

# Nemo File Format Specification

Version 2.34

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## TABLE OF CONTENTS

### 1 CHANGE HISTORY

### 2 INTRODUCTION

#### 2.1 HOW TO READ THIS DOCUMENT

### 3 DESCRIPTION OF THE FILE FORMAT

#### 3.1 EVENT ID

#### 3.2 TIME

#### 3.3 CONTEXT IDS

#### 3.4 EVENT PARAMETERS

### 4 MEASUREMENT FILE NAMING

### 5 EVENTS

## 1 CHANGE HISTORY

### New to 2.34

- Added support for Autonomous Probe serial number. (#SERVERHW)

- Added support for power save mode. (PSM)
- Added support for synchronization channel RSSI measurements. (OFDMSCAN)
- Added support for NB-IoT channel raster offset. (SCANCONFIG, OFDMSCAN)
- Added support for NB-IoT NRS and NPSS signal types. (OFDMSCAN)
- Added support for data connection processing delay. (DCOMP)
- Added data connection context ID to the DNSQUERY. (DNSQUERY)
- Added support for bandwidth agnostic EVS codec rates for situations when exact bandwidth is unknown. (AMRS)
- Added support for QoS class identifier (QCI) per EPS bearer. (PBC)
- Added support for initial coverage enhancement level during LTE RACH procedure. (RACHI)
- Renamed TCP connection establishment time to TCP handshake time. (DCOMP)

## 2 INTRODUCTION

**You should read the following chapters carefully before you start analyzing your measurement files.**

This document is a description of the Keysight Technologies open ASCII file format. All Nemo tools produce this type of measurement files and the files can be viewed and analyzed using various methods or tools; e.g., Nemo Outdoor playback functions, Nemo Analyze, or a text editor.

The file format description includes events and event-related parameters for all network technologies that can be measured with the Nemo tools.

### 2.1 HOW TO READ THIS DOCUMENT

This document is organized in such a manner that it is easy to locate specific events and parameters. From the **Table of Contents**, you will find all events organized in specific groups; e.g., Handover/Handoff events, GPRS Related events, and Call events. All events and event parameters are listed in the **Index** table. The events are also categorized according to different technologies. In other words, if you are looking for all CDMA events, go to the Index (at the end of this document) and find the keyword CDMA events. Under that keyword are listed all CDMA related events and the page where that event can be found.

All events and their parameters are presented in table format.

### 5.1.2 INCOMING CALL (CAI)

Heading

Event Info table

<b>Event ID</b>	CAI
<b>Cellular systems</b>	All
<b>Mode</b>	Voice call, data call
<b>Recorded</b>	Idle Recorded when setup message has arrived from the network. Setup is used instead of paging request, because the information of the call type (voice or data; voice is only acceptable here) is first available in the setup messaging.
<b>Nemo Tools</b>	Nemo Outdoor, Nemo Indoor

#### Parameters

Parameters table

Name	Type	Description
Call type	Integer	Call type 1 = Voice call 2 = Markov call (CDMA) 3 = Data call 4 = Fax call 7 = Video call 8 = POC call
#MTC	Integer	Number of mobile terminated calls during session The ordinal number of the calls terminated during a measurement session
Number	String	Calling number Phone number from which the call is originated.

#### Example:

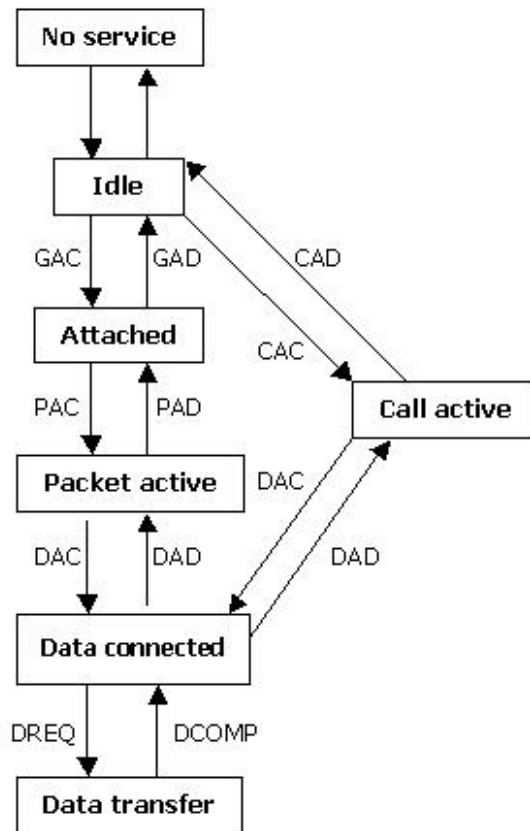
CAI +32.123456 +64.654321 55 1234 1 8 99 12:13:14.156 1 23 12345678

The **Heading** displays the event name and event ID. In measurement files, the events are marked with the event ID only.

The **Event Info** table presents general information of this event; for example, the cellular system where this event may occur and the Nemo tools which produce this event. All the events produced by Nemo tools are listed in this document with the respective parameters.

The following information is given for each event:

- **Event ID**
- **Cellular systems:** refers to the networks in which the event is used.
- **Recorded:** describes the state in which the event is recorded. For voice calls the alternatives are idle and call active. For circuit switched data calls the alternatives are idle, call active, and data transfer. For PS data calls (GPRS) the alternatives are idle, attach, packet active, and data transfer. For GSM the state is idle if the phone is on a control channel and call active if the phone is on a traffic channel. The diagram below describes the different recording states and the events that initiate the state transitions.



- **Nemo Tools:** refers to the Nemo tools that produce the event.

The following information is given for all parameters:

- **Name** defines the short parameter name displayed, for example, in Nemo Outdoor windows.
- **Type:** defines the parameter type. The alternatives are integer, string, hex(adecimal data), and float.
- **Description** of the parameter and possible limits and alternatives. On the first line of this field is stated the long parameter name. This name is used when selecting parameters to be displayed in the Nemo Outdoor windows.

*Only the event specific parameters are listed here. However, each event also has the time and location information. But to save space, the time and location parameters are explained only once in chapter 3.3 Event Structure. The event specific parameters are marked with bold type in the event examples.*

The **Parameters table** lists all the parameters that belong to this specific event. The number of parameters differs from one event to another: while one event may have only one parameter, another event may have as many as ten. Furthermore, the same parameter can appear in several events. For each parameter are displayed the parameter name, type, and a description of the parameter. If the parameter has been shaded, it means that this parameter is repeated. In other words, there may appear several of these parameters in one event.

Finally, an example of how the event might look like in the actual measurement file is given. For example, this is how you would interpret the example above:

LLCSM,12:13:14.156,,1,1,"UI-CMD","**PACCH**",**"01C00B"**

The first two parameters after the event ID are common to all events. For more information on these common events, see chapter 3.3 Event Structure.

- LLCSM = event ID; i.e., this is a LLC layer signaling event.
- 12:13:14.156 = time in the following format [Hour]:[Min]:[Sec].[thousands of seconds]
- Empty parameter = Number of context IDs is zero since LLC signaling event does not use context IDs.

The events that come after the time are event specific parameters. Only these parameters are explained in the Parameters table after each event. In the examples, the event specific parameters are marked with **bold** type to

distinguish them from the common parameters.

- 1 = Measured system (GSM)
- 1 = Message direction (uplink)
- UI-CMD = LLC message name
- PACCH = Sub channel name
- 01C00B = Content of the LLC message

## 3 DESCRIPTION OF THE FILE FORMAT

An event is an ASCII string that has an unspecified length. All events are separated from each other with the ?new line? character. Different fields in each event are separated from each other by the comma character. If a value is not available (n/a), the value is omitted from the ASCII string and the omission indicated by two consecutive commas. This document describes the initial set of events and their parameters. However, new events or event parameters can be added to the file format later on.

[event ID],[time],[number of context IDs],[context ID1],[context ID2],...,[event parameters]

Example:

[event ID]	[time]	[number of context IDs]	[id1]	[event parameters]
CAA,	01:11:46.120,	1,	30,	1,1,"1234567"

### 3.1 EVENT ID

The event ID is unique identifier for each measurement event. The event ID defines the meaning for context IDs and for the parameters. An event ID is a string of characters without double quotes.

### 3.2 TIME

Time is presented in the following format:

[Hour]:[Min]:[Sec].[thousands of seconds]

### 3.3 CONTEXT IDS

Contexts are used in identifying measurement events written during simultaneous ?sessions?. For example, when there are two simultaneous data transfers, both data transfers use a different context ID value. Context ID values are unique only within the scope of each context ID type contained in a single measurement file, i.e. different context ID types can use the same value. In each measurement event there can be an arbitrary number of context IDs for different purposes. The event definition specifies the meaning of each context ID. If a measurement event does not contain any context IDs, number of context IDs is omitted and the omission indicated by two consecutive commas. Note also that the context ID number defines the number of context IDs in a particular measurement event, i.e. the context ID number does not refer to the number of simultaneously active ?sessions?. The context information is presented in the following format:

[number of context IDs],[id1],[id2],[id3],...

Since the idea of context IDs is quite complex, some common usage examples are provided below. In each example, irrelevant event parameters are expressed using three dots. As timestamp information is not relevant either, the text 'timestamp' is used in place of the timestamp.

#### **Example 1**

PAA,timestamp,1,100,...

The PAA measurement event starts a new packet session (in 3GPP systems this is the same as PDP context). The event contains only one context ID value, the value 100. The PAA measurement event specification defines that the first and the only context ID is the same as Packet session context ID. Other measurement events can use the Packet session context ID value 100 to refer to this particular packet session.

#### **Example 2**

PAC,timestamp,1,100,...

The PAC measurement event is written when a packet session is connected. The event contains only one context ID value, the value 100. Based on the event specification, the type of the context ID is Packet session context ID, i.e. the same as with the PAA measurement event. This packet session connection is intended to be paired with the PAA measurement event in Example 1. If there are multiple simultaneous packet session attempts, the context ID value indicates which of the packet sessions is connected.

#### **Example 3**

DAA,timestamp,3,150,100,...

The DAA measurement event is written for each data connection attempt, e.g. when FTP logon is started. The measurement event contains three context ID values, the values 150, 100, and n/a. Based on the event specification, the first context ID is Data connection context ID. As with the PAA measurement event, other measurement events can use the Data connection context ID value 150 to refer to this particular data connection.

The type of the second context ID is packet session context ID with the context ID value 100. Again, this context ID refers to the packet session started in Example 1. The type of the last context ID is Call context ID without context ID value. The DAA measurement event does not refer to any circuit-switched data as there is no context ID value. This behaviour is normal and due to a situation where the event is already associated with some packet session. Data connection can be established using either a packet connection or a circuit-switched connection, but not both. Thus, only one of the context IDs can have a valid value.

#### **Example 4**

MSGa,timestamp,1,100,1,1,...

The MSGa measurement event is used in indicating SMS or MMS message sending. The event contains only one context ID value, the value 100. As the MSGa event specification defines two different context types, the use of the parameter Message type is necessary for deducing the correct context type. In this particular example, the Message type value is 1 (=SMS message), reflecting the fact that the event contains an SMS context ID.

Note also that even though the SMS context ID value is 100, i.e. the same as the Packet session context ID in the PAA measurement event in Example 1, these two are not related in any way as they differ in their context type. Within the scope of a single measurement file, the context ID values are unique only within each context type.

### **3.4 EVENT PARAMETERS**

An event specifies what parameters or values are presented in each specific case. The parameter field should stay unchanged but new parameters can be added such that backward compatibility is maintained. In practice this means that new parameters can be added to the end of the measurement event or to the middle of the measurement event if event structure supports that kind of additions and normally Number of Parameters -field indicates that.

**Example:**

Old event CAA,[time],[cellular system],[call type],[phone number]

New event CAA,[time],[cellular system],[call type],[phone number],[new parameter]

Parameter can have one of the following types:

Type	Syntax
Integer	Contains only characters ?-0123456789?, e.g. 593.
Float	Contains always one dot and characters ?-.0123456789?, e.g. -30.63.
String	UTF8 string surrounded by double quotes, e.g. "Good measurement!".

## 4 MEASUREMENT FILE NAMING

Measurement files are named in following format:

[filename].[device ID].nmf

Filename is defined by user or auto-generated by measurement tool.

Device ID is used to separate simultaneous measurement files when multiple devices are used simultaneously.

## 5 EVENTS

### Antenna gain (#AG)

Event ID	#AG
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

Parameters |Top|

Name	Type	Description
AG	Float	Antenna gain Signal gain achieved by using an external antenna attached to a mobile phone. Value is obtained from the antenna specifications. Unit: dBi



## BTS filename (#BF)

Event ID	#BF
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
BTS file	String	BTS filename File containing base station location information. The file extension is NBF.

## BTS template (#BTSTEMPLATE)

Event ID	#BTSTEMPLATE
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
BTS template	String	BTS template filename File containing template headers for a base station file (.nbt).

## Cell whitelist (#CELLWHITELIST)

Event ID	#CELLWHITELIST
Cellular systems	All

<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters |Top|

Name	Type	Description
BTS whitelist	String	BTS whitelist filename File containing a list of whitelisted base stations.

## Conversion info (#CI)

<b>Event ID</b>	#CI
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

#### Parameters |Top|

Name	Type	Description
Converter name	String	Converter name
Converter version	String	Converter version
Converted file	String	Converted filename

## Cable loss (#CL)

<b>Event ID</b>	#CL
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

#### Parameters |Top|

Name	Type	Description
CL	Float	Cable loss

		Signal loss due to the antenna cable when using external antenna attached to a mobile phone. Value is obtained from the cable specifications. Unit: dBm
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## Device label (#DL)

<b>Event ID</b>	#DL
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Device label	String	Device label Short textual description of the device. For example, this could contain information about the usage of the device.

## Device name (#DN)

<b>Event ID</b>	#DN
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
Device name	String	Device name Describes the type of mobile phone used in measurements.

## Device system (#DS)

<b>Event ID</b>	#DS
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Number of supported systems	Integer	Number of supported systems
Supported systems	Integer	Supported systems Supported systems. Depends on the measurement tool and device capabilities. With fixed-line measurement tools, it is also possible to use PSTN and ISDN values. 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 20 = WLAN 21 = GAN WLAN 25 = WiMAX 50 = NMT 51 = AMPS 52 = NAMPS 53 = DAMPS 54 = ETACS 55 = iDEN 60 = PSTN 61 = ISDN 62 = IP 65 = DVB-H

## Device type (#DT)

<b>Event ID</b>	#DT
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

**Parameters** |Top|

Name	Type	Description
Device type	Integer	Device type 1 = Phone 2 = Scanner

## Device configuration (#DC)

Event ID	#DC
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log the static device configuration, e.g. supported down converters or front ends etc.
Tools	Nemo Outdoor

|Parameters |

**Parameters** |Top|

Name	Type	Description
Device configuration	String	Device configuration At the moment this is only used to define supported down converters with FSR1 scanner.

## EVRC info (#EVRC)

Event ID	#EVRC
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor

|Parameters |

**Parameters** |Top|

Name	Type	Description
EVRC status	Integer	EVRC status 0 = Off 1 = On

## File format (#FF)

<b>Event ID</b>	#FF
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
File format version	String	File format version

## Floorplan information (#FLOORPLAN)

<b>Event ID</b>	#FLOORPLAN
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Floorplan file name	String	Floorplan file name
Floorplan coordinate system	Integer	Floorplan coordinate system 1 = GPS 2 = Metric 3 = UTM Universal Transverse Mercator coordinates. See more <a href="http://en.wikipedia.org/wiki/Universal_Transverse_Mercator_coordinate_system">http://en.wikipedia.org/wiki/Universal_Transverse_Mercator_coordinate_system</a> .
iBwave file name	String	iBwave file name
Venue name	String	Venue name Venue or address of the building.
Building name	String	Building name
Floor name	String	Floor name

---

## Equipment identity (#EI)

<b>Event ID</b>	#EI
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Device identity	String	Device identity This value is unique for each piece of equipment. For GSM and UMTS systems this is the same as IMEI (International Mobile Equipment Identity).

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## Handler version (#HV)

<b>Event ID</b>	#HV
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Handler version	String	Handler version Defines the handler version that was used when generating the file.

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## Device hardware version (#HW)

Event ID	#HW
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
Hardware version	String	Hardware version
Manufacturer	String	Manufacturer
Model	String	Model

## Measurement ID (#ID)

Event ID	#ID
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Measurement ID	String	Measurement ID The identification tag is generated by using Microsoft Windows GUID functions. It is used to identify all simultaneously generated measurement files made by one measurement tool.

## Server information (#SERVER)

Event ID	#SERVER
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.



<b>Tools</b>	Nemo Outdoor, Nemo Server	
Parameters	Parameters for Invex	Parameters for Nemo Server

#### Parameters [|Top|](#)

Name	Type	Description
Server HW type	Integer	Server hardware type 1 = Invex I 2 = Invex II 4 = Nemo Server

#### Parameters for Invex [|Top|](#)

Name	Type	Description
Host	String	Invex host address
Device connector	Integer	Invex device connector 1 = USB 1 2 = USB 2 3 = USB 3 Only with Invex II. 4 = USB 4 Only with Invex II. 5 = USB 5 Only with Invex II. 6 = USB 6 Only with Invex II.

#### Parameters for Nemo Server [|Top|](#)

Name	Type	Description
Host	String	Server host address
IP	String	Server IP addresses Comma separated list of IP addresses.

## Server hardware information (#SERVERHW)

<b>Event ID</b>	#SERVERHW
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Server

Parameters	Parameters for Outdoor	Parameters for Invex	Parameters for Autonomous Probe	Parameters for Nemo Server
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#### Parameters [|Top|](#)

Name	Type	Description
Server HW type	Integer	Server hardware type 0 = Outdoor 1 = Invex I 2 = Invex II 3 = Autonomous Probe 4 = Nemo Server

**Parameters for Outdoor** [\[Top\]](#)

Name	Type	Description
HIM model	String	Invex handset isolation module model
HIM HW	String	Invex handset isolation module hardware version
HIM SN	String	Invex handset isolation module serial number
HIM SW	String	Invex handset isolation module software version
HIM device ID	String	Invex handset isolation module device ID
CPU	String	Invex CPU model

**Parameters for Invex** [\[Top\]](#)

Name	Type	Description
Invex UIC model	String	Invex UIC model
UIC HW	String	Invex UIC hardware version
UIC SN	String	Invex UIC serial number
UIC SW	String	Invex UIC software version
BP model	String	Invex backplane model
BP HW	String	Invex backplane hardware version
BP SN	String	Invex backplane serial number
BP SW	String	Invex backplane software version
HIM model	String	Invex handset isolation module model
HIM HW	String	Invex handset isolation module hardware version
HIM SN	String	Invex handset isolation module serial number
HIM SW	String	Invex handset isolation module software version
HIM device ID	String	Invex handset isolation module device ID
CPU	String	Invex CPU model
Chassis	Integer	Invex chassis number
Slot	Integer	Invex slot number
Device connector	Integer	Invex device connector 1 = USB 1 2 = USB 2 3 = USB 3 Only with Invex II. 4 = USB 4 Only with Invex II. 5 = USB 5 Only with Invex II. 6 = USB 6 Only with Invex II.

**Parameters for Autonomous Probe** [\[Top\]](#)

Name	Type	Description
AP model	String	Autonomous Probe model
AP SW	String	Autonomous Probe software version
AP CPU	String	Autonomous Probe CPU model
AP device connector	Integer	Autonomous Probe device connector 1 = USB 1 2 = USB 2 3 = USB 3 4 = USB 4 5 = USB 5 6 = USB 6
AP SN	String	Autonomous Probe serial number

**Parameters for Nemo Server** [|Top](#)

Name	Type	Description
Model	String	Server model
Manufacturer	String	Server manufacturer
SW	String	Server software version
CPU	String	Server CPU model
SN	String	Server serial number
System ID	String	Server system ID

## License information (#LICENSE)

Event ID	#LICENSE
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log license information.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for HASP and HLS](#) |**Parameters** [|Top](#)

Name	Type	Description
License type	Integer	License type 1 = HASP 2 = HLS Handy License Server.

**Parameters for HASP and HLS** [|Top](#)

Name	Type	Description
License serial number	String	License serial number
License expiration date	String	License expiration date Date in format dd.mm.yyyy, where dd is the day of the month, mm is the month of the year and yyyy is the year. Empty string when expiration date is not defined.
TS expiration date	String	Technical support expiration date Date in format dd.mm.yyyy, where dd is the day of the month, mm is the month of the year and yyyy is the year. Empty string when expiration date is not defined.
License options	String	License options Comma separated list of license options, e.g. "Qualcomm HSPA+,Qualcomm LTE FDD,iOS NMR".

## License region information (#LICENSEREGION)

Event ID	#LICENSEREGION
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log license region information.
Tools	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
#Countries	Integer	Number of countries
#Params/country	Integer	Number of parameters per country
MCC	Integer	Mobile country code See ITU-T recommendation E.212. Range: 0 – 999
#Operators	Integer	Number of operators
#Params/operator	Integer	Number of parameters per operator
MNC/SID	Integer	MNC/SID This is MNC for 3GPP systems and SID for 3GPP2 systems. Range: 0 – 32767

## Map filename (#MF)

Event ID	#MF
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Map file	String	Map filename Defines the map file used during measurement.

## Measurement label (#ML)

<b>Event ID</b>	#ML
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

#### Parameters |Top|

Name	Type	Description
Measurement label	String	Measurement label Short textual description of the measurement.

## Measurement mode (#MM)

<b>Event ID</b>	#MM
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

#### Parameters |Top|

Name	Type	Description
Measurement mode	Integer	Measurement mode 1 = Outdoor 2 = Indoor

## Report tags (#REPORT)

<b>Event ID</b>	#REPORT
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to indicate the role of the measurement for the reports.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |Parameters for Nemo Xynergy |

#### Parameters |Top|

Name	Type	Description
Report type	Integer	Report type 1 = Nemo Xynergy

#### Parameters for Nemo Xynergy [\[Top\]](#)

Name	Type	Description
Report name	String	Report name
Report ID	String	Report ID Unique identifier for report.
Report tags	String	Report tags Comma-separated list of report tags.

## NMR information (#NMR)

Event ID	#NMR
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor

[Parameters](#) |

#### Parameters [\[Top\]](#)

Name	Type	Description
NMR version	String	NMR version
NMR features	String	NMR features Comma separated list of supported NMR features, e.g. "FTP,HTTP,VQ".

## Network name (#NN)

Event ID	#NN
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) |

#### Parameters [\[Top\]](#)

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Name	Type	Description
Network name	String	Network name Specifies the name of the measured network, given by the user in the configuration file.

## Packet capture state (#PC)

Event ID	#PC
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Packet capture state	Integer	Packet capture state Defines if packet capturing is enabled or disabled. Log file is stored in the same directory as the measurement file and the log file name is the same as the measurement file with the appendix '.pcap'. For example measurement.nemo -> measurement.nemo.pcap. 0 = Disabled 1 = Enabled

## Product information (#PRODUCT)

Event ID	#PRODUCT
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Product name	String	Product name
Product version	String	Product version

## Project information (#PROJECT)

Event ID	#PROJECT
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log static measurement settings.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
Project ID	String	Project ID
Session ID	String	Session ID

## Operating system information (#OS)

Event ID	#OS
Cellular systems	All
Record state	Start of the measurement
Description	Recorded at the beginning of the measurement file to log information about running operating system.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Operating system	String	Operating system The operating system name and the version.

## Subscriber identity (#SI)

Event ID	#SI



<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

#### Parameters |Top|

Name	Type	Description
Subscriber identity	String	Subscriber identity This value is unique for each user. For GSM, UMTS, and LTE systems this is the same as IMSI (International Mobile Subscriber Identity).

## Subscriber phone number (#SP)

<b>Event ID</b>	#SP
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

#### Parameters |Top|

Name	Type	Description
Subscriber phone number	String	Subscriber phone number Same as phone number of the caller for originated calls.

## Device software version (#SW)

<b>Event ID</b>	#SW
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

#### Parameters |Top|

Name	Type	Description
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Device software version	String	Device software version
Nemo firmware ID	String	Nemo firmware ID
Nemo firmware version	String	Nemo firmware version
Build fingerprint	String	Build fingerprint

## Test script (#TS)

<b>Event ID</b>	#TS
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Test script file	String	Test script filename Defines the test script that was used during measurements.

## Gap to UTC (#UT)

<b>Event ID</b>	#UT
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
UTC to local	Integer	UTC to local time difference Defines the time difference in minutes from UTC time to local time. This is the same as the timezone but it is adjusted by daylight saving. Unit: minute
UTC to timestamp	Integer	UTC to timestamp time difference Defines the time difference in minutes from UTC time to event timestamps. Unit: minute

## Unit ID (#UNITID)

<b>Event ID</b>	#UNITID
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Unit ID	String	Unit ID Unique identifier for the measurement unit.

## Voice quality version (#VQ)

<b>Event ID</b>	#VQ
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to log static measurement settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
VQ type	Integer	Voice quality type Defines what kind of voice quality hardware is used for the voice quality measurements. 0 = Disabled 1 = EVOQ 2 = Soundcard based 3 = Psytechnics PSM 4 = Fixed line 5 = Invex 6 = Nemo media router
VQ version	String	Voice quality version Defines the voice quality hardware version.
VQ device	String	Voice quality device With sound card based voice quality tests, the parameter contains the name of the driver and the number of the channel.

## Kodiak info (#KODIAK)

<b>Event ID</b>	#KODIAK
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
Kodiak version	String	Kodiak version

## Start measurement (#START)

<b>Event ID</b>	#START
<b>Cellular systems</b>	All
<b>Record state</b>	Start of the measurement
<b>Description</b>	Recorded at the beginning of the measurement file to indicate the start of the measurement, i.e. the point after which events with measurement information are recorded.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
Date	String	Date Date in format dd.mm.yyyy, where dd is the day of the month, mm is the month of the year and yyyy is the year.

## Stop measurement (#STOP)

<b>Event ID</b>	#STOP
<b>Cellular systems</b>	All
<b>Record state</b>	End of the measurement
<b>Description</b>	Recorded at the end of the measurement file to indicate the end of the measurement, i.e. the point after which events with measurement information are no longer recorded.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

#### Parameters |Top|

Name	Type	Description
Date	String	Date Date in format dd.mm.yyyy, where dd is the day of the month, mm is the month of the year and yyyy is the year.

## Hash code (#HASH)

<b>Event ID</b>	#HASH
<b>Cellular systems</b>	All
<b>Record state</b>	End of the measurement
<b>Description</b>	Recorded at the end of the measurement (after #STOP measurement event). Contains the hash code that is calculated over the measurement.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |Parameters for MD5 |Parameters for Nemo proprietary hash |

#### Parameters |Top|

Name	Type	Description
HASH code type	Integer	HASH code type Defines the type of checksum used for the measurement. 1 = MD5 2 = Nemo internal This is improved hash for our internal usage.

#### Parameters for MD5 |Top|

Name	Type	Description
HASH	String (hex)	HASH code Contains MD5 (Message-Digest algorithm 5) hash code calculated over the measurement in hex format. More information about MD5 can be found in <a href="http://en.wikipedia.org/wiki/Md5">http://en.wikipedia.org/wiki/Md5</a> .

#### Parameters for Nemo proprietary hash |Top|

Name	Type	Description
HASH	String (hex)	HASH code This hash is calculated using proprietary formula.

## Call attempt (CAA)

<b>Event ID</b>	CAA
<b>Cellular systems</b>	All
<b>Record state</b>	Idle state
<b>Description</b>	Recorded for an originated call when the user has pressed the SEND key. If this is not known (e.g. call activation is done using the keypad of the mobile station), the point in time when the SETUP NAS signaling message or INVITE SIP message (or related when INVITE is lost) is sent to the network. In case of incoming calls, the point in time when the SETUP NAS message or INVITE SIP message (or related when INVITE is lost) is received. Setup is used instead of paging request, because information on the call type (voice or data; voice is only acceptable here) is first available in setup messaging. The CAA measurement event begins the call attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
Call context ID	Context	Call context ID
Measured sys.	Integer	<p>Measured system</p> <p>For the incoming call this is the system where the call indication was received. For example for LTE CSFB call the logged system is LTE since the first indication about the incoming call was received in LTE even though the CAA measurement event is logged during GSM/UMTS when the SETUP L3 signaling message was received.</p> <p>1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD     This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 20 = WLAN 21 = GAN WLAN 25 = WiMAX 50 = NMT 51 = AMPS 52 = NAMPS 53 = DAMPS 54 = ETACS 55 = iDEN 60 = PSTN 61 = ISDN 62 = IP 65 = DVB-H</p>
Call type	Integer	<p>Call type</p> <p>Sometimes the exact call type is not known when SEND key is pressed and in these cases the value of this parameter is either voice (1) or video call (7). The actual established call type is logged to the CAC measurement event.</p> <p>1 = Voice call 2 = Markov call 3 = Data call 4 = Fax call 5 = Dial-up based data call</p>

		6 = Loopback call (CDMA) 7 = Video call 8 = Push-to-talk 9 = Push-to-talk between mobiles (TETRA) 10 = VoIP 11 = Skype 12 = QChat 13 = Kodiak 14 = LTE IMS voice 15 = iDEN push-to-talk 16 = LTE IMS video It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the VOIPI measurement event defines the existence of the video. 17 = WLAN IMS voice 18 = WLAN IMS video It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the VOIPI measurement event defines the existence of the video. 19 = IP IMS voice 20 = WhatsApp
Call direction	Integer	Call direction 1 = Originated call The test system makes the call to the other end. 2 = Terminated call The test system receives the call from the other end.
Phone number	String	Phone number This is always the remote identity. For originated calls, this is the phone number where the calls are made to and for terminated calls this is the number from which the call is made from. For the VoIP calls the SIP URI format is used.
Own phone number	String	Own phone number This is always the own identity. For originated calls this is the phone number of the caller and for incoming calls this is the own phone number. For the VoIP calls the SIP URI format is used. Currently this parameter is only implemented for the VoIP calls.
Call timeout	Integer	Call timeout The timeout value from call attempt (CAA) to the dedicated channel allocation (CAC 1). If call has not been established during this time the CAF measurement event is recorded. Unit: ms
Unique ID	String	Unique ID This parameter is unique for each call, even between measurement files, and it can be used in post-processing to match originated and terminated calls. The value of the parameter is meaningless and it should only be used for the matching.
CAA time correction	Integer	CAA time correction In some cases the CAA measurement event is logged later than the real call attempt. For example, for incoming calls, the CAA measurement event is logged when the SETUP signaling message is received and not to the paging request. This parameter defines the time difference between the first indication about a call and the CAA measurement event. Currently it has only been implemented for incoming voice and video calls. Unit: ms

## Call connect success (CAC)

<b>Event ID</b>	CAC
<b>Cellular systems</b>	All
<b>Record state</b>	Call attempt state
<b>Description</b>	Recorded in different stages of call establishment. This measurement event begins the call connection state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters | Parameters for GSM | Parameters for TETRA |

### Parameters [|Top|](#)

Name	Type	Description
Call context ID	Context	Call context ID
Measured sys.	Integer	<p>Measured system</p> <p>1 = GSM</p> <p>2 = TETRA</p> <p>5 = UMTS FDD</p> <p>6 = UMTS TD-SCDMA</p> <p>7 = LTE FDD</p> <p>    This is also used with NB-IoT.</p> <p>8 = LTE TDD</p> <p>10 = cdmaOne</p> <p>11 = CDMA 1x</p> <p>12 = EVDO</p> <p>20 = WLAN</p> <p>21 = GAN WLAN</p> <p>25 = WiMAX</p> <p>50 = NMT</p> <p>51 = AMPS</p> <p>52 = NAMPS</p> <p>53 = DAMPS</p> <p>54 = ETACS</p> <p>55 = iDEN</p> <p>60 = PSTN</p> <p>61 = ISDN</p> <p>62 = IP</p> <p>65 = DVB-H</p>
Call type	Integer	<p>Call type</p> <p>1 = Voice call</p> <p>2 = Markov call</p> <p>3 = Data call</p> <p>4 = Fax call</p> <p>5 = Dial-up based data call</p> <p>6 = Loopback call (CDMA)</p> <p>7 = Video call</p> <p>8 = Push-to-talk</p> <p>9 = Push-to-talk between mobiles (TETRA)</p> <p>10 = VoIP</p> <p>11 = Skype</p> <p>12 = QChat</p> <p>13 = Kodiak</p> <p>14 = LTE IMS voice</p> <p>15 = iDEN push-to-talk</p> <p>16 = LTE IMS video</p> <p>    It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the VOIPI measurement event defines the existence of the video.</p> <p>17 = WLAN IMS voice</p> <p>18 = WLAN IMS video</p> <p>    It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the</p>



		VOIPI measurement event defines the existence of the video. 19 = IP IMS voice 20 = WhatsApp
Call connection status	Integer	Call connection status 1 = Traffic channel allocated With GSM after traffic channel is allocated. With UMTS after DCH radio bearer is allocated. With IMS based calls after PRACK related SIP message is sent or received. 2 = Alerting With GSM and UMTS after ALERTING NAS signaling message is sent or received. With IMS based calls after 180 ringing SIP message is sent or received. 3 = Connected With GSM and UMTS after CONNECT is received or CONNECT_ACKNOWLEDGE NAS signaling message is sent or received. With IMS based calls after 200 OK for INVITE or ACK SIP message is sent or received. 4 = Dial-up connection established
#Parameters	Integer	Number of system specific parameters

#### Parameters for GSM [\[Top\]](#)

Name	Type	Description
TSL	Integer	Timeslot number In case of HSCSD data test call, used timeslots are listed in a DCHI event. Range: 0 – 7

#### Parameters for TETRA [\[Top\]](#)

Name	Type	Description
TSL	Integer	Timeslot number Range: 1 – 4

## Call failed (CAF)

Event ID	CAF
Cellular systems	All
Record state	Call attempt state
Description	Recorded when there is a timeout or a call release before dedicated radio resource allocation for the call. Recorded on timeout after CAA event when no service available. With IMS based calls logged when any BYE related SIP message is sent or received, or if 300 or higher SIP response code is sent or received for INVITE, PRACK, or ACK. The CAF measurement event ends call attempt state.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

[Parameters](#) | [Parameters for non-VoIP GSM, UMTS FDD, UMTS TD-SCDMA, and GAN WLAN](#) | [Parameters for non-VoIP TETRA](#) | [Parameters for LTE](#)  
[Parameters for non-VoIP cdmaOne, CDMA 1x, and EVDO](#) | [Parameters for iDEN](#) | [Parameters for ISDN](#) | [Parameters for VoIP](#) | [Parameters for Skype](#)  
[Parameters for QChat](#) | [Parameters for Kodiak](#) | [Parameters for IMS based calls](#) | [Parameters for iDEN push-to-talk](#) | [Parameters for WhatsApp](#) |

#### Parameters [\[Top\]](#)

Name	Type	Description
Call context ID	Context	Call context ID

Measured sys.	Integer	<p>Measured system</p> <p>1 = GSM  2 = TETRA  5 = UMTS FDD  6 = UMTS TD-SCDMA  7 = LTE FDD  This is also used with NB-IoT.  8 = LTE TDD  10 = cdmaOne  11 = CDMA 1x  12 = EVDO  20 = WLAN  21 = GAN WLAN  25 = WiMAX  50 = NMT  51 = AMPS  52 = NAMPS  53 = DAMPS  54 = ETACS  55 = iDEN  60 = PSTN  61 = ISDN  62 = IP  65 = DVB-H</p>
Call type	Integer	<p>Call type</p> <p>1 = Voice call  2 = Markov call  3 = Data call  4 = Fax call  5 = Dial-up based data call  6 = Loopback call (CDMA)  7 = Video call  8 = Push-to-talk  9 = Push-to-talk between mobiles (TETRA)  10 = VoIP  11 = Skype  12 = QChat  13 = Kodiak  14 = LTE IMS voice  15 = iDEN push-to-talk  16 = LTE IMS video  It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the VOIPI measurement event defines the existence of the video.  17 = WLAN IMS voice  18 = WLAN IMS video  It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the VOIPI measurement event defines the existence of the video.  19 = IP IMS voice  20 = WhatsApp</p>
CS fail. status	Integer	<p>CS call attempt failure status</p> <p>1 = Timeout before connection  Recorded for other than GSM and UMTS systems when call has failed after timeout. With the Nemo Handy this is also recorded when call attempt is aborted after timeout in the call script.  2 = Call was released before connection  The caller or the network releases the call attempt before the connection is received. Normally this happens when CM_SERVICE_ABORT layer 3 message is sent or CM_SERVICE_REJECT layer 3 message is received.  3 = Service not available  Recorded for call failure when mobile is not in service.  4 = Incoming call rejected  Recorded when B party rejects the call. Realization of this is the disconnect signaling message received from the network with CC cause value 16 (user disconnect).  5 = Test system failure</p>

		<p>The call is considered as a test system failure when any call associated signaling (etc. cm service request, immediate assignment, setup, etc.) is not received after the call attempt command has been sent to the mobile. Another reason for this failure cause is when the called phone number is blacklisted or delayed based on country specific telecommunication regulations. Also this failure cause is recorded if called phone number differs in the setup signaling message from the one defined by user to the user interface.</p> <p>6 = SDCCH blocking Recorded for GSM when call fails because SDCCH channel cannot be allocated.</p> <p>7 = TCH blocking Recorded for GSM when call fails because TCH channel cannot be allocated.</p> <p>8 = RRC connection failed Recorded for UMTS when RRC connection cannot be established for the call.</p> <p>9 = Radio bearer setup failed Recorded for UMTS when radio bearer configuration fails or when there is no attempt to allocate radio bearer after RRC connection is established.</p> <p>10 = SDCCH release Recorded for GSM when network releases the SDCCH channel before TCH assignment attempt.</p> <p>11 = SDCCH drop Recorded for GSM when call drops after SDCCH assignment, the SETUP signaling message is received, and before TCH is assigned.</p> <p>12 = TCH assignment failure Recorded for GSM when TCH assignment fails.</p> <p>13 = Incoming call not received Recorded when the incoming call was expected but not received. To be able to log this status code the measurement system must have knowledge about the incoming call.</p> <p>14 = User busy Recorded when B party is busy and cannot answer. Realization of this is the disconnect signaling message received from the network with CC cause value 17 (user busy).</p> <p>20 = PPP error Recorded for circuit-switched data call when PPP layer (MS Windows RAS) has failed to establish PPP connection to the dial-up server. The cause value contains returned RAS error value.</p>
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**Parameters for non-VolP GSM, UMTS FDD, UMTS TD-SCDMA, and GAN WLAN** [\[Top\]](#)

Name	Type	Description
CS disc. cause	Integer	<p>CS call disconnect cause</p> <p>If call is dropped due to a dial-up connection error (status code 20), the value is an OS RAS cause. Otherwise CC cause code.</p> <p>1 = Unassigned (unallocated number)</p> <p>3 = No route to destination</p> <p>6 = Channel unacceptable</p> <p>8 = Operator determined barring</p> <p>16 = Normal clearing</p> <p>17 = User busy</p> <p>18 = No user responding</p> <p>19 = User alerting, no answer</p> <p>21 = Call rejected</p> <p>22 = Number changed</p> <p>25 = Pre-emption</p> <p>26 = Non selected user clearing</p> <p>27 = Destination out of order</p> <p>28 = Invalid number format (incomplete number)</p> <p>29 = Facility rejected</p> <p>30 = Response to STATUS ENQUIRY</p> <p>31 = Normal, unspecified</p>

34 = No circuit/channel available  
38 = Network out of order  
41 = Temporary failure  
42 = Switching equipment congestion  
43 = Access information discarded  
44 = Requested circuit/Channel not available  
47 = Resources unavailable, unspecified  
49 = Quality of service unavailable  
50 = Requested facility not subscribed  
55 = Incoming calls barred within the CUG  
57 = Bearer capability not authorized  
58 = Bearer capability not presently available  
63 = Service or option not available, unspecified  
65 = Bearer service not implemented  
68 = ACM equal to or greater than ACMmax  
69 = Requested facility not implemented  
70 = Only restricted digital information bearer capability is available  
79 = Service or option not implemented, unspecified  
81 = Invalid transaction identifier value  
87 = User not member of CUG  
88 = Incompatible destination  
91 = Invalid transit network selection  
95 = Semantically incorrect message  
96 = Invalid mandatory information  
97 = Message type not non-existent  
98 = Message type not compatible with protocol state  
99 = Information element non-existent or not implemented  
100 = Conditional IE error  
101 = Message not compatible with protocol state  
102 = Recovery on timer expiry  
111 = Protocol error, unspecified  
127 = Interworking, unspecified  
600 = An operation is pending.  
601 = An invalid port handle was detected.  
602 = The specified port is already open.  
603 = The caller's buffer is too small.  
604 = Incorrect information was specified.  
605 = The port information cannot be set.  
606 = The specified port is not connected.  
607 = An invalid event was detected.  
608 = A device was specified that does not exist.  
609 = A device type was specified that does not exist.  
610 = An invalid buffer was specified.  
611 = A route was specified that is not available.  
612 = A route was specified that is not allocated.  
613 = An invalid compression was specified.  
614 = There were insufficient buffers available.  
615 = The specified port was not found.  
616 = An asynchronous request is pending.  
617 = The modem (or other connecting device) is already disconnecting.  
618 = The specified port is not open.  
619 = The specified port is not connected.  
620 = No endpoints could be determined.  
621 = The system could not open the phone book file.  
622 = The system could not load the phone book file.  
623 = The system could not find the phone book entry for this connection.  
624 = The system could not update the phone book file.  
625 = The system found invalid information in the phone book file.  
626 = A string could not be loaded.  
627 = A key could not be found.  
628 = The connection was closed.  
629 = The connection was closed by the remote computer.  
630 = The modem (or other connecting device) was disconnected due to hardware failure.  
631 = The user disconnected the modem (or other connecting device).  
632 = An incorrect structure size was detected.  
633 = The modem (or other connecting device) is already in use

or is not configured properly.  
634 = Your computer could not be registered on the remote network.  
635 = There was an unknown error.  
636 = The device attached to the port is not the one expected.  
637 = A string was detected that could not be converted.  
638 = The request has timed out.  
639 = No asynchronous net is available.  
640 = An error has occurred involving NetBIOS.  
641 = The server cannot allocate NetBIOS resources needed to support the client.  
642 = One of your computer's NetBIOS names is already registered on the remote network.  
643 = A network adapter at the server failed.  
644 = You will not receive network message popups.  
645 = There was an internal authentication error.  
646 = The account is not permitted to log on at this time of day.  
647 = The account is disabled.  
648 = The password for this account has expired.  
649 = The account does not have permission to dial in.  
650 = The remote access server is not responding.  
651 = The modem (or other connecting device) has reported an error.  
652 = There was an unrecognized response from the modem (or other connecting device).  
653 = A macro required by the modem (or other connecting device) was not found in the device.INF file.  
654 = A command or response in the device.INF file section refers to an undefined macro.  
655 = The macro was not found in the device.INF file section.  
656 = The macro in the device.INF file section contains an undefined macro.  
657 = The device.INF file could not be opened.  
658 = The device name in the device.INF or media.INI file is too long.  
659 = The media.INI file refers to an unknown device name.  
660 = The device.INF file contains no responses for the command.  
661 = The device.INF file is missing a command.  
662 = There was an attempt to set a macro not listed in device.INF file section.  
663 = The media.INI file refers to an unknown device type.  
664 = The system has run out of memory.  
665 = The modem (or other connecting device) is not properly configured.  
666 = The modem (or other connecting device) is not functioning.  
667 = The system was unable to read the media.INI file.  
668 = The connection was terminated.  
669 = The usage parameter in the media.INI file is invalid.  
670 = The system was unable to read the section name from the media.INI file.  
671 = The system was unable to read the device type from the media.INI file.  
672 = The system was unable to read the device name from the media.INI file.  
673 = The system was unable to read the usage from the media.INI file.  
674 = The system was unable to read the maximum connection BPS rate from the media.INI file.  
675 = The system was unable to read the maximum carrier connection speed from the media.INI file.  
676 = The phone line is busy.  
677 = A person answered instead of a modem (or other connecting device).  
678 = There was no answer.  
679 = The system could not detect the carrier.  
680 = There was no dial tone.  
681 = The modem (or other connecting device) reported a general error.  
682 = There was an error in writing the section name.  
683 = There was an error in writing the device type.

684 = There was an error in writing the device name.  
685 = There was an error in writing the maximum connection speed.  
686 = There was an error in writing the maximum carrier speed.  
687 = There was an error in writing the usage.  
688 = There was an error in writing the default-off.  
689 = There was an error in reading the default-off.  
690 = ERROR\_EMPTY\_INI\_FILE  
691 = Access was denied because the username and/or password was invalid on the domain.  
692 = There was a hardware failure in the modem (or other connecting device).  
693 = ERROR\_NOT\_BINARY\_MACRO  
694 = ERROR\_DCB\_NOT\_FOUND  
695 = The state machines are not started.  
696 = The state machines are already started.  
697 = The response looping did not complete.  
698 = A response keyname in the device.INF file is not in the expected format.  
699 = The modem (or other connecting device) response caused a buffer overflow.  
700 = The expanded command in the device.INF file is too long.  
701 = The modem moved to a connection speed not supported by the COM driver.  
702 = Device response received when none expected.  
703 = The connection needs information from you, but the application does not allow user interaction.  
704 = The callback number is invalid.  
705 = The authorization state is invalid.  
706 = ERROR\_WRITING\_INITBPS  
707 = There was an error related to the X.25 protocol.  
708 = The account has expired.  
709 = There was an error changing the password on the domain. The password might have been too short or might have matched a previously used password.  
710 = Serial overrun errors were detected while communicating with the modem.  
711 = The Remote Access Service Manager could not start. Additional information is provided in the event log.  
712 = The two-way port is initializing. Wait a few seconds and redial.  
713 = No active ISDN lines are available.  
714 = No ISDN channels are available to make the call.  
715 = Too many errors occurred because of poor phone line quality.  
716 = The Remote Access Service IP configuration is unusable.  
717 = No IP addresses are available in the static pool of Remote Access Service IP addresses.  
718 = The connection timed out waiting for a valid response from the remote computer.  
719 = The connection was terminated by the remote computer.  
720 = The connection attempt failed because your computer and the remote computer could not agree on PPP control protocols.  
721 = The remote computer is not responding.  
722 = Invalid data was received from the remote computer. This data was ignored.  
723 = The phone number, including prefix and suffix, is too long.  
724 = The IPX protocol cannot dial out on the modem (or other connecting device) because this computer is not configured for dialing out (it is an IPX router).  
725 = The IPX protocol cannot dial in on the modem (or other connecting device) because this computer is not configured for dialing in (the IPX router is not installed).  
726 = The IPX protocol cannot be used for dialing out on more than one modem (or other connecting device) at a time.  
727 = Cannot access TCPCFG.DLL.  
728 = The system cannot find an IP adapter.  
729 = SLIP cannot be used unless the IP protocol is installed.  
730 = Computer registration is not complete.  
731 = The protocol is not configured.

732 = Your computer and the remote computer could not agree on PPP control protocols.  
733 = Your computer and the remote computer could not agree on PPP control protocols.  
734 = The PPP link control protocol was terminated.  
735 = The requested address was rejected by the server.  
736 = The remote computer terminated the control protocol.  
737 = Loopback was detected.  
738 = The server did not assign an address.  
739 = The authentication protocol required by the remote server cannot use the stored password. Redial, entering the password explicitly.  
740 = An invalid dialing rule was detected.  
741 = The local computer does not support the required data encryption type.  
742 = The remote computer does not support the required data encryption type.  
743 = The remote computer requires data encryption.  
744 = The system cannot use the IPX network number assigned by the remote computer. Additional information is provided in the event log.  
745 = ERROR\_INVALID\_SMM  
746 = ERROR\_SMM\_UNINITIALIZED  
747 = ERROR\_NO\_MAC\_FOR\_PORT  
748 = ERROR\_SMM\_TIMEOUT  
749 = ERROR\_BAD\_PHONE\_NUMBER  
750 = ERROR\_WRONG\_MODULE  
751 = The callback number contains an invalid character. Only the following 18 characters are allowed: 0 to 9, T, P, W, (, ), -, @, and space.  
752 = A syntax error was encountered while processing a script.  
753 = The connection could not be disconnected because it was created by the multi-protocol router.  
754 = The system could not find the multi-link bundle.  
755 = The system cannot perform automated dial because this connection has a custom dialer specified.  
756 = This connection is already being dialed.  
757 = Remote Access Services could not be started automatically. Additional information is provided in the event log.  
758 = Internet Connection Sharing is already enabled on the connection.  
759 = An error occurred while the existing Internet Connection Sharing settings were being changed.  
760 = An error occurred while routing capabilities were being enabled.  
761 = An error occurred while Internet Connection Sharing was being enabled for the connection.  
762 = An error occurred while the local network was being configured for sharing.  
763 = Internet Connection Sharing cannot be enabled. There is more than one LAN connection other than the connection to be shared.  
764 = No smart card reader is installed.  
765 = Internet Connection Sharing cannot be enabled. A LAN connection is already configured with the IP address that is required for automatic IP addressing.  
766 = A certificate could not be found. Connections that use the L2TP protocol over IPSec require the installation of a machine certificate, also known as a computer certificate.  
767 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network has more than one IP address configured. Please reconfigure the LAN connection with a single IP address before enabling Internet Connection Sharing.  
768 = The connection attempt failed because of failure to encrypt data.  
769 = The specified destination is not reachable.  
770 = The remote computer rejected the connection attempt.  
771 = The connection attempt failed because the network is busy.

		<p>772 = The remote computer's network hardware is incompatible with the type of call requested.</p> <p>773 = The connection attempt failed because the destination number has changed.</p> <p>774 = The connection attempt failed because of a temporary failure. Try connecting again.</p> <p>775 = The call was blocked by the remote computer.</p> <p>776 = The call could not be connected because the remote computer has invoked the Do Not Disturb feature.</p> <p>777 = The connection attempt failed because the modem (or other connecting device) on the remote computer is out of order.</p> <p>778 = It was not possible to verify the identity of the server.</p> <p>779 = To dial out using this connection you must use a smart card.</p> <p>780 = An attempted function is not valid for this connection.</p> <p>781 = The encryption attempt failed because no valid certificate was found.</p> <p>782 = Connection Sharing (NAT) is currently installed as a routing protocol, and must be removed before enabling Internet Connection Sharing.</p> <p>783 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network is either not present, or is disconnected from the network. Please ensure that the LAN adapter is connected before enabling Internet Connection Sharing.</p> <p>784 = You cannot dial using this connection at logon time, because it is configured to use a user name different than the one on the smart card. If you want to use it at logon time, you must configure it to use the user name on the smart card.</p> <p>785 = You cannot dial using this connection at logon time, because it is not configured to use a smart card. If you want to use it at logon time, you must edit the properties of this connection so that it uses a smart card.</p> <p>786 = The L2TP connection attempt failed because there is no valid machine certificate on your computer for security authentication.</p> <p>787 = The L2TP connection attempt failed because the security layer could not authenticate the remote computer.</p> <p>788 = The L2TP connection attempt failed because the security layer could not negotiate compatible parameters with the remote computer.</p> <p>789 = The L2TP connection attempt failed because the security layer encountered a processing error during initial negotiations with the remote computer.</p> <p>790 = The L2TP connection attempt failed because certificate validation on the remote computer failed.</p> <p>791 = The L2TP connection attempt failed because security policy for the connection was not found.</p> <p>792 = The L2TP connection attempt failed because security negotiation timed out.</p> <p>793 = The L2TP connection attempt failed because an error occurred while negotiating security.</p> <p>794 = The Framed Protocol RADIUS attribute for this user is not PPP.</p> <p>795 = The Tunnel Type RADIUS attribute for this user is not correct.</p> <p>796 = The Service Type RADIUS attribute for this user is neither Framed nor Callback Framed.</p> <p>797 = The connection failed because the modem (or other connecting device) was not found. Please make sure that the modem or other connecting device is installed.</p> <p>798 = A certificate could not be found that can be used with this Extensible Authentication Protocol.</p> <p>799 = Not available</p>
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#### Parameters for non-VoIP TETRA [|Top|](#)

Name	Type	Description
CS disc. cause	Integer	CS call disconnect cause 0 = Cause not defined or unknown



		1 = User requested disconnect 2 = Called party busy 3 = Called party not reachable 4 = Called party does not support encryption 5 = Congestion in infrastructure 6 = Not allowed traffic case 7 = Incompatible traffic case 8 = Requested service not available 9 = Pre-emptive use of resource 10 = Invalid call identifier 11 = Call rejected by the called party 12 = No idle CC entity 13 = Expiry of timer 14 = SwMI requested disconnection 15 = Acknowledged service not completed
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#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
Reserved	Integer	Reserved

#### Parameters for non-VoIP cdmaOne, CDMA 1x, and EVDO [\[Top\]](#)

Name	Type	Description
CS disc. cause	Integer	CS call disconnect cause 0 = Phone is offline 20 = Phone is CDMA-locked until power cycle CDMA only. 21 = Phone has no service 22 = Call has ended abnormally CDMA only. 23 = Received intercept from BS Origination and CDMA only. 24 = Received reorder from BS Origination and CDMA only. 25 = Received release from BS 26 = Received release from BS SO reject, CDMA only. 27 = Received incoming call from BS 28 = Received alert stop from BS Incoming and CDMA only. 29 = Client ended call 30 = Received end activation OTASP call and CDMA only. 31 = MC aborted origination/conversation CDMA only. 32 = Maximum access probes transmitted CDMA only. 33 = Persistence test failure JCDMA and CDMA only. 34 = R-UIM not present 35 = Access attempt already in progress 36 = Access failure for reason other than the above 37 = Received retry order Origination IS-2000 and CDMA only. 38 = Concurrent service not supported by BS 39 = No response received from BS 40 = Call rejected by BS CDMA only. 41 = Concurrent services requested not compatible CDMA only. 42 = Access is blocked by BS CDMA only. 43 = Corresponds to CM_CALL_ORIG_ERR_ALREADY_IN_TC 44 = Call is ending due to emergency call that is flashed over this call CDMA only.

45 = CM is ending GPS call in favor of a user call
46 = CM is ending SMS call in favor of a user call
47 = CM is ending data call in favor of an emergency call
48 = Call rejected because of redirection or handoff

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
CS cause	Integer	Call failure cause 0 = FNE Denies Request 1 = Target Acknowledges Alert 2 = Target Does Not Acknowledge Alert 3 = User Cancelled 4 = Radio Time-out 5 = Radio Denies Request 6 = Normal Termination 7 = Channel Failed 8 = System Busy 9 = Access Failed 10 = Target Not Responding 11 = Target Non-Existent 12 = Unanswered Call

#### Parameters for ISDN [|Top|](#)

Name	Type	Description
Q.931	Integer	ISDN failure cause 1 = Unallocated or unassigned number 2 = No route to specified transit network (Transit Network Identity) 3 = No route to destination 4 = Send special information tone 5 = Misdialed trunk prefix 6 = Channel unacceptable 7 = Call awarded and being delivered in an established channel 8 = Prefix 0 dialed but not allowed 9 = Prefix 1 dialed but not allowed 10 = Prefix 1 not dialed but required 11 = More digits received than allowed, call is proceeding 16 = Normal call clearing 17 = User busy 18 = No user responding 19 = T.301 expired, user alerted, no answer from user 20 = Subscriber absent 21 = Call rejected 22 = Number changed to number in diagnostic field 23 = Reverse charging rejected 24 = Call suspended 25 = Call resumed 26 = Non-selected user clearing 27 = Destination out of order 28 = Invalid number format or incomplete address 29 = EKTS facility rejected by network 30 = Response to STATUS ENQUIRY 31 = Normal, unspecified 33 = Circuit out of order 34 = No circuit/channel available 35 = Destination unattainable 36 = Out of order 37 = Degraded service 38 = Network out of order 39 = Transit delay range cannot be achieved 40 = Throughput range cannot be achieved 41 = Temporary failure 42 = Switching equipment congestion 43 = Access information discarded 44 = Requested circuit channel not available 45 = Preempted 46 = Precedence call blocked

47 = Resource unavailable, unspecified  
 49 = Quality of service unavailable  
 50 = Requested facility not subscribed  
 51 = Reverse charging not allowed  
 52 = Outgoing calls barred  
 53 = Outgoing calls barred within CUG  
 54 = Incoming calls barred  
 55 = Incoming calls barred within CUG  
 56 = Call waiting not subscribed  
 57 = Bearer capability not authorized  
 58 = Bearer capability not presently available  
 63 = Service or option not available, unspecified  
 65 = Bearer service not implemented  
 66 = Channel type not implemented  
 67 = Transit network selection not implemented  
 68 = Message not implemented  
 69 = Requested facility not implemented  
 70 = Only restricted digital information bearer capability is available  
 79 = Service or option not implemented, unspecified  
 81 = Invalid call reference value  
 82 = Identified channel does not exist  
 83 = A suspended call exists, but this call identity does not  
 84 = Call identity in use  
 85 = No call suspended  
 86 = Call having the requested call identity has been cleared  
 87 = Called user not member of CUG  
 88 = Incompatible destination  
 89 = Non-existent abbreviated address entry  
 90 = Destination address missing, and direct call not subscribed  
 91 = Invalid transit network selection (national use)  
 92 = Invalid facility parameter 93 Mandatory information element is missing  
 93 = Message type non-existent or not implemented  
 95 = Invalid message, unspecified  
 96 = Mandatory information element is missing  
 97 = Message type non-existent or not implemented  
 98 = Message not compatible with call state or message type non-existent or not implemented  
 99 = Information element nonexistent or not implemented  
 100 = Invalid information element contents  
 101 = Message not compatible with call state  
 102 = Recovery on timer expiry  
 103 = Parameter non-existent or not implemented - passed on  
 111 = Protocol error, unspecified  
 127 = Internetworking, unspecified

#### Parameters for VoIP [\[Top\]](#)

Name	Type	Description
SIP cause	Integer	SIP cause 100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response. 180 = Ringing 181 = Call is being forwarded 182 = Queued 183 = Session progress 199 = Early dialog terminated 200 = OK 202 = Accepted The request has been understood but cannot be processed. 204 = No notification 300 = Multiple choices 301 = Moved permanently 302 = Moved temporarily 305 = Use proxy 380 = Alternative service 400 = Bad request 401 = Unauthorized

		<p>Used only by registrars or user agents. Proxies should use proxy authorization 407.</p> <p>402 = Payment required</p> <p>403 = Forbidden</p> <p>404 = Not found</p> <p>User not found.</p> <p>405 = Method not allowed</p> <p>406 = Not acceptable</p> <p>407 = Proxy authentication required</p> <p>408 = Request timeout (could not find the user in time)</p> <p>409 = Conflict</p> <p>410 = Gone</p> <p>The user existed once, but is not available here any more.</p> <p>411 = Length required</p> <p>412 = Conditional request failed</p> <p>413 = Request entity too large</p> <p>414 = Request-URI too long</p> <p>415 = Unsupported media type</p> <p>416 = Unsupported URI scheme</p> <p>417 = Unknown resource priority</p> <p>420 = Bad extension</p> <p>Bad SIP protocol extension used, not understood by the server.</p> <p>421 = Extension required</p> <p>422 = Session interval too small</p> <p>423 = Interval too brief</p> <p>424 = Bad location information</p> <p>428 = Use identity header</p> <p>429 = Provide referrer identity</p> <p>430 = Flow failed</p> <p>433 = Anonymity disallowed</p> <p>436 = Bad identity-info</p> <p>437 = Unsupported certificate</p> <p>438 = Invalid identity header</p> <p>439 = First hop lacks outbound support</p> <p>470 = Consent needed</p> <p>480 = Temporarily unavailable</p> <p>481 = Call/transaction does not exist</p> <p>482 = Loop detected</p> <p>483 = Too many hops</p> <p>484 = Address incomplete</p> <p>485 = Ambiguous</p> <p>486 = Busy here</p> <p>487 = Request terminated</p> <p>488 = Not acceptable here</p> <p>489 = Bad event</p> <p>491 = Request pending</p> <p>493 = Undecipherable</p> <p>Could not decrypt S/MIME body part.</p> <p>494 = Security agreement required</p> <p>500 = Server internal error</p> <p>501 = Not implemented</p> <p>502 = Bad gateway</p> <p>503 = Service unavailable</p> <p>504 = Server time-out</p> <p>505 = Version not supported</p> <p>513 = Message too large</p> <p>580 = Precondition failure</p> <p>600 = Busy everywhere</p> <p>603 = Decline</p> <p>604 = Does not exist anywhere</p> <p>606 = Not acceptable</p>
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#### Parameters for Skype [\[Top\]](#)

Name	Type	Description
Skype cause	Integer	Skype cause Currently this is always n/a.

**Parameters for QChat** [|Top](#)

Name	Type	Description
QChat cause	Integer	QChat cause 1 = Unsupported 2 = No targets available 3 = No reply 4 = All targets reject 5 = Unknown user 6 = Invalid conference ID 7 = Invalid address 8 = Unknown call 9 = Network delay/timeout 10 = No privilege 11 = Vocoder incompatible 12 = Version not supported 13 = No resources available 14 = Invalid opcode 15 = Bad syntax 16 = Unexpected message 17 = Busy 18 = Call not running 19 = No targets registered 20 = Not a member 21 = Limits exceeded 22 = Insufficient resources for QoS 23 = Foreign dispatch targets 24 = No call type capability 25 = Alert successful 26 = System error 27 = Already a member 28 = Talk group permission denied 29 = No multicast resources 30 = Insufficient bandwidth 100 = Hangtime timer expired on the MCU 101 = No participants All the participants have left the call. 102 = Server Abort 103 = Unresponsive The server has not been receiving responses from the client. 104 = Originator advanced termination The originator has chosen to tear down the call.

**Parameters for Kodiak** [|Top](#)

Name	Type	Description
Kodiak cause	Integer	Kodiak cause 1001 = ACK missing 1101 = ACK failure 1102 = UI input missing 1103 = UI not ready 1104 = API request not expected/applicable

**Parameters for IMS based calls** [|Top](#)

Name	Type	Description
SIP cause	Integer	SIP cause 100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response. 180 = Ringing 181 = Call is being forwarded 182 = Queued 183 = Session progress 199 = Early dialog terminated 200 = OK 202 = Accepted The request has been understood but cannot be processed.

		204 = No notification 300 = Multiple choices 301 = Moved permanently 302 = Moved temporarily 305 = Use proxy 380 = Alternative service 400 = Bad request 401 = Unauthorized Used only by registrars or user agents. Proxies should use proxy authorization 407. 402 = Payment required 403 = Forbidden 404 = Not found User not found. 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout (could not find the user in time) 409 = Conflict 410 = Gone The user existed once, but is not available here any more. 411 = Length required 412 = Conditional request failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Unsupported URI scheme 417 = Unknown resource priority 420 = Bad extension Bad SIP protocol extension used, not understood by the server. 421 = Extension required 422 = Session interval too small 423 = Interval too brief 424 = Bad location information 428 = Use identity header 429 = Provide referrer identity 430 = Flow failed 433 = Anonymity disallowed 436 = Bad identity-info 437 = Unsupported certificate 438 = Invalid identity header 439 = First hop lacks outbound support 470 = Consent needed 480 = Temporarily unavailable 481 = Call/transaction does not exist 482 = Loop detected 483 = Too many hops 484 = Address incomplete 485 = Ambiguous 486 = Busy here 487 = Request terminated 488 = Not acceptable here 489 = Bad event 491 = Request pending 493 = Undecipherable Could not decrypt S/MIME body part. 494 = Security agreement required 500 = Server internal error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Server time-out 505 = Version not supported 513 = Message too large 580 = Precondition failure 600 = Busy everywhere 603 = Decline 604 = Does not exist anywhere 606 = Not acceptable
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#### Parameters for iDEN push-to-talk [\[Top\]](#)

Name	Type	Description
CS cause	Integer	Call failure cause 0 = FNE Denies Request 1 = Target Acknowledges Alert 2 = Target Does Not Acknowledge Alert 3 = User Cancelled 4 = Radio Time-out 5 = Radio Denies Request 6 = Normal Termination 7 = Channel Failed 8 = System Busy 9 = Access Failed 10 = Target Not Responding 11 = Target Non-Existent 12 = Unanswered Call

#### Parameters for WhatsApp [\[Top\]](#)

Name	Type	Description
WhatsApp cause	Integer	WhatsApp cause Currently this is always n/a.

## Call disconnect (CAD)

Event ID	CAD
Cellular systems	All
Record state	Call connection state
Description	Recorded when call has ended and upper layer (call control layer with GSM and UMTS) signaling has released the call. With IMS based calls logged when any BYE related SIP message is sent or received, or if 300 or higher SIP response code is sent or received for INVITE, PRACK, or ACK. The CAD measurement event ends call connection state.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

[Parameters](#) | [Parameters for non-VoIP GSM, UMTS FDD, UMTS TD-SCDMA, and GAN WLAN](#) | [Parameters for non-VoIP TETRA](#) | [Parameters for LTE](#)  
[Parameters for non-VoIP cdmaOne, CDMA 1x, and EVDO](#) | [Parameters for iDEN](#) | [Parameters for ISDN](#) | [Parameters for VoIP](#) | [Parameters for Skype](#)  
[Parameters for QChat](#) | [Parameters for Kodiak](#) | [Parameters for IMS based calls](#) | [Parameters for iDEN push-to-talk](#) | [Parameters for WhatsApp](#) |

#### Parameters [\[Top\]](#)

Name	Type	Description
Call context ID	Context	Call context ID
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 20 = WLAN 21 = GAN WLAN

		25 = WiMAX 50 = NMT 51 = AMPS 52 = NAMPS 53 = DAMPS 54 = ETACS 55 = iDEN 60 = PSTN 61 = ISDN 62 = IP 65 = DVB-H
Call type	Integer	Call type 1 = Voice call 2 = Markov call 3 = Data call 4 = Fax call 5 = Dial-up based data call 6 = Loopback call (CDMA) 7 = Video call 8 = Push-to-talk 9 = Push-to-talk between mobiles (TETRA) 10 = VoIP 11 = Skype 12 = QChat 13 = Kodiak 14 = LTE IMS voice 15 = iDEN push-to-talk 16 = LTE IMS video It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the VOIPI measurement event defines the existence of the video. 17 = WLAN IMS voice 18 = WLAN IMS video It is possible to have IMS video call with voice only. In these cases the call type is still IMS video and video codec parameter in the VOIPI measurement event defines the existence of the video. 19 = IP IMS voice 20 = WhatsApp
CS disc. status	Integer	CS call disconnect status 1 = Normal disconnect Recorded when the call does NOT end abnormally, i.e. the call is assumed to end successfully. Occurs when the user requests call disconnection or the B party terminates the voice call. 2 = Dropped call This status value is used when there is no better description for the dropped call. 3 = Dropped out of service Recorded when the call is terminated because of missing service. 4 = Dropped during handover/handoff/hard handover 5 = Test system failure Currently this status value is never logged but it would be used when an abnormal call ending was caused by the measurement tool. 6 = Timeout Logged when the call timeout happens between the dedicated channel allocation (CAC 1) and alerting (CAC 2). 11 = Voice quality synchronization lost The call was terminated because voice quality synchronization could not be achieved or it was lost. 12 = TCH assignment failure Recorded for GSM when TCH channel assignment fails. Typically this occurs when the late assignment configuration is used or when the terminal's attempt to send ASSIGNMENT COMPLETE signaling message to the network fails. 13 = Early release



		<p>The received call was terminated normally before the predefined call duration was reached. Early release is not logged if user terminates the call.</p> <p>14 = User busy Recorded when B party is busy and cannot answer. Realization of this is the disconnect signaling message received from the network with CC cause value 17 (user busy).</p> <p>20 = PPP error The call was terminated because of RAS failure. The RAS error value is stored in the cause value parameter.</p>
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#### Parameters for non-VoIP GSM, UMTS FDD, UMTS TD-SCDMA, and GAN WLAN [\[Top\]](#)

Name	Type	Description
CS disc. cause	Integer	<p>CS call disconnect cause</p> <p>If call is dropped due to a dial-up connection error (status code 20), the value is an OS RAS cause. Otherwise CC cause code.</p> <p>1 = Unassigned (unallocated number)  3 = No route to destination  6 = Channel unacceptable  8 = Operator determined barring  16 = Normal clearing  17 = User busy  18 = No user responding  19 = User alerting, no answer  21 = Call rejected  22 = Number changed  25 = Pre-emption  26 = Non selected user clearing  27 = Destination out of order  28 = Invalid number format (incomplete number)  29 = Facility rejected  30 = Response to STATUS ENQUIRY  31 = Normal, unspecified  34 = No circuit/channel available  38 = Network out of order  41 = Temporary failure  42 = Switching equipment congestion  43 = Access information discarded  44 = Requested circuit/Channel not available  47 = Resources unavailable, unspecified  49 = Quality of service unavailable  50 = Requested facility not subscribed  55 = Incoming calls barred within the CUG  57 = Bearer capability not authorized  58 = Bearer capability not presently available  63 = Service or option not available, unspecified  65 = Bearer service not implemented  68 = ACM equal to or greater than ACMmax  69 = Requested facility not implemented  70 = Only restricted digital information bearer capability is available  79 = Service or option not implemented, unspecified  81 = Invalid transaction identifier value  87 = User not member of CUG  88 = Incompatible destination  91 = Invalid transit network selection  95 = Semantically incorrect message  96 = Invalid mandatory information  97 = Message type not non-existent  98 = Message type not compatible with protocol state  99 = Information element non existent or not implemented  100 = Conditional IE error  101 = Message not compatible with protocol state  102 = Recovery on timer expiry  111 = Protocol error, unspecified  127 = Interworking, unspecified  600 = An operation is pending.  601 = An invalid port handle was detected.  602 = The specified port is already open.</p>

603 = The caller's buffer is too small.  
604 = Incorrect information was specified.  
605 = The port information cannot be set.  
606 = The specified port is not connected.  
607 = An invalid event was detected.  
608 = A device was specified that does not exist.  
609 = A device type was specified that does not exist.  
610 = An invalid buffer was specified.  
611 = A route was specified that is not available.  
612 = A route was specified that is not allocated.  
613 = An invalid compression was specified.  
614 = There were insufficient buffers available.  
615 = The specified port was not found.  
616 = An asynchronous request is pending.  
617 = The modem (or other connecting device) is already disconnecting.  
618 = The specified port is not open.  
619 = The specified port is not connected.  
620 = No endpoints could be determined.  
621 = The system could not open the phone book file.  
622 = The system could not load the phone book file.  
623 = The system could not find the phone book entry for this connection.  
624 = The system could not update the phone book file.  
625 = The system found invalid information in the phone book file.  
626 = A string could not be loaded.  
627 = A key could not be found.  
628 = The connection was closed.  
629 = The connection was closed by the remote computer.  
630 = The modem (or other connecting device) was disconnected due to hardware failure.  
631 = The user disconnected the modem (or other connecting device).  
632 = An incorrect structure size was detected.  
633 = The modem (or other connecting device) is already in use or is not configured properly.  
634 = Your computer could not be registered on the remote network.  
635 = There was an unknown error.  
636 = The device attached to the port is not the one expected.  
637 = A string was detected that could not be converted.  
638 = The request has timed out.  
639 = No asynchronous net is available.  
640 = An error has occurred involving NetBIOS.  
641 = The server cannot allocate NetBIOS resources needed to support the client.  
642 = One of your computer's NetBIOS names is already registered on the remote network.  
643 = A network adapter at the server failed.  
644 = You will not receive network message popups.  
645 = There was an internal authentication error.  
646 = The account is not permitted to log on at this time of day.  
647 = The account is disabled.  
648 = The password for this account has expired.  
649 = The account does not have permission to dial in.  
650 = The remote access server is not responding.  
651 = The modem (or other connecting device) has reported an error.  
652 = There was an unrecognized response from the modem (or other connecting device).  
653 = A macro required by the modem (or other connecting device) was not found in the device.INF file.  
654 = A command or response in the device.INF file section refers to an undefined macro.  
655 = The macro was not found in the device.INF file section.  
656 = The macro in the device.INF file section contains an undefined macro.  
657 = The device.INF file could not be opened.  
658 = The device name in the device.INF or media.INI file is too long.  
659 = The media.INI file refers to an unknown device name.

660 = The device.INF file contains no responses for the command.  
661 = The device.INF file is missing a command.  
662 = There was an attempt to set a macro not listed in device.INF file section.  
663 = The media.INI file refers to an unknown device type.  
664 = The system has run out of memory.  
665 = The modem (or other connecting device) is not properly configured.  
666 = The modem (or other connecting device) is not functioning.  
667 = The system was unable to read the media.INI file.  
668 = The connection was terminated.  
669 = The usage parameter in the media.INI file is invalid.  
670 = The system was unable to read the section name from the media.INI file.  
671 = The system was unable to read the device type from the media.INI file.  
672 = The system was unable to read the device name from the media.INI file.  
673 = The system was unable to read the usage from the media.INI file.  
674 = The system was unable to read the maximum connection BPS rate from the media.INI file.  
675 = The system was unable to read the maximum carrier connection speed from the media.INI file.  
676 = The phone line is busy.  
677 = A person answered instead of a modem (or other connecting device).  
678 = There was no answer.  
679 = The system could not detect the carrier.  
680 = There was no dial tone.  
681 = The modem (or other connecting device) reported a general error.  
682 = There was an error in writing the section name.  
683 = There was an error in writing the device type.  
684 = There was an error in writing the device name.  
685 = There was an error in writing the maximum connection speed.  
686 = There was an error in writing the maximum carrier speed.  
687 = There was an error in writing the usage.  
688 = There was an error in writing the default-off.  
689 = There was an error in reading the default-off.  
690 = ERROR\_EMPTY\_INI\_FILE  
691 = Access was denied because the username and/or password was invalid on the domain.  
692 = There was a hardware failure in the modem (or other connecting device).  
693 = ERROR\_NOT\_BINARY\_MACRO  
694 = ERROR\_DCB\_NOT\_FOUND  
695 = The state machines are not started.  
696 = The state machines are already started.  
697 = The response looping did not complete.  
698 = A response keyname in the device.INF file is not in the expected format.  
699 = The modem (or other connecting device) response caused a buffer overflow.  
700 = The expanded command in the device.INF file is too long.  
701 = The modem moved to a connection speed not supported by the COM driver.  
702 = Device response received when none expected.  
703 = The connection needs information from you, but the application does not allow user interaction.  
704 = The callback number is invalid.  
705 = The authorization state is invalid.  
706 = ERROR\_WRITING\_INITBPS  
707 = There was an error related to the X.25 protocol.  
708 = The account has expired.  
709 = There was an error changing the password on the domain. The password might have been too short or might have matched a previously used password.  
710 = Serial overrun errors were detected while communicating

with the modem.

711 = The Remote Access Service Manager could not start. Additional information is provided in the event log.

712 = The two-way port is initializing. Wait a few seconds and redial.

713 = No active ISDN lines are available.

714 = No ISDN channels are available to make the call.

715 = Too many errors occurred because of poor phone line quality.

716 = The Remote Access Service IP configuration is unusable.

717 = No IP addresses are available in the static pool of Remote Access Service IP addresses.

718 = The connection timed out waiting for a valid response from the remote computer.

719 = The connection was terminated by the remote computer.

720 = The connection attempt failed because your computer and the remote computer could not agree on PPP control protocols.

721 = The remote computer is not responding.

722 = Invalid data was received from the remote computer. This data was ignored.

723 = The phone number, including prefix and suffix, is too long.

724 = The IPX protocol cannot dial out on the modem (or other connecting device) because this computer is not configured for dialing out (it is an IPX router).

725 = The IPX protocol cannot dial in on the modem (or other connecting device) because this computer is not configured for dialing in (the IPX router is not installed).

726 = The IPX protocol cannot be used for dialing out on more than one modem (or other connecting device) at a time.

727 = Cannot access TCPCFG.DLL.

728 = The system cannot find an IP adapter.

729 = SLIP cannot be used unless the IP protocol is installed.

730 = Computer registration is not complete.

731 = The protocol is not configured.

732 = Your computer and the remote computer could not agree on PPP control protocols.

733 = Your computer and the remote computer could not agree on PPP control protocols.

734 = The PPP link control protocol was terminated.

735 = The requested address was rejected by the server.

736 = The remote computer terminated the control protocol.

737 = Loopback was detected.

738 = The server did not assign an address.

739 = The authentication protocol required by the remote server cannot use the stored password. Redial, entering the password explicitly.

740 = An invalid dialing rule was detected.

741 = The local computer does not support the required data encryption type.

742 = The remote computer does not support the required data encryption type.

743 = The remote computer requires data encryption.

744 = The system cannot use the IPX network number assigned by the remote computer. Additional information is provided in the event log.

745 = ERROR\_INVALID\_SMM

746 = ERROR\_SMM\_UNINITIALIZED

747 = ERROR\_NO\_MAC\_FOR\_PORT

748 = ERROR\_SMM\_TIMEOUT

749 = ERROR\_BAD\_PHONE\_NUMBER

750 = ERROR\_WRONG\_MODULE

751 = The callback number contains an invalid character. Only the following 18 characters are allowed: 0 to 9, T, P, W, (, ), -, @, and space.

752 = A syntax error was encountered while processing a script.

753 = The connection could not be disconnected because it was created by the multi-protocol router.

754 = The system could not find the multi-link bundle.

755 = The system cannot perform automated dial because this

connection has a custom dialer specified.

756 = This connection is already being dialed.

757 = Remote Access Services could not be started automatically. Additional information is provided in the event log.

758 = Internet Connection Sharing is already enabled on the connection.

759 = An error occurred while the existing Internet Connection Sharing settings were being changed.

760 = An error occurred while routing capabilities were being enabled.

761 = An error occurred while Internet Connection Sharing was being enabled for the connection.

762 = An error occurred while the local network was being configured for sharing.

763 = Internet Connection Sharing cannot be enabled. There is more than one LAN connection other than the connection to be shared.

764 = No smart card reader is installed.

765 = Internet Connection Sharing cannot be enabled. A LAN connection is already configured with the IP address that is required for automatic IP addressing.

766 = A certificate could not be found. Connections that use the L2TP protocol over IPsec require the installation of a machine certificate, also known as a computer certificate.

767 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network has more than one IP address configured. Please reconfigure the LAN connection with a single IP address before enabling Internet Connection Sharing.

768 = The connection attempt failed because of failure to encrypt data.

769 = The specified destination is not reachable.

770 = The remote computer rejected the connection attempt.

771 = The connection attempt failed because the network is busy.

772 = The remote computer's network hardware is incompatible with the type of call requested.

773 = The connection attempt failed because the destination number has changed.

774 = The connection attempt failed because of a temporary failure. Try connecting again.

775 = The call was blocked by the remote computer.

776 = The call could not be connected because the remote computer has invoked the Do Not Disturb feature.

777 = The connection attempt failed because the modem (or other connecting device) on the remote computer is out of order.

778 = It was not possible to verify the identity of the server.

779 = To dial out using this connection you must use a smart card.

780 = An attempted function is not valid for this connection.

781 = The encryption attempt failed because no valid certificate was found.

782 = Connection Sharing (NAT) is currently installed as a routing protocol, and must be removed before enabling Internet Connection Sharing.

783 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network is either not present, or is disconnected from the network. Please ensure that the LAN adapter is connected before enabling Internet Connection Sharing.

784 = You cannot dial using this connection at logon time, because it is configured to use a user name different than the one on the smart card. If you want to use it at logon time, you must configure it to use the user name on the smart card.

785 = You cannot dial using this connection at logon time, because it is not configured to use a smart card. If you want to use it at logon time, you must edit the properties of this connection so that it uses a smart card.

786 = The L2TP connection attempt failed because there is no valid machine certificate on your computer for security

		<p>authentication.</p> <p>787 = The L2TP connection attempt failed because the security layer could not authenticate the remote computer.</p> <p>788 = The L2TP connection attempt failed because the security layer could not negotiate compatible parameters with the remote computer.</p> <p>789 = The L2TP connection attempt failed because the security layer encountered a processing error during initial negotiations with the remote computer.</p> <p>790 = The L2TP connection attempt failed because certificate validation on the remote computer failed.</p> <p>791 = The L2TP connection attempt failed because security policy for the connection was not found.</p> <p>792 = The L2TP connection attempt failed because security negotiation timed out.</p> <p>793 = The L2TP connection attempt failed because an error occurred while negotiating security.</p> <p>794 = The Framed Protocol RADIUS attribute for this user is not PPP.</p> <p>795 = The Tunnel Type RADIUS attribute for this user is not correct.</p> <p>796 = The Service Type RADIUS attribute for this user is neither Framed nor Callback Framed.</p> <p>797 = The connection failed because the modem (or other connecting device) was not found. Please make sure that the modem or other connecting device is installed.</p> <p>798 = A certificate could not be found that can be used with this Extensible Authentication Protocol.</p> <p>799 = Not available</p>
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#### Parameters for non-VoIP TETRA [|Top|](#)

Name	Type	Description
CS disc. cause	Integer	<p>CS call disconnect cause</p> <p>0 = Cause not defined or unknown</p> <p>1 = User requested disconnect</p> <p>2 = Called party busy</p> <p>3 = Called party not reachable</p> <p>4 = Called party does not support encryption</p> <p>5 = Congestion in infrastructure</p> <p>6 = Not allowed traffic case</p> <p>7 = Incompatible traffic case</p> <p>8 = Requested service not available</p> <p>9 = Pre-emptive use of resource</p> <p>10 = Invalid call identifier</p> <p>11 = Call rejected by the called party</p> <p>12 = No idle CC entity</p> <p>13 = Expiry of timer</p> <p>14 = SwMI requested disconnection</p> <p>15 = Acknowledged service not completed</p>

#### Parameters for LTE [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved

#### Parameters for non-VoIP cdmaOne, CDMA 1x, and EVDO [|Top|](#)

Name	Type	Description
CS disc. cause	Integer	<p>CS call disconnect cause</p> <p>0 = Phone is offline</p> <p>20 = Phone is CDMA-locked until power cycle CDMA only.</p> <p>21 = Phone has no service</p> <p>22 = Call has ended abnormally CDMA only.</p> <p>23 = Received intercept from BS Origination and CDMA only.</p>

		24 = Received reorder from BS Origination and CDMA only. 25 = Received release from BS 26 = Received release from BS SO reject, CDMA only. 27 = Received incoming call from BS 28 = Received alert stop from BS Incoming and CDMA only. 29 = Client ended call 30 = Received end activation OTASP call and CDMA only. 31 = MC aborted origination/conversation CDMA only. 32 = Maximum access probes transmitted CDMA only. 33 = Persistence test failure JCDMA and CDMA only. 34 = R-UIM not present 35 = Access attempt already in progress 36 = Access failure for reason other than the above 37 = Received retry order Origination IS-2000 and CDMA only. 38 = Concurrent service not supported by BS 39 = No response received from BS 40 = Call rejected by BS CDMA only. 41 = Concurrent services requested not compatible CDMA only. 42 = Access is blocked by BS CDMA only. 43 = Corresponds to CM_CALL_ORIG_ERR_ ALREADY_IN_TC 44 = Call is ending due to emergency call that is flashed over this call CDMA only. 45 = CM is ending GPS call in favor of a user call 46 = CM is ending SMS call in favor of a user call 47 = CM is ending data call in favor of an emergency call 48 = Call rejected because of redirection or handoff
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#### Parameters for iDEN |Top|

Name	Type	Description
CS cause	Integer	Call failure cause 0 = FNE Denies Request 1 = Target Acknowledges Alert 2 = Target Does Not Acknowledge Alert 3 = User Cancelled 4 = Radio Time-out 5 = Radio Denies Request 6 = Normal Termination 7 = Channel Failed 8 = System Busy 9 = Access Failed 10 = Target Not Responding 11 = Target Non-Existent 12 = Unanswered Call

#### Parameters for ISDN |Top|

Name	Type	Description
Q.931	Integer	ISDN failure cause 1 = Unallocated or unassigned number 2 = No route to specified transit network (Transit Network Identity) 3 = No route to destination 4 = Send special information tone 5 = Misdialed trunk prefix 6 = Channel unacceptable

7 = Call awarded and being delivered in an established channel  
8 = Prefix 0 dialed but not allowed  
9 = Prefix 1 dialed but not allowed  
10 = Prefix 1 not dialed but required  
11 = More digits received than allowed, call is proceeding  
16 = Normal call clearing  
17 = User busy  
18 = No user responding  
19 = T.301 expired, user alerted, no answer from user  
20 = Subscriber absent  
21 = Call rejected  
22 = Number changed to number in diagnostic field  
23 = Reverse charging rejected  
24 = Call suspended  
25 = Call resumed  
26 = Non-selected user clearing  
27 = Destination out of order  
28 = Invalid number format or incomplete address  
29 = EKTS facility rejected by network  
30 = Response to STATUS ENQUIRY  
31 = Normal, unspecified  
33 = Circuit out of order  
34 = No circuit/channel available  
35 = Destination unattainable  
36 = Out of order  
37 = Degraded service  
38 = Network out of order  
39 = Transit delay range cannot be achieved  
40 = Throughput range cannot be achieved  
41 = Temporary failure  
42 = Switching equipment congestion  
43 = Access information discarded  
44 = Requested circuit channel not available  
45 = Preempted  
46 = Precedence call blocked  
47 = Resource unavailable, unspecified  
49 = Quality of service unavailable  
50 = Requested facility not subscribed  
51 = Reverse charging not allowed  
52 = Outgoing calls barred  
53 = Outgoing calls barred within CUG  
54 = Incoming calls barred  
55 = Incoming calls barred within CUG  
56 = Call waiting not subscribed  
57 = Bearer capability not authorized  
58 = Bearer capability not presently available  
63 = Service or option not available, unspecified  
65 = Bearer service not implemented  
66 = Channel type not implemented  
67 = Transit network selection not implemented  
68 = Message not implemented  
69 = Requested facility not implemented  
70 = Only restricted digital information bearer capability is available  
79 = Service or option not implemented, unspecified  
81 = Invalid call reference value  
82 = Identified channel does not exist  
83 = A suspended call exists, but this call identity does not  
84 = Call identity in use  
85 = No call suspended  
86 = Call having the requested call identity has been cleared  
87 = Called user not member of CUG  
88 = Incompatible destination  
89 = Non-existent abbreviated address entry  
90 = Destination address missing, and direct call not subscribed  
91 = Invalid transit network selection (national use)  
92 = Invalid facility parameter 93 Mandatory information element is missing  
93 = Message type non-existent or not implemented  
95 = Invalid message, unspecified  
96 = Mandatory information element is missing  
97 = Message type non-existent or not implemented



	<p>98 = Message not compatible with call state or message type non-existent or not implemented</p> <p>99 = Information element nonexistent or not implemented</p> <p>100 = Invalid information element contents</p> <p>101 = Message not compatible with call state</p> <p>102 = Recovery on timer expiry</p> <p>103 = Parameter non-existent or not implemented - passed on</p> <p>111 = Protocol error, unspecified</p> <p>127 = Internetworking, unspecified</p>
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#### Parameters for VoIP [\[Top\]](#)

Name	Type	Description
SIP cause	Integer	<p>SIP cause</p> <p>100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response.</p> <p>180 = Ringing</p> <p>181 = Call is being forwarded</p> <p>182 = Queued</p> <p>183 = Session progress</p> <p>199 = Early dialog terminated</p> <p>200 = OK</p> <p>202 = Accepted The request has been understood but cannot be processed.</p> <p>204 = No notification</p> <p>300 = Multiple choices</p> <p>301 = Moved permanently</p> <p>302 = Moved temporarily</p> <p>305 = Use proxy</p> <p>380 = Alternative service</p> <p>400 = Bad request</p> <p>401 = Unauthorized Used only by registrars or user agents. Proxies should use proxy authorization 407.</p> <p>402 = Payment required</p> <p>403 = Forbidden</p> <p>404 = Not found User not found.</p> <p>405 = Method not allowed</p> <p>406 = Not acceptable</p> <p>407 = Proxy authentication required</p> <p>408 = Request timeout (could not find the user in time)</p> <p>409 = Conflict</p> <p>410 = Gone The user existed once, but is not available here any more.</p> <p>411 = Length required</p> <p>412 = Conditional request failed</p> <p>413 = Request entity too large</p> <p>414 = Request-URI too long</p> <p>415 = Unsupported media type</p> <p>416 = Unsupported URI scheme</p> <p>417 = Unknown resource priority</p> <p>420 = Bad extension Bad SIP protocol extension used, not understood by the server.</p> <p>421 = Extension required</p> <p>422 = Session interval too small</p> <p>423 = Interval too brief</p> <p>424 = Bad location information</p> <p>428 = Use identity header</p> <p>429 = Provide referrer identity</p> <p>430 = Flow failed</p> <p>433 = Anonymity disallowed</p> <p>436 = Bad identity-info</p> <p>437 = Unsupported certificate</p> <p>438 = Invalid identity header</p> <p>439 = First hop lacks outbound support</p> <p>470 = Consent needed</p> <p>480 = Temporarily unavailable</p> <p>481 = Call/transaction does not exist</p>

		482 = Loop detected 483 = Too many hops 484 = Address incomplete 485 = Ambiguous 486 = Busy here 487 = Request terminated 488 = Not acceptable here 489 = Bad event 491 = Request pending 493 = Undecipherable Could not decrypt S/MIME body part. 494 = Security agreement required 500 = Server internal error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Server time-out 505 = Version not supported 513 = Message too large 580 = Precondition failure 600 = Busy everywhere 603 = Decline 604 = Does not exist anywhere 606 = Not acceptable
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#### Parameters for Skype [|Top](#)

Name	Type	Description
Skype cause	Integer	Skype cause Currently this is always n/a.

#### Parameters for QChat [|Top](#)

Name	Type	Description
QChat cause	Integer	QChat cause 1 = Unsupported 2 = No targets available 3 = No reply 4 = All targets reject 5 = Unknown user 6 = Invalid conference ID 7 = Invalid address 8 = Unknown call 9 = Network delay/timeout 10 = No privilege 11 = Vocoder incompatible 12 = Version not supported 13 = No resources available 14 = Invalid opcode 15 = Bad syntax 16 = Unexpected message 17 = Busy 18 = Call not running 19 = No targets registered 20 = Not a member 21 = Limits exceeded 22 = Insufficient resources for QoS 23 = Foreign dispatch targets 24 = No call type capability 25 = Alert successful 26 = System error 27 = Already a member 28 = Talk group permission denied 29 = No multicast resources 30 = Insufficient bandwidth 100 = Hangtime timer expired on the MCU 101 = No participants All the participants have left the call.

		102 = Server Abort 103 = Unresponsive The server has not been receiving responses from the client. 104 = Originator advanced termination The originator has chosen to tear down the call.
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#### Parameters for Kodiak [\[Top\]](#)

Name	Type	Description
Kodiak cause	Integer	Kodiak cause 1001 = ACK missing 1101 = ACK failure 1102 = UI input missing 1103 = UI not ready 1104 = API request not expected/applicable

#### Parameters for IMS based calls [\[Top\]](#)

Name	Type	Description
SIP cause	Integer	SIP cause 100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response. 180 = Ringing 181 = Call is being forwarded 182 = Queued 183 = Session progress 199 = Early dialog terminated 200 = OK 202 = Accepted The request has been understood but cannot be processed. 204 = No notification 300 = Multiple choices 301 = Moved permanently 302 = Moved temporarily 305 = Use proxy 380 = Alternative service 400 = Bad request 401 = Unauthorized Used only by registrars or user agents. Proxies should use proxy authorization 407. 402 = Payment required 403 = Forbidden 404 = Not found User not found. 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout (could not find the user in time) 409 = Conflict 410 = Gone The user existed once, but is not available here any more. 411 = Length required 412 = Conditional request failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Unsupported URI scheme 417 = Unknown resource priority 420 = Bad extension Bad SIP protocol extension used, not understood by the server. 421 = Extension required 422 = Session interval too small 423 = Interval too brief 424 = Bad location information 428 = Use identity header 429 = Provide referrer identity

		430 = Flow failed 433 = Anonymity disallowed 436 = Bad identity-info 437 = Unsupported certificate 438 = Invalid identity header 439 = First hop lacks outbound support 470 = Consent needed 480 = Temporarily unavailable 481 = Call/transaction does not exist 482 = Loop detected 483 = Too many hops 484 = Address incomplete 485 = Ambiguous 486 = Busy here 487 = Request terminated 488 = Not acceptable here 489 = Bad event 491 = Request pending 493 = Undecipherable Could not decrypt S/MIME body part. 494 = Security agreement required 500 = Server internal error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Server time-out 505 = Version not supported 513 = Message too large 580 = Precondition failure 600 = Busy everywhere 603 = Decline 604 = Does not exist anywhere 606 = Not acceptable
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#### Parameters for iDEN push-to-talk [\[Top\]](#)

Name	Type	Description
CS cause	Integer	Call failure cause 0 = FNE Denies Request 1 = Target Acknowledges Alert 2 = Target Does Not Acknowledge Alert 3 = User Cancelled 4 = Radio Time-out 5 = Radio Denies Request 6 = Normal Termination 7 = Channel Failed 8 = System Busy 9 = Access Failed 10 = Target Not Responding 11 = Target Non-Existent 12 = Unanswered Call

#### Parameters for WhatsApp [\[Top\]](#)

Name	Type	Description
WhatsApp cause	Integer	WhatsApp cause Currently this is always n/a.

## Call modification indication (CALLMODI)

<b>Event ID</b>	CALLMODI
<b>Cellular systems</b>	All
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded when call type is modified.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |

#### Parameters [|Top](#)

Name	Type	Description
Call context ID	Context	Call context ID
Call modification type	Integer	Call modification type 101 = LTE IMS voice -> GSM voice 102 = LTE IMS voice -> UMTS voice 103 = LTE IMS voice -> CDMA voice 110 = LTE IMS voice -> LTE IMS video 130 = LTE IMS voice -> WLAN IMS voice 140 = LTE IMS voice -> WLAN IMS video 201 = LTE IMS video -> GSM voice 202 = LTE IMS video -> UMTS voice 203 = LTE IMS video -> CDMA voice 210 = LTE IMS video -> LTE IMS voice 230 = LTE IMS video -> WLAN IMS voice 240 = LTE IMS video -> WLAN IMS video 310 = WLAN IMS voice -> LTE IMS voice 320 = WLAN IMS voice -> LTE IMS video 340 = WLAN IMS voice -> WLAN IMS video 410 = WLAN IMS video -> LTE IMS voice 420 = WLAN IMS video -> LTE IMS video 430 = WLAN IMS video -> WLAN IMS voice
Call modification result	Integer	Call modification result 1 = Success

## VoIP information (VOIPI)

<b>Event ID</b>	VOIPI
<b>Cellular systems</b>	All
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded when VoIP information changes.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for VoIP](#) | [Parameters for IMS calls](#) |

#### Parameters [|Top](#)

Name	Type	Description
Call context ID	Context	Call context ID
VoIP type	Integer	VoIP type 1 = VoIP 3 = IMS voice 4 = IMS video
#Params	Integer	Number of type specific parameters.

### Parameters for VoIP [|Top|](#)

Name	Type	Description
VoIP codec	String	VoIP codec Currently used VoIP codec that can change during the VoIP call. This is the same as what is configured as audio media (m=audio) in the SDP part of the SIP message. See more RFC 4566.

### Parameters for IMS calls [|Top|](#)

Name	Type	Description
VoIP codec	String	VoIP codec Currently used VoIP codec that can change during the VoIP call. This is the same as what is configured as audio media (m=audio) in the SDP part of the SIP message. See more RFC 4566.
SIP handshake time	Integer	SIP handshake time Time from SIP INVITE to 100 Trying message. Minimum value: 0 Unit: ms
VoIP video codec	String	VoIP video codec Currently used VoIP video codec that can change during the VoIP call. The parameter is empty for audio only IMS video calls. This is the same as what is configured as video media (m=video) in the SDP part of the SIP message. See more RFC 4566.

## Voice channel information (VCHI)

Event ID	VCHI
Cellular systems	TETRA,GSM,UMTS FDD,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO,iDEN
Record state	Call connection state
Description	Recorded when voice call configuration or state changes.
Tools	Nemo Outdoor

[Parameters](#) | [Parameters for TETRA](#) | [System specific parameters](#) | [Call type specific parameters.](#) | [Parameters for push-to-talk](#) | [Parameters for QChat](#)  
[Parameters for Kodiak](#) | [Parameters for iDEN push-to-talk](#) |

### Parameters [|Top|](#)

Name	Type	Description
Call context ID	Context	Call context ID
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

### Parameters for TETRA [|Top|](#)

Name	Type	Description
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PTT state	Integer	Push-to-talk state 1 = Idle 2 = Receiving 3 = Preparing to transmit 4 = Transmitting
PTT comm. type	Integer	Push-to-talk communication type 0 = Point-to-point 1 = Point-to-multipoint 2 = Point-to-multipoint acknowledged 3 = Broadcast
PTT user identity	String	Push-to-talk user identity

#### System specific parameters [\[Top\]](#)

Name	Type	Description
#System parameters	Integer	Number of system specific parameters Currently this is always 0. The previous TETRA parameters are not counted for this.

#### Call type specific parameters. [\[Top\]](#)

Name	Type	Description
Call type	Integer	Call type 8 = Push-to-talk 12 = QChat 13 = Kodiak 15 = iDEN push-to-talk
#Call type parameters	Integer	Number of call type specific parameters

#### Parameters for push-to-talk [\[Top\]](#)

Name	Type	Description
PTT state	Integer	Push-to-talk state 1 = Idle 2 = Receiving 3 = Preparing to transmit 4 = Transmitting

#### Parameters for QChat [\[Top\]](#)

Name	Type	Description
PTT state	Integer	Push-to-talk state 1 = Idle 2 = Receiving 3 = Preparing to transmit 4 = Transmitting

#### Parameters for Kodiak [\[Top\]](#)

Name	Type	Description
PTT state	Integer	Push-to-talk state 1 = Idle 2 = Receiving 3 = Preparing to transmit 4 = Transmitting

#### Parameters for iDEN push-to-talk [\[Top\]](#)

Name	Type	Description
PTT state	Integer	Push-to-talk state 1 = Idle

		2 = Receiving 3 = Preparing to transmit 4 = Transmitting
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## Call re-establishment (CARE)

Event ID	CARE
Cellular systems	GSM,UMTS FDD,UMTS TD-SCDMA
Record state	Call state
Description	Recorded when call re-establishment fails or is completed. This measurement event is not recorded if no clear indication of call re-establishment attempt is received. This requires CM Re-establishment Request L3 signaling message with GSM and Cell Update RRC signaling message with UMTS FDD. Also note that only one measurement event is written per radio link failure even when multiple separate re-establishment attempts have been performed to different cells. Call re-establishment is considered successful if traffic channel allocation succeeded with GSM or RRC reconfiguration completed successfully with UMTS.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters | Parameters for GSM, UMTS FDD, and UMTS TD-SCDMA |

### Parameters [|Top|](#)

Name	Type	Description
Call context ID	Context	Call context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA

### Parameters for GSM, UMTS FDD, and UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
Re-est status	Integer	CS call re-establishment status 1 = Re-establishment succeeded 2 = Re-establishment failed
Re-est duration	Integer	CS call re-establishment duration This is the time that expires between a radio link failure and the moment when the call is active again. For failed call re-establishments this information is not available. Minimum value: 0 Unit: ms

## Data connection attempt (DAA)

Event ID	DAA
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<b>Cellular systems</b>	All
<b>Record state</b>	Data call connection and packet active state
<b>Description</b>	Recorded when data connection is attempted to the server. For TCP based protocols, this is recorded when socket connection is attempted. For UDP protocols, when the first UDP packet is sent. The measurement event begins the data connection attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Data connection context ID	Context	Data connection context ID
Packet session context ID	Context	Packet session context ID
Call context ID	Context	Call context ID
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3 7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube. 10 = WAP 2.0 11 = HTTP browsing 12 = ICMP ping 13 = IPerf over TCP 14 = IPerf over UDP 15 = Trace route 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox 24 = Speedtest 25 = mScore 26 = Netflix 27 = WhatsApp
Host address	String	Data transfer host address Connection address. With MMS this is the MMS service center address.
Host port	Integer	Data transfer host port IP port.
Connection timeout	Integer	Data transfer connection timeout The timeout value from data connection attempt (DAA) to the data connection (DAC). If the data connection has not been established during this time the DAF measurement event is recorded. Minimum value: 0 Unit: ms
Security protocol	Integer	Data transfer security protocol 0 = None 1 = SSL 2 = SSH
Authentication scheme	Integer	Data transfer authentication scheme 0 = Basic 1 = Digest 3 = None

		4 = NTLM 5 = Negotiate
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## Data connection success (DAC)

Event ID	DAC
Cellular systems	All
Record state	Data connection attempt state
Description	Recorded when data connection received from the server. For non-connection TCP-based protocols (e.g. HTTP), this is recorded when the socket connection is established. This measurement event begins the data connection state.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Data connection context ID	Context	Data connection context ID
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3 7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube. 10 = WAP 2.0 11 = HTTP browsing 12 = ICMP ping 13 = IPerf over TCP 14 = IPerf over UDP 15 = Trace route 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox 24 = Speedtest 25 = mScore 26 = Netflix 27 = WhatsApp

## Data connection failed (DAF)

<b>Event ID</b>	DAF
<b>Cellular systems</b>	All
<b>Record state</b>	Data connection attempt state
<b>Description</b>	Recorded after DAA measurement event after connection attempt to server has failed. For connection-based protocols, the logging to the server has failed, and for non-connection based TCP protocols, the socket connection cannot be established. This measurement event ends the data connection attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous

[Parameters](#) | [Parameters for user abort](#) | [Parameters for socket error](#) | [Parameters for Nemo protocol error](#) | [Parameters for FTP and SFTP protocol error](#) | [Parameters for HTTP protocol error](#) | [Parameters for SMTP protocol error](#) | [Parameters for POP3 protocol error](#) | [Parameters for WAP and MMS protocol error](#) | [Parameters for streaming protocol error](#) | [Parameters for HTTP browsing protocol error](#) | [Parameters for ICMP ping protocol error](#) | [Parameters for IPPerf protocol error](#) | [Parameters for trace route protocol error](#) | [Parameters for IMAP protocol error](#) | [Parameters for Facebook protocol error](#) | [Parameters for Twitter protocol error](#) | [Parameters for Instagram protocol error](#) | [Parameters for LinkedIn protocol error](#) | [Parameters for Youtube PEVQ-S protocol error](#) | [Parameters for Dropbox protocol error](#) | [Parameters for Speedtest](#) | [Parameters for mScore](#) | [Parameters for Netflix](#) | [Parameters for WhatsApp](#) | [Parameters for test system failure](#)

### Parameters [|Top|](#)

Name	Type	Description
Data connection context ID	Context	Data connection context ID
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3 7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube. 10 = WAP 2.0 11 = HTTP browsing 12 = ICMP ping 13 = IPPerf over TCP 14 = IPPerf over UDP 15 = Trace route 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox 24 = Speedtest 25 = mScore 26 = Netflix 27 = WhatsApp
Data fail. status	Integer	Data connection failure status 1 = User abort 2 = Socket error 3 = Protocol error or timeout 4 = Test system failure

### Parameters for user abort [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved Always n/a.

**Parameters for socket error** [\[Top\]](#)

Name	Type	Description
Socket cause	Integer	<p>Socket cause</p> <p>10004 = A blocking operation was interrupted by a call to WSACancelBlockingCall.</p> <p>10009 = The file handle supplied is not valid.</p> <p>10013 = An attempt was made to access a socket in a way forbidden by its access permissions.</p> <p>10014 = The system detected an invalid pointer address in attempting to use a pointer argument in a call.</p> <p>10022 = An invalid argument was supplied.</p> <p>10024 = Too many open sockets.</p> <p>10035 = A non-blocking socket operation could not be completed immediately.</p> <p>10036 = A blocking operation is currently executing.</p> <p>10037 = An operation was attempted on a non-blocking socket that already had an operation in progress.</p> <p>10038 = An operation was attempted on something that is not a socket.</p> <p>10039 = A required address was omitted from an operation on a socket.</p> <p>10040 = A message sent on a datagram socket was larger than the internal message buffer or some other network limit, or the buffer used to receive a datagram into was smaller than the datagram itself.</p> <p>10041 = A protocol was specified in the socket function call that does not support the semantics of the socket type requested.</p> <p>10042 = An unknown, invalid, or unsupported option or level was specified in a getsockopt or setsockopt call.</p> <p>10043 = The requested protocol has not been configured into the system, or no implementation for it exists.</p> <p>10044 = The support for the specified socket type does not exist in this address family.</p> <p>10045 = The attempted operation is not supported for the type of object referenced.</p> <p>10046 = The protocol family has not been configured into the system or no implementation for it exists.</p> <p>10047 = An address incompatible with the requested protocol was used.</p> <p>10048 = Only one usage of each socket address (protocol/network address/port) is normally permitted.</p> <p>10049 = The requested address is not valid in its context.</p> <p>10050 = A socket operation encountered a dead network.</p> <p>10051 = A socket operation was attempted to an unreachable network.</p> <p>10052 = The connection has been broken due to keep-alive activity detecting a failure while the operation was in progress.</p> <p>10053 = An established connection was aborted by the software in your host machine.</p> <p>10054 = An existing connection was forcibly closed by the remote host.</p> <p>10055 = An operation on a socket could not be performed because the system lacked sufficient buffer space or because a queue was full.</p> <p>10056 = A connect request was made on an already connected socket.</p> <p>10057 = A request to send or receive data was disallowed because the socket is not connected and (when sending on a datagram socket using a sendto call) no address was supplied.</p> <p>10058 = A request to send or receive data was disallowed because the socket had already been shut down in that direction with a previous shutdown call.</p> <p>10059 = Too many references to some kernel object.</p> <p>10060 = A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.</p> <p>10061 = No connection could be made because the target machine actively refused it.</p>

10062 = Cannot translate name.  
 10063 = Name component or name was too long.  
 10064 = A socket operation failed because the destination host was down.  
 10065 = A socket operation was attempted to an unreachable host.  
 10066 = Cannot remove a directory that is not empty.  
 10067 = A Windows Sockets implementation may have a limit on the number of applications that may use it simultaneously.  
 10068 = Ran out of quota.  
 10069 = Ran out of disk quota.  
 10070 = File handle reference is no longer available.  
 10071 = Item is not available locally.  
 10091 = WSASStartup cannot function at this time because the underlying system it uses to provide network services is currently unavailable.  
 10092 = The Windows Sockets version requested is not supported.  
 10093 = Either the application has not called WSASStartup, or WSASStartup failed.  
 10101 = Returned by WSARecv or WSARecvFrom to indicate the remote party has initiated a graceful shutdown sequence.  
 10102 = No more results can be returned by WSALookupServiceNext.  
 10103 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.  
 10104 = The procedure call table is invalid.  
 10105 = The requested service provider is invalid.  
 10106 = The requested service provider could not be loaded or initialized.  
 10107 = A system call that should never fail has failed.  
 10108 = No such service is known. The service cannot be found in the specified name space.  
 10109 = The specified class was not found.  
 10110 = No more results can be returned by WSALookupServiceNext.  
 10111 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.  
 10112 = A database query failed because it was actively refused.  
 11001 = No such host is known.  
 11002 = This is usually a temporary error during hostname resolution and means that the local server did not receive a response from an authoritative server.  
 11003 = A non-recoverable error occurred during a database lookup.  
 11004 = The requested name is valid and was found in the database, but it does not have the correct associated data being resolved for.  
 11005 = At least one reserve has arrived.  
 11006 = At least one path has arrived.  
 11007 = There are no senders.  
 11008 = There are no receivers.  
 11009 = Reserve has been confirmed.  
 11010 = Error due to lack of resources.  
 11011 = Rejected for administrative reasons - bad credentials.  
 11012 = Unknown or conflicting style.  
 11013 = Problem with some part of the filterspec or providerspecific buffer in general.  
 11014 = Problem with some part of the flowspec.  
 11015 = General QOS error.  
 11016 = An invalid or unrecognized service type was found in the flowspec.  
 11017 = An invalid or inconsistent flowspec was found in the QOS structure.  
 11018 = Invalid QOS provider-specific buffer.  
 11019 = An invalid QOS filter style was used.  
 11020 = An invalid QOS filter type was used.  
 11021 = An incorrect number of QOS FILTERSPECs were specified in the FLOWDESCRIPTOR.  
 11022 = An object with an invalid ObjectLength field was specified in the QOS provider-specific buffer.

		11023 = An incorrect number of flow descriptors was specified in the QOS structure. 11024 = An unrecognized object was found in the QOS provider-specific buffer. 11025 = An invalid policy object was found in the QOS provider-specific buffer. 11026 = An invalid QOS flow descriptor was found in the flow descriptor list. 11027 = An invalid or inconsistent flowspec was found in the QOS provider-specific buffer. 11028 = An invalid FILTERSPEC was found in the QOS provider-specific buffer. 11029 = An invalid shape discard mode object was found in the QOS provider-specific buffer. 11030 = An invalid shaping rate object was found in the QOS provider-specific buffer. 11031 = A reserved policy element was found in the QOS provider-specific buffer.
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#### Parameters for Nemo protocol error [\[Top\]](#)

Name	Type	Description
Data transfer cause	Integer	Data transfer cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file.

#### Parameters for FTP and SFTP protocol error [\[Top\]](#)

Name	Type	Description
FTP cause	Integer	FTP cause 1 = Timeout 2 = Invalid remote address 3 = Invalid username/password 4 = Invalid remote file 5 = Invalid local file 104 = Already connected 116 = Remote port cannot be zero 118 = Firewall error 120 = Service ready in nnn minutes 135 = Operation would block 141 = Unspecified FTP protocol error 202 = Command not implemented, superfluous at this site 211 = Action impossible in control's present state 212 = Action impossible while connected 213 = Action impossible while listening 421 = Service not available, closing control connection 425 = Cannot open data connection 426 = Connection closed, transfer aborted 434 = Requested host unavailable 450 = Requested file action not taken. File unavailable (e.g., file busy) 451 = Requested action aborted, local error in processing 452 = Requested action not taken. Insufficient storage space in system 500 = Syntax error, command unrecognized. This may include errors such as command line too long 501 = Syntax error in parameters or arguments 502 = Command not implemented 503 = Bad sequence of commands 504 = Command not implemented for that parameter 530 = User not logged in 532 = Need account for storing files 550 = Requested action not taken, file unavailable (e.g., file not found, no access) 552 = Requested file action aborted, storage allocation exceeded 553 = Requested action not taken, illegal file name 1032 = Password authentication failed

		SFTP only. 1102 = Unrecognized remote SSH version string format SFTP only. 1103 = SFTP command failed SFTP only. 1105 = Already connecting, close the current connection first SFTP only. 1120 = Connection dropped by remote host SFTP only.
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#### Parameters for HTTP protocol error [|Top|](#)

Name	Type	Description
HTTP cause	Integer	HTTP cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required 429 = Too many requests 431 = Request header fields too large 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout

		505 = HTTP version not supported 1120 = Connection dropped by remote host
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#### Parameters for SMTP protocol error [\[Top\]](#)

Name	Type	Description
SMTP cause	Integer	SMTP cause 1 = Timeout 2 = Invalid remote address 5 = Invalid local file 102 = Invalid remote address 421 = Service not available, closing transmission channel 450 = Requested mail action not taken: mailbox unavailable 451 = Requested action aborted: local error in processing 452 = Requested action not taken: insufficient system storage 500 = Syntax error, command unrecognized 501 = Syntax error in parameters or arguments 502 = Command not implemented 503 = Bad sequence of commands 504 = Command parameter not implemented 535 = Incorrect password or account name 550 = Requested action not taken: mailbox unavailable 551 = User not local 552 = Requested mail action aborted: exceeded storage allocation 553 = Requested action not taken: mailbox name not allowed 554 = Transaction failed 1120 = Connection dropped by remote host

#### Parameters for POP3 protocol error [\[Top\]](#)

Name	Type	Description
POP3 cause	Integer	POP3 cause 1 = Timeout 2 = Invalid remote address 6 = Incorrect index 118 = Firewall error 172 = Error communicating with server 174 = Busy executing current method 1120 = Connection dropped by remote host

#### Parameters for WAP and MMS protocol error [\[Top\]](#)

Name	Type	Description
WAP and MMS cause	Integer	WAP and MMS cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 50 = Unknown Only used with the MMS protocol. 51 = Protocol error Only used with the MMS protocol. 52 = Invalid TID Only used with the MMS protocol. 53 = Not implemented class 2 Only used with the MMS protocol. 54 = Not implemented SAR Only used with the MMS protocol. 55 = Not implemented user acknowledgement Only used with the MMS protocol. 56 = WTP version zero Only used with the MMS protocol. 57 = Capacity temporarily exceeded Only used with the MMS protocol. 58 = No response Only used with the MMS protocol. 59 = Message too large



		<p>Only used with the MMS protocol.</p> <p>100 = Continue</p> <p>101 = Switching Protocols</p> <p>129 = Unspecified</p> <p>Only used with the MMS protocol.</p> <p>130 = Service denied</p> <p>Only used with the MMS protocol.</p> <p>131 = Message format corrupt</p> <p>Only used with the MMS protocol.</p> <p>132 = Sending address unresolved</p> <p>Only used with the MMS protocol.</p> <p>133 = Message not found</p> <p>Only used with the MMS protocol.</p> <p>134 = Network problem</p> <p>Only used with the MMS protocol.</p> <p>135 = Content not accepted</p> <p>Only used with the MMS protocol.</p> <p>136 = Unsupported message</p> <p>Only used with the MMS protocol.</p> <p>200 = OK, success</p> <p>201 = Created</p> <p>202 = Accepted</p> <p>203 = Non-Authoritative information</p> <p>204 = No content</p> <p>205 = Reset content</p> <p>206 = Partial content</p> <p>300 = Multiple choices</p> <p>301 = Moved permanently</p> <p>302 = Moved temporarily</p> <p>303 = See other</p> <p>304 = Not modified</p> <p>305 = Use proxy</p> <p>306 = Reserved</p> <p>307 = Temporary redirect</p> <p>400 = Bad request - server could not understand request</p> <p>401 = Unauthorized</p> <p>402 = Payment required</p> <p>403 = Forbidden - operation is understood but refused</p> <p>404 = Not found</p> <p>405 = Method not allowed</p> <p>406 = Not acceptable</p> <p>407 = Proxy authentication required</p> <p>408 = Request timeout</p> <p>409 = Conflict</p> <p>410 = Gone</p> <p>411 = Length required</p> <p>412 = Precondition failed</p> <p>413 = Request entity too large</p> <p>414 = Request-URI too large</p> <p>415 = Unsupported media type</p> <p>416 = Requested range not satisfiable</p> <p>417 = Expectation failed</p> <p>500 = Internal server error</p> <p>501 = Not implemented</p> <p>502 = Bad gateway</p> <p>503 = Service unavailable</p> <p>504 = Gateway timeout</p> <p>505 = HTTP version not supported</p>
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#### Parameters for streaming protocol error [|Top|](#)

Name	Type	Description
Streaming cause	Integer	<p>Streaming cause</p> <p>1 = Timeout</p> <p>2 = Invalid remote address</p> <p>4 = Invalid remote file</p> <p>64413 = Audio stream config not available</p> <p>64414 = Video stream config not available</p> <p>64415 = Dx add filter failed</p> <p>64416 = Com create failed</p> <p>64417 = Audio cap create failed</p>

64418 = Video cap create failed
64419 = Audio device lost
64420 = Video device lost
64421 = Find filter failed
64422 = Insert filter failed
64423 = No audio track present
64424 = No video track present
64425 = User authentication failed
64426 = Media not seekable
64427 = Media handler create failed
64428 = Streaming error
64429 = Get image failed
64430 = Extract buffering status failed
64431 = Audio conversion failed
64432 = Video conversion failed
64433 = Convert to pcm failed
64434 = Wave writer save failed
64435 = Mixer init failed
64436 = Get image bits failed
64437 = Get bitmap info failed
64438 = Get save video sample filename failed
64439 = Get audio sample filename failed
64440 = Get last video image failed
64441 = Get media info failed
64442 = Get parent hwnd failed
64443 = Tick counter failed
64444 = Destroy media handler failed
64445 = Init dll failed
64446 = Media wrapper library not available
64447 = Wrapper library not loaded
64448 = Lib proc not found
64449 = Unknown media action
64450 = Failed to reload media file
64451 = Failed to seek media file
64452 = Failed to pause media file
64453 = Failed to stop media file
64454 = Failed to play media file
64455 = Video writer init failed
64456 = Audio writer init failed
64457 = Video analyzer init failed
64458 = Audio analyzer init failed
64459 = Player not available
64460 = Media wrapper create failed
64461 = Get pin failed
64462 = Render output failed
64463 = Add key provider failed
64464 = Set media type failed
64465 = Get shell command failed
64466 = Dx filter pin access failed
64467 = Launch web browser failed
64468 = Monitor license acquisition failed
64469 = Failed to acquire license
64470 = Drm authentication failed
64471 = Open movie file failed
64472 = New movie failed
64473 = Get dib failed
64474 = Empty bitmap
64475 = Unknown media type
64476 = New gworld failed
64477 = New call back failed
64478 = New movie controller failed
64479 = Audio player create failed
64480 = Player init failed
64481 = Create player failed
64482 = Create client engine failed
64483 = Incomplete action in progress
64484 = No media loaded
64485 = Load media file failed
64486 = Unsupported media type
64487 = Unsupported writer format
64488 = Handler specific
64489 = High resolution counter unavailable

64490 = Mixer select recorder failed  
64491 = Mixer get control detail failed  
64492 = Unrecognized mixer component type  
64493 = Empty mixer item  
64494 = Mixer get line controls failed  
64495 = Mixer get line info failed  
64496 = Mixer close failed  
64497 = Mixer get caps failed  
64498 = Mixer open failed  
64499 = Wave in start failed  
64500 = Wave in stop failed  
64501 = Wave in add buffer failed  
64502 = Wave in prepare header failed  
64503 = Wave in open failed  
64504 = Mono line index read failed  
64505 = Stereo line index read failed  
64506 = Mixer index read failed  
64507 = Invalid media handler  
64508 = Avi write frame failed  
64509 = Avi stream format failed  
64510 = Avi stream create failed  
64511 = Avi file create failed  
65016 = Video image req failed  
65017 = Video alignment out of range  
65018 = Video alignment out of bound  
65019 = Video analyzer pause failed  
65020 = Video analyzer stop failed  
65021 = Video analyzer start failed  
65022 = Video analyzer load failed  
65023 = Video analysis failed  
65246 = Duration diff  
65247 = Duration too diff  
65248 = Duration too long  
65249 = Incompatible sampling rate  
65250 = Sut high sampling rate  
65251 = Ref duration too short  
65252 = Sut duration too short  
65253 = Data end not found  
65254 = Data begin not found  
65255 = Get data buffer failed  
65256 = Unmatched sample width  
65257 = Corr too low  
65258 = Upsampling failed  
65259 = Merge data failed  
65260 = Unsupport sampling rate  
65261 = Unsupport sample width  
65262 = Unsupport channel count  
65263 = Unmatched channel count  
65264 = Unmatched sampling rate  
65265 = Level too diff  
65266 = Replace data chunk failed  
65267 = Split data failed  
65268 = Fft failed  
65269 = Audio analyzer pause failed  
65270 = Audio analyzer stop failed  
65271 = Audio analyzer start failed  
65272 = Audio analyzer load failed  
65273 = Audio analysis failed  
65274 = Invalid audio sample width  
65275 = Uninit audio mean mos table  
65276 = Resampling failed  
65277 = Access pass end of data  
65278 = Fixed bit rate only  
65279 = Invalid audio codec type  
65489 = Unlock application failed  
65490 = No file loaded  
65491 = Empty file  
65492 = Invalid sample width  
65493 = Invalid channel count  
65494 = Invalid data format  
65495 = Invalid chunk data  
65496 = Invalid riff header

65497 = Unexpected eof
65498 = Invalid analyzer type
65499 = Mixer recorder volume unavailable
65500 = No mixer available
65501 = Invalid command
65502 = Command parser error
65503 = Invalid command type
65504 = Analysis result create failed
65505 = Analyzer compute metrics failed
65506 = Analyzer prepare attribute failed
65507 = Analyzer create failed
65508 = Analyzer load failed
65509 = Analyzer pause failed
65510 = Analyzer stop failed
65511 = Analyzer start failed
65512 = Analyzer destroy failed
65513 = Analyzer library not available
65514 = Analyzer library not loaded
65515 = Open dib failed
65516 = Create window failed
65517 = Draw dib failed
65518 = Register wnd class failed
65519 = DLL interface specific
65520 = Init com failed
65521 = Registry query failed
65522 = Query interface failed
65523 = Generate temp file failed
65524 = Thread create failed
65525 = Wait timeout
65526 = Unsupported feature
65527 = Create process failed
65528 = File not exist
65529 = File open failed
65530 = Registry open failed
65531 = Invalid parameter
65532 = Uninitialized object
65533 = User interrupted
65534 = Out of memory
65535 = Unknown error
262148 = Invalid operation
262149 = Invalid version
262150 = Invalid revision
262151 = Not initialized
262152 = Doc missing
262153 = Unexpected
262156 = Incomplete
262157 = Buffer too small
262158 = Unsupported video
262159 = Unsupported audio
262160 = Invalid bandwidth
262161 = No renderer
262162 = Element not found
262163 = No class
262164 = Class no aggregation
262165 = Not licensed
262166 = No file system
262167 = Request upgrade
262168 = Awaiting license
262208 = Buffering
262209 = Paused
262210 = No data
262211 = Net socket invalid
262212 = Net connect
262213 = Bind
262214 = Socket create
262215 = Invalid host
262216 = Net read
262217 = Net write
262218 = Net UDP
262219 = Retry
262220 = Server timeout
262221 = Server disconnected

262222 = Would block  
262223 = General nonet  
262224 = Block canceled  
262225 = Multicast join  
262226 = General multicast  
262227 = Multicast UDP  
262228 = At interrupt  
262229 = Msg too large  
262230 = Net TCP  
262231 = Try auto config  
262232 = Not enough bandwidth  
262233 = HTTP connect  
262234 = Port in use  
262235 = Load test not supported  
262272 = At end  
262273 = Invalid file  
262274 = Invalid path  
262275 = Record  
262276 = Record write  
262277 = Temp file  
262278 = Already open  
262279 = Seek pending  
262280 = Cancelled  
262281 = File not found  
262282 = Write error  
262283 = File exists  
262285 = Advise prefer linear  
262286 = Parse error  
262336 = Bad server  
262337 = Advanced server  
262338 = Old server  
262339 = Redirection  
262340 = Server alert  
262341 = Proxy  
262342 = Proxy response  
262343 = Advanced proxy  
262344 = Old proxy  
262345 = Invalid protocol  
262346 = Invalid url option  
262347 = Invalid url host  
262348 = Invalid url path  
262349 = HTTP content not found  
262350 = Not authorized  
262351 = Unexpected msg  
262352 = Bad transport  
262353 = No session id  
262354 = Proxy dnr  
262355 = Proxy net connect  
262400 = Audio driver  
262401 = Late packet  
262402 = Overlapped packet  
262403 = Out of order packet  
262404 = Non contiguous packet  
262464 = Open not processed  
262528 = Expired  
262593 = Could not init core  
262594 = Perfectplay not supported  
262595 = No live perfectplay  
262596 = Perfectplay not allowed  
262597 = No codecs  
262598 = Slow machine  
262599 = Force perfectplay  
262600 = Invalid HTTP proxy host  
262601 = Invalid metafile  
262602 = Browser launch  
262603 = View source noclip  
262604 = View source dissabled  
262656 = Decoder initied  
262657 = Decoder not found  
262658 = Decoder invalid  
262659 = Decoder type mismatch  
262660 = Decoder init failed

262661 = Decoder not initied
262662 = Decoder decompress
262663 = Obsolete version
262720 = Encoder file too small
262721 = Encoder unknown file
262722 = Encoder bad channels
262723 = Encoder bad sampsize
262724 = Encoder bad samprate
262725 = Encoder invalid
262726 = Encoder no output file
262727 = Encoder no input file
262728 = Encoder no output permissions
262729 = Encoder bad file type
262730 = Encoder invalid video
262731 = Encoder invalid audio
262732 = Encoder no video capture
262733 = Encoder invalid video capture
262734 = Encoder no audio capture
262735 = Encoder invalid audio capture
262736 = Encoder too slow for live
262737 = Encoder engine not initialized
262738 = Encoder coDecoder not found
262739 = Encoder coDecoder not initialized
262740 = Encoder invalid input dimensions
262741 = Encoder message ignored
262742 = Encoder no settings
262743 = Encoder no output types
262744 = Encoder improper state
262745 = Encoder invalid server
262746 = Encoder invalid temp path
262747 = Encoder merge fail
262748 = Bin data not found
262749 = Bin end of data
262750 = Bin data purged
262751 = Bin full
262752 = Bin offset past end
262753 = Encoder no encoded data
262754 = Encoder invalid dll
262755 = Not indexable
262756 = Encoder no browser
262757 = Encoder no file to server
262758 = Encoder insufficient disk space
262785 = Prop not found
262786 = Prop not composite
262787 = Prop duplicate
262788 = Prop type mismatch
262789 = Prop active
262790 = Prop inactive
262848 = Ppv no user
262849 = Ppv guid read only
262850 = Ppv guid collision
262851 = Register guid exists
262852 = Ppv authorization failed
262853 = Ppv old player
262854 = Ppv account locked
262856 = Ppv dbaccess error
262857 = Ppv user already exists
262914 = Resource not found
262915 = Resource close file first
262916 = Resource nodata
262917 = Resource badfile
262918 = Resource partial copy
262976 = Upg auth failed
262977 = Upg cert auth failed
262978 = Upg cert expired
262979 = Upg cert revoked
262980 = Upg rup bad
263105 = Rmt usage error
263106 = Rmt invalid end time
263107 = Rmt missing input file
263108 = Rmt missing output file
263109 = Rmt input equals output file

		263110 = Rmt unsupported audio version 263111 = Rmt different audio 263112 = Rmt different video 263113 = Rmt paste missing stream 263114 = Rmt end of stream 263115 = Rmt image map parse error 263116 = Rmt invalid image map file 263117 = Rmt event parse error 263118 = Rmt invalid event file 263119 = Rmt invalid output file 263120 = Rmt invalid duration 263121 = Rmt no dump files 263122 = Rmt no event dump file 263123 = Rmt no imap dump file 263124 = Rmt no data 263125 = Rmt empty stream 263126 = Rmt read only file 263127 = Rmt paste missing audio stream 263128 = Rmt paste missing video stream 263168 = Autocfg success 263169 = Autocfg failed 263170 = Autocfg abort 266176 = Invalid inter leaver 266177 = Bad format 266178 = Chunk missing 266179 = Invalid stream 266180 = Dnr 266181 = Open driver 266182 = Upgrade 266183 = Notification 266184 = Not notified 266185 = Stopped 266186 = Closed 266187 = Invalid wav file 266188 = No seek
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#### Parameters for HTTP browsing protocol error [Top](#)

Name	Type	Description
HTTP browsing cause	Integer	HTTP browsing cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused.

404 = Not Found  
405 = Method not allowed  
406 = Not acceptable  
407 = Proxy authentication required  
408 = Request timeout  
409 = Conflict  
410 = Gone  
411 = Length Required  
412 = Precondition failed  
413 = Request entity too large  
414 = Request-URI too long  
415 = Unsupported media type  
416 = Requested range not satisfiable  
417 = Expectation failed  
422 = Unprocessable entity  
423 = Locked  
424 = Failed dependency  
426 = Upgrade required  
428 = Precondition required  
429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
2002 = Failed  
2003 = Aborted  
2004 = Invalid argument  
2005 = Invalid handle  
2006 = File not found  
2007 = Timed out  
2008 = File too big  
2009 = Unexpected error  
2010 = Access denied  
2011 = Not implemented  
2100 = Connection closed  
2101 = Connection reset  
2102 = Connection refused  
2103 = Connection aborted  
2104 = Connection failed  
2105 = Name not resolved  
2106 = Internet disconnected  
2107 = SSL protocol error  
2108 = Invalid address  
2109 = Address unreachable  
2110 = SSL authentication certification needed  
2111 = Tunnel connection failed  
2112 = No SSL versions enabled  
2113 = SSL version or cipher mismatch  
2114 = SSL renegotiation requested  
2115 = Unsupported proxy authentication method  
2116 = SSL renegotiation error  
2117 = Bad or missing SSL client certificate  
2118 = Connection timeout  
2119 = Too many pending DNS resolves  
2120 = Failed to connect SOCKS proxy  
2121 = SOCKS proxy server failed to establish connection to the target host  
2122 = The request to negotiate an alternate protocol failed  
2123 = The peer sent an SSL no\_renegotiation alert message  
2124 = Winsock reported unexpected written bytes  
2125 = SSL decompression failure  
2126 = SSL bad record MAC alert  
2127 = The proxy requested authentication for tunnel establishment  
2128 = A known TLS strict server didn't offer the renegotiation extension  
2129 = The SSL server attempted to use a weak ephemeral Diffie-Hellman key



		2130 = Could not connect to proxy server 2131 = Snap start NPN misprection 2132 = ESET anti-virus SSL interception 2133 = Preconnect socket limit reached 2134 = The permission to use the SSL client certificate's private key was denied 2135 = The SSL client certificate has no private key 2136 = The certificate presented by the HTTPS Proxy was invalid 2137 = An error occurred when trying to do a name resolution (DNS) 2138 = Permission to access the network was denied 2139 = The request throttler module cancelled this request to avoid DDOS 2140 = SSL tunnel connection through HTTPS proxy failed 2200 = SSL certification invalid common name 2201 = SSL certification invalid date 2202 = SSL certification invalid authority 2203 = SSL certification contains errors 2204 = SSL certification has no revocation mechanism 2205 = Unable to the revocation for SSL certification 2206 = SSL certification revoked 2207 = SSL certification is invalid 2208 = SSL certification end 2300 = Invalid URL 2301 = Disallowed URL scheme 2302 = Unknown URL scheme 2310 = Too many redirects 2311 = Unsafe redirect 2312 = Unsafe port 2320 = Invalid response 2321 = Invalid chunked encoding 2322 = Method not supported 2323 = Unexpected proxy authentication 2324 = Empty response 2325 = Response headers are too big 2400 = Cache miss 2501 = Insecure response
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#### Parameters for ICMP ping protocol error [|Top|](#)

Name	Type	Description
ICMP ping cause	Integer	ICMP ping cause 2 = Invalid remote address 119 = Message too short

#### Parameters for IPerf protocol error [|Top|](#)

Name	Type	Description
Data transfer cause	Integer	Data transfer cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file.

#### Parameters for trace route protocol error [|Top|](#)

Name	Type	Description
Trace route cause	Integer	Trace route cause 1 = Timeout 2 = Invalid remote address 119 = Message too short 131 = Request queue is full 132 = Message for unknown request 159 = Invalid hop index (out of range) 312 = Busy performing current trace

#### Parameters for IMAP protocol error [|Top|](#)

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Name	Type	Description
IMAP cause	Integer	IMAP cause 1 = Timeout 2 = Invalid remote address 6 = Incorrect index 116 = RemotePort cannot be zero. Please specify a valid service port number 118 = Firewall error 270 = Cannot load specified security library 271 = Cannot open certificate store 272 = Cannot find specified certificate 273 = Cannot acquire security credentials 274 = Cannot find certificate chain 275 = Cannot verify certificate chain 276 = Error during handshake 280 = Error verifying certificate 281 = Could not find client certificate 282 = Could not find server certificate 283 = Error encrypting data 284 = Error decrypting data 315 = Invalid argument 317 = Unknown content encoding 1117 = You need to connect first. 1120 = Connection dropped by remote host

#### Parameters for Facebook protocol error [|Top](#)

Name	Type	Description
Facebook cause	Integer	Facebook cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large

414 = Request-URI too long  
415 = Unsupported media type  
416 = Requested range not satisfiable  
417 = Expectation failed  
422 = Unprocessable entity  
423 = Locked  
424 = Failed dependency  
426 = Upgrade required  
428 = Precondition required  
429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
10231 = Unbalanced element tag  
10232 = Invalid JSON markup  
10233 = Invalid XPath  
10234 = DOM tree unavailable  
20000 = Invalid access token  
20001 = An unknown error occurred  
20002 = Service temporarily unavailable  
20003 = Unknown method  
20004 = Application request limit reached  
20009 = User is performing too many actions  
20011 = This method is deprecated  
20013 = FQL query error  
20015 = This method call must be signed with the application secret  
20017 = User request limit reached  
20100 = Invalid parameter  
20101 = Invalid API key  
20102 = Session key invalid or no longer valid  
20105 = Too many parameters  
20110 = Invalid user id  
20113 = Invalid email  
20200 = Permissions error  
20210 = User not visible  
20211 = Application has no developers  
20250 = Updating status requires the extended permission status\_update  
20321 = Album is full  
20324 = Missing or invalid image file  
20325 = Too many unapproved photos pending  
20340 = Feed publication request limit reached  
20341 = Feed action request limit reached  
20343 = The story title is too long  
20345 = Feed story title rendered as blank  
20346 = Feed story body is too long  
20347 = Feed story photo could not be accessed or proxied  
20348 = Feed story photo link invalid  
20362 = Feed story body\_data argument was not a valid JSON-encoded array  
20370 = The email address is not valid  
20371 = The email address belongs to an existing account  
20400 = Invalid email address  
20401 = Invalid username or password  
20402 = Invalid application auth sig  
20403 = Invalid timestamp for authentication  
20450 = Session key specified has passed its expiration time  
20451 = Session key specified cannot be used to call this method  
20452 = Invalid session key  
20453 = A session key is required for calling this method  
20454 = A session key must be specified when request is signed with a session secret  
20455 = A session secret is not permitted to be used with this type of session key  
20500 = Message contains banned content

		20501 = Missing message body 20502 = Message is too long 20503 = User has sent too many messages 20504 = Invalid reply thread id 20505 = Invalid message recipient 20506 = Duplicate status message 20803 = Invalid user id
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#### Parameters for Twitter protocol error [|Top|](#)

Name	Type	Description
Twitter cause	Integer	Twitter cause 1 = Timeout 200 = OK, success 20032 = Could not authenticate Call could not be completed as dialed. 20034 = Page does not exist Page does not exist. Corresponds with an HTTP 404 - the specified resource was not found. 20064 = Account suspended Account is suspended and is not permitted to access this feature. 20068 = Depracated API The Twitter REST API v1 is no longer active. Please migrate to API v1.1. 20088 = Rate limit exceeded The request limit for this resource has been reached for the current rate limit window. 20089 = Access token incorrect or expired Use API v1.1. 20092 = SSL is required Only SSL connections are allowed in the API, you should update your request to a secure connection. 20130 = Service unavailable Corresponds with an HTTP 503 - Twitter is temporarily over capacity. 20131 = Internal server error Corresponds with an HTTP 500 - An unknown internal error occurred. 20135 = Could not authenticate 20161 = Unable to follow more people at this time 20179 = Not authorized to see this status 20185 = User is over daily status update limit 20187 = Status is a duplicate 20189 = Error creating status 20215 = Bad authentication data Typically sent with 1.1 responses with HTTP code 400. 20226 = Spam This request looks like it might be automated. To protect users from spam and other malicious activity, can not complete this action right now. 20231 = User must verify login 20251 = This endpoint has been retired Corresponds to a HTTP request to a retired URL. 20261 = Application cannot perform write actions

#### Parameters for Instagram protocol error [|Top|](#)

Name	Type	Description
Instagram cause	Integer	Instagram cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created

202 = Accepted  
 203 = Non-authoritative information  
 204 = No content  
 205 = Reset content  
 206 = Partial content  
 208 = Already reported  
 300 = Multiple choices  
 301 = Moved permanently  
 302 = Found  
     In some cases this can be same as moved temporarily.  
 303 = See other  
 304 = Not modified  
 305 = Use proxy  
 306 = Reserved  
 307 = Temporary redirect  
 308 = Permanent redirect  
 400 = Bad request  
     Server could not understand request.  
 401 = Unauthorized  
 402 = Payment required  
 403 = Forbidden  
     Operation is understood but refused.  
 404 = Not Found  
 405 = Method not allowed  
 406 = Not acceptable  
 407 = Proxy authentication required  
 408 = Request timeout  
 409 = Conflict  
 410 = Gone  
 411 = Length Required  
 412 = Precondition failed  
 413 = Request entity too large  
 414 = Request-URI too long  
 415 = Unsupported media type  
 416 = Requested range not satisfiable  
 417 = Expectation failed  
 422 = Unprocessable entity  
 423 = Locked  
 424 = Failed dependency  
 426 = Upgrade required  
 428 = Precondition required  
 429 = Too many requests  
 431 = Request header fields too large  
 500 = Internal server error  
 501 = Not implemented  
 502 = Bad gateway  
 503 = Service unavailable  
 504 = Gateway timeout  
 505 = HTTP version not supported  
 1120 = Connection dropped by remote host  
 20001 = Image download failed  
 20002 = Invalid user  
 20400 = Invalid user or Access Token  
 20429 = The maximum number of requests per hour has been exceeded  
 20503 = too many requests

#### Parameters for LinkedIn protocol error [|Top|](#)

Name	Type	Description
LinkedIn cause	Integer	LinkedIn cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted

		203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required 429 = Too many requests 431 = Request header fields too large 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported 1120 = Connection dropped by remote host 20001 = Image download failed 20003 = JSON error
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#### Parameters for Youtube PEVQ-S protocol error [|Top|](#)

Name	Type	Description
PEVQ-S cause	Integer	PEVQ-S cause 1 = Timeout 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 12 = Invalid PEVQS handle 13 = Handle was already setup or used in another measurement 14 = Error with license 15 = Error with license info generation 16 = Out of Memory 17 = Packet drop in packet capture detected 18 = Network error 19 = Error with packet source 20 = Video is transported over HTTPS

21 = Could not open database  
22 = Database does not match measured video stream  
23 = Database version does not match PEVQ-S probe version  
24 = Unspecific SQL error  
25 = Could not open or parse SSL log file  
26 = Error in player simulation  
27 = Player signaled error  
28 = The player end message is missing but end of video was detected  
29 = General error  
100 = Continue  
101 = Switching protocols  
102 = Processing  
200 = OK, success  
201 = Created  
202 = Accepted  
203 = Non-authoritative information  
204 = No content  
205 = Reset content  
206 = Partial content  
208 = Already reported  
300 = Multiple choices  
301 = Moved permanently  
302 = Found  
    In some cases this can be same as moved temporarily.  
303 = See other  
304 = Not modified  
305 = Use proxy  
306 = Reserved  
307 = Temporary redirect  
308 = Permanent redirect  
400 = Bad request  
    Server could not understand request.  
401 = Unauthorized  
402 = Payment required  
403 = Forbidden  
    Operation is understood but refused.  
404 = Not Found  
405 = Method not allowed  
406 = Not acceptable  
407 = Proxy authentication required  
408 = Request timeout  
409 = Conflict  
410 = Gone  
411 = Length Required  
412 = Precondition failed  
413 = Request entity too large  
414 = Request-URI too long  
415 = Unsupported media type  
416 = Requested range not satisfiable  
417 = Expectation failed  
422 = Unprocessable entity  
423 = Locked  
424 = Failed dependency  
426 = Upgrade required  
428 = Precondition required  
429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
2002 = Failed  
2003 = Aborted  
2004 = Invalid argument  
2005 = Invalid handle  
2006 = File not found  
2007 = Timed out  
2008 = File too big

2009 = Unexpected error  
2010 = Access denied  
2011 = Not implemented  
2100 = Connection closed  
2101 = Connection reset  
2102 = Connection refused  
2103 = Connection aborted  
2104 = Connection failed  
2105 = Name not resolved  
2106 = Internet disconnected  
2107 = SSL protocol error  
2108 = Invalid address  
2109 = Address unreachable  
2110 = SSL authentication certification needed  
2111 = Tunnel connection failed  
2112 = No SSL versions enabled  
2113 = SSL version or cipher mismatch  
2114 = SSL renegotiation requested  
2115 = Unsupported proxy authentication method  
2116 = SSL renegotiation error  
2117 = Bad or missing SSL client certificate  
2118 = Connection timeout  
2119 = Too many pending DNS resolves  
2120 = Failed to connect SOCKS proxy  
2121 = SOCKS proxy server failed to establish connection to the target host  
2122 = The request to negotiate an alternate protocol failed  
2123 = The peer sent an SSL no\_renegotiation alert message  
2124 = Winsock reported unexpected written bytes  
2125 = SSL decompression failure  
2126 = SSL bad record MAC alert  
2127 = The proxy requested authentication for tunnel establishment  
2128 = A known TLS strict server didn't offer the renegotiation extension  
2129 = The SSL server attempted to use a weak ephemeral Diffie-Hellman key  
2130 = Could not connect to proxy server  
2131 = Snap start NPN misprection  
2132 = ESET anti-virus SSL interception  
2133 = Preconnect socket limit reached  
2134 = The permission to use the SSL client certificate's private key was denied  
2135 = The SSL client certificate has no private key  
2136 = The certificate presented by the HTTPS Proxy was invalid  
2137 = An error occurred when trying to do a name resolution (DNS)  
2138 = Permission to access the network was denied  
2139 = The request throttler module cancelled this request to avoid DDOS  
2140 = SSL tunnel connection through HTTPS proxy failed  
2200 = SSL certification invalid common name  
2201 = SSL certification invalid date  
2202 = SSL certification invalid authority  
2203 = SSL certification contains errors  
2204 = SSL certification has no revocation mechanism  
2205 = Unable to the revocation for SSL certification  
2206 = SSL certification revoked  
2207 = SSL certification is invalid  
2208 = SSL certification end  
2300 = Invalid URL  
2301 = Disallowed URL scheme  
2302 = Unknown URL scheme  
2310 = Too many redirects  
2311 = Unsafe redirect  
2312 = Unsafe port  
2320 = Invalid response  
2321 = Invalid chunked encoding  
2322 = Method not supported  
2323 = Unexpected proxy authentication  
2324 = Empty response



		2325 = Response headers are too big 2400 = Cache miss 2501 = Insecure response
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#### Parameters for Dropbox protocol error [|Top|](#)

Name	Type	Description
Dropbox cause	Integer	Dropbox cause 4 = Invalid remote file 5 = Invalid local file 421 = Service not available 425 = Cannot open connection

#### Parameters for Speedtest [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved Always n/a.

#### Parameters for mScore [|Top|](#)

Name	Type	Description
mScore error code	Integer	mScore error code 1 = Timeout 2 = Invalid remote address 401 = Unauthorized 404 = Not found 503 = Service unavailable 509 = Bandwidth limit exceeded 2107 = SSL protocol error 20001 = Connection lost during download 20002 = Connection lost during upload 20003 = mScore result receiving failed

#### Parameters for Netflix [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved Currently this is always n/a.

#### Parameters for WhatsApp [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved Currently this is always n/a.

#### Parameters for test system failure [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved Always n/a.

## Data disconnect (DAD)

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<b>Event ID</b>	DAD
<b>Cellular systems</b>	All
<b>Record state</b>	Data connection state
<b>Description</b>	Recorded when the connection to the server is disconnected. For TCP-based protocols this means that the socket connection has been terminated. The measurement event ends the data connection state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous

[Parameters](#) |
[Parameters for normal data disconnect](#) |
[Parameters for socket error](#) |
[Parameters for Nemo protocol error](#) |
[Parameters for FTP and SFTP protocol error](#) |
[Parameters for HTTP protocol error](#) |
[Parameters for SMTP protocol error](#) |
[Parameters for POP3 protocol error](#) |
[Parameters for WAP and MMS protocol error](#) |
[Parameters for streaming protocol error](#) |
[Parameters for HTTP browsing protocol error](#) |
[Parameters for ICMP ping protocol error](#) |
[Parameters for IPerf protocol error](#) |
[Parameters for trace route protocol error](#) |
[Parameters for IMAP protocol error](#) |
[Parameters for Facebook protocol error](#) |
[Parameters for Twitter protocol error](#) |
[Parameters for Instagram protocol error](#) |
[Parameters for LinkedIn protocol error](#) |
[Parameters for Youtube PEVQ-S protocol error](#) |
[Parameters for Dropbox protocol error](#) |
[Parameters for Speedtest](#) |
[Parameters for mScore](#) |
[Parameters for Netflix](#) |
[Parameters for WhatsApp](#) |
[Parameters for test system failure](#)

#### Parameters [|Top](#)

Name	Type	Description
Data connection context ID	Context	Data connection context ID
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3 7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube. 10 = WAP 2.0 11 = HTTP browsing 12 = ICMP ping 13 = IPerf over TCP 14 = IPerf over UDP 15 = Trace route 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox 24 = Speedtest 25 = mScore 26 = Netflix 27 = WhatsApp
Data disc. status	Integer	Data disconnect status 1 = Normal data disconnect 2 = Socket error 3 = Protocol error or timeout 4 = Test system failure

#### Parameters for normal data disconnect [|Top](#)

Name	Type	Description
Reserved	Integer	Reserved Always n/a.

#### Parameters for socket error [|Top](#)

Name	Type	Description
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Socket cause	Integer	<p>Socket cause</p> <p>10004 = A blocking operation was interrupted by a call to WSACancelBlockingCall.</p> <p>10009 = The file handle supplied is not valid.</p> <p>10013 = An attempt was made to access a socket in a way forbidden by its access permissions.</p> <p>10014 = The system detected an invalid pointer address in attempting to use a pointer argument in a call.</p> <p>10022 = An invalid argument was supplied.</p> <p>10024 = Too many open sockets.</p> <p>10035 = A non-blocking socket operation could not be completed immediately.</p> <p>10036 = A blocking operation is currently executing.</p> <p>10037 = An operation was attempted on a non-blocking socket that already had an operation in progress.</p> <p>10038 = An operation was attempted on something that is not a socket.</p> <p>10039 = A required address was omitted from an operation on a socket.</p> <p>10040 = A message sent on a datagram socket was larger than the internal message buffer or some other network limit, or the buffer used to receive a datagram into was smaller than the datagram itself.</p> <p>10041 = A protocol was specified in the socket function call that does not support the semantics of the socket type requested.</p> <p>10042 = An unknown, invalid, or unsupported option or level was specified in a getsockopt or setsockopt call.</p> <p>10043 = The requested protocol has not been configured into the system, or no implementation for it exists.</p> <p>10044 = The support for the specified socket type does not exist in this address family.</p> <p>10045 = The attempted operation is not supported for the type of object referenced.</p> <p>10046 = The protocol family has not been configured into the system or no implementation for it exists.</p> <p>10047 = An address incompatible with the requested protocol was used.</p> <p>10048 = Only one usage of each socket address (protocol/network address/port) is normally permitted.</p> <p>10049 = The requested address is not valid in its context.</p> <p>10050 = A socket operation encountered a dead network.</p> <p>10051 = A socket operation was attempted to an unreachable network.</p> <p>10052 = The connection has been broken due to keep-alive activity detecting a failure while the operation was in progress.</p> <p>10053 = An established connection was aborted by the software in your host machine.</p> <p>10054 = An existing connection was forcibly closed by the remote host.</p> <p>10055 = An operation on a socket could not be performed because the system lacked sufficient buffer space or because a queue was full.</p> <p>10056 = A connect request was made on an already connected socket.</p> <p>10057 = A request to send or receive data was disallowed because the socket is not connected and (when sending on a datagram socket using a sendto call) no address was supplied.</p> <p>10058 = A request to send or receive data was disallowed because the socket had already been shut down in that direction with a previous shutdown call.</p> <p>10059 = Too many references to some kernel object.</p> <p>10060 = A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.</p> <p>10061 = No connection could be made because the target machine actively refused it.</p> <p>10062 = Cannot translate name.</p> <p>10063 = Name component or name was too long.</p> <p>10064 = A socket operation failed because the destination host was down.</p>
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10065 = A socket operation was attempted to an unreachable host.  
10066 = Cannot remove a directory that is not empty.  
10067 = A Windows Sockets implementation may have a limit on the number of applications that may use it simultaneously.  
10068 = Ran out of quota.  
10069 = Ran out of disk quota.  
10070 = File handle reference is no longer available.  
10071 = Item is not available locally.  
10091 = WSASStartup cannot function at this time because the underlying system it uses to provide network services is currently unavailable.  
10092 = The Windows Sockets version requested is not supported.  
10093 = Either the application has not called WSASStartup, or WSASStartup failed.  
10101 = Returned by WSAREcv or WSAREcvFrom to indicate the remote party has initiated a graceful shutdown sequence.  
10102 = No more results can be returned by WSALookupServiceNext.  
10103 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.  
10104 = The procedure call table is invalid.  
10105 = The requested service provider is invalid.  
10106 = The requested service provider could not be loaded or initialized.  
10107 = A system call that should never fail has failed.  
10108 = No such service is known. The service cannot be found in the specified name space.  
10109 = The specified class was not found.  
10110 = No more results can be returned by WSALookupServiceNext.  
10111 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.  
10112 = A database query failed because it was actively refused.  
11001 = No such host is known.  
11002 = This is usually a temporary error during hostname resolution and means that the local server did not receive a response from an authoritative server.  
11003 = A non-recoverable error occurred during a database lookup.  
11004 = The requested name is valid and was found in the database, but it does not have the correct associated data being resolved for.  
11005 = At least one reserve has arrived.  
11006 = At least one path has arrived.  
11007 = There are no senders.  
11008 = There are no receivers.  
11009 = Reserve has been confirmed.  
11010 = Error due to lack of resources.  
11011 = Rejected for administrative reasons - bad credentials.  
11012 = Unknown or conflicting style.  
11013 = Problem with some part of the filterspec or providerspecific buffer in general.  
11014 = Problem with some part of the flowspec.  
11015 = General QOS error.  
11016 = An invalid or unrecognized service type was found in the flowspec.  
11017 = An invalid or inconsistent flowspec was found in the QOS structure.  
11018 = Invalid QOS provider-specific buffer.  
11019 = An invalid QOS filter style was used.  
11020 = An invalid QOS filter type was used.  
11021 = An incorrect number of QOS FILTERSPECS were specified in the FLOWDESCRIPTOR.  
11022 = An object with an invalid ObjectLength field was specified in the QOS provider-specific buffer.  
11023 = An incorrect number of flow descriptors was specified in the QOS structure.  
11024 = An unrecognized object was found in the QOS provider-specific buffer.

		11025 = An invalid policy object was found in the QOS provider-specific buffer. 11026 = An invalid QOS flow descriptor was found in the flow descriptor list. 11027 = An invalid or inconsistent flowspec was found in the QOS provider-specific buffer. 11028 = An invalid FILTERSPEC was found in the QOS provider-specific buffer. 11029 = An invalid shape discard mode object was found in the QOS provider-specific buffer. 11030 = An invalid shaping rate object was found in the QOS provider-specific buffer. 11031 = A reserved policy element was found in the QOS provider-specific buffer.
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#### Parameters for Nemo protocol error [\[Top\]](#)

Name	Type	Description
Data transfer cause	Integer	Data transfer cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file.

#### Parameters for FTP and SFTP protocol error [\[Top\]](#)

Name	Type	Description
FTP cause	Integer	FTP cause 1 = Timeout 2 = Invalid remote address 3 = Invalid username/password 4 = Invalid remote file 5 = Invalid local file 104 = Already connected 116 = Remote port cannot be zero 118 = Firewall error 120 = Service ready in nnn minutes 135 = Operation would block 141 = Unspecified FTP protocol error 202 = Command not implemented, superfluous at this site 211 = Action impossible in control's present state 212 = Action impossible while connected 213 = Action impossible while listening 421 = Service not available, closing control connection 425 = Cannot open data connection 426 = Connection closed, transfer aborted 434 = Requested host unavailable 450 = Requested file action not taken. File unavailable (e.g., file busy) 451 = Requested action aborted, local error in processing 452 = Requested action not taken. Insufficient storage space in system 500 = Syntax error, command unrecognized. This may include errors such as command line too long 501 = Syntax error in parameters or arguments 502 = Command not implemented 503 = Bad sequence of commands 504 = Command not implemented for that parameter 530 = User not logged in 532 = Need account for storing files 550 = Requested action not taken, file unavailable (e.g., file not found, no access) 552 = Requested file action aborted, storage allocation exceeded 553 = Requested action not taken, illegal file name 1032 = Password authentication failed SFTP only. 1102 = Unrecognized remote SSH version string format SFTP only. 1103 = SFTP command failed

		SFTP only. 1105 = Already connecting, close the current connection first SFTP only. 1120 = Connection dropped by remote host SFTP only.
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#### Parameters for HTTP protocol error |Top|

Name	Type	Description
HTTP cause	Integer	HTTP cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required 429 = Too many requests 431 = Request header fields too large 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported 1120 = Connection dropped by remote host

**Parameters for SMTP protocol error** [\[Top\]](#)

Name	Type	Description
SMTP cause	Integer	SMTP cause 1 = Timeout 2 = Invalid remote address 5 = Invalid local file 102 = Invalid remote address 421 = Service not available, closing transmission channel 450 = Requested mail action not taken: mailbox unavailable 451 = Requested action aborted: local error in processing 452 = Requested action not taken: insufficient system storage 500 = Syntax error, command unrecognized 501 = Syntax error in parameters or arguments 502 = Command not implemented 503 = Bad sequence of commands 504 = Command parameter not implemented 535 = Incorrect password or account name 550 = Requested action not taken: mailbox unavailable 551 = User not local 552 = Requested mail action aborted: exceeded storage allocation 553 = Requested action not taken: mailbox name not allowed 554 = Transaction failed 1120 = Connection dropped by remote host

**Parameters for POP3 protocol error** [\[Top\]](#)

Name	Type	Description
POP3 cause	Integer	POP3 cause 1 = Timeout 2 = Invalid remote address 6 = Incorrect index 118 = Firewall error 172 = Error communicating with server 174 = Busy executing current method 1120 = Connection dropped by remote host

**Parameters for WAP and MMS protocol error** [\[Top\]](#)

Name	Type	Description
WAP and MMS cause	Integer	WAP and MMS cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 50 = Unknown Only used with the MMS protocol. 51 = Protocol error Only used with the MMS protocol. 52 = Invalid TID Only used with the MMS protocol. 53 = Not implemented class 2 Only used with the MMS protocol. 54 = Not implemented SAR Only used with the MMS protocol. 55 = Not implemented user acknowledgement Only used with the MMS protocol. 56 = WTP version zero Only used with the MMS protocol. 57 = Capacity temporarily exceeded Only used with the MMS protocol. 58 = No response Only used with the MMS protocol. 59 = Message too large Only used with the MMS protocol. 100 = Continue 101 = Switching Protocols 129 = Unspecified

		<p>Only used with the MMS protocol.</p> <p>130 = Service denied</p> <p>Only used with the MMS protocol.</p> <p>131 = Message format corrupt</p> <p>Only used with the MMS protocol.</p> <p>132 = Sending address unresolved</p> <p>Only used with the MMS protocol.</p> <p>133 = Message not found</p> <p>Only used with the MMS protocol.</p> <p>134 = Network problem</p> <p>Only used with the MMS protocol.</p> <p>135 = Content not accepted</p> <p>Only used with the MMS protocol.</p> <p>136 = Unsupported message</p> <p>Only used with the MMS protocol.</p> <p>200 = OK, success</p> <p>201 = Created</p> <p>202 = Accepted</p> <p>203 = Non-Authoritative information</p> <p>204 = No content</p> <p>205 = Reset content</p> <p>206 = Partial content</p> <p>300 = Multiple choices</p> <p>301 = Moved permanently</p> <p>302 = Moved temporarily</p> <p>303 = See other</p> <p>304 = Not modified</p> <p>305 = Use proxy</p> <p>306 = Reserved</p> <p>307 = Temporary redirect</p> <p>400 = Bad request - server could not understand request</p> <p>401 = Unauthorized</p> <p>402 = Payment required</p> <p>403 = Forbidden - operation is understood but refused</p> <p>404 = Not found</p> <p>405 = Method not allowed</p> <p>406 = Not acceptable</p> <p>407 = Proxy authentication required</p> <p>408 = Request timeout</p> <p>409 = Conflict</p> <p>410 = Gone</p> <p>411 = Length required</p> <p>412 = Precondition failed</p> <p>413 = Request entity too large</p> <p>414 = Request-URI too large</p> <p>415 = Unsupported media type</p> <p>416 = Requested range not satisfiable</p> <p>417 = Expectation failed</p> <p>500 = Internal server error</p> <p>501 = Not implemented</p> <p>502 = Bad gateway</p> <p>503 = Service unavailable</p> <p>504 = Gateway timeout</p> <p>505 = HTTP version not supported</p>
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#### Parameters for streaming protocol error [\[Top\]](#)

Name	Type	Description
Streaming cause	Integer	<p>Streaming cause</p> <p>1 = Timeout</p> <p>2 = Invalid remote address</p> <p>4 = Invalid remote file</p> <p>64413 = Audio stream config not available</p> <p>64414 = Video stream config not available</p> <p>64415 = Dx add filter failed</p> <p>64416 = Com create failed</p> <p>64417 = Audio cap create failed</p> <p>64418 = Video cap create failed</p> <p>64419 = Audio device lost</p> <p>64420 = Video device lost</p> <p>64421 = Find filter failed</p>



64422 = Insert filter failed  
64423 = No audio track present  
64424 = No video track present  
64425 = User authentication failed  
64426 = Media not seekable  
64427 = Media handler create failed  
64428 = Streaming error  
64429 = Get image failed  
64430 = Extract buffering status failed  
64431 = Audio conversion failed  
64432 = Video conversion failed  
64433 = Convert to pcm failed  
64434 = Wave writer save failed  
64435 = Mixer init failed  
64436 = Get image bits failed  
64437 = Get bitmap info failed  
64438 = Get save video sample filename failed  
64439 = Get audio sample filename failed  
64440 = Get last video image failed  
64441 = Get media info failed  
64442 = Get parent hwnd failed  
64443 = Tick counter failed  
64444 = Destroy media handler failed  
64445 = Init dll failed  
64446 = Media wrapper library not available  
64447 = Wrapper library not loaded  
64448 = Lib proc not found  
64449 = Unknown media action  
64450 = Failed to reload media file  
64451 = Failed to seek media file  
64452 = Failed to pause media file  
64453 = Failed to stop media file  
64454 = Failed to play media file  
64455 = Video writer init failed  
64456 = Audio writer init failed  
64457 = Video analyzer init failed  
64458 = Audio analyzer init failed  
64459 = Player not available  
64460 = Media wrapper create failed  
64461 = Get pin failed  
64462 = Render output failed  
64463 = Add key provider failed  
64464 = Set media type failed  
64465 = Get shell command failed  
64466 = Dx filter pin access failed  
64467 = Launch web browser failed  
64468 = Monitor license acquisition failed  
64469 = Failed to acquire license  
64470 = Drm authentication failed  
64471 = Open movie file failed  
64472 = New movie failed  
64473 = Get dib failed  
64474 = Empty bitmap  
64475 = Unknown media type  
64476 = New gworld failed  
64477 = New call back failed  
64478 = New movie controller failed  
64479 = Audio player create failed  
64480 = Player init failed  
64481 = Create player failed  
64482 = Create client engine failed  
64483 = Incomplete action in progress  
64484 = No media loaded  
64485 = Load media file failed  
64486 = Unsupported media type  
64487 = Unsupported writer format  
64488 = Handler specific  
64489 = High resolution counter unavailable  
64490 = Mixer select recorder failed  
64491 = Mixer get control detail failed  
64492 = Unrecognized mixer component type  
64493 = Empty mixer item

64494 = Mixer get line controls failed  
64495 = Mixer get line info failed  
64496 = Mixer close failed  
64497 = Mixer get caps failed  
64498 = Mixer open failed  
64499 = Wave in start failed  
64500 = Wave in stop failed  
64501 = Wave in add buffer failed  
64502 = Wave in prepare header failed  
64503 = Wave in open failed  
64504 = Mono line index read failed  
64505 = Stereo line index read failed  
64506 = Mixer index read failed  
64507 = Invalid media handler  
64508 = Avi write frame failed  
64509 = Avi stream format failed  
64510 = Avi stream create failed  
64511 = Avi file create failed  
65016 = Video image req failed  
65017 = Video alignment out of range  
65018 = Video alignment out of bound  
65019 = Video analyzer pause failed  
65020 = Video analyzer stop failed  
65021 = Video analyzer start failed  
65022 = Video analyzer load failed  
65023 = Video analysis failed  
65246 = Duration diff  
65247 = Duration too diff  
65248 = Duration too long  
65249 = Incompatible sampling rate  
65250 = Sut high sampling rate  
65251 = Ref duration too short  
65252 = Sut duration too short  
65253 = Data end not found  
65254 = Data begin not found  
65255 = Get data buffer failed  
65256 = Unmatched sample width  
65257 = Corr too low  
65258 = Upsampling failed  
65259 = Merge data failed  
65260 = Unsupport sampling rate  
65261 = Unsupport sample width  
65262 = Unsupport channel count  
65263 = Unmatched channel count  
65264 = Unmatched sampling rate  
65265 = Level too diff  
65266 = Replace data chunk failed  
65267 = Split data failed  
65268 = Fft failed  
65269 = Audio analyzer pause failed  
65270 = Audio analyzer stop failed  
65271 = Audio analyzer start failed  
65272 = Audio analyzer load failed  
65273 = Audio analysis failed  
65274 = Invalid audio sample width  
65275 = Uninit audio mean mos table  
65276 = Resampling failed  
65277 = Access pass end of data  
65278 = Fixed bit rate only  
65279 = Invalid audio codec type  
65489 = Unlock application failed  
65490 = No file loaded  
65491 = Empty file  
65492 = Invalid sample width  
65493 = Invalid channel count  
65494 = Invalid data format  
65495 = Invalid chunk data  
65496 = Invalid riff header  
65497 = Unexpected eof  
65498 = Invalid analyzer type  
65499 = Mixer recorder volume unavailable  
65500 = No mixer available

	65501 = Invalid command	
	65502 = Command parser error	
	65503 = Invalid command type	
	65504 = Analysis result create failed	
	65505 = Analyzer compute metrics failed	
	65506 = Analyzer prepare attribute failed	
	65507 = Analyzer create failed	
	65508 = Analyzer load failed	
	65509 = Analyzer pause failed	
	65510 = Analyzer stop failed	
	65511 = Analyzer start failed	
	65512 = Analyzer destroy failed	
	65513 = Analyzer library not available	
	65514 = Analyzer library not loaded	
	65515 = Open dib failed	
	65516 = Create window failed	
	65517 = Draw dib failed	
	65518 = Register wnd class failed	
	65519 = Dll interface specific	
	65520 = Init com failed	
	65521 = Registry query failed	
	65522 = Query interface failed	
	65523 = Generate temp file failed	
	65524 = Thread create failed	
	65525 = Wait timeout	
	65526 = Unsupported feature	
	65527 = Create process failed	
	65528 = File not exist	
	65529 = File open failed	
	65530 = Registry open failed	
	65531 = Invalid parameter	
	65532 = Uninitialized object	
	65533 = User interrupted	
	65534 = Out of memory	
	65535 = Unknown error	
	262148 = Invalid operation	
	262149 = Invalid version	
	262150 = Invalid revision	
	262151 = Not initialized	
	262152 = Doc missing	
	262153 = Unexpected	
	262156 = Incomplete	
	262157 = Buffer too small	
	262158 = Unsupported video	
	262159 = Unsupported audio	
	262160 = Invalid bandwidth	
	262161 = No renderer	
	262162 = Element not found	
	262163 = No class	
	262164 = Class no aggregation	
	262165 = Not licensed	
	262166 = No file system	
	262167 = Request upgrade	
	262168 = Awaiting license	
	262208 = Buffering	
	262209 = Paused	
	262210 = No data	
	262211 = Net socket invalid	
	262212 = Net connect	
	262213 = Bind	
	262214 = Socket create	
	262215 = Invalid host	
	262216 = Net read	
	262217 = Net write	
	262218 = Net UDP	
	262219 = Retry	
	262220 = Server timeout	
	262221 = Server disconnected	
	262222 = Would block	
	262223 = General nonet	
	262224 = Block canceled	
	262225 = Multicast join	

262226 = General multicast  
262227 = Multicast UDP  
262228 = At interrupt  
262229 = Msg too large  
262230 = Net TCP  
262231 = Try auto config  
262232 = Not enough bandwidth  
262233 = HTTP connect  
262234 = Port in use  
262235 = Load test not supported  
262272 = At end  
262273 = Invalid file  
262274 = Invalid path  
262275 = Record  
262276 = Record write  
262277 = Temp file  
262278 = Already open  
262279 = Seek pending  
262280 = Cancelled  
262281 = File not found  
262282 = Write error  
262283 = File exists  
262285 = Advise prefer linear  
262286 = Parse error  
262336 = Bad server  
262337 = Advanced server  
262338 = Old server  
262339 = Redirection  
262340 = Server alert  
262341 = Proxy  
262342 = Proxy response  
262343 = Advanced proxy  
262344 = Old proxy  
262345 = Invalid protocol  
262346 = Invalid url option  
262347 = Invalid url host  
262348 = Invalid url path  
262349 = HTTP content not found  
262350 = Not authorized  
262351 = Unexpected msg  
262352 = Bad transport  
262353 = No session id  
262354 = Proxy dnr  
262355 = Proxy net connect  
262400 = Audio driver  
262401 = Late packet  
262402 = Overlapped packet  
262403 = Out of order packet  
262404 = Non contiguous packet  
262464 = Open not processed  
262528 = Expired  
262593 = Could not init core  
262594 = Perfectplay not supported  
262595 = No live perfectplay  
262596 = Perfectplay not allowed  
262597 = No codecs  
262598 = Slow machine  
262599 = Force perfectplay  
262600 = Invalid HTTP proxy host  
262601 = Invalid metafile  
262602 = Browser launch  
262603 = View source noclip  
262604 = View source dissabled  
262656 = Decoder inited  
262657 = Decoder not found  
262658 = Decoder invalid  
262659 = Decoder type mismatch  
262660 = Decoder init failed  
262661 = Decoder not inited  
262662 = Decoder decompress  
262663 = Obsolete version  
262720 = Encoder file too small

	262721 = Encoder unknown file	
	262722 = Encoder bad channels	
	262723 = Encoder bad sampsize	
	262724 = Encoder bad samprate	
	262725 = Encoder invalid	
	262726 = Encoder no output file	
	262727 = Encoder no input file	
	262728 = Encoder no output permissions	
	262729 = Encoder bad file type	
	262730 = Encoder invalid video	
	262731 = Encoder invalid audio	
	262732 = Encoder no video capture	
	262733 = Encoder invalid video capture	
	262734 = Encoder no audio capture	
	262735 = Encoder invalid audio capture	
	262736 = Encoder too slow for live	
	262737 = Encoder engine not initialized	
	262738 = Encoder coDecoder not found	
	262739 = Encoder coDecoder not initialized	
	262740 = Encoder invalid input dimensions	
	262741 = Encoder message ignored	
	262742 = Encoder no settings	
	262743 = Encoder no output types	
	262744 = Encoder improper state	
	262745 = Encoder invalid server	
	262746 = Encoder invalid temp path	
	262747 = Encoder merge fail	
	262748 = Bin data not found	
	262749 = Bin end of data	
	262750 = Bin data purged	
	262751 = Bin full	
	262752 = Bin offset past end	
	262753 = Encoder no encoded data	
	262754 = Encoder invalid dll	
	262755 = Not indexable	
	262756 = Encoder no browser	
	262757 = Encoder no file to server	
	262758 = Encoder insufficient disk space	
	262785 = Prop not found	
	262786 = Prop not composite	
	262787 = Prop duplicate	
	262788 = Prop type mismatch	
	262789 = Prop active	
	262790 = Prop inactive	
	262848 = Ppv no user	
	262849 = Ppv guid read only	
	262850 = Ppv guid collision	
	262851 = Register guid exists	
	262852 = Ppv authorization failed	
	262853 = Ppv old player	
	262854 = Ppv account locked	
	262856 = Ppv dbaccess error	
	262857 = Ppv user already exists	
	262914 = Resource not found	
	262915 = Resource close file first	
	262916 = Resource nodata	
	262917 = Resource badfile	
	262918 = Resource partial copy	
	262976 = Upg auth failed	
	262977 = Upg cert auth failed	
	262978 = Upg cert expired	
	262979 = Upg cert revoked	
	262980 = Upg rup bad	
	263105 = Rmt usage error	
	263106 = Rmt invalid end time	
	263107 = Rmt missing input file	
	263108 = Rmt missing output file	
	263109 = Rmt input equals output file	
	263110 = Rmt unsupported audio version	
	263111 = Rmt different audio	
	263112 = Rmt different video	
	263113 = Rmt paste missing stream	

263114 = Rmt end of stream  
 263115 = Rmt image map parse error  
 263116 = Rmt invalid image map file  
 263117 = Rmt event parse error  
 263118 = Rmt invalid event file  
 263119 = Rmt invalid output file  
 263120 = Rmt invalid duration  
 263121 = Rmt no dump files  
 263122 = Rmt no event dump file  
 263123 = Rmt no imap dump file  
 263124 = Rmt no data  
 263125 = Rmt empty stream  
 263126 = Rmt read only file  
 263127 = Rmt paste missing audio stream  
 263128 = Rmt paste missing video stream  
 263168 = Autocfg success  
 263169 = Autocfg failed  
 263170 = Autocfg abort  
 266176 = Invalid inter leaver  
 266177 = Bad format  
 266178 = Chunk missing  
 266179 = Invalid stream  
 266180 = Dnr  
 266181 = Open driver  
 266182 = Upgrade  
 266183 = Notification  
 266184 = Not notified  
 266185 = Stopped  
 266186 = Closed  
 266187 = Invalid wav file  
 266188 = No seek

#### Parameters for HTTP browsing protocol error [Top](#)

Name	Type	Description
HTTP browsing cause	Integer	HTTP browsing cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required

408 = Request timeout  
409 = Conflict  
410 = Gone  
411 = Length Required  
412 = Precondition failed  
413 = Request entity too large  
414 = Request-URI too long  
415 = Unsupported media type  
416 = Requested range not satisfiable  
417 = Expectation failed  
422 = Unprocessable entity  
423 = Locked  
424 = Failed dependency  
426 = Upgrade required  
428 = Precondition required  
429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
2002 = Failed  
2003 = Aborted  
2004 = Invalid argument  
2005 = Invalid handle  
2006 = File not found  
2007 = Timed out  
2008 = File too big  
2009 = Unexpected error  
2010 = Access denied  
2011 = Not implemented  
2100 = Connection closed  
2101 = Connection reset  
2102 = Connection refused  
2103 = Connection aborted  
2104 = Connection failed  
2105 = Name not resolved  
2106 = Internet disconnected  
2107 = SSL protocol error  
2108 = Invalid address  
2109 = Address unreachable  
2110 = SSL authentication certification needed  
2111 = Tunnel connection failed  
2112 = No SSL versions enabled  
2113 = SSL version or cipher mismatch  
2114 = SSL renegotiation requested  
2115 = Unsupported proxy authentication method  
2116 = SSL renegotiation error  
2117 = Bad or missing SSL client certificate  
2118 = Connection timeout  
2119 = Too many pending DNS resolves  
2120 = Failed to connect SOCKS proxy  
2121 = SOCKS proxy server failed to establish connection to the target host  
2122 = The request to negotiate an alternate protocol failed  
2123 = The peer sent an SSL no\_renegotiation alert message  
2124 = Winsock reported unexpected written bytes  
2125 = SSL decompression failure  
2126 = SSL bad record MAC alert  
2127 = The proxy requested authentication for tunnel establishment  
2128 = A known TLS strict server didn't offer the renegotiation extension  
2129 = The SSL server attempted to use a weak ephemeral Diffie-Hellman key  
2130 = Could not connect to proxy server  
2131 = Snap start NPN misprection  
2132 = ESET anti-virus SSL interception  
2133 = Preconnect socket limit reached

		2134 = The permission to use the SSL client certificate's private key was denied 2135 = The SSL client certificate has no private key 2136 = The certificate presented by the HTTPS Proxy was invalid 2137 = An error occurred when trying to do a name resolution (DNS) 2138 = Permission to access the network was denied 2139 = The request throttler module cancelled this request to avoid DDOS 2140 = SSL tunnel connection through HTTPS proxy failed 2200 = SSL certification invalid common name 2201 = SSL certification invalid date 2202 = SSL certification invalid authority 2203 = SSL certification contains errors 2204 = SSL certification has no revocation mechanism 2205 = Unable to the revocation for SSL certification 2206 = SSL certification revoked 2207 = SSL certification is invalid 2208 = SSL certification end 2300 = Invalid URL 2301 = Disallowed URL scheme 2302 = Unknown URL scheme 2310 = Too many redirects 2311 = Unsafe redirect 2312 = Unsafe port 2320 = Invalid response 2321 = Invalid chunked encoding 2322 = Method not supported 2323 = Unexpected proxy authentication 2324 = Empty response 2325 = Response headers are too big 2400 = Cache miss 2501 = Insecure response
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#### Parameters for ICMP ping protocol error [|Top|](#)

Name	Type	Description
ICMP ping cause	Integer	ICMP ping cause 2 = Invalid remote address 119 = Message too short

#### Parameters for IPerf protocol error [|Top|](#)

Name	Type	Description
Data transfer cause	Integer	Data transfer cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file.

#### Parameters for trace route protocol error [|Top|](#)

Name	Type	Description
Trace route cause	Integer	Trace route cause 1 = Timeout 2 = Invalid remote address 119 = Message too short 131 = Request queue is full 132 = Message for unknown request 159 = Invalid hop index (out of range) 312 = Busy performing current trace

#### Parameters for IMAP protocol error [|Top|](#)

Name	Type	Description
IMAP cause	Integer	IMAP cause 1 = Timeout



		2 = Invalid remote address 6 = Incorrect index 116 = RemotePort cannot be zero. Please specify a valid service port number 118 = Firewall error 270 = Cannot load specified security library 271 = Cannot open certificate store 272 = Cannot find specified certificate 273 = Cannot acquire security credentials 274 = Cannot find certificate chain 275 = Cannot verify certificate chain 276 = Error during handshake 280 = Error verifying certificate 281 = Could not find client certificate 282 = Could not find server certificate 283 = Error encrypting data 284 = Error decrypting data 315 = Invalid argument 317 = Unknown content encoding 1117 = You need to connect first. 1120 = Connection dropped by remote host
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#### Parameters for Facebook protocol error [|Top](#)

Name	Type	Description
Facebook cause	Integer	Facebook cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed

422 = Unprocessable entity  
423 = Locked  
424 = Failed dependency  
426 = Upgrade required  
428 = Precondition required  
429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
10231 = Unbalanced element tag  
10232 = Invalid JSON markup  
10233 = Invalid XPath  
10234 = DOM tree unavailable  
20000 = Invalid access token  
20001 = An unknown error occurred  
20002 = Service temporarily unavailable  
20003 = Unknown method  
20004 = Application request limit reached  
20009 = User is performing too many actions  
20011 = This method is deprecated  
20013 = FQL query error  
20015 = This method call must be signed with the application secret  
20017 = User request limit reached  
20100 = Invalid parameter  
20101 = Invalid API key  
20102 = Session key invalid or no longer valid  
20105 = Too many parameters  
20110 = Invalid user id  
20113 = Invalid email  
20200 = Permissions error  
20210 = User not visible  
20211 = Application has no developers  
20250 = Updating status requires the extended permission status\_update  
20321 = Album is full  
20324 = Missing or invalid image file  
20325 = Too many unapproved photos pending  
20340 = Feed publication request limit reached  
20341 = Feed action request limit reached  
20343 = The story title is too long  
20345 = Feed story title rendered as blank  
20346 = Feed story body is too long  
20347 = Feed story photo could not be accessed or proxied  
20348 = Feed story photo link invalid  
20362 = Feed story body\_data argument was not a valid JSON-encoded array  
20370 = The email address is not valid  
20371 = The email address belongs to an existing account  
20400 = Invalid email address  
20401 = Invalid username or password  
20402 = Invalid application auth sig  
20403 = Invalid timestamp for authentication  
20450 = Session key specified has passed its expiration time  
20451 = Session key specified cannot be used to call this method  
20452 = Invalid session key  
20453 = A session key is required for calling this method  
20454 = A session key must be specified when request is signed with a session secret  
20455 = A session secret is not permitted to be used with this type of session key  
20500 = Message contains banned content  
20501 = Missing message body  
20502 = Message is too long  
20503 = User has sent too many messages  
20504 = Invalid reply thread id

20505 = Invalid message recipient  
 20506 = Duplicate status message  
 20803 = Invalid user id

#### Parameters for Twitter protocol error [|Top|](#)

Name	Type	Description
Twitter cause	Integer	<p>Twitter cause</p> <p>1 = Timeout</p> <p>200 = OK, success</p> <p>20032 = Could not authenticate Call could not be completed as dialed.</p> <p>20034 = Page does not exist Page does not exist. Corresponds with an HTTP 404 - the specified resource was not found.</p> <p>20064 = Account suspended Account is suspended and is not permitted to access this feature.</p> <p>20068 = Depreciated API The Twitter REST API v1 is no longer active. Please migrate to API v1.1.</p> <p>20088 = Rate limit exceeded The request limit for this resource has been reached for the current rate limit window.</p> <p>20089 = Access token incorrect or expired Use API v1.1.</p> <p>20092 = SSL is required Only SSL connections are allowed in the API, you should update your request to a secure connection.</p> <p>20130 = Service unavailable Corresponds with an HTTP 503 - Twitter is temporarily over capacity.</p> <p>20131 = Internal server error Corresponds with an HTTP 500 - An unknown internal error occurred.</p> <p>20135 = Could not authenticate</p> <p>20161 = Unable to follow more people at this time</p> <p>20179 = Not authorized to see this status</p> <p>20185 = User is over daily status update limit</p> <p>20187 = Status is a duplicate</p> <p>20189 = Error creating status</p> <p>20215 = Bad authentication data Typically sent with 1.1 responses with HTTP code 400.</p> <p>20226 = Spam This request looks like it might be automated. To protect users from spam and other malicious activity, can not complete this action right now.</p> <p>20231 = User must verify login</p> <p>20251 = This endpoint has been retired Corresponds to a HTTP request to a retired URL.</p> <p>20261 = Application cannot perform write actions</p>

#### Parameters for Instagram protocol error [|Top|](#)

Name	Type	Description
Instagram cause	Integer	<p>Instagram cause</p> <p>1 = Timeout</p> <p>2 = Invalid remote address</p> <p>4 = Invalid remote file</p> <p>5 = Invalid local file</p> <p>100 = Continue</p> <p>101 = Switching protocols</p> <p>102 = Processing</p> <p>200 = OK, success</p> <p>201 = Created</p> <p>202 = Accepted</p> <p>203 = Non-authoritative information</p> <p>204 = No content</p> <p>205 = Reset content</p>

		206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required 429 = Too many requests 431 = Request header fields too large 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported 1120 = Connection dropped by remote host 20001 = Image download failed 20002 = Invalid user 20400 = Invalid user or Access Token 20429 = The maximum number of requests per hour has been exceeded 20503 = too many requests
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#### Parameters for LinkedIn protocol error [|Top|](#)

Name	Type	Description
LinkedIn cause	Integer	LinkedIn cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content

208 = Already reported  
 300 = Multiple choices  
 301 = Moved permanently  
 302 = Found  
     In some cases this can be same as moved temporarily.  
 303 = See other  
 304 = Not modified  
 305 = Use proxy  
 306 = Reserved  
 307 = Temporary redirect  
 308 = Permanent redirect  
 400 = Bad request  
     Server could not understand request.  
 401 = Unauthorized  
 402 = Payment required  
 403 = Forbidden  
     Operation is understood but refused.  
 404 = Not Found  
 405 = Method not allowed  
 406 = Not acceptable  
 407 = Proxy authentication required  
 408 = Request timeout  
 409 = Conflict  
 410 = Gone  
 411 = Length Required  
 412 = Precondition failed  
 413 = Request entity too large  
 414 = Request-URI too long  
 415 = Unsupported media type  
 416 = Requested range not satisfiable  
 417 = Expectation failed  
 422 = Unprocessable entity  
 423 = Locked  
 424 = Failed dependency  
 426 = Upgrade required  
 428 = Precondition required  
 429 = Too many requests  
 431 = Request header fields too large  
 500 = Internal server error  
 501 = Not implemented  
 502 = Bad gateway  
 503 = Service unavailable  
 504 = Gateway timeout  
 505 = HTTP version not supported  
 1120 = Connection dropped by remote host  
 20001 = Image download failed  
 20003 = JSON error

#### Parameters for Youtube PEVQ-S protocol error [\[Top\]](#)

Name	Type	Description
PEVQ-S cause	Integer	PEVQ-S cause 1 = Timeout 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 12 = Invalid PEVQS handle 13 = Handle was already setup or used in another measurement 14 = Error with license 15 = Error with license info generation 16 = Out of Memory 17 = Packet drop in packet capture detected 18 = Network error 19 = Error with packet source 20 = Video is transported over HTTPS 21 = Could not open database 22 = Database does not match measured video stream 23 = Database version does not match PEVQ-S probe version 24 = Unspecific SQL error

25 = Could not open or parse SSL log file  
26 = Error in player simulation  
27 = Player signaled error  
28 = The player end message is missing but end of video was detected  
29 = General error  
100 = Continue  
101 = Switching protocols  
102 = Processing  
200 = OK, success  
201 = Created  
202 = Accepted  
203 = Non-authoritative information  
204 = No content  
205 = Reset content  
206 = Partial content  
208 = Already reported  
300 = Multiple choices  
301 = Moved permanently  
302 = Found  
    In some cases this can be same as moved temporarily.  
303 = See other  
304 = Not modified  
305 = Use proxy  
306 = Reserved  
307 = Temporary redirect  
308 = Permanent redirect  
400 = Bad request  
    Server could not understand request.  
401 = Unauthorized  
402 = Payment required  
403 = Forbidden  
    Operation is understood but refused.  
404 = Not Found  
405 = Method not allowed  
406 = Not acceptable  
407 = Proxy authentication required  
408 = Request timeout  
409 = Conflict  
410 = Gone  
411 = Length Required  
412 = Precondition failed  
413 = Request entity too large  
414 = Request-URI too long  
415 = Unsupported media type  
416 = Requested range not satisfiable  
417 = Expectation failed  
422 = Unprocessable entity  
423 = Locked  
424 = Failed dependency  
426 = Upgrade required  
428 = Precondition required  
429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
2002 = Failed  
2003 = Aborted  
2004 = Invalid argument  
2005 = Invalid handle  
2006 = File not found  
2007 = Timed out  
2008 = File too big  
2009 = Unexpected error  
2010 = Access denied  
2011 = Not implemented  
2100 = Connection closed

		2101 = Connection reset 2102 = Connection refused 2103 = Connection aborted 2104 = Connection failed 2105 = Name not resolved 2106 = Internet disconnected 2107 = SSL protocol error 2108 = Invalid address 2109 = Address unreachable 2110 = SSL authentication certification needed 2111 = Tunnel connection failed 2112 = No SSL versions enabled 2113 = SSL version or cipher mismatch 2114 = SSL renegotiation requested 2115 = Unsupported proxy authentication method 2116 = SSL renegotiation error 2117 = Bad or missing SSL client certificate 2118 = Connection timeout 2119 = Too many pending DNS resolves 2120 = Failed to connect SOCKS proxy 2121 = SOCKS proxy server failed to establish connection to the target host 2122 = The request to negotiate an alternate protocol failed 2123 = The peer sent an SSL no_renegotiation alert message 2124 = Winsock reported unexpected written bytes 2125 = SSL decompression failure 2126 = SSL bad record MAC alert 2127 = The proxy requested authentication for tunnel establishment 2128 = A known TLS strict server didn't offer the renegotiation extension 2129 = The SSL server attempted to use a weak ephemeral Diffie-Hellman key 2130 = Could not connect to proxy server 2131 = Snap start NPN misprection 2132 = ESET anti-virus SSL interception 2133 = Preconnect socket limit reached 2134 = The permission to use the SSL client certificate's private key was denied 2135 = The SSL client certificate has no private key 2136 = The certificate presented by the HTTPS Proxy was invalid 2137 = An error occurred when trying to do a name resolution (DNS) 2138 = Permission to access the network was denied 2139 = The request throttler module cancelled this request to avoid DDOS 2140 = SSL tunnel connection through HTTPS proxy failed 2200 = SSL certification invalid common name 2201 = SSL certification invalid date 2202 = SSL certification invalid authority 2203 = SSL certification contains errors 2204 = SSL certification has no revocation mechanism 2205 = Unable to the revocation for SSL certification 2206 = SSL certification revoked 2207 = SSL certification is invalid 2208 = SSL certification end 2300 = Invalid URL 2301 = Disallowed URL scheme 2302 = Unknown URL scheme 2310 = Too many redirects 2311 = Unsafe redirect 2312 = Unsafe port 2320 = Invalid response 2321 = Invalid chunked encoding 2322 = Method not supported 2323 = Unexpected proxy authentication 2324 = Empty response 2325 = Response headers are too big 2400 = Cache miss 2501 = Insecure response
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**Parameters for Dropbox protocol error** [|Top](#)

Name	Type	Description
Dropbox cause	Integer	Dropbox cause 4 = Invalid remote file 5 = Invalid local file 421 = Service not available 425 = Cannot open connection

**Parameters for Speedtest** [|Top](#)

Name	Type	Description
Reserved	Integer	Reserved Always n/a.

**Parameters for mScore** [|Top](#)

Name	Type	Description
mScore error code	Integer	mScore error code 1 = Timeout 2 = Invalid remote address 401 = Unauthorized 404 = Not found 503 = Service unavailable 509 = Bandwidth limit exceeded 2107 = SSL protocol error 20001 = Connection lost during download 20002 = Connection lost during upload 20003 = mScore result receiving failed

**Parameters for Netflix** [|Top](#)

Name	Type	Description
Reserved	Integer	Reserved Currently this is always n/a.

**Parameters for WhatsApp** [|Top](#)

Name	Type	Description
Reserved	Integer	Reserved Currently this is always n/a.

**Parameters for test system failure** [|Top](#)

Name	Type	Description
Reserved	Integer	Reserved Always n/a.

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## Data transfer request (DREQ)

Event ID	DREQ
Cellular systems	All
Record state	Data connection state



<b>Description</b>	Recorded when data transfer is requested to or from the server. Begins the data transfer state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous

[Parameters](#) | [Parameters for Nemo test protocol](#) | [Parameters for FTP and SFTP](#) | [Parameters for HTTP](#) | [Parameters for SMTP](#) | [Parameters for POP3](#)  
[Parameters for MMS](#) | [Parameters for WAP 1.0 and 2.0](#) | [Parameters for Streaming](#) | [Parameters for HTTP browsing](#) | [Parameters for ICMP ping](#)  
[Parameters for IPerf over TCP](#) | [Parameters for IPerf over UDP](#) | [Parameters for trace route](#) | [Parameters for IMAP](#) | [Parameters for Facebook](#) | [Parameters for Twitter](#) | [Parameters for Instagram](#) | [Parameters for LinkedIn](#) | [Parameters for Youtube PEVQ-S](#) | [Parameters for Dropbox](#) | [Parameters for Speedtest](#)  
[Parameters for mScore](#) | [Parameters for Netflix](#) | [Parameters for WhatsApp](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Data connection context ID	Context	Data connection context ID
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3 7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube. 10 = WAP 2.0 11 = HTTP browsing 12 = ICMP ping 13 = IPerf over TCP 14 = IPerf over UDP 15 = Trace route 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox 24 = Speedtest 25 = mScore 26 = Netflix 27 = WhatsApp
Transf. dir.	Integer	Data transfer direction 1 = Uplink 2 = Downlink 3 = Uplink and downlink

#### Parameters for Nemo test protocol [|Top|](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Packet size	Integer	Data transfer packet size Packet size used in data transfer. Minimum value: 0 Unit: byte
Rate limit	Integer	Data transfer bitrate limit Transfer rate limit used in the transfer. Unit: bit/s
Ping size	Integer	Ping packet size

		Ping packet size is the size of the ping packet. The value also determines the size of the reply packet. Minimum value: 0 Unit: byte
Ping rate	Integer	Ping rate Ping rate determines the delay between two consecutive ping requests. Minimum value: 0 Unit: ms
Ping timeout	Integer	Ping timeout Ping timeout determines the maximum time between a ping request and the reply. If this time is exceeded, ping measurement event is created using the timeout parameter. Minimum value: 0 Unit: ms

#### Parameters for FTP and SFTP [\[Top\]](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Filename	String	Data transfer filename
Transf. att. #	Integer	Data transfer attempt number
Threads	Integer	Data transfer threads Number of concurrent data transfers.
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for HTTP [\[Top\]](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Filename	String	Data transfer filename
Transf. att. #	Integer	Data transfer attempt number
Threads	Integer	Data transfer threads Number of concurrent data transfers.
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for SMTP [\[Top\]](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result.

		Minimum value: 0 Unit: ms
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#### Parameters for POP3 [|Top|](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for MMS [|Top|](#)

Name	Type	Description
MMS file size	Integer	MMS file size Amount of data to be transferred. Minimum value: 0 Unit: byte
MMS filename	String	MMS filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for WAP 1.0 and 2.0 [|Top|](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for Streaming [|Top|](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for HTTP browsing [|Top|](#)

Name	Type	Description

Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for ICMP ping [|Top|](#)

Name	Type	Description
Ping size	Integer	Ping packet size Ping packet size is the size of the ping packet. The value also determines the size of the reply packet. Minimum value: 0 Unit: byte
Ping rate	Integer	Ping rate Ping rate determines the delay between two consecutive ping requests. Minimum value: 0 Unit: ms
Ping timeout	Integer	Ping timeout Ping timeout determines the maximum time between a ping request and the reply. If this time is exceeded, ping measurement event is created using the timeout parameter. Minimum value: 0 Unit: ms
Data connection context ID	Context	Data connection context ID

#### Parameters for IPerf over TCP [|Top|](#)

Name	Type	Description
Data size	Integer	Data size Amount of data to be transferred. For time based transfers this information is not available. Minimum value: 0 Unit: byte
Threads	Integer	Data transfer threads Number of concurrent data transfers.
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for IPerf over UDP [|Top|](#)

Name	Type	Description
Data size	Integer	Data size Amount of data to be transferred. For time based transfers this information is not available. Minimum value: 0 Unit: byte
Threads	Integer	Data transfer threads Number of concurrent data transfers.
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for trace route [|Top|](#)

Name	Type	Description

Packet size	Integer	Trace route packet size Currently not available. Minimum value: 0 Unit: byte
Timeout	Integer	Trace route total timeout If the whole path to the destination has not been traced during the timeout period the trace route is recorded as failed. Minimum value: 0 Unit: ms
TTL	Integer	Trace route time to live Maximum number of hops before failure.
Hop timeout	Integer	Trace route hop timeout Minimum value: 0 Unit: ms

#### Parameters for IMAP [|Top|](#)

Name	Type	Description
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for Facebook [|Top|](#)

Name	Type	Description
Facebook operation	Integer	Facebook operation 1 = Get user feed 2 = Get friend list 3 = Post a status update 4 = Post an image 5 = Post a video
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms
File size	Integer	File size This parameter is valid only with post a video operation. Minimum value: 0 Unit: byte

#### Parameters for Twitter [|Top|](#)

Name	Type	Description
Twitter operation	Integer	Twitter operation 1 = Load home page 2 = Load profile 3 = Follow Twitter feed 4 = Text tweet 5 = Photo tweet
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

**Parameters for Instagram** [|Top](#)

Name	Type	Description
Instagram operation	Integer	Instagram operation 1 = Load user feed 2 = Load self feed 3 = Load popular feed 4 = Search media with a tag
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

**Parameters for LinkedIn** [|Top](#)

Name	Type	Description
LinkedIn operation	Integer	LinkedIn operation 1 = Load self feed 2 = Load profile from contact list 3 = Load profile using public URL 4 = Share text and URL 5 = Load my info
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

**Parameters for Youtube PEVQ-S** [|Top](#)

Name	Type	Description
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

**Parameters for Dropbox** [|Top](#)

Name	Type	Description
Dropbox operation	Integer	Dropbox operation 1 = Upload 2 = Download
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte

**Parameters for Speedtest** [|Top](#)

Name	Type	Description
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**Parameters for mScore** [|Top](#)

Name	Type	Description
mScore operation	Integer	mScore operation

		1 = Shooter UL 2 = Shooter DL 3 = Flash UL 4 = Flash DL 5 = Packet loss UL 6 = packet loss DL 7 = Score
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#### Parameters for Netflix [|Top|](#)

Name	Type	Description
Filename	String	Data transfer filename
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms

#### Parameters for WhatsApp [|Top|](#)

Name	Type	Description
WhatsApp operation	Integer	WhatsApp operation 1 = Post message 2 = Post picture
Timeout	Integer	Data transfer timeout If no data has been transferred during the timeout period, the data transfer is terminated with the timeout result. Minimum value: 0 Unit: ms
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte

## Data transfer completed (DCOMP)

Event ID	DCOMP
Cellular systems	All
Record state	Data transfer state
Description	Recorded when data transfer is stopped. For TCP based protocols when the socket connection to the server is terminated. The measurement event ends the data transfer state.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous

[Parameters](#) | [Parameters for success, partial success, abortion, and test system failure.](#) | [Parameters for socket error](#) | [Parameters for Nemo protocol error](#)  
[Parameters for FTP and SFTP protocol error](#) | [Parameters for HTTP protocol error](#) | [Parameters for SMTP protocol error](#) | [Parameters for POP3 protocol error](#)  
[Parameters for WAP and MMS protocol error](#) | [Parameters for streaming protocol error](#) | [Parameters for HTTP browsing protocol error](#) | [Parameters for ICMP ping protocol error](#) | [Parameters for IPerf protocol error](#) | [Parameters for trace route protocol error](#) | [Parameters for IMAP protocol error](#) | [Parameters for Facebook protocol error](#) | [Parameters for Twitter protocol error](#) | [Parameters for Instagram protocol error](#) | [Parameters for LinkedIn protocol error](#) | [Parameters for Youtube PEVQ-S protocol error](#) | [Parameters for Dropbox protocol error](#) | [Parameters for Speedtest](#) | [Parameters for mScore protocol error](#) | [Parameters for Netflix protocol error](#) | [Parameters for WhatsApp protocol error](#) | [Parameters for ICMP ping](#) | [Parameters for all protocols](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3 7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube. 10 = WAP 2.0 11 = HTTP browsing 12 = ICMP ping 13 = IPerf over TCP 14 = IPerf over UDP 15 = Trace route 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox 24 = Speedtest 25 = mScore 26 = Netflix 27 = WhatsApp
Transf. status	Integer	Data transfer status 1 = Success 2 = Socket error 3 = Protocol error or timeout 4 = Test system failure 5 = User abort 6 = Partial success Transfer is considered a partial success when only some of the content has been transferred successfully e.g. during HTTP browsing. Content reply status code parameter in the DCONTENT measurement event defines the transfer status for each transferred item separately.

**Parameters for success, partial success, abortion, and test system failure.** [\[Top\]](#)

Name	Type	Description
Reserved	Integer	Reserved Always n/a.

**Parameters for socket error** [\[Top\]](#)

Name	Type	Description
Socket cause	Integer	Socket cause 10004 = A blocking operation was interrupted by a call to WSACancelBlockingCall. 10009 = The file handle supplied is not valid. 10013 = An attempt was made to access a socket in a way forbidden by its access permissions. 10014 = The system detected an invalid pointer address in attempting to use a pointer argument in a call. 10022 = An invalid argument was supplied. 10024 = Too many open sockets. 10035 = A non-blocking socket operation could not be completed immediately. 10036 = A blocking operation is currently executing. 10037 = An operation was attempted on a non-blocking socket



that already had an operation in progress.

10038 = An operation was attempted on something that is not a socket.

10039 = A required address was omitted from an operation on a socket.

10040 = A message sent on a datagram socket was larger than the internal message buffer or some other network limit, or the buffer used to receive a datagram into was smaller than the datagram itself.

10041 = A protocol was specified in the socket function call that does not support the semantics of the socket type requested.

10042 = An unknown, invalid, or unsupported option or level was specified in a getsockopt or setsockopt call.

10043 = The requested protocol has not been configured into the system, or no implementation for it exists.

10044 = The support for the specified socket type does not exist in this address family.

10045 = The attempted operation is not supported for the type of object referenced.

10046 = The protocol family has not been configured into the system or no implementation for it exists.

10047 = An address incompatible with the requested protocol was used.

10048 = Only one usage of each socket address (protocol/network address/port) is normally permitted.

10049 = The requested address is not valid in its context.

10050 = A socket operation encountered a dead network.

10051 = A socket operation was attempted to an unreachable network.

10052 = The connection has been broken due to keep-alive activity detecting a failure while the operation was in progress.

10053 = An established connection was aborted by the software in your host machine.

10054 = An existing connection was forcibly closed by the remote host.

10055 = An operation on a socket could not be performed because the system lacked sufficient buffer space or because a queue was full.

10056 = A connect request was made on an already connected socket.

10057 = A request to send or receive data was disallowed because the socket is not connected and (when sending on a datagram socket using a sendto call) no address was supplied.

10058 = A request to send or receive data was disallowed because the socket had already been shut down in that direction with a previous shutdown call.

10059 = Too many references to some kernel object.

10060 = A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.

10061 = No connection could be made because the target machine actively refused it.

10062 = Cannot translate name.

10063 = Name component or name was too long.

10064 = A socket operation failed because the destination host was down.

10065 = A socket operation was attempted to an unreachable host.

10066 = Cannot remove a directory that is not empty.

10067 = A Windows Sockets implementation may have a limit on the number of applications that may use it simultaneously.

10068 = Ran out of quota.

10069 = Ran out of disk quota.

10070 = File handle reference is no longer available.

10071 = Item is not available locally.

10091 = WSASStartup cannot function at this time because the underlying system it uses to provide network services is currently unavailable.

10092 = The Windows Sockets version requested is not supported.

10093 = Either the application has not called WSASStartup, or

WSAStartup failed.

10101 = Returned by WSAREcv or WSAREcvFrom to indicate the remote party has initiated a graceful shutdown sequence.

10102 = No more results can be returned by WSALookupServiceNext.

10103 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.

10104 = The procedure call table is invalid.

10105 = The requested service provider is invalid.

10106 = The requested service provider could not be loaded or initialized.

10107 = A system call that should never fail has failed.

10108 = No such service is known. The service cannot be found in the specified name space.

10109 = The specified class was not found.

10110 = No more results can be returned by WSALookupServiceNext.

10111 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.

10112 = A database query failed because it was actively refused.

11001 = No such host is known.

11002 = This is usually a temporary error during hostname resolution and means that the local server did not receive a response from an authoritative server.

11003 = A non-recoverable error occurred during a database lookup.

11004 = The requested name is valid and was found in the database, but it does not have the correct associated data being resolved for.

11005 = At least one reserve has arrived.

11006 = At least one path has arrived.

11007 = There are no senders.

11008 = There are no receivers.

11009 = Reserve has been confirmed.

11010 = Error due to lack of resources.

11011 = Rejected for administrative reasons - bad credentials.

11012 = Unknown or conflicting style.

11013 = Problem with some part of the filterspec or providerspecific buffer in general.

11014 = Problem with some part of the flowspec.

11015 = General QOS error.

11016 = An invalid or unrecognized service type was found in the flowspec.

11017 = An invalid or inconsistent flowspec was found in the QOS structure.

11018 = Invalid QOS provider-specific buffer.

11019 = An invalid QOS filter style was used.

11020 = An invalid QOS filter type was used.

11021 = An incorrect number of QOS FILTERSPECS were specified in the FLOWDESCRIPTOR.

11022 = An object with an invalid ObjectLength field was specified in the QOS provider-specific buffer.

11023 = An incorrect number of flow descriptors was specified in the QOS structure.

11024 = An unrecognized object was found in the QOS provider-specific buffer.

11025 = An invalid policy object was found in the QOS provider-specific buffer.

11026 = An invalid QOS flow descriptor was found in the flow descriptor list.

11027 = An invalid or inconsistent flowspec was found in the QOS provider-specific buffer.

11028 = An invalid FILTERSPEC was found in the QOS provider-specific buffer.

11029 = An invalid shape discard mode object was found in the QOS provider-specific buffer.

11030 = An invalid shaping rate object was found in the QOS provider-specific buffer.

11031 = A reserved policy element was found in the QOS provider-specific buffer.

**Parameters for Nemo protocol error** [\[Top\]](#)

Name	Type	Description
Data transfer cause	Integer	Data transfer cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file.

**Parameters for FTP and SFTP protocol error** [\[Top\]](#)

Name	Type	Description
FTP cause	Integer	FTP cause 1 = Timeout 2 = Invalid remote address 3 = Invalid username/password 4 = Invalid remote file 5 = Invalid local file 104 = Already connected 116 = Remote port cannot be zero 118 = Firewall error 120 = Service ready in nnn minutes 135 = Operation would block 141 = Unspecified FTP protocol error 202 = Command not implemented, superfluous at this site 211 = Action impossible in control's present state 212 = Action impossible while connected 213 = Action impossible while listening 421 = Service not available, closing control connection 425 = Cannot open data connection 426 = Connection closed, transfer aborted 434 = Requested host unavailable 450 = Requested file action not taken. File unavailable (e.g., file busy) 451 = Requested action aborted, local error in processing 452 = Requested action not taken. Insufficient storage space in system 500 = Syntax error, command unrecognized. This may include errors such as command line too long 501 = Syntax error in parameters or arguments 502 = Command not implemented 503 = Bad sequence of commands 504 = Command not implemented for that parameter 530 = User not logged in 532 = Need account for storing files 550 = Requested action not taken, file unavailable (e.g., file not found, no access) 552 = Requested file action aborted, storage allocation exceeded 553 = Requested action not taken, illegal file name 1032 = Password authentication failed SFTP only. 1102 = Unrecognized remote SSH version string format SFTP only. 1103 = SFTP command failed SFTP only. 1105 = Already connecting, close the current connection first SFTP only. 1120 = Connection dropped by remote host SFTP only.

**Parameters for HTTP protocol error** [\[Top\]](#)

Name	Type	Description
HTTP cause	Integer	HTTP cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file

		100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required 429 = Too many requests 431 = Request header fields too large 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported 1120 = Connection dropped by remote host
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#### Parameters for SMTP protocol error [|Top|](#)

Name	Type	Description
SMTP cause	Integer	SMTP cause 1 = Timeout 2 = Invalid remote address 5 = Invalid local file 102 = Invalid remote address 421 = Service not available, closing transmission channel 450 = Requested mail action not taken: mailbox unavailable 451 = Requested action aborted: local error in processing 452 = Requested action not taken: insufficient system storage 500 = Syntax error, command unrecognized 501 = Syntax error in parameters or arguments 502 = Command not implemented

		503 = Bad sequence of commands 504 = Command parameter not implemented 535 = Incorrect password or account name 550 = Requested action not taken: mailbox unavailable 551 = User not local 552 = Requested mail action aborted: exceeded storage allocation 553 = Requested action not taken: mailbox name not allowed 554 = Transaction failed 1120 = Connection dropped by remote host
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#### Parameters for POP3 protocol error [\[Top\]](#)

Name	Type	Description
POP3 cause	Integer	POP3 cause 1 = Timeout 2 = Invalid remote address 6 = Incorrect index 118 = Firewall error 172 = Error communicating with server 174 = Busy executing current method 1120 = Connection dropped by remote host

#### Parameters for WAP and MMS protocol error [\[Top\]](#)

Name	Type	Description
WAP and MMS cause	Integer	WAP and MMS cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 50 = Unknown Only used with the MMS protocol. 51 = Protocol error Only used with the MMS protocol. 52 = Invalid TID Only used with the MMS protocol. 53 = Not implemented class 2 Only used with the MMS protocol. 54 = Not implemented SAR Only used with the MMS protocol. 55 = Not implemented user acknowledgement Only used with the MMS protocol. 56 = WTP version zero Only used with the MMS protocol. 57 = Capacity temporarily exceeded Only used with the MMS protocol. 58 = No response Only used with the MMS protocol. 59 = Message too large Only used with the MMS protocol. 100 = Continue 101 = Switching Protocols 129 = Unspecified Only used with the MMS protocol. 130 = Service denied Only used with the MMS protocol. 131 = Message format corrupt Only used with the MMS protocol. 132 = Sending address unresolved Only used with the MMS protocol. 133 = Message not found Only used with the MMS protocol. 134 = Network problem Only used with the MMS protocol. 135 = Content not accepted Only used with the MMS protocol. 136 = Unsupported message Only used with the MMS protocol.

		200 = OK, success 201 = Created 202 = Accepted 203 = Non-Authoritative information 204 = No content 205 = Reset content 206 = Partial content 300 = Multiple choices 301 = Moved permanently 302 = Moved temporarily 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 400 = Bad request - server could not understand request 401 = Unauthorized 402 = Payment required 403 = Forbidden - operation is understood but refused 404 = Not found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too large 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported
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#### Parameters for streaming protocol error [|Top|](#)

Name	Type	Description
Streaming cause	Integer	Streaming cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 64413 = Audio stream config not available 64414 = Video stream config not available 64415 = Dx add filter failed 64416 = Com create failed 64417 = Audio cap create failed 64418 = Video cap create failed 64419 = Audio device lost 64420 = Video device lost 64421 = Find filter failed 64422 = Insert filter failed 64423 = No audio track present 64424 = No video track present 64425 = User authentication failed 64426 = Media not seekable 64427 = Media handler create failed 64428 = Streaming error 64429 = Get image failed 64430 = Extract buffering status failed 64431 = Audio conversion failed 64432 = Video conversion failed 64433 = Convert to pcm failed 64434 = Wave writer save failed 64435 = Mixer init failed 64436 = Get image bits failed

64437 = Get bitmap info failed  
64438 = Get save video sample filename failed  
64439 = Get audio sample filename failed  
64440 = Get last video image failed  
64441 = Get media info failed  
64442 = Get parent hwnd failed  
64443 = Tick counter failed  
64444 = Destroy media handler failed  
64445 = Init dll failed  
64446 = Media wrapper library not available  
64447 = Wrapper library not loaded  
64448 = Lib proc not found  
64449 = Unknown media action  
64450 = Failed to reload media file  
64451 = Failed to seek media file  
64452 = Failed to pause media file  
64453 = Failed to stop media file  
64454 = Failed to play media file  
64455 = Video writer init failed  
64456 = Audio writer init failed  
64457 = Video analyzer init failed  
64458 = Audio analyzer init failed  
64459 = Player not available  
64460 = Media wrapper create failed  
64461 = Get pin failed  
64462 = Render output failed  
64463 = Add key provider failed  
64464 = Set media type failed  
64465 = Get shell command failed  
64466 = Dx filter pin access failed  
64467 = Launch web browser failed  
64468 = Monitor license acquisition failed  
64469 = Failed to acquire license  
64470 = Drm authentication failed  
64471 = Open movie file failed  
64472 = New movie failed  
64473 = Get dib failed  
64474 = Empty bitmap  
64475 = Unknown media type  
64476 = New gworld failed  
64477 = New call back failed  
64478 = New movie controller failed  
64479 = Audio player create failed  
64480 = Player init failed  
64481 = Create player failed  
64482 = Create client engine failed  
64483 = Incomplete action in progress  
64484 = No media loaded  
64485 = Load media file failed  
64486 = Unsupported media type  
64487 = Unsupported writer format  
64488 = Handler specific  
64489 = High resolution counter unavailable  
64490 = Mixer select recorder failed  
64491 = Mixer get control detail failed  
64492 = Unrecognized mixer component type  
64493 = Empty mixer item  
64494 = Mixer get line controls failed  
64495 = Mixer get line info failed  
64496 = Mixer close failed  
64497 = Mixer get caps failed  
64498 = Mixer open failed  
64499 = Wave in start failed  
64500 = Wave in stop failed  
64501 = Wave in add buffer failed  
64502 = Wave in prepare header failed  
64503 = Wave in open failed  
64504 = Mono line index read failed  
64505 = Stereo line index read failed  
64506 = Mixer index read failed  
64507 = Invalid media handler  
64508 = Avi write frame failed

64509 = Avi stream format failed  
64510 = Avi stream create failed  
64511 = Avi file create failed  
65016 = Video image req failed  
65017 = Video alignment out of range  
65018 = Video alignment out of bound  
65019 = Video analyzer pause failed  
65020 = Video analyzer stop failed  
65021 = Video analyzer start failed  
65022 = Video analyzer load failed  
65023 = Video analysis failed  
65246 = Duration diff  
65247 = Duration too diff  
65248 = Duration too long  
65249 = Incompatible sampling rate  
65250 = Sut high sampling rate  
65251 = Ref duration too short  
65252 = Sut duration too short  
65253 = Data end not found  
65254 = Data begin not found  
65255 = Get data buffer failed  
65256 = Unmatched sample width  
65257 = Corr too low  
65258 = Upsampling failed  
65259 = Merge data failed  
65260 = Unsupport sampling rate  
65261 = Unsupport sample width  
65262 = Unsupport channel count  
65263 = Unmatched channel count  
65264 = Unmatched sampling rate  
65265 = Level too diff  
65266 = Replace data chunk failed  
65267 = Split data failed  
65268 = Fft failed  
65269 = Audio analyzer pause failed  
65270 = Audio analyzer stop failed  
65271 = Audio analyzer start failed  
65272 = Audio analyzer load failed  
65273 = Audio analysis failed  
65274 = Invalid audio sample width  
65275 = Uninit audio mean mos table  
65276 = Resampling failed  
65277 = Access pass end of data  
65278 = Fixed bit rate only  
65279 = Invalid audio codec type  
65489 = Unlock application failed  
65490 = No file loaded  
65491 = Empty file  
65492 = Invalid sample width  
65493 = Invalid channel count  
65494 = Invalid data format  
65495 = Invalid chunk data  
65496 = Invalid riff header  
65497 = Unexpected eof  
65498 = Invalid analyzer type  
65499 = Mixer recorder volume unavailable  
65500 = No mixer available  
65501 = Invalid command  
65502 = Command parser error  
65503 = Invalid command type  
65504 = Analysis result create failed  
65505 = Analyzer compute metrics failed  
65506 = Analyzer prepare attribute failed  
65507 = Analyzer create failed  
65508 = Analyzer load failed  
65509 = Analyzer pause failed  
65510 = Analyzer stop failed  
65511 = Analyzer start failed  
65512 = Analyzer destroy failed  
65513 = Analyzer library not available  
65514 = Analyzer library not loaded  
65515 = Open dib failed



	65516 = Create window failed	
	65517 = Draw dib failed	
	65518 = Register wnd class failed	
	65519 = Dll interface specific	
	65520 = Init com failed	
	65521 = Registry query failed	
	65522 = Query interface failed	
	65523 = Generate temp file failed	
	65524 = Thread create failed	
	65525 = Wait timeout	
	65526 = Unsupported feature	
	65527 = Create process failed	
	65528 = File not exist	
	65529 = File open failed	
	65530 = Registry open failed	
	65531 = Invalid parameter	
	65532 = Uninitialized object	
	65533 = User interrupted	
	65534 = Out of memory	
	65535 = Unknown error	
	262148 = Invalid operation	
	262149 = Invalid version	
	262150 = Invalid revision	
	262151 = Not initialized	
	262152 = Doc missing	
	262153 = Unexpected	
	262156 = Incomplete	
	262157 = Buffer too small	
	262158 = Unsupported video	
	262159 = Unsupported audio	
	262160 = Invalid bandwidth	
	262161 = No renderer	
	262162 = Element not found	
	262163 = No class	
	262164 = Class no aggregation	
	262165 = Not licensed	
	262166 = No file system	
	262167 = Request upgrade	
	262168 = Awaiting license	
	262208 = Buffering	
	262209 = Paused	
	262210 = No data	
	262211 = Net socket invalid	
	262212 = Net connect	
	262213 = Bind	
	262214 = Socket create	
	262215 = Invalid host	
	262216 = Net read	
	262217 = Net write	
	262218 = Net UDP	
	262219 = Retry	
	262220 = Server timeout	
	262221 = Server disconnected	
	262222 = Would block	
	262223 = General nonet	
	262224 = Block canceled	
	262225 = Multicast join	
	262226 = General multicast	
	262227 = Multicast UDP	
	262228 = At interrupt	
	262229 = Msg too large	
	262230 = Net TCP	
	262231 = Try auto config	
	262232 = Not enough bandwidth	
	262233 = HTTP connect	
	262234 = Port in use	
	262235 = Load test not supported	
	262272 = At end	
	262273 = Invalid file	
	262274 = Invalid path	
	262275 = Record	
	262276 = Record write	

262277 = Temp file  
262278 = Already open  
262279 = Seek pending  
262280 = Cancelled  
262281 = File not found  
262282 = Write error  
262283 = File exists  
262285 = Advise prefer linear  
262286 = Parse error  
262336 = Bad server  
262337 = Advanced server  
262338 = Old server  
262339 = Redirection  
262340 = Server alert  
262341 = Proxy  
262342 = Proxy response  
262343 = Advanced proxy  
262344 = Old proxy  
262345 = Invalid protocol  
262346 = Invalid url option  
262347 = Invalid url host  
262348 = Invalid url path  
262349 = HTTP content not found  
262350 = Not authorized  
262351 = Unexpected msg  
262352 = Bad transport  
262353 = No session id  
262354 = Proxy dnr  
262355 = Proxy net connect  
262400 = Audio driver  
262401 = Late packet  
262402 = Overlapped packet  
262403 = Out of order packet  
262404 = Non contiguous packet  
262464 = Open not processed  
262528 = Expired  
262593 = Could not init core  
262594 = Perfectplay not supported  
262595 = No live perfectplay  
262596 = Perfectplay not allowed  
262597 = No codecs  
262598 = Slow machine  
262599 = Force perfectplay  
262600 = Invalid HTTP proxy host  
262601 = Invalid metafile  
262602 = Browser launch  
262603 = View source noclip  
262604 = View source dissabled  
262656 = Decoder initied  
262657 = Decoder not found  
262658 = Decoder invalid  
262659 = Decoder type mismatch  
262660 = Decoder init failed  
262661 = Decoder not initied  
262662 = Decoder decompress  
262663 = Obsolete version  
262720 = Encoder file too small  
262721 = Encoder unknown file  
262722 = Encoder bad channels  
262723 = Encoder bad sampsize  
262724 = Encoder bad samprate  
262725 = Encoder invalid  
262726 = Encoder no output file  
262727 = Encoder no input file  
262728 = Encoder no output permissions  
262729 = Encoder bad file type  
262730 = Encoder invalid video  
262731 = Encoder invalid audio  
262732 = Encoder no video capture  
262733 = Encoder invalid video capture  
262734 = Encoder no audio capture  
262735 = Encoder invalid audio capture

	262736 = Encoder too slow for live	
	262737 = Encoder engine not initialized	
	262738 = Encoder coDecoder not found	
	262739 = Encoder coDecoder not initialized	
	262740 = Encoder invalid input dimensions	
	262741 = Encoder message ignored	
	262742 = Encoder no settings	
	262743 = Encoder no output types	
	262744 = Encoder improper state	
	262745 = Encoder invalid server	
	262746 = Encoder invalid temp path	
	262747 = Encoder merge fail	
	262748 = Bin data not found	
	262749 = Bin end of data	
	262750 = Bin data purged	
	262751 = Bin full	
	262752 = Bin offset past end	
	262753 = Encoder no encoded data	
	262754 = Encoder invalid dll	
	262755 = Not indexable	
	262756 = Encoder no browser	
	262757 = Encoder no file to server	
	262758 = Encoder insufficient disk space	
	262785 = Prop not found	
	262786 = Prop not composite	
	262787 = Prop duplicate	
	262788 = Prop type mismatch	
	262789 = Prop active	
	262790 = Prop inactive	
	262848 = Ppv no user	
	262849 = Ppv guid read only	
	262850 = Ppv guid collision	
	262851 = Register guid exists	
	262852 = Ppv authorization failed	
	262853 = Ppv old player	
	262854 = Ppv account locked	
	262856 = Ppv dbaccess error	
	262857 = Ppv user already exists	
	262914 = Resource not found	
	262915 = Resource close file first	
	262916 = Resource nodata	
	262917 = Resource badfile	
	262918 = Resource partial copy	
	262976 = Upg auth failed	
	262977 = Upg cert auth failed	
	262978 = Upg cert expired	
	262979 = Upg cert revoked	
	262980 = Upg rup bad	
	263105 = Rmt usage error	
	263106 = Rmt invalid end time	
	263107 = Rmt missing input file	
	263108 = Rmt missing output file	
	263109 = Rmt input equals output file	
	263110 = Rmt unsupported audio version	
	263111 = Rmt different audio	
	263112 = Rmt different video	
	263113 = Rmt paste missing stream	
	263114 = Rmt end of stream	
	263115 = Rmt image map parse error	
	263116 = Rmt invalid image map file	
	263117 = Rmt event parse error	
	263118 = Rmt invalid event file	
	263119 = Rmt invalid output file	
	263120 = Rmt invalid duration	
	263121 = Rmt no dump files	
	263122 = Rmt no event dump file	
	263123 = Rmt no imap dump file	
	263124 = Rmt no data	
	263125 = Rmt empty stream	
	263126 = Rmt read only file	
	263127 = Rmt paste missing audio stream	
	263128 = Rmt paste missing video stream	

	263168 = Autocfg success 263169 = Autocfg failed 263170 = Autocfg abort 266176 = Invalid inter leaver 266177 = Bad format 266178 = Chunk missing 266179 = Invalid stream 266180 = Dnr 266181 = Open driver 266182 = Upgrade 266183 = Notification 266184 = Not notified 266185 = Stopped 266186 = Closed 266187 = Invalid wav file 266188 = No seek
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#### Parameters for HTTP browsing protocol error [Top](#)

Name	Type	Description
HTTP browsing cause	Integer	HTTP browsing cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required

429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
2002 = Failed  
2003 = Aborted  
2004 = Invalid argument  
2005 = Invalid handle  
2006 = File not found  
2007 = Timed out  
2008 = File too big  
2009 = Unexpected error  
2010 = Access denied  
2011 = Not implemented  
2100 = Connection closed  
2101 = Connection reset  
2102 = Connection refused  
2103 = Connection aborted  
2104 = Connection failed  
2105 = Name not resolved  
2106 = Internet disconnected  
2107 = SSL protocol error  
2108 = Invalid address  
2109 = Address unreachable  
2110 = SSL authentication certification needed  
2111 = Tunnel connection failed  
2112 = No SSL versions enabled  
2113 = SSL version or cipher mismatch  
2114 = SSL renegotiation requested  
2115 = Unsupported proxy authentication method  
2116 = SSL renegotiation error  
2117 = Bad or missing SSL client certificate  
2118 = Connection timeout  
2119 = Too many pending DNS resolves  
2120 = Failed to connect SOCKS proxy  
2121 = SOCKS proxy server failed to establish connection to the target host  
2122 = The request to negotiate an alternate protocol failed  
2123 = The peer sent an SSL no\_renegotiation alert message  
2124 = Winsock reported unexpected written bytes  
2125 = SSL decompression failure  
2126 = SSL bad record MAC alert  
2127 = The proxy requested authentication for tunnel establishment  
2128 = A known TLS strict server didn't offer the renegotiation extension  
2129 = The SSL server attempted to use a weak ephemeral Diffie-Hellman key  
2130 = Could not connect to proxy server  
2131 = Snap start NPN misprection  
2132 = ESET anti-virus SSL interception  
2133 = Preconnect socket limit reached  
2134 = The permission to use the SSL client certificate's private key was denied  
2135 = The SSL client certificate has no private key  
2136 = The certificate presented by the HTTPS Proxy was invalid  
2137 = An error occurred when trying to do a name resolution (DNS)  
2138 = Permission to access the network was denied  
2139 = The request throttler module cancelled this request to avoid DDOS  
2140 = SSL tunnel connection through HTTPS proxy failed  
2200 = SSL certification invalid common name  
2201 = SSL certification invalid date  
2202 = SSL certification invalid authority  
2203 = SSL certification contains errors

		2204 = SSL certification has no revocation mechanism 2205 = Unable to the revocation for SSL certification 2206 = SSL certification revoked 2207 = SSL certification is invalid 2208 = SSL certification end 2300 = Invalid URL 2301 = Disallowed URL scheme 2302 = Unknown URL scheme 2310 = Too many redirects 2311 = Unsafe redirect 2312 = Unsafe port 2320 = Invalid response 2321 = Invalid chunked encoding 2322 = Method not supported 2323 = Unexpected proxy authentication 2324 = Empty response 2325 = Response headers are too big 2400 = Cache miss 2501 = Insecure response
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#### Parameters for ICMP ping protocol error [|Top|](#)

Name	Type	Description
ICMP ping cause	Integer	ICMP ping cause 2 = Invalid remote address 119 = Message too short

#### Parameters for IPerf protocol error [|Top|](#)

Name	Type	Description
Data transfer cause	Integer	Data transfer cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file.

#### Parameters for trace route protocol error [|Top|](#)

Name	Type	Description
Trace route cause	Integer	Trace route cause 1 = Timeout 2 = Invalid remote address 119 = Message too short 131 = Request queue is full 132 = Message for unknown request 159 = Invalid hop index (out of range) 312 = Busy performing current trace

#### Parameters for IMAP protocol error [|Top|](#)

Name	Type	Description
IMAP cause	Integer	IMAP cause 1 = Timeout 2 = Invalid remote address 6 = Incorrect index 116 = RemotePort cannot be zero. Please specify a valid service port number 118 = Firewall error 270 = Cannot load specified security library 271 = Cannot open certificate store 272 = Cannot find specified certificate 273 = Cannot acquire security credentials 274 = Cannot find certificate chain 275 = Cannot verify certificate chain 276 = Error during handshake 280 = Error verifying certificate 281 = Could not find client certificate 282 = Could not find server certificate

283 = Error encrypting data  
 284 = Error decrypting data  
 315 = Invalid argument  
 317 = Unknown content encoding  
 1117 = You need to connect first.  
 1120 = Connection dropped by remote host

#### Parameters for Facebook protocol error [\[Top\]](#)

Name	Type	Description
Facebook cause	Integer	Facebook cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request. 401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required 429 = Too many requests 431 = Request header fields too large 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported 1120 = Connection dropped by remote host 10231 = Unbalanced element tag

10232 = Invalid JSON markup  
 10233 = Invalid XPath  
 10234 = DOM tree unavailable  
 20000 = Invalid access token  
 20001 = An unknown error occurred  
 20002 = Service temporarily unavailable  
 20003 = Unknown method  
 20004 = Application request limit reached  
 20009 = User is performing too many actions  
 20011 = This method is deprecated  
 20013 = FQL query error  
 20015 = This method call must be signed with the application secret  
 20017 = User request limit reached  
 20100 = Invalid parameter  
 20101 = Invalid API key  
 20102 = Session key invalid or no longer valid  
 20105 = Too many parameters  
 20110 = Invalid user id  
 20113 = Invalid email  
 20200 = Permissions error  
 20210 = User not visible  
 20211 = Application has no developers  
 20250 = Updating status requires the extended permission status\_update  
 20321 = Album is full  
 20324 = Missing or invalid image file  
 20325 = Too many unapproved photos pending  
 20340 = Feed publication request limit reached  
 20341 = Feed action request limit reached  
 20343 = The story title is too long  
 20345 = Feed story title rendered as blank  
 20346 = Feed story body is too long  
 20347 = Feed story photo could not be accessed or proxied  
 20348 = Feed story photo link invalid  
 20362 = Feed story body\_data argument was not a valid JSON-encoded array  
 20370 = The email address is not valid  
 20371 = The email address belongs to an existing account  
 20400 = Invalid email address  
 20401 = Invalid username or password  
 20402 = Invalid application auth sig  
 20403 = Invalid timestamp for authentication  
 20450 = Session key specified has passed its expiration time  
 20451 = Session key specified cannot be used to call this method  
 20452 = Invalid session key  
 20453 = A session key is required for calling this method  
 20454 = A session key must be specified when request is signed with a session secret  
 20455 = A session secret is not permitted to be used with this type of session key  
 20500 = Message contains banned content  
 20501 = Missing message body  
 20502 = Message is too long  
 20503 = User has sent too many messages  
 20504 = Invalid reply thread id  
 20505 = Invalid message recipient  
 20506 = Duplicate status message  
 20803 = Invalid user id

#### Parameters for Twitter protocol error [\[Top\]](#)

Name	Type	Description
Twitter cause	Integer	Twitter cause 1 = Timeout 200 = OK, success 20032 = Could not authenticate Call could not be completed as dialed. 20034 = Page does not exist



		<p>Page does not exist. Corresponds with an HTTP 404 - the specified resource was not found.</p> <p>20064 = Account suspended Account is suspended and is not permitted to access this feature.</p> <p>20068 = Depreciated API The Twitter REST API v1 is no longer active. Please migrate to API v1.1.</p> <p>20088 = Rate limit exceeded The request limit for this resource has been reached for the current rate limit window.</p> <p>20089 = Access token incorrect or expired Use API v1.1.</p> <p>20092 = SSL is required Only SSL connections are allowed in the API, you should update your request to a secure connection.</p> <p>20130 = Service unavailable Corresponds with an HTTP 503 - Twitter is temporarily over capacity.</p> <p>20131 = Internal server error Corresponds with an HTTP 500 - An unknown internal error occurred.</p> <p>20135 = Could not authenticate</p> <p>20161 = Unable to follow more people at this time</p> <p>20179 = Not authorized to see this status</p> <p>20185 = User is over daily status update limit</p> <p>20187 = Status is a duplicate</p> <p>20189 = Error creating status</p> <p>20215 = Bad authentication data Typically sent with 1.1 responses with HTTP code 400.</p> <p>20226 = Spam This request looks like it might be automated. To protect users from spam and other malicious activity, can not complete this action right now.</p> <p>20231 = User must verify login</p> <p>20251 = This endpoint has been retired Corresponds to a HTTP request to a retired URL.</p> <p>20261 = Application cannot perform write actions</p>
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#### Parameters for Instagram protocol error [|Top|](#)

Name	Type	Description
Instagram cause	Integer	<p>Instagram cause</p> <p>1 = Timeout</p> <p>2 = Invalid remote address</p> <p>4 = Invalid remote file</p> <p>5 = Invalid local file</p> <p>100 = Continue</p> <p>101 = Switching protocols</p> <p>102 = Processing</p> <p>200 = OK, success</p> <p>201 = Created</p> <p>202 = Accepted</p> <p>203 = Non-authoritative information</p> <p>204 = No content</p> <p>205 = Reset content</p> <p>206 = Partial content</p> <p>208 = Already reported</p> <p>300 = Multiple choices</p> <p>301 = Moved permanently</p> <p>302 = Found In some cases this can be same as moved temporarily.</p> <p>303 = See other</p> <p>304 = Not modified</p> <p>305 = Use proxy</p> <p>306 = Reserved</p> <p>307 = Temporary redirect</p> <p>308 = Permanent redirect</p> <p>400 = Bad request Server could not understand request.</p>

401 = Unauthorized  
 402 = Payment required  
 403 = Forbidden  
     Operation is understood but refused.  
 404 = Not Found  
 405 = Method not allowed  
 406 = Not acceptable  
 407 = Proxy authentication required  
 408 = Request timeout  
 409 = Conflict  
 410 = Gone  
 411 = Length Required  
 412 = Precondition failed  
 413 = Request entity too large  
 414 = Request-URI too long  
 415 = Unsupported media type  
 416 = Requested range not satisfiable  
 417 = Expectation failed  
 422 = Unprocessable entity  
 423 = Locked  
 424 = Failed dependency  
 426 = Upgrade required  
 428 = Precondition required  
 429 = Too many requests  
 431 = Request header fields too large  
 500 = Internal server error  
 501 = Not implemented  
 502 = Bad gateway  
 503 = Service unavailable  
 504 = Gateway timeout  
 505 = HTTP version not supported  
 1120 = Connection dropped by remote host  
 20001 = Image download failed  
 20002 = Invalid user  
 20400 = Invalid user or Access Token  
 20429 = The maximum number of requests per hour has been exceeded  
 20503 = too many requests

#### Parameters for LinkedIn protocol error [|Top|](#)

Name	Type	Description
LinkedIn cause	Integer	LinkedIn cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information 204 = No content 205 = Reset content 206 = Partial content 208 = Already reported 300 = Multiple choices 301 = Moved permanently 302 = Found In some cases this can be same as moved temporarily. 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 308 = Permanent redirect 400 = Bad request Server could not understand request.

		401 = Unauthorized 402 = Payment required 403 = Forbidden Operation is understood but refused. 404 = Not Found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length Required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 422 = Unprocessable entity 423 = Locked 424 = Failed dependency 426 = Upgrade required 428 = Precondition required 429 = Too many requests 431 = Request header fields too large 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported 1120 = Connection dropped by remote host 20001 = Image download failed 20003 = JSON error
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#### Parameters for Youtube PEVQ-S protocol error [\[Top\]](#)

Name	Type	Description
PEVQ-S cause	Integer	PEVQ-S cause 1 = Timeout 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 12 = Invalid PEVQS handle 13 = Handle was already setup or used in another measurement 14 = Error with license 15 = Error with license info generation 16 = Out of Memory 17 = Packet drop in packet capture detected 18 = Network error 19 = Error with packet source 20 = Video is transported over HTTPS 21 = Could not open database 22 = Database does not match measured video stream 23 = Database version does not match PEVQ-S probe version 24 = Unspecific SQL error 25 = Could not open or parse SSL log file 26 = Error in player simulation 27 = Player signaled error 28 = The player end message is missing but end of video was detected 29 = General error 100 = Continue 101 = Switching protocols 102 = Processing 200 = OK, success 201 = Created 202 = Accepted 203 = Non-authoritative information

204 = No content  
205 = Reset content  
206 = Partial content  
208 = Already reported  
300 = Multiple choices  
301 = Moved permanently  
302 = Found  
    In some cases this can be same as moved temporarily.  
303 = See other  
304 = Not modified  
305 = Use proxy  
306 = Reserved  
307 = Temporary redirect  
308 = Permanent redirect  
400 = Bad request  
    Server could not understand request.  
401 = Unauthorized  
402 = Payment required  
403 = Forbidden  
    Operation is understood but refused.  
404 = Not Found  
405 = Method not allowed  
406 = Not acceptable  
407 = Proxy authentication required  
408 = Request timeout  
409 = Conflict  
410 = Gone  
411 = Length Required  
412 = Precondition failed  
413 = Request entity too large  
414 = Request-URI too long  
415 = Unsupported media type  
416 = Requested range not satisfiable  
417 = Expectation failed  
422 = Unprocessable entity  
423 = Locked  
424 = Failed dependency  
426 = Upgrade required  
428 = Precondition required  
429 = Too many requests  
431 = Request header fields too large  
500 = Internal server error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Gateway timeout  
505 = HTTP version not supported  
1120 = Connection dropped by remote host  
2002 = Failed  
2003 = Aborted  
2004 = Invalid argument  
2005 = Invalid handle  
2006 = File not found  
2007 = Timed out  
2008 = File too big  
2009 = Unexpected error  
2010 = Access denied  
2011 = Not implemented  
2100 = Connection closed  
2101 = Connection reset  
2102 = Connection refused  
2103 = Connection aborted  
2104 = Connection failed  
2105 = Name not resolved  
2106 = Internet disconnected  
2107 = SSL protocol error  
2108 = Invalid address  
2109 = Address unreachable  
2110 = SSL authentication certification needed  
2111 = Tunnel connection failed  
2112 = No SSL versions enabled  
2113 = SSL version or cipher mismatch

2114 = SSL renegotiation requested  
 2115 = Unsupported proxy authentication method  
 2116 = SSL renegotiation error  
 2117 = Bad or missing SSL client certificate  
 2118 = Connection timeout  
 2119 = Too many pending DNS resolves  
 2120 = Failed to connect SOCKS proxy  
 2121 = SOCKS proxy server failed to establish connection to the target host  
 2122 = The request to negotiate an alternate protocol failed  
 2123 = The peer sent an SSL no\_renegotiation alert message  
 2124 = Winsock reported unexpected written bytes  
 2125 = SSL decompression failure  
 2126 = SSL bad record MAC alert  
 2127 = The proxy requested authentication for tunnel establishment  
 2128 = A known TLS strict server didn't offer the renegotiation extension  
 2129 = The SSL server attempted to use a weak ephemeral Diffie-Hellman key  
 2130 = Could not connect to proxy server  
 2131 = Snap start NPN misprection  
 2132 = ESET anti-virus SSL interception  
 2133 = Preconnect socket limit reached  
 2134 = The permission to use the SSL client certificate's private key was denied  
 2135 = The SSL client certificate has no private key  
 2136 = The certificate presented by the HTTPS Proxy was invalid  
 2137 = An error occurred when trying to do a name resolution (DNS)  
 2138 = Permission to access the network was denied  
 2139 = The request throttler module cancelled this request to avoid DDOS  
 2140 = SSL tunnel connection through HTTPS proxy failed  
 2200 = SSL certification invalid common name  
 2201 = SSL certification invalid date  
 2202 = SSL certification invalid authority  
 2203 = SSL certification contains errors  
 2204 = SSL certification has no revocation mechanism  
 2205 = Unable to the revocation for SSL certification  
 2206 = SSL certification revoked  
 2207 = SSL certification is invalid  
 2208 = SSL certification end  
 2300 = Invalid URL  
 2301 = Disallowed URL scheme  
 2302 = Unknown URL scheme  
 2310 = Too many redirects  
 2311 = Unsafe redirect  
 2312 = Unsafe port  
 2320 = Invalid response  
 2321 = Invalid chunked encoding  
 2322 = Method not supported  
 2323 = Unexpected proxy authentication  
 2324 = Empty response  
 2325 = Response headers are too big  
 2400 = Cache miss  
 2501 = Insecure response

#### Parameters for Dropbox protocol error [\[Top\]](#)

Name	Type	Description
Dropbox cause	Integer	Dropbox cause 4 = Invalid remote file 5 = Invalid local file 421 = Service not available 425 = Cannot open connection

#### Parameters for Speedtest [\[Top\]](#)

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Name	Type	Description
Reserved	Integer	Reserved

#### Parameters for mScore protocol error [|Top|](#)

Name	Type	Description
mScore error code	Integer	mScore error code 1 = Timeout 2 = Invalid remote address 401 = Unauthorized 404 = Not found 503 = Service unavailable 509 = Bandwidth limit exceeded 2107 = SSL protocol error 20001 = Connection lost during download 20002 = Connection lost during upload 20003 = mScore result receiving failed

#### Parameters for Netflix protocol error [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved Currently this is always n/a.

#### Parameters for WhatsApp protocol error [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved Currently this is always n/a.

#### Parameters for ICMP ping [|Top|](#)

Name	Type	Description
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#### Parameters for all protocols [|Top|](#)

Name	Type	Description
Service access time	Integer	Data transfer IP service access time Time from DREQ to moment when socket connection has been established with FTP, GET/POST/PUT send with HTTP and browsing, RETR send with POP3, and MAIL FROM send with SMTP. This is the same as the ETSI stop trigger point (method B with FTP and HTTP). See more ETSI TS 102.250-2. Minimum value: 0 Unit: ms
IP term. time	Integer	Data transfer IP termination time Time from last received data packet or ACK of the last transmitted data packet to the DCOMP. Minimum value: 0 Unit: ms
Bytes UL	Integer	Transferred bytes uplink This is a cumulative byte count from the beginning of the transfer. Minimum value: 0 Unit: byte
Bytes DL	Integer	Transferred bytes downlink This is a cumulative byte count from the beginning of the transfer. Minimum value: 0 Unit: byte
Header transfer time	Integer	Header transfer time Currently this parameter is only logged for POP3 and IMAP protocols.

		Minimum value: 0 Unit: ms
TCP handshake time	Integer	TCP handshake time Time from transmitted SYN to the time when ACK has been received for it. Always one roundtrip. Minimum value: 0 Unit: ms
Redirect address	String	Redirect address This is the address where the transfer was redirected.
Payload access time	Integer	Data transfer IP payload access time Time from DREQ to moment when the first payload data is send (upload) or received (download). For FTP and HTTP this is the same as ETSI stop method A trigger point. See more ETSI TS 102.250-2. Minimum value: 0 Unit: ms
Processing delay	Integer	Data transfer IP processing delay Time from DREQ to the first socket opening SYN. Minimum value: 0 Unit: ms
Connection processing delay	Integer	Data connection processing delay Time from DAA to the first socket opening SYN. With FTP this refers to control socket. Minimum value: 0 Unit: ms

## Data throughput (DRATE)

<b>Event ID</b>	DRATE
<b>Cellular systems</b>	All
<b>Record state</b>	Data transfer state
<b>Description</b>	Recorded semi-periodically when application layer data is transferred to or received from the server. Minimum time period between two measurement events is one second; the maximum is ten seconds (zero values are recorded when data has not been transferred at a point in time).
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous

Parameters | Parameters for application protocols |

### Parameters [\[Top\]](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3 7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube.

		10 = WAP 2.0 11 = HTTP browsing 13 = IPerf over TCP 14 = IPerf over UDP 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox 24 = Speedtest 25 = mScore 26 = Netflix 27 = WhatsApp
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#### Parameters for application protocols [|Top|](#)

Name	Type	Description
App. rate UL	Integer	Application throughput uplink The value of this parameter is calculated based on the SDUs that are successfully transferred through the application layer. Missing and erroneous application layer data is excluded from the throughput calculation. Note that with TCP/IP-based application protocols, the TCP/IP headers are not taken into account when calculating the throughput. Minimum value: 0 Unit: bit/s
App. rate DL	Integer	Application throughput downlink The value of this parameter is calculated based on the SDUs that are successfully transferred through the application layer. Missing and erroneous application layer data is excluded from the throughput calculation. Note that with TCP/IP-based application protocols, the TCP/IP headers are not taken into account when calculating the throughput. Minimum value: 0 Unit: bit/s
Bytes UL	Integer	Transferred bytes uplink This is a cumulative byte count from the beginning of the transfer. Minimum value: 0 Unit: byte
Bytes DL	Integer	Transferred bytes downlink This is a cumulative byte count from the beginning of the transfer. Minimum value: 0 Unit: byte

## Packet error rate (PER)

Event ID	PER
Cellular systems	All
Record state	Data transfer state
Description	Recorded semi-periodically when application layer data is transferred to or received from the server. The measurement event is written simultaneously with the DRATE measurement event for the documented UDP-based protocols.



<b>Tools</b>	Nemo Outdoor, Nemo Handy
<b>Parameters</b>	Parameters for streaming and IPerf over UDP protocols

#### Parameters [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Application protocol	Integer	Application protocol 9 = Streaming Currently this can be either VLC or Youtube. 14 = IPerf over UDP

#### Parameters for streaming and IPerf over UDP protocols [|Top|](#)

Name	Type	Description
PER UL	Float	Packet error rate uplink The ratio of erroneously transferred packets to total number of transferred packets. Range: 0 – 100 Unit: %
PER DL	Float	Packet error rate downlink The ratio of erroneously received packets to total number of received packets. Range: 0 – 100 Unit: %
Packets UL	Integer	Transferred packets uplink
Packets DL	Integer	Transferred packets downlink
Errors UL	Integer	Erroneous packets uplink
Errors DL	Integer	Erroneous packets downlink

## Round trip time (RTT)

<b>Event ID</b>	RTT
<b>Cellular systems</b>	All
<b>Record state</b>	Data transfer state
<b>Description</b>	Recorded for each ICMP ping packet separately.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

<b>Parameters</b>	Parameters for ICMP ping and Speedtest
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#### Parameters [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Application protocol	Integer	Application protocol 12 = ICMP ping 24 = Speedtest

#### Parameters for ICMP ping and Speedtest [|Top|](#)

Name	Type	Description

Ping size	Integer	Ping packet size Ping packet size is the size of the ping packet. The value also determines the size of the reply packet. Minimum value: 0 Unit: byte
Ping RTT	Integer	Ping round trip time Minimum value: 0 Unit: ms

## Jitter (JITTER)

Event ID	JITTER
Cellular systems	All
Record state	Data transfer state
Description	Recorded semi-periodically when application layer data is transferred to or received from the server. The measurement event is written simultaneously with the DRATE measurement.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for IPerf over UDP |

### Parameters [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Application protocol	Integer	Application protocol 14 = IPerf over UDP

### Parameters for IPerf over UDP [|Top|](#)

Name	Type	Description
Jitter UL	Integer	Packet jitter uplink Minimum value: 0 Unit: ms
Jitter DL	Integer	Packet jitter downlink Minimum value: 0 Unit: ms

## Data stream status (DSS)

Event ID	DSS
Cellular systems	All
Record state	Data transfer state
Description	Recorded when the data stream state changes.

<b>Tools</b>	Nemo Outdoor, Nemo Handy
<b>Parameters</b>	Parameters for streaming, Youtube PEVQ-S, and Netflix.

#### Parameters [|Top|](#)

Name	Type	Description
Application protocol	Integer	Application protocol 9 = Streaming Currently this can be either VLC or Youtube. 22 = Youtube PEVQ-S 26 = Netflix

#### Parameters for streaming, Youtube PEVQ-S, and Netflix. [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Stream state	Integer	Data transfer stream state 0 = Uninitialized 1 = Stopped 2 = Buffering 3 = Streaming
Stream bandwidth	Integer	Data transfer stream bandwidth Non-measured stream throughput that have to be used to be able to receive data stream without breaks. Minimum value: 0 Unit: bit/s
Stream resolution	String	Data transfer stream resolution The string format is XxY, e.g. 1920x1080.
Stream duration	Integer	Data transfer stream total duration Minimum value: 0 Unit: ms
Stream position	Integer	Data transfer stream playback position Minimum value: 0 Unit: ms
Stream content type	String	Data transfer stream content type
Stream video codec	String	Data transfer stream video codec
Stream audio codec	String	Data transfer stream audio codec
File size	Integer	File size Amount of data to be transferred. Minimum value: 0 Unit: byte

## Data content (DCONTENT)

<b>Event ID</b>	DCONTENT
<b>Cellular systems</b>	All
<b>Record state</b>	Data transfer state
<b>Description</b>	Recorded after data transfer has been completed and WAP/HTML content has been parsed.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

<b>Parameters</b>	Parameters for WAP 1.0 and 2.0	Parameters for HTTP browsing, Facebook, Twitter, Instagram, and LinkedIn
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**Parameters** [|Top](#)

Name	Type	Description
Application protocol	Integer	Application protocol 8 = WAP 1.0 10 = WAP 2.0 11 = HTTP browsing 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn

**Parameters for WAP 1.0 and 2.0** [|Top](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Number of content elements	Integer	Number of content elements
Number of parameters per content	Integer	Number of parameters per content
Content	String	Content For text this is the content itself and for the other content types the URL to the resource.
Type	Integer	Content type 1 = File 2 = Image 3 = Link 4 = Text
Size	Integer	Content size Minimum value: 0 Unit: byte
Encoding	String	Content encoding

**Parameters for HTTP browsing, Facebook, Twitter, Instagram, and LinkedIn** [|Top](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Number of content elements	Integer	Number of content elements
Number of parameters per content	Integer	Number of parameters per content
Content	String	Content For text this is the content itself and for the other content types the URL to the resource.
Type	Integer	Content type 1 = File 2 = Image 3 = Link 4 = Text
Size	Integer	Content size Minimum value: 0 Unit: byte
Encoding	String	Content encoding
Download duration	Integer	Content download duration Minimum value: 0

		Unit: ms
Start time	String	Content download start time
Reply	Integer	<p>Content reply status code</p> <p>100 = Continue</p> <p>101 = Switching protocols</p> <p>102 = Processing</p> <p>200 = OK, success</p> <p>201 = Created</p> <p>202 = Accepted</p> <p>203 = Non-authoritative information</p> <p>204 = No content</p> <p>205 = Reset content</p> <p>206 = Partial content</p> <p>208 = Already reported</p> <p>300 = Multiple choices</p> <p>301 = Moved permanently</p> <p>302 = Found</p> <p>    In some cases this can be same as moved temporarily.</p> <p>303 = See other</p> <p>304 = Not modified</p> <p>305 = Use proxy</p> <p>306 = Reserved</p> <p>307 = Temporary redirect</p> <p>308 = Permanent redirect</p> <p>400 = Bad request</p> <p>    Server could not understand request.</p> <p>401 = Unauthorized</p> <p>402 = Payment required</p> <p>403 = Forbidden</p> <p>    Operation is understood but refused.</p> <p>404 = Not Found</p> <p>405 = Method not allowed</p> <p>406 = Not acceptable</p> <p>407 = Proxy authentication required</p> <p>408 = Request timeout</p> <p>409 = Conflict</p> <p>410 = Gone</p> <p>411 = Length Required</p> <p>412 = Precondition failed</p> <p>413 = Request entity too large</p> <p>414 = Request-URI too long</p> <p>415 = Unsupported media type</p> <p>416 = Requested range not satisfiable</p> <p>417 = Expectation failed</p> <p>422 = Unprocessable entity</p> <p>423 = Locked</p> <p>424 = Failed dependency</p> <p>426 = Upgrade required</p> <p>428 = Precondition required</p> <p>429 = Too many requests</p> <p>431 = Request header fields too large</p> <p>500 = Internal server error</p> <p>501 = Not implemented</p> <p>502 = Bad gateway</p> <p>503 = Service unavailable</p> <p>504 = Gateway timeout</p> <p>505 = HTTP version not supported</p> <p>1120 = Connection dropped by remote host</p>
Content-Type	String	<p>Content HTTP Content-Type</p> <p>This is the same as MIME type. The parameter gets values such as text/html, video/3gpp, or image/jpeg.</p>

## Data content (DSUMMARY)

Event ID	DSUMMARY
Cellular systems	All
Record state	Data transfer state
Description	Recorded after data transfer to summarize transfer result.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for mScore |

### Parameters |Top|

Name	Type	Description
Application protocol	Integer	Application protocol 25 = mScore

### Parameters for mScore |Top|

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
TCP bytes	Integer	TCP bytes Minimum value: 0 Unit: byte
TCP throughput	Integer	TCP throughput Minimum value: 0 Unit: bit/s
TCP segments	Integer	TCP segments
TCP ACKs	Integer	TCP ACKs
TCP UL retr.	Integer	TCP uplink retransmission rate Minimum value: 0
TCP OoOs	Integer	TCP out-of-order packets Out Of Order is a packet that arrives in the middle of data sequence. Minimum value: 0
TCP out of delay	Integer	TCP out of delay
GeoIP ASN	String	GeoIP ASN This information is received from the MaxMind GeoIP database.
GeoIP country	String	GeoIP country
GeoIP city	String	GeoIP city
Jitter DL	Integer	Jitter DL Minimum value: 0 Unit: ms
Jitter DL min	Integer	Jitter DL min Minimum value: 0 Unit: ms
Jitter DL max	Integer	Jitter DL max Minimum value: 0 Unit: ms
Jitter underrun	Float	Jitter underrun Range: 0 – 100 Unit: %
Jitter overflow	Float	Jitter overflow Range: 0 – 100 Unit: %
Ping RTT	Integer	Ping RTT Minimum value: 0 Unit: ms
Ping RTT min	Integer	Ping RTT min

		Minimum value: 0 Unit: ms
Ping RTT max	Integer	Ping RTT max Minimum value: 0 Unit: ms
Achievable throughput	Integer	Achievable throughput Achievable throughput is computed as the median value of 100ms throughput samples where TCP is congested (when RTT is greater than target RTT, achievable throughput can be estimated only if congestion percent is more than 10%).
TCP throughput 10pctl	Integer	TCP throughput 10pctl The 10th percentile of 100ms throughput samples is the value for which 10% of the data points are smaller. Minimum value: 0 Unit: bit/s
TCP throughput 50pctl	Integer	TCP throughput 50pctl The 50th percentile of 100ms throughput samples is the value for which 50% of the data points are smaller. Minimum value: 0 Unit: bit/s
TCP throughput 90pctl	Integer	TCP throughput 90pctl The 90th percentile of 100ms throughput samples is the value for which 90% of the data points are smaller. Minimum value: 0 Unit: bit/s
TCP RTT 10pctl	Integer	TCP RTT 10pctl The 10th percentile of 100ms RTT samples is the value for which 10% of the data points are smaller. Minimum value: 0 Unit: ms
TCP RTT 50pctl	Integer	TCP RTT 50pctl The 50th percentile of 100ms RTT samples is the value for which 50% of the data points are smaller. Minimum value: 0 Unit: ms
TCP RTT 90pctl	Integer	TCP RTT 90pctl The 90th percentile of 100ms RTT samples is the value for which 90% of the data points are smaller. Minimum value: 0 Unit: ms
TCP RWIN 10pctl	Integer	TCP RWIN 10pctl The 10th percentile of 100ms receive window size samples is the value for which 10% of the data points are smaller. Minimum value: 0 Unit: byte
TCP RWIN 50pctl	Integer	TCP RWIN 50pctl The 50th percentile of 100ms receive window size samples is the value for which 50% of the data points are smaller. Minimum value: 0 Unit: byte
TCP RWIN 90pctl	Integer	TCP RWIN 90pctl The 90th percentile of 100ms receive window size samples is the value for which 90% of the data points are smaller. Minimum value: 0 Unit: byte
TCP BIF 10pctl	Integer	TCP BIF 10pctl The 10th percentile of 100ms bytes in flight samples is the value for which 10% of the data points are smaller. Minimum value: 0 Unit: byte
TCP BIF 50pctl	Integer	TCP BIF 50pctl The 50th percentile of 100ms bytes in flight samples is the value for which 50% of the data points are smaller. Minimum value: 0 Unit: byte

TCP BIF 90pctl	Integer	TCP BIF 90pctl The 90th percentile of 100ms bytes in flight samples is the value for which 90% of the data points are smaller. Minimum value: 0 Unit: byte
TCP inter-act 10pctl	Integer	TCP inter-act 10pctl The 10th percentile of 100ms inter-act delay samples is the value for which 10% of the data points are smaller. Minimum value: 0 Unit: ms
TCP inter-act 50pctl	Integer	TCP inter-act 50pctl The 50th percentile of 100ms inter-act delay samples is the value for which 50% of the data points are smaller. Minimum value: 0 Unit: ms
TCP inter-act 90pctl	Integer	TCP inter-act 90pctl The 90th percentile of 100ms inter-act delay samples is the value for which 90% of the data points are smaller. Minimum value: 0 Unit: ms
mScore MOS	Float	mScore MOS Range: 0 – 5 Unit: MOS
Lim. RWIN	Float	Throughput limited by RWIN Range: 0 – 100 Unit: %
Lim. congestion	Float	Throughput limited by congestion Range: 0 – 100 Unit: %
Lim. stall	Float	Throughput limited by stall Range: 0 – 100 Unit: %
Lim. retransmission	Float	Throughput limited by retransmission Range: 0 – 100 Unit: %
Lim. CWIN	Float	Throughput limited by congestion window Range: 0 – 100 Unit: %
Root cause analysis subcause	Integer	Root cause analysis subcause 100 = Device 200 = Congestion 300 = Core/backhaul 400 = WiFi 500 = Server 900 = Multiple reasons

## Trace route (DTRACE)

<b>Event ID</b>	DTRACE
<b>Cellular systems</b>	All
<b>Record state</b>	Data transfer state
<b>Description</b>	One measurement event is recorded for each trace route host.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for trace route |



**Parameters** |Top|

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
Application protocol	Integer	Application protocol 15 = Trace route

**Parameters for trace route** |Top|

Name	Type	Description
Host	String	Destination address
Trace hop count	Integer	Trace hop count
Ping RTT	Integer	Ping round trip time Minimum value: 0 Unit: ms

## DNS query (DNSQUERY)

<b>Event ID</b>	DNSQUERY
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded after DNS query.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

**Parameters** |Top|

Name	Type	Description
Data connection context ID	Context	Data connection context ID
DNS query address	String	DNS query address This is the domain name in human friendly format and this is translated to the IP address using DNS.
DNS query latency	Integer	DNS host name resolution time See 3GPP TS 102.25 subclause 5.11. Minimum value: 0 Unit: ms
DNS query result	Integer	DNS query result 0 = Success 1460 = Timeout 9001 = DNS server unable to interpret format. 9002 = DNS server failure. 9003 = DNS name does not exist. 9004 = DNS request not supported by name server. 9005 = DNS operation refused. 9006 = DNS name that ought not exist, does exist. 9007 = DNS RR set that ought not exist, does exist. 9008 = DNS RR set that ought to exist, does not exist. 9009 = DNS server not authoritative for zone. 9010 = DNS name in update or prereq is not in zone. 9016 = DNS signature failed to verify. 9017 = DNS bad key.

9018 = DNS signature validity expired.  
9501 = No records found for given DNS query.  
9502 = Bad DNS packet.  
9503 = No DNS packet.  
9504 = DNS error, check rcode.  
9505 = Unsecured DNS packet.  
9551 = Invalid DNS type.  
9552 = Invalid IP address.  
9553 = Invalid property.  
9554 = Try DNS operation again later.  
9555 = Record for given name and type is not unique.  
9556 = DNS name does not comply with RFC specifications.  
9557 = DNS name is a fully-qualified DNS name.  
9558 = DNS name is dotted (multi-label).  
9559 = DNS name is a single-part name.  
9560 = DNS name contains an invalid character.  
9561 = DNS name is entirely numeric.  
9562 = The operation requested is not permitted on a DNS root server.  
9563 = The record could not be created because this part of the DNS namespace has been delegated to another server.  
9564 = The DNS server could not find a set of root hints.  
9565 = The DNS server found root hints but they were not consistent across all adapters.  
9566 = The specified value is too small for this parameter.  
9567 = The specified value is too large for this parameter.  
9568 = This operation is not allowed while the DNS server is loading zones in the background. Please try again later.  
9569 = The operation requested is not permitted on against a DNS server running on a read-only DC.  
9570 = No data is allowed to exist underneath a DNAME record.  
9571 = This operation requires credentials delegation.  
9601 = DNS zone does not exist.  
9602 = DNS zone information not available.  
9603 = Invalid operation for DNS zone.  
9604 = Invalid DNS zone configuration.  
9605 = DNS zone has no start of authority (SOA) record.  
9606 = DNS zone has no Name Server (NS) record.  
9607 = DNS zone is locked.  
9608 = DNS zone creation failed.  
9609 = DNS zone already exists.  
9610 = DNS automatic zone already exists.  
9611 = Invalid DNS zone type.  
9612 = Secondary DNS zone requires master IP address.  
9613 = DNS zone not secondary.  
9614 = Need secondary IP address.  
9615 = WINS initialization failed.  
9616 = Need WINS servers.  
9617 = NBTSTAT initialization call failed.  
9618 = Invalid delete of start of authority (SOA)  
9619 = A conditional forwarding zone already exists for that name.  
9620 = This zone must be configured with one or more master DNS server IP addresses.  
9621 = The operation cannot be performed because this zone is shutdown.  
9651 = Primary DNS zone requires datafile.  
9652 = Invalid datafile name for DNS zone.  
9653 = Failed to open datafile for DNS zone.  
9654 = Failed to write datafile for DNS zone.  
9655 = Failure while reading datafile for DNS zone.  
9701 = DNS record does not exist.  
9702 = DNS record format error.  
9703 = Node creation failure in DNS.  
9704 = Unknown DNS record type.  
9705 = DNS record timed out.  
9706 = Name not in DNS zone.  
9707 = CNAME loop detected.  
9708 = Node is a CNAME DNS record.  
9709 = A CNAME record already exists for given name.  
9710 = Record only at DNS zone root.  
9711 = DNS record already exists.  
9712 = Secondary DNS zone data error.  
9713 = Could not create DNS cache data.

9714 = DNS name does not exist.  
9715 = Could not create pointer (PTR) record.  
9716 = DNS domain was undeleted.  
9717 = The directory service is unavailable.  
9718 = DNS zone already exists in the directory service.  
9719 = DNS server not creating or reading the boot file for the directory service integrated DNS zone.  
9720 = Node is a DNAME DNS record.  
9721 = A DNAME record already exists for given name.  
9722 = An alias loop has been detected with either CNAME or DNAME records.  
9751 = DNS AXFR (zone transfer) complete.  
9752 = DNS zone transfer failed.  
9753 = Added local WINS server.  
9801 = Secure update call needs to continue update request.  
9851 = TCP/IP network protocol not installed.  
9852 = No DNS servers configured for local system.  
9901 = The specified directory partition does not exist.  
9902 = The specified directory partition already exists.  
9903 = This DNS server is not enlisted in the specified directory partition.  
9904 = This DNS server is already enlisted in the specified directory partition.  
9905 = The directory partition is not available at this time. Please wait a few minutes and try again.  
9906 = The application directory partition operation failed.  
10004 = A blocking operation was interrupted by a call to WSACancelBlockingCall.  
10009 = The file handle supplied is not valid.  
10013 = An attempt was made to access a socket in a way forbidden by its access permissions.  
10014 = The system detected an invalid pointer address in attempting to use a pointer argument in a call.  
10022 = An invalid argument was supplied.  
10024 = Too many open sockets.  
10035 = A non-blocking socket operation could not be completed immediately.  
10036 = A blocking operation is currently executing.  
10037 = An operation was attempted on a non-blocking socket that already had an operation in progress.  
10038 = An operation was attempted on something that is not a socket.  
10039 = A required address was omitted from an operation on a socket.  
10040 = A message sent on a datagram socket was larger than the internal message buffer or some other network limit, or the buffer used to receive a datagram into was smaller than the datagram itself.  
10041 = A protocol was specified in the socket function call that does not support the semantics of the socket type requested.  
10042 = An unknown, invalid, or unsupported option or level was specified in a getsockopt or setsockopt call.  
10043 = The requested protocol has not been configured into the system, or no implementation for it exists.  
10044 = The support for the specified socket type does not exist in this address family.  
10045 = The attempted operation is not supported for the type of object referenced.  
10046 = The protocol family has not been configured into the system or no implementation for it exists.  
10047 = An address incompatible with the requested protocol was used.  
10048 = Only one usage of each socket address (protocol/network address/port) is normally permitted.  
10049 = The requested address is not valid in its context.  
10050 = A socket operation encountered a dead network.  
10051 = A socket operation was attempted to an unreachable network.  
10052 = The connection has been broken due to keep-alive activity detecting a failure while the operation was in progress.  
10053 = An established connection was aborted by the software in your host machine.  
10054 = An existing connection was forcibly closed by the remote host.  
10055 = An operation on a socket could not be performed because the system lacked sufficient buffer space or because a queue was full.

10056 = A connect request was made on an already connected socket.

10057 = A request to send or receive data was disallowed because the socket is not connected and (when sending on a datagram socket using a sendto call) no address was supplied.

10058 = A request to send or receive data was disallowed because the socket had already been shut down in that direction with a previous shutdown call.

10059 = Too many references to some kernel object.

10060 = A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.

10061 = No connection could be made because the target machine actively refused it.

10062 = Cannot translate name.

10063 = Name component or name was too long.

10064 = A socket operation failed because the destination host was down.

10065 = A socket operation was attempted to an unreachable host.

10066 = Cannot remove a directory that is not empty.

10067 = A Windows Sockets implementation may have a limit on the number of applications that may use it simultaneously.

10068 = Ran out of quota.

10069 = Ran out of disk quota.

10070 = File handle reference is no longer available.

10071 = Item is not available locally.

10091 = WSASStartup cannot function at this time because the underlying system it uses to provide network services is currently unavailable.

10092 = The Windows Sockets version requested is not supported.

10093 = Either the application has not called WSASStartup, or WSASStartup failed.

10101 = Returned by WSARecv or WSARecvFrom to indicate the remote party has initiated a graceful shutdown sequence.

10102 = No more results can be returned by WSALookupServiceNext.

10103 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.

10104 = The procedure call table is invalid.

10105 = The requested service provider is invalid.

10106 = The requested service provider could not be loaded or initialized.

10107 = A system call that should never fail has failed.

10108 = No such service is known. The service cannot be found in the specified name space.

10109 = The specified class was not found.

10110 = No more results can be returned by WSALookupServiceNext.

10111 = A call to WSALookupServiceEnd was made while this call was still processing. The call has been canceled.

10112 = A database query failed because it was actively refused.

11001 = No such host is known.

11002 = This is usually a temporary error during hostname resolution and means that the local server did not receive a response from an authoritative server.

11003 = A non-recoverable error occurred during a database lookup.

11004 = The requested name is valid and was found in the database, but it does not have the correct associated data being resolved for.

11005 = At least one reserve has arrived.

11006 = At least one path has arrived.

11007 = There are no senders.

11008 = There are no receivers.

11009 = Reserve has been confirmed.

11010 = Error due to lack of resources.

11011 = Rejected for administrative reasons - bad credentials.

11012 = Unknown or conflicting style.

11013 = Problem with some part of the filterspec or providerspecific buffer in general.

11014 = Problem with some part of the flowspec.

11015 = General QOS error.

11016 = An invalid or unrecognized service type was found in the flowspec.

11017 = An invalid or inconsistent flowspec was found in the QOS structure.

11018 = Invalid QOS provider-specific buffer.

		11019 = An invalid QOS filter style was used. 11020 = An invalid QOS filter type was used. 11021 = An incorrect number of QOS FILTERSPECS were specified in the FLOWDESCRIPTOR. 11022 = An object with an invalid ObjectLength field was specified in the QOS provider-specific buffer. 11023 = An incorrect number of flow descriptors was specified in the QOS structure. 11024 = An unrecognized object was found in the QOS provider-specific buffer. 11025 = An invalid policy object was found in the QOS provider-specific buffer. 11026 = An invalid QOS flow descriptor was found in the flow descriptor list. 11027 = An invalid or inconsistent flowspec was found in the QOS provider-specific buffer. 11028 = An invalid FILTERSPEC was found in the QOS provider-specific buffer. 11029 = An invalid shape discard mode object was found in the QOS provider-specific buffer. 11030 = An invalid shaping rate object was found in the QOS provider-specific buffer. 11031 = A reserved policy element was found in the QOS provider-specific buffer.
#Results	Integer	Number of resolved DNS results
#Params/result	Integer	Number of parameters per resolved DNS result
DNS address	String	DNS resolved address The DNS query result in the IP format. When multiple IP addresses is received for the domain name the first recorded IP address is used by the recording tool.
DNS cache	Integer	DNS query cache status Defines if IP address was received from the client side DNS cache or requested from the DNS server. 0 = Non-cached 1 = Cached

## TCP Statistics (TCPSTAT)

<b>Event ID</b>	TCPSTAT
<b>Cellular systems</b>	All
<b>Record state</b>	Data transfer state
<b>Description</b>	Recorded once a second.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for application protocols |

### Parameters [\[Top\]](#)

Name	Type	Description
Application protocol	Integer	Application protocol 0 = Nemo protocol using modem connection 1 = Nemo protocol using TCP 2 = Nemo protocol using UDP 3 = FTP 4 = HTTP 5 = SMTP 6 = POP3

		7 = MMS 8 = WAP 1.0 9 = Streaming Currently this can be either VLC or Youtube. 10 = WAP 2.0 11 = HTTP browsing 13 = IPerf over TCP 14 = IPerf over UDP 16 = SFTP 17 = IMAP 18 = Facebook 19 = Twitter 20 = Instagram 21 = LinkedIn 22 = Youtube PEVQ-S 23 = Dropbox
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#### Parameters for application protocols [\[Top\]](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
TCP RWIN	Integer	TCP receive window size See <a href="http://en.wikipedia.org/wiki/TCP_tuning">http://en.wikipedia.org/wiki/TCP_tuning</a> . Minimum value: 0 Unit: byte
TCP send window size	Integer	TCP send window size Minimum value: 0 Unit: byte
TCP RTP	Integer	TCP round-trip time TCP round-trip time is counted from the moment a data packet has been sent to a moment when a server has been responded with an ACK. This calculation is based on the packet timestamps, not the time the packet is sent and ACK is received at local time. SRTT (Smoothed Round-Trip Time) is an averaged estimation of the current RTT. The calculation formula is: $SRTT = (0.9 * \text{previous\_SRTT}) + (0.1 * \text{current\_RTT})$ . See <a href="http://tools.ietf.org/html/rfc6298">http://tools.ietf.org/html/rfc6298</a> . Minimum value: 0 Unit: ms
TCP UL BIF	Integer	TCP uplink bytes in flight This parameter shows how much data has been sent or received, but has not been confirmed by an ACK packet. If there is a problem with the network or multiple packets are lost or retransmitted, the value increases until it has been confirmed. The calculation of this parameters differs from the way Wireshark does it. In Wireshark, BIF can be quite high if an Out Of Order packet arrives to the data stream because Wireshark identifies BIF by sequence numbers. In Outdoor this is always calculated by inspecting the payload length of non-sent or non-received packets. Minimum value: 0 Unit: byte
TCP throughput downlink	Integer	TCP throughput downlink Minimum value: 0 Unit: bit/s
TCP throughput uplink	Integer	TCP throughput uplink Minimum value: 0 Unit: bit/s
TCP UL retr.	Integer	TCP uplink retransmission rate Minimum value: 0
TCP DUP ACKs	Integer	TCP duplicate ACKs Duplicate ACK is an ACK packet where all the sequence numbers are identical to the previous ACK. It is caused by a missing packet from the server side we try to get the server to send again. Minimum value: 0

TCP OoOs	Integer	TCP out-of-order packets Out Of Order is a packet that arrives in the middle of data sequence. Minimum value: 0
TCP RSTs	Integer	TCP reset packets RST packets are an indication about TCP connection that is only half open and one side has stopped sending information for some reason and connection has to be closed. Often RST packet is a response to receiving a packet for a socket that is already closed. Minimum value: 0

## Cell measurement (CELLMEAS)

<b>Event ID</b>	CELLMEAS
<b>Cellular systems</b>	GSM,TETRA,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO,WLAN,GAN WLAN,WiMAX,AMPS,DAMPS,NAMPS,iDEN
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameter sample is received from the device. Note that not necessarily all received samples are recorded and currently the recording frequency is about twice per second in connected state. Separate measurement event is logged for each system.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | 
 [Parameters for GSM](#) | 
 [Parameters for TETRA](#) | 
 [Parameters for UMTS FDD](#) | 
 [Parameters for UMTS TD-SCDMA](#) | 
 [Parameters for LTE](#) | 
 [Parameters for cdmaOne and CDMA 1x](#) | 
 [Parameters for EVDO](#) | 
 [Parameters for WLAN](#) | 
 [Parameters for GAN WLAN](#) | 
 [Parameters for WiMAX](#) | 
 [Parameters for AMPS and NAMPS](#) | 
 [Parameters for DAMPS](#) | 
 [Parameters for iDEN](#) |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 20 = WLAN 21 = GAN WLAN 25 = WiMAX 51 = AMPS 52 = NAMPS 53 = DAMPS 55 = iDEN

### Parameters for GSM [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells

#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
ARFCN	Integer	Channel number During the active state this is the TCH channel number. If hopping is enabled the first hopping channel is reported.
BSIC	Integer	Base station identification code Range: 0 – 63
RxLev full	Float	RX level full The received signal level of all TDMA frames. See 3GPP TS 145.008 subclause 8.4. Range: –120 – –10 Unit: dBm
RxLev sub	Float	RX level sub The received signal level of the subset of the TDMA frames. See 3GPP TS 145.008 subclause 8.4. Range: –120 – –10 Unit: dBm
C1	Float	C1 criterion Path loss criterion parameter C1 is used for cell selection and reselection. See 3GPP TS 145.008 subclause 6.4 (with GPRS, also subclause 10.1.2). Unit: dB
C2	Float	C2 criterion The reselection criterion C2 is used for cell reselection. This parameter is used for cell reselection when the value of the path loss criterion C1 is over zero. See 3GPP TS 145.008 subclause 6.4. Unit: dB
C31	Float	C31 criterion The signal level threshold criterion parameter C31 is used to determine whether prioritized hierarchical GPRS and LSA cell re-selection shall apply. See 3GPP TS 145.008 subclause 10.1.2.
C32	Float	C32 criterion The cell ranking criterion C32 is used in selecting cells from cells that have the same priority. See 3GPP TS 145.008 subclause 10.1.2.
HCS priority	Integer	HCS priority class Defines the cell re-selection order of the cells. See 3GPP TS 145.008 subclause 10.1.3. Range: 0 – 7
HCS thr.	Float	HCS threshold See 3GPP TS 145.008 subclause 10.1.2. Range: –48 – –110 Unit: dBm
Cell ID	Integer	Cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 65535
LAC	Integer	Location area code Range: 0 – 65535
RAC	Integer	Routing area code
Srxlev	Float	Neighbor Srxlev criterion Cell selection criterion S based on RX level. This value is only available during the UMTS mode. See 3GPP TS 25.304 subclause 5.2.3 cell selection process.



		Range: -107 – 90 Unit: dBm
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#### Parameters for TETRA [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	Band 20001 = TETRA band 1 20002 = TETRA band 2 20003 = TETRA band 3 20004 = TETRA band 4 20005 = TETRA band 5 20006 = TETRA band 6 20007 = TETRA band 7 20008 = TETRA band 8 20009 = TETRA band 9 20010 = TETRA band 10 20011 = TETRA band 11 20012 = TETRA band 12 20013 = TETRA band 13 20014 = TETRA band 14 20015 = TETRA band 15 29999 = TETRA
ARFCN	Integer	Channel number
LAC	Integer	Location area code Range: 0 – 65535
RSSI	Float	RSSI Range: -111 – -10 Unit: dBm
C1	Float	C1 criterion Path loss criterion parameter C1 is used for cell selection and reselection. See 3GPP TS 145.008 subclause 6.4 (with GPRS, also subclause 10.1.2). Unit: dB
C2	Float	C2 criterion The reselection criterion C2 is used for cell reselection. This parameter is used for cell reselection when the value of the path loss criterion C1 is over zero. See 3GPP TS 145.008 subclause 6.4. Unit: dB
CC	Integer	Color code Range: 0 – 63

#### Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number
RSSI	Float	Carrier RSSI Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm
Band	Integer	Band

		50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Active The Node-B the UE is connected to (i.e., the UTRA cells currently assigning a downlink DPCH to the UE constitute the active set). 1 = Monitored The Node-B that is included in the neighbor list but not in the active set. 2 = Detected The Node-B that is detected by the UE but is not included in the neighbor list. Reporting of the measurements of the detected set is only applicable to intra-frequency measurements made by UEs in CELL_DCH state. 3 = Undetected
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
Ch	Integer	Channel number
SC	Integer	Scrambling code Range: 0 – 511
Ec/N0	Float	Ec/N0 The received energy per chip divided by the power density of the band measured on the primary CPICH. See 3GPP TS 125.215 subclause 5.1.5.

		Range: -30 – 0 Unit: dB
STTD	Integer	STTD status 0 = STTD not active on PCCPCH 1 = STTD active on PCCPCH
RSCP	Float	RSCP The received signal code power of a single code measured on the primary CPICH. See 3GPP TS 125.215 subclause 5.1.1. Range: -150 – -20 Unit: dBm
Secondary SC	Integer	Secondary scrambling code Range: 0 – 15
Squal	Float	Squal criterion Cell selection criterion S based on $E_c/N_0$ . Valid only for UMTS FDD cells. See 3GPP TS 25.304 subclause 5.2.3 cell selection process. Range: -24 – 24
Srxlev	Float	Srxlev criterion Cell selection criterion S based on RSCP. See 3GPP TS 25.304 subclause 5.2.3 cell selection process. Range: -107 – 90
Hqual	Float	Hqual criterion Hierarchical cell criterion H based on $E_c/N_0$ . Valid only for UMTS FDD cells. See 3GPP TS 25.304 subclause 5.2.6 cell reselection evaluation process. Range: -32 – 24
Hrxlev	Float	Hrxlev criterion Hierarchical cell criterion H based on RSCP. See 3GPP TS 25.304 subclause 5.2.6 cell reselection evaluation process. Range: -115 – 90
Rqual	Float	Rqual criterion Cell ranking criterion R based on $E_c/N_0$ . Valid only for UMTS FDD cells. See 3GPP TS 25.304 subclause 5.2.6 cell reselection evaluation process. Range: -200 – 50
Rrxlev	Float	Rrxlev criterion Cell ranking criterion R based on RSCP. See 3GPP TS 25.304 subclause 5.2.6 cell reselection evaluation process. Range: -191 – 25
OFF	Integer	SFN-CFN difference frames Range: 0 – 255 Unit: frame
Tm	Float	SFN-CFN difference chips Range: 0 – 38400 Unit: chip
Pathloss	Float	Pathloss The reduction of the power density from the base station to the mobile station. Range: 40 – 170 Unit: dB

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e

		60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
Ch	Integer	Channel number
RSSI	Float	Carrier RSSI Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
Ch	Integer	Channel number
Cell params ID	Integer	Cell parameters ID Range: 0 – 127
RSCP	Float	PCCPCH RSCP The received signal code power of a single code measured on PCCPCH. See 3GPP TS 5.1.2 subclause 5.1.2. Range: –116 – –20 Unit: dBm
Srxlev	Float	Srxlev criterion Cell selection criterion S based on RSCP. See 3GPP TS 25.304 subclause 5.2.3 cell selection process. Range: –107 – 90
Hrxlev	Float	Hrxlev criterion Hierarchical cell criterion H based on RSCP. See 3GPP TS 25.304 subclause 5.2.6 cell reselection evaluation process. Range: –115 – 90
Rrxlev	Float	Rrxlev criterion Cell ranking criterion R based on RSCP. See 3GPP TS 25.304 subclause 5.2.6 cell reselection evaluation process. Range: –191 – 25
Pathloss	Float	Pathloss Range: 46 – 148 Unit: dB

#### Parameters for LTE [Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Serving 1 = Listed 2 = Detected 10 = SCell 1 11 = SCell 2 12 = SCell 3 13 = SCell 4
Band	Integer	Band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2

70003 = LTE FDD 1800 band 3  
 70004 = LTE FDD 2100 AWS band 4  
 70005 = LTE FDD 850 band 5  
 Band 850 is also known as band 800.  
 70006 = LTE FDD 850 band 6  
 70007 = LTE FDD 2600 band 7  
 70008 = LTE FDD 900 band 8  
 70009 = LTE FDD 1800 band 9  
 70010 = LTE FDD 2100 band 10  
 70011 = LTE FDD 1400 band 11  
 70012 = LTE FDD 700 band 12  
 70013 = LTE FDD 700 band 13  
 70014 = LTE FDD 700 band 14  
 70017 = LTE FDD 700 band 17  
 70018 = LTE FDD 850 band 18  
 70019 = LTE FDD 850 band 19  
 70020 = LTE FDD 800 band 20  
 70021 = LTE FDD 1500 band 21  
 70022 = LTE FDD 3500 band 22  
 70023 = LTE FDD 2200 band 23  
 70024 = LTE FDD 1500 band 24  
 70025 = LTE FDD 1900 band 25  
 70026 = LTE FDD 850 band 26  
 70027 = LTE FDD 800 band 27  
 70028 = LTE FDD 700 band 28  
 70029 = LTE FDD 700 band 29  
 This is downlink only band.  
 70030 = LTE FDD 2350 band 30  
 70031 = LTE FDD 450 band 31  
 70032 = LTE FDD 1500 L-band  
 This is downlink only band.  
 70064 = LTE FDD 390-470 band 64  
 This is a non-standard LTE FDD band.  
 70065 = LTE FDD 2100 band 65  
 70066 = LTE FDD AWS-3 2100 band 66  
 70067 = LTE FDD 700 EU band 67  
 This is downlink only band.  
 70068 = LTE FDD 700 ME band 68  
 70069 = LTE FDD 2500 band 69  
 This is downlink only band.  
 70070 = LTE FDD AWS-4 band 70  
 70071 = LTE FDD 600 band 71  
 70252 = LTE FDD 5200 NII-1 band 252  
 70255 = LTE FDD 5700 NII-3 band 255  
 79999 = LTE FDD  
 80033 = LTE TDD 1900-1920 band 33  
 80034 = LTE TDD 2010-2025 band 34  
 80035 = LTE TDD 1850-1910 band 35  
 80036 = LTE TDD 1930-1990 band 36  
 80037 = LTE TDD 1910-1930 band 37  
 80038 = LTE TDD 2570-2620 band 38  
 80039 = LTE TDD 1880-1920 band 39  
 80040 = LTE TDD 2300-2400 band 40  
 80041 = LTE TDD 2496-2690 band 41  
 80042 = LTE TDD 3400-3600 band 42  
 80043 = LTE TDD 3600-3800 band 43  
 80044 = LTE TDD 703-803 band 44  
 80045 = LTE TDD 1447-1467 band 45  
 80046 = LTE TDD 5154-5925 band 46  
 80047 = LTE TDD 5855-5925 band 47  
 80048 = LTE TDD 3550-3700 band 48  
 80061 = LTE TDD 1447-1467 band 61  
 This is a non-standard LTE TDD band.  
 80062 = LTE TDD 1785-1805 band 62  
 This is a non-standard LTE TDD band.  
 80087 = LTE TDD 1447-1467 band 87  
 This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
 This is a non-standard LTE TDD band.  
 89999 = LTE TDD

Ch	Integer	Channel number
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PCI	Integer	Physical cell identity Range: 0 – 503
RSSI	Float	E-UTRAN carrier RSSI Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm
RSRP	Float	RSRP Reference signal received power is the linear average of the power contributions of the resource elements that carry cell-specific reference signals within the considered measurement frequency. This is the same as NRSRP with NB-IoT. 3GPP TS 36.214 subclause 5.1.1. Range: –160 – 0 Unit: dBm
RSRQ	Float	RSRQ Reference signal received quality is the ratio $N * RSRP / E-UTRA$ carrier RSSI, where N is the number of resource blocks of the E-UTRA carrier RSSI measurement bandwidth. The measurements in the numerator and denominator are made over the same set of resource blocks. This is the same as NRSRQ with NB-IoT. 3GPP TS 36.214 subclause 5.1.3. Range: –35 – 0 Unit: dB
Timing	Integer	Cell frame timing The unit of this parameter is Ts and one Ts is 1/30720000 seconds. Range: 0 – 307199
Pathloss	Float	Pathloss The reduction of the power density from the base station to the mobile station. Range: 0 – 170 Unit: dB
Srxlev	Float	Srxlev Cell selection criterion S defines if the cell is suitable (greater than zero in normal coverage conditions) for cell selection. See 3GPP 136.304 subclause 5.2.3. Unit: dB

#### Parameters for cdmaOne and CDMA 1x [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Band	Integer	Band 100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band. 100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band. 100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 100007 = cdmaOne 700 band 7 North American cellular 700 MHz band. 100008 = cdmaOne 1800 band 8 1800 MHz band. 100009 = cdmaOne 900 band 9 900 MHz band. 100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band.

		100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band. 100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band. 100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension. 100014 = cdmaOne 1900 band 14 US PCS 1.9 GHz. 100015 = cdmaOne 2100 AWS band 15 100016 = cdmaOne 2500 band 16 US 2.5 GHz. 100018 = cdmaOne 700 public safety band 18 100019 = cdmaOne 700 lower band 19 100020 = cdmaOne 1500 L-band band 20 100021 = cdmaOne 2000 S-band band 21 109999 = cdmaOne 110000 = CDMA 1x 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 110001 = CDMA 1x 1900 band 1 North American PCS 1900 MHz band. 110002 = CDMA 1x 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 110003 = CDMA 1x 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 110004 = CDMA 1x 1800 Korean band 4 Korean PCS 1800 MHz band. 110005 = CDMA 1x 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 110006 = CDMA 1x 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 110007 = CDMA 1x 700 band 7 North American cellular 700 MHz band. 110008 = CDMA 1x 1800 band 8 1800 MHz band. 110009 = CDMA 1x 900 band 9 900 MHz band. 110010 = CDMA 1x 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 110011 = CDMA 1x 400 PAMR band 11 European PAMR 400 MHz band. 110012 = CDMA 1x 800 PAMR band 12 European PAMR 800 MHz band. 110013 = CDMA 1x 2500 band 13 2.5 GHz IMT-2000 extension. 110014 = CDMA 1x 1900 band 14 US PCS 1.9 GHz. 110015 = CDMA 1x 2100 AWS band 15 110016 = CDMA 1x 2500 band 16 US 2.5 GHz. 110018 = CDMA 1x 700 public safety band 18 110019 = CDMA 1x 700 lower band 19 110020 = CDMA 1x 1500 L-band band 20 110021 = CDMA 1x 2000 S-band band 21 119999 = CDMA 1x
Ch	Integer	Channel number
RX power	Float	RX power Range: -120 – 30 Unit: dBm
RX0 power	Float	RX power antenna 0 Range: -120 – 30 Unit: dBm
RX1 power	Float	RX power antenna 1 Range: -120 – 30 Unit: dBm
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Set	Integer	Set information

0 = Active  
 1 = Candidate  
 2 = Neighbor  
 3 = Remainder

Band

Integer

Band

100000 = cdmaOne 800 band 0  
 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.  
 100001 = cdmaOne 1900 band 1  
 North American PCS 1900 MHz band.  
 100002 = cdmaOne 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 100003 = cdmaOne 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 100004 = cdmaOne 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 100005 = cdmaOne 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 100006 = cdmaOne 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 100007 = cdmaOne 700 band 7  
 North American cellular 700 MHz band.  
 100008 = cdmaOne 1800 band 8  
 1800 MHz band.  
 100009 = cdmaOne 900 band 9  
 900 MHz band.  
 100010 = cdmaOne 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 100011 = cdmaOne 400 PAMR band 11  
 European PAMR 400 MHz band.  
 100012 = cdmaOne 800 PAMR band 12  
 European PAMR 800 MHz band.  
 100013 = cdmaOne 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 100014 = cdmaOne 1900 band 14  
 US PCS 1.9 GHz.  
 100015 = cdmaOne 2100 AWS band 15  
 100016 = cdmaOne 2500 band 16  
 US 2.5 GHz.  
 100018 = cdmaOne 700 public safety band 18  
 100019 = cdmaOne 700 lower band 19  
 100020 = cdmaOne 1500 L-band band 20  
 100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
 North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
 North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
 1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
 900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.



		110013 = CDMA 1x 2500 band 13 2.5 GHz IMT-2000 extension. 110014 = CDMA 1x 1900 band 14 US PCS 1.9 GHz. 110015 = CDMA 1x 2100 AWS band 15 110016 = CDMA 1x 2500 band 16 US 2.5 GHz. 110018 = CDMA 1x 700 public safety band 18 110019 = CDMA 1x 700 lower band 19 110020 = CDMA 1x 1500 L-band band 20 110021 = CDMA 1x 2000 S-band band 21 119999 = CDMA 1x
Ch	Integer	Channel number
PN	Integer	Pilot number Range: 0 – 511
Ec/I0	Float	Ec/I0 Range: –50 – 0 Unit: dB
Walsh	Integer	Walsh code Walsh code used, available only for active set.
RSCP	Float	RSCP The received signal code power of a single code. Range: –150 – –20 Unit: dBm

#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz.

		120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Ch	Integer	Channel number
RX power	Float	RX power Range: -120 – 30 Unit: dBm
RX0 power	Float	RX power antenna 0 Range: -120 – 30 Unit: dBm
RX1 power	Float	RX power antenna 1 Range: -120 – 30 Unit: dBm
Ch ID	Integer	Channel ID Range: 0 – 7
#Chs	Integer	Number of channels
#Params/cell	Integer	Number of parameters per cell
Set	Integer	Set information 0 = Active 1 = Candidate 2 = Neighbor 3 = Remainder
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Ch	Integer	Channel number
PN	Integer	Pilot number

		Range: 0 – 511
Ec/I0	Float	Ec/I0 Range: –50 – 0 Unit: dB
RSCP	Float	RSCP The received signal code power of a single code. Range: –150 – 0 Unit: dBm
Reportable	Integer	Reportable This parameter is only valid for EVDO Rev B active set cells. 0 = No 1 = Yes
Scheduler tag	Integer	Scheduler tag This parameter is only valid for EVDO Rev B active set cells. Range: 0 – 7

#### Parameters for WLAN [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	WLAN band 200001 = WLAN 2.4 GHz 200002 = WLAN 3.6 GHz 200003 = WLAN 4.9 GHz 200004 = WLAN 5.0 GHz 209999 = WLAN
Quality	Float	WLAN quality Range: 0 – 100 Unit: %
Channel	Integer	WLAN channel number
RSSI	Float	WLAN RSSI Range: –110 – 20 Unit: dBm
SSID	String	WLAN service set identifier
BSSID	String	WLAN BSSID This is same as MAC address. Logged format is hexadecimal bytes separated by colon, for example 01:23:45:67:89:ab.
Security	Integer	WLAN security mode 0 = Open 1 = 802.1x 2 = WEP 3 = WPA-EAP 4 = WPA-PSK 5 = WPA2-EAP 6 = WPA2-PSK
Link speed	Integer	WLAN link speed Minimum value: 0 Unit: Mbit/s
IP	String	WLAN IP address The IP address for the WLAN access point.

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
#Header	Integer	Number of header parameters

params		
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	WLAN band 219999 = GAN WLAN
Quality	Float	WLAN quality Range: 0 – 100 Unit: %
Channel	Integer	WLAN channel number
RSSI	Float	WLAN RSSI Range: –110 – 20 Unit: dBm
SSID	String	WLAN service set identifier
BSSID	String	WLAN BSSID This is same as MAC address. Logged format is hexadecimal bytes separated by colon, for example 01:23:45:67:89:ab.

#### Parameters for WiMAX [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	Band 259999 = WiMAX
Frequency	Float	WiMAX frequency Unit: MHz
Preamble index	Integer	WiMAX preamble index Range: 0 – 113
BS ID	String	WiMAX base station ID Six colon separated hex values.
RSSI	Float	WiMAX RSSI Signal strength. Range: –120 – 20 Unit: dBm
RSSI dev	Float	WiMAX RSSI deviation Range: 0 – 50 Unit: dB
CINR	Float	WiMAX CINR Channel to interference-noise ratio. Range: –32 – 40 Unit: dB
CINR dev	Float	WiMAX CINR deviation Channel to interference-noise ratio devitaion. Range: 0 – 40 Unit: dB

#### Parameters for AMPS and NAMPS [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters

#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	Band 510800 = AMPS 800 519999 = AMPS 520800 = NAMPS 800 529999 = NAMPS
Ch	Integer	Channel number
SAT	Integer	Setup audio tone Range: 0 – 6
RxLev	Float	RX level Range: –120 – –10 Unit: dBm

#### Parameters for DAMPS [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	Band 530800 = DAMPS 800 531900 = DAMPS 1900 539999 = DAMPS
Ch	Integer	Channel number
DCC	Integer	Digital color code Range: 0 – 255
RxLev	Float	RX level Range: –120 – –10 Unit: dBm

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Cell type	Integer	Cell type 0 = Neighbor 1 = Serving
Band	Integer	Band 550001 = iDEN proprietary 550002 = iDEN 800 standard 550003 = iDEN 800 extended 550004 = iDEN 900 550005 = iDEN 1500 559999 = iDEN
Ch	Integer	Channel number
CC	Integer	Color code Range: 0 – 15
Sync count	Integer	Sync count

		Minimum value: 0
RxLev	Float	RX level Range: -130 – -30 Unit: dBm
SQE	Float	SQE Range: 0 – 50 Unit: dB
Foreground	Integer	Foreground 0 = No 1 = Yes

## MIMO measurement (MIMOMEAS)

<b>Event ID</b>	MIMOMEAS
<b>Cellular systems</b>	UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Currently the recording interval is about two times per second. This measurement event is currently only logged for serving cells.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters Parameters for UMTS FDD Parameters for LTE

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Measurements	Integer	Number of measurements
#Params/measurement	Integer	Number of parameters per measurement
Band	Integer	MIMO band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19

		50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
Ch	Integer	MIMO channel
SC	Integer	MIMO scrambling code Range: 0 – 511
Antenna	Integer	MIMO antenna port Range: 0 – 1
Cell type	Integer	Cell type 0 = Active The Node-B the UE is connected to (i.e., the UTRA cells currently assigning a downlink DPCH to the UE constitute the active set). 1 = Monitored The Node-B that is included in the neighbor list but not in the active set. 2 = Detected The Node-B that is detected by the UE but is not included in the neighbor list. Reporting of the measurements of the detected set is only applicable to intra-frequency measurements made by UEs in CELL_DCH state. 3 = Undetected
RSSI	Float	MIMO RSSI Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm
Ec/N0	Float	MIMO Ec/N0 The received energy per chip divided by the power density of the band. Range: -30 – 0 Unit: dB
RSCP	Float	MIMO RSCP The received signal code power of a single code. Range: -150 – -20 Unit: dBm

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Measurements	Integer	Number of measurements
#Params/measurement	Integer	Number of parameters per measurement
Band	Integer	MIMO band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7 70008 = LTE FDD 900 band 8 70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20

		<p> 70021 = LTE FDD 1500 band 21  70022 = LTE FDD 3500 band 22  70023 = LTE FDD 2200 band 23  70024 = LTE FDD 1500 band 24  70025 = LTE FDD 1900 band 25  70026 = LTE FDD 850 band 26  70027 = LTE FDD 800 band 27  70028 = LTE FDD 700 band 28  70029 = LTE FDD 700 band 29  This is downlink only band.  70030 = LTE FDD 2350 band 30  70031 = LTE FDD 450 band 31  70032 = LTE FDD 1500 L-band  This is downlink only band.  70064 = LTE FDD 390-470 band 64  This is a non-standard LTE FDD band.  70065 = LTE FDD 2100 band 65  70066 = LTE FDD AWS-3 2100 band 66  70067 = LTE FDD 700 EU band 67  This is downlink only band.  70068 = LTE FDD 700 ME band 68  70069 = LTE FDD 2500 band 69  This is downlink only band.  70070 = LTE FDD AWS-4 band 70  70071 = LTE FDD 600 band 71  70252 = LTE FDD 5200 NII-1 band 252  70255 = LTE FDD 5700 NII-3 band 255  79999 = LTE FDD  80033 = LTE TDD 1900-1920 band 33  80034 = LTE TDD 2010-2025 band 34  80035 = LTE TDD 1850-1910 band 35  80036 = LTE TDD 1930-1990 band 36  80037 = LTE TDD 1910-1930 band 37  80038 = LTE TDD 2570-2620 band 38  80039 = LTE TDD 1880-1920 band 39  80040 = LTE TDD 2300-2400 band 40  80041 = LTE TDD 2496-2690 band 41  80042 = LTE TDD 3400-3600 band 42  80043 = LTE TDD 3600-3800 band 43  80044 = LTE TDD 703-803 band 44  80045 = LTE TDD 1447-1467 band 45  80046 = LTE TDD 5154-5925 band 46  80047 = LTE TDD 5855-5925 band 47  80048 = LTE TDD 3550-3700 band 48  80061 = LTE TDD 1447-1467 band 61  This is a non-standard LTE TDD band.  80062 = LTE TDD 1785-1805 band 62  This is a non-standard LTE TDD band.  80087 = LTE TDD 1447-1467 band 87  This is a non-standard LTE TDD band.  80088 = LTE TDD 1785-1805 band 88  This is a non-standard LTE TDD band.  89999 = LTE TDD </p>
Ch	Integer	MIMO channel
PCI	Integer	Physical cell identity Range: 0 – 503
Port	Integer	<p> Antenna port  0 = Port 0  This is the same as TX0.  1 = Port 1  This is the same as TX1.  2 = Port 2  This is the same as TX2.  3 = Port 3  This is the same as TX3.  100 = TX0-RX0 channel  101 = TX0-RX1 channel  102 = TX0-RX2 channel  103 = TX0-RX3 channel  110 = TX1-RX0 channel </p>



		111 = TX1-RX1 channel 112 = TX1-RX2 channel 113 = TX1-RX3 channel 120 = TX2-RX0 channel 121 = TX2-RX1 channel 122 = TX2-RX2 channel 123 = TX2-RX3 channel 130 = TX3-RX0 channel 131 = TX3-RX1 channel 132 = TX3-RX2 channel 133 = TX3-RX3 channel
Cell type	Integer	MIMO cell type 0 = Serving 10 = SCell 1 11 = SCell 2 12 = SCell 3 13 = SCell 4
RSSI/P	Float	E-UTRAN carrier RSSI/antenna port Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm
RSRQ/P	Float	RSRQ/antenna port Reference signal received quality is the ratio $N * RSRP / E\text{-UTRA carrier RSSI}$ , where N is the number of resource blocks of the E-UTRA carrier RSSI measurement bandwidth. The measurements in the numerator and denominator are made over the same set of resource blocks. This is the same as NRSRQ with NB-IoT. 3GPP TS 36.214 subclause 5.1.3. Range: -35 – 0 Unit: dB
RSRP/P	Float	RSRP/antenna port Reference signal received power is the linear average of the power contributions of the resource elements that carry cell-specific reference signals within the considered measurement frequency. This is the same as NRSRP with NB-IoT. 3GPP TS 36.214 subclause 5.1.1. Range: -160 – 0 Unit: dBm
Timing/P	Integer	Cell frame timing/antenna port The unit of this parameter is Ts and one Ts is 1/30720000 seconds. Range: 0 – 307199

## Adjacent Channel Measurement (ADJMEAS)

Event ID	ADJMEAS
Cellular systems	GSM
Record state	Always
Description	Recorded when parameter sample is received from the device.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM |

### Parameters [Top](#)

Name	Type	Description
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Measured sys.	Integer	Measured system 1 = GSM
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#### Parameters for GSM [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
C/A ch	Integer	C/A center channel
C/A minimum	Float	C/A minimum Carrier to adjacent channel ratio between center channel and the strongest adjacent channel. Range: -100 – 100 Unit: dB
RSSI	Float	C/A measurement RSSI Signal strength for center channel. Range: -120 – -10 Unit: dBm
C/A -1	Float	C/A -1 The value of C/A -1 parameter is the ratio between center channel RSSI and adjacent channel RSSI. The adjacent channel frequency is 200 kHz lower than the frequency of the center channel. Range: -100 – 100 Unit: dB
RSSI -1	Float	C/A measurement RSSI -1 The RSSI value of the adjacent channel. The adjacent channel is 200 kHz lower than the frequency of the center channel. Range: -120 – -10 Unit: dBm
C/A +1	Float	C/A +1 The value of C/A +1 parameter is the ratio between center channel RSSI and adjacent channel RSSI. The adjacent channel frequency is 200 kHz higher than the frequency of the center channel. Range: -100 – 100 Unit: dB
RSSI +1	Float	C/A measurement RSSI +1 The RSSI value of the adjacent channel. The adjacent channel is 200 kHz higher than the frequency of the center channel. Range: -120 – -10 Unit: dBm
C/A -2	Float	C/A -2 The value of C/A -2 parameter is the ratio between center channel RSSI and adjacent channel RSSI. The adjacent channel frequency is 400 kHz lower than the frequency of the center channel. Range: -100 – 100 Unit: dB
RSSI -2	Float	C/A measurement RSSI -2 The RSSI value of the adjacent channel. The adjacent channel is 400 kHz lower than the frequency of the center channel. Range: -120 – -10 Unit: dBm
C/A +2	Float	C/A +2 The value of C/A +2 parameter is the ratio between center channel RSSI and adjacent channel RSSI. The adjacent channel frequency is 400 kHz higher than the frequency of the center channel. Range: -100 – 100 Unit: dB
RSSI +2	Float	C/A measurement RSSI +2 The RSSI value of the adjacent channel. The adjacent channel is 400 kHz higher than the frequency of the center channel. Range: -120 – -10 Unit: dBm

## RX quality (RXQ)

Event ID	RXQ
Cellular systems	GSM,DAMPS
Record state	Call attempt and connection state
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result. Currently the maximum update frequency is about twice per second.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Parameters for GSM](#) | [Parameters for DAMPS](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 53 = DAMPS

### Parameters for GSM [|Top](#)

Name	Type	Description
RXQ full	Integer	RX quality full Quality value measured on every TDMA frame. Use this value when DTX is inactive. See 3GPP TS 145.008 subclause 8.4.
RXQ sub	Integer	RX quality sub Quality value measured over the subset of every TDMA frame. Use this value when DTX is active. See 3GPP TS 145.008 subclause 8.4.

### Parameters for DAMPS [|Top](#)

Name	Type	Description
BER class	Integer	BER class BER class value reported by mobile. Range: 0 – 7

## Packet channel RX quality (PRXQ)

Event ID	PRXQ
Cellular systems	GSM
Record state	Attach and packet active state
Description	Recorded when parameter sample is received from the device and the received sample

	differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM |

#### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM

#### Parameters for GSM |Top|

Name	Type	Description
RXQ	Integer	Packet RX quality See 3GPP TS 145.008 subclause 8.2.3.1. This parameter is only recorded for GPRS. Range: 0 – 7
C value	Float	C value Received signal level of each paging block monitored by the MS according to its current DRX mode and its paging group. See 3GPP TS 145.008 subclause 10.2.3.1. This parameter is only recorded for GPRS. Range: –120 – –48 Unit: dBm
SIGN_VAR	Float	Signal variance Average variance of signal level (C value). See 3GPP TS 145.008 subclause 10.2.3.1. This parameter is only recorded for GPRS. Range: 0 – 16 Unit: dBm <sup>2</sup>
#TSL results	Integer	Number of timeslot C/I results
TSL interf.	Float	Timeslot interference Timeslot interference level relative to C value. See 3GPP TS 145.008 subclause 10.3. This parameter is only recorded for GPRS. Range: –28 – 0

## Frame error rate (FER)

<b>Event ID</b>	FER
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA | Parameters for LTE | Parameters for cdmaOne and CDMA 1x |

#### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system

		1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x
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#### Parameters for GSM [|Top|](#)

Name	Type	Description
FER full	Float	Frame error rate full This calculation assumes all 25 frames of the SACCH multiframe have been sent. Just like RXQual Full, when DL DTX is on, FER FULL will become invalid. This is because only 2 or 3 frames are sent when DL DTX is on. Range: 0 – 100 Unit: %
FER sub	Float	Frame error rate sub FER Sub is calculated as the ratio of erroneous frames to number of sent frames. With EFR speech, only 2 out of the 25 are sent when DL DTX is on. With AMR speech, either 2 or 3 frames will be sent. Range: 0 – 100 Unit: %
FER TCH	Float	Frame error rate TCH This calculation concentrates only on TCH frames. It is also more robust when DL DTX is changing. This is because it concentrates on the ratio of TCH frame errors to TCH frames sent. Range: 0 – 100 Unit: %
DTX DL	Integer	DTX downlink Defines if the DTX is used during the previous reporting period. 0 = DTX not in use 1 = DTX in use

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
FER	Float	Frame error rate Currently this is only logged with EVS. Range: 0 – 100 Unit: %

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
FER	Float	Frame error rate Range: 0 – 100 Unit: %

#### Parameters for LTE [|Top|](#)

Name	Type	Description
FER	Float	Frame error rate Calculated from the speech frames. Range: 0 – 100 Unit: %

#### Parameters for cdmaOne and CDMA 1x [|Top|](#)

Name	Type	Description

FER (dec)	Float	FER Total (fundamental channel + supplemental channel) frame error rate value reported by mobile. Range: 0 – 100 Unit: %
FER F-FCH target	Float	FER F-FCH target Range: 0 – 100
FER F-SCH0 target	Float	FER F-SCH0 target Range: 0 – 100
FER F-DCCH target	Float	FER F-DCCH target Range: 0 – 100
FER F-FCH	Float	FER F-FCH Range: 0 – 100
FER F-SCH0	Float	FER F-SCH0 Range: 0 – 100
FER F-DCCH	Float	FER F-DCCH Range: 0 – 100

## MS power (MSP)

<b>Event ID</b>	MSP
<b>Cellular systems</b>	GSM,DAMPS,AMPS
<b>Record state</b>	Call connection and packet active state
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters | Parameters for GSM | Parameters for AMPS and NAMPS | Parameters for DAMPS |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 51 = AMPS 52 = NAMPS 53 = DAMPS

### Parameters for GSM |Top|

Name	Type	Description
MSP	Integer	MS power level Reported mobile station power level class. See 3GPP TS 45.005 subclause 4.1. Range: 0 – 32
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM

**Parameters for AMPS and NAMPS** [|Top](#)

Name	Type	Description
MSP	Integer	MS power level Reported mobile station power level class. See 3GPP TS 45.005 subclause 4.1. Range: 0 – 32

**Parameters for DAMPS** [|Top](#)

Name	Type	Description
MSP	Integer	MS power level Reported mobile station power level class. See 3GPP TS 45.005 subclause 4.1. Range: 0 – 32

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## Radio link timeout (RLT)

Event ID	RLT
Cellular systems	GSM
Record state	Call connection state
Description	Recorded when the radio link timeout changes.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Parameters for GSM](#) |**Parameters** [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM

**Parameters for GSM** [|Top](#)

Name	Type	Description
RLT	Integer	Radiolink timeout The counter used in determining when the radio link failure condition is declared. The value of the counter is decreased by one when SACCH message decoding fails. When decoding succeeds, it is increased by two. If the value of the counter drops to zero, the radio link failure condition is declared. See 3GPP TS 145.008 subclause 5. Range: 0 – 64

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## Timing advance (TAD)

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<b>Event ID</b>	TAD
<b>Cellular systems</b>	GSM,UMTS TD-SCDMA,LTE FDD,LTE TDD,DAMPS
<b>Record state</b>	Always
<b>Description</b>	Recorded when timing advance changes.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters | Parameters for GSM | Parameters for UMTS TD-SCDMA | Parameters for LTE | Parameters for DAMPS |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 53 = DAMPS

#### Parameters for GSM [|Top|](#)

Name	Type	Description
TA	Integer	Timing advance Reported timing advance. Range: 0 – 63

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
TA	Float	Timing advance Range: –16 – 240 Unit: chip

#### Parameters for LTE [|Top|](#)

Name	Type	Description
TA	Integer	Timing advance Timing advance is used to adjust uplink transmission timing in a way that allows node B to receive transmissions from all UEs simultaneously. The timing advance is relative to downlink radio frame received by UE. This parameter is the same as N_TA parameter divided by 16. See 3GPP TS 36.213 subclause 4.2.3 and 3GPP TS 36.211 subclause 8. Range: 0 – 1282
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4

#### Parameters for DAMPS [|Top|](#)

Name	Type	Description
TAL	Integer	Timing alignment Reported timing alignment. Range: 0 – 30



## Downlink signaling counter (DSC)

Event ID	DSC
Cellular systems	GSM
Record state	Packet active state
Description	Recorded when downlink signaling counter value changes.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) [Parameters for GSM](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM

### Parameters for GSM [|Top](#)

Name	Type	Description
DSC current	Integer	Downlink signaling counter current The counter used in determining when the downlink signaling failure condition is declared. Whenever the message is decoded in the paging subchannel; if the message decoding is successful, the DSC counter is increased by one; if the message decoding fails, the DSC counter is decreased by four. The downlink signaling failure condition is declared if the DSC counter drops to zero or below. See 3GPP TS 145.008 subclause 6.5. Range: 0 – 45
DSC max	Integer	Downlink signaling counter maximum The maximum value of the DSC counter. Range: 0 – 45

## Bit error probability (BEP)

Event ID	BEP
Cellular systems	GSM
Record state	Attach and packet active state
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result. Recorded only when EGPRS is used.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) [Parameters for GSM](#)

### Parameters [|Top](#)

Name	Type	Description

Measured sys.	Integer	Measured system 1 = GSM
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#### Parameters for GSM [|Top|](#)

Name	Type	Description
GMSK MEAN_BEP	Integer	BEP mean class GMSK See 3GPP TS 145.008 subclause 8.2.3.2. Range: 0 – 31
GMSK CV_BEP	Integer	BEP CV class GMSK See 3GPP TS 145.008 subclause 8.2.3.2. Range: 0 – 7
8-PSK MEAN_BEP	Integer	BEP mean class 8-PSK See 3GPP TS 145.008 subclause 8.2.3.2. Range: 0 – 31
8-PSK CV_BEP	Integer	BEP CV class 8-PSK See 3GPP TS 145.008 subclause 8.2.3.2. Range: 0 – 7

## Carrier per interference (CI)

<b>Event ID</b>	CI
<b>Cellular systems</b>	GSM,UMTS TD-SCDMA,LTE FDD,LTE TDD,EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameter sample is received from the device.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for GSM](#) | 
 [Parameters for UMTS TD-SCDMA](#) | 
 [Parameters for LTE](#) | 
 [Parameters for EVDO](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 12 = EVDO

#### Parameters for GSM [|Top|](#)

Name	Type	Description
C/I	Float	C/I average C/I average is calculated over the reporting period. The C/I average is the average of all C/I values per hopping channel (and timeslot with GPRS) when this information is available. If C/I per hopping channel or per timeslot is not available, the C/I average calculation method is vendor specific. Range: –10 – 40 Unit: dB
#TSL results	Integer	Number of timeslot C/I results
C/I per TSL	Float	C/I per timeslot Separate C/I result for each dedicated GRPS timeslot. C/I calculation

		method is vendor specific. Range: -10 – 40 Unit: dB
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
ARFCN	Integer	Channel number
C/I	Float	C/I per hopping channel Separate C/I result for each hopping channel. C/I calculation method is vendor specific. Range: -10 – 40 Unit: dB
RSSI	Float	RSSI per hopping channel Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm

#### Parameters for UMTS TD-SCDMA [|Top](#)

Name	Type	Description
C/I	Float	PCCPCH C/I Range: -45 – 40 Unit: dB

#### Parameters for LTE [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
SNR	Float	RS SNR The calculation method for this parameter is device specific and can change between the devices. Range: -40 – 50 Unit: dB
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
#Antennas	Integer	Number of antennas
#Params/antenna	Integer	Parameters per antenna
SNR/P	Float	RS SNR/antenna port The calculation method for this parameter is device specific and can change between the devices. Range: -40 – 50 Unit: dB
Port	Integer	Antenna port or channel 0 = Port 0 This is the same as TX0. 1 = Port 1 This is the same as TX1. 2 = Port 2 This is the same as TX2. 3 = Port 3 This is the same as TX3. 100 = TX0-RX0 channel 101 = TX0-RX1 channel 102 = TX0-RX2 channel 103 = TX0-RX3 channel 110 = TX1-RX0 channel 111 = TX1-RX1 channel 112 = TX1-RX2 channel

		113 = TX1-RX3 channel 120 = TX2-RX0 channel 121 = TX2-RX1 channel 122 = TX2-RX2 channel 123 = TX2-RX3 channel 130 = TX3-RX0 channel 131 = TX3-RX1 channel 132 = TX3-RX2 channel 133 = TX3-RX3 channel
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#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Act set PNs	Integer	Number of pilots in active set
Params/pilot	Integer	Number of parameters per pilot
PN	Integer	Pilot number Range: 0 – 511
SINR	Float	Signal-to-interference and noise ratio Range: -28 – 15 Unit: dB
MAC Index	Integer	MAC index Range: 0 – 255
DRC cover	Integer	DRC cover Cover used to transmit DRC. Range: 0 – 7
RPC cell index	Integer	RPC cell index Range: 0 – 15
DRC Lock	Integer	DRC lock 0 = Unlocked 1 = Locked
RAB	Integer	Reverse activity bit Range: 0 – 1
Ch	Integer	Channel number
Slot FRAB	Integer	Slot FRAB Slot fast reverse activity bit.
Slot QRAB	Integer	Slot QRAB Slot quick reverse activity bit. 0 = Unloaded 1 = Loaded

## TX power control (TXPC)

Event ID	TXPC
Cellular systems	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO,TETRA,WiMAX
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor, Nemo Handy

## Parameters [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	Measured system 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 25 = WiMAX

## Parameters for TETRA [\[Top\]](#)

Name	Type	Description
TX power	Float	TX power MS transit power. Range: 15 – 45 Unit: dBm
Pwr ctrl alg.	Integer	TX power control algorithm Range: 0 – 1
TX power change	Float	TX power change Range: -30 – 30 Unit: dBm

## Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
TX power	Float	TX power The total UE transmitted power on one carrier. See 3GPP TS 125.215 subclause 5.1.7. Range: -120 – 30 Unit: dBm
Pwr ctrl alg.	Integer	TX power control algorithm 0 = Power control algorithm 0 1 = Power control algorithm 1
Pwr ctrl step	Float	TX power control step size Range: 1 – 2 Unit: dB
Compr. mode	Integer	Compressed mode 0 = No compressed mode 1 = Compressed mode
#UL pwr up	Integer	Number of "UL power up" commands Number of received "UL power up" commands (BTS to mobile).
#UL pwr down	Integer	Number of "UL power down" commands Number of received "UL power down" commands (BTS to mobile).
UL pwr up %	Float	Percentage of "UL power up" commands In percentage the number of "UL power up" commands from all commands. If this value is 100%, all commands request to increase power. Range: 0 – 100

## Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
TX power	Float	TX power Range: -99 – 99

		Unit: dBm
Pwr ctrl step	Float	TX power control step size Range: 1 – 3 Unit: dB
#UL pwr up	Integer	Number of "UL power up" commands Number of received "UL power up" commands (BTS to mobile).
#UL pwr down	Integer	Number of "UL power down" commands Number of received "UL power down" commands (BTS to mobile).
UL pwr up %	Float	Percentage of "UL power up" commands In percentage the number of "UL power up" commands from all commands. If this value is 100%, all commands request to increase power. Range: 0 – 100

#### Parameters for LTE [|Top|](#)

Name	Type	Description
PUSCH TX power	Float	TX power PUSCH The average transmit power for PUSCH calculated over the reporting period. With NB-IoT this is same as NPUSCH. See 3GPP TS 36.213 subclause 5.1.1.1. Range: -50 – 40 Unit: dBm
PUCCH TX power	Float	TX power PUCCH The average transmit power for PUCCH calculated over the reporting period. See 3GPP TS 36.213 subclause 5.1.2.1. Range: -50 – 40 Unit: dBm
PH	Float	TX power headroom (PUSCH) The average UE power headroom reported from the same reporting period as PUSCH TX power. See 3GPP TS 36.213 subclause 5.1.1.2. Range: -23 – 100 Unit: dB
f(i)	Float	TX power PUSCH adjustment The average PUSCH power control adjustment during the last reporting period. Same as f(i) parameter in 3GPP TS 36.213 subclause 5.1.1.1. Unit: dB
g(i)	Float	TX power PUCCH adjustment The average PUCCH power control adjustment during the last reporting period. Same as g(i) parameter in 3GPP TS 36.213 subclause 5.1.2.1. Unit: dB
#PUSCH TPCs	Integer	Number of PUSCH TPCs
#Params/PUSCH TPC	Integer	Number of parameters per PUSCH TPC
#PUSCH TPC	Integer	PUSCH TPC count The number of times this TPC command is received since the previous report. Minimum value: 0
PUSCH TPC	Float	PUSCH TPC This is the same as delta_PUSCH. See 3GPP TS 36.213 subclause 5.1.1. Range: -4 – 4 Unit: dB
#PUCCH TPCs	Integer	Number of PUCCH TPCs
#Params/PUCCH TPC	Integer	Number of parameters per PUCCH TPC
#PUCCH TPC	Integer	PUCCH TPC count The number of times this TPC command is received since the previous report. Minimum value: 0
PUCCH TPC	Float	PUCCH TPC

		This is the same as delta_PUCCH. See 3GPP TS 136.123 subclause 5.1.2. Range: -1 – 3 Unit: dB
SRS TX power	Float	TX power SRS The average transmit power for SRS calculated over the reporting period. See 3GPP TS 36.211 subclause 5.5.3 and 36.213 subclause 5.1.3. Range: -50 – 40
M_SRS	Integer	SRS TX bandwidth Bandwidth of sounding reference signal (SRS) in physical resource blocks. This is same as M_SRS parameter. See 3GPP TS 36.211 subclause 5.5.3 and 36.213 subclause 5.1.3. Range: 4 – 96
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4

#### Parameters for cdmaOne and CDMA 1x [\[Top\]](#)

Name	Type	Description
TX power	Float	TX power Range: -99 – 99 Unit: dBm
Pwr ctrl step	Integer	TX power control step size 0 = 1.0 1 = 0.5 2 = 0.25 Unit: dB
#UL pwr up	Integer	Number of "UL power up" commands Number of received "UL power up" commands (BTS to mobile).
#UL pwr down	Integer	Number of "UL power down" commands Number of received "UL power down" commands (BTS to mobile).
UL pwr up %	Float	Percentage of "UL power up" commands In percentage the number of "UL power up" commands from all commands. If this value is 100%, all commands request to increase power. Range: 0 – 100
TX adjust	Float	Closed loop adjustment Unit: dB
TX pwr limit	Float	Upper limit on TX power Unit: dBm
Max power limited	Integer	Max power limited Reports whether max power protection is in effect. 0 = Not applicable 1 = Not in effect 2 = In effect
R-FCH/R-PICH	Float	R-FCH to pilot ratio Unit: dB
R-SCH0/R-PICH	Float	R-SCH0 to pilot ratio Unit: dB
R-SCH1/R-PICH	Float	R-SCH1 to pilot ratio Unit: dB
R-DCCH/R-PICH	Float	R-DCCH to pilot ratio Unit: dB

#### Parameters for EVDO [\[Top\]](#)

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Name	Type	Description
TX power	Float	TX power Range: -99 – 99 Unit: dBm
#UL pwr up	Integer	Number of "UL power up" commands Number of received "UL power up" commands (BTS to mobile).
#UL pwr hold	Integer	Number of "UL power hold" commands Number of received "UL power hold" commands (BTS to mobile).
#UL pwr down	Integer	Number of "UL power down" commands Number of received "UL power down" commands (BTS to mobile).
UL pwr up %	Float	Percentage of "UL power up" commands In percentage the number of "UL power up" commands from all commands. If this value is 100%, all commands request to increase power. Range: 0 – 100
TX adjust	Float	Closed loop adjustment Unit: dB
TX Pilot	Float	TX pilot power Range: -99 – 99 Unit: dBm
TX open loop power	Float	TX open loop power TX power determined by the open loop adjust mechanism. Range: -99 – 99 Unit: dBm
DRC/pilot	Float	DRC channel to pilot ratio Unit: dB
ACK/pilot	Float	ACK channel to pilot ratio Unit: dB
Data/pilot	Float	Data channel to pilot ratio Unit: dB
PA max	Float	PA max Maximum recommended headroom available (Rev A). The mobile station indicates the available Power Amplifier (PA) headroom to the access network. The access network can assign carriers based on the mobile stations available power amplifier headroom. Unit: dB
DRC lock period	Integer	DRC lock period DRC lock period indicates which RPC bits are 'hold' (Rel 0). 8 = 8 slots 16 = 16 slots
TX throttle	Float	TX throttle TX throttle indicates how often TX channel gains are being throttled during the previous reporting period (Rev A). Range: 0 – 100 Unit: %
TX max power usage	Float	TX max power usage Indicates how often TX AGC was at maximum power during the previous reporting period. Range: 0 – 100 Unit: %
TX min power usage	Float	TX min power usage Indicates how often TX AGC was at minimum power during the previous reporting period. Range: 0 – 100 Unit: %
Transmission mode	Integer	Transmission mode Indicates the transmission mode of the data packets being transmitted (Rev A). 0 = HiCap 1 = LoLat
PS	Integer	Physical layer packet size Minimum value: 0 Unit: bit



RRI/pilot	Float	RRI channel to pilot ratio (Rev A). Unit: dB
DSC/pilot	Float	DSC channel to pilot ratio (Rev A). Unit: dB
AUX/data	Float	AUX channel to data channel ratio Unit: dB
#Carriers	Integer	Number of EVDO carriers
#Params/carrier	Integer	Number of parameters per EVDO carrier
Ch	Integer	Channel number
TX power/Ch	Float	TX power/Channel Range: -99 – 99 Unit: dBm
TX Pilot/Ch	Float	TX pilot power/Channel Range: -99 – 99 Unit: dBm
TX adjust/Ch	Float	Closed loop adjustment/Channel Unit: dB
Power limited/Ch	Integer	Power limited/Channel 0 = No 1 = Yes
Power amplifier/Ch	Integer	Power amplifier/Channel 0 = Off 1 = On
TX OL power/Ch	Float	TX open loop power/Channel Range: -128 – 127 Unit: dBm
TX T2P	Float	TX T2P Range: -100 – 100 Unit: dB

#### Parameters for WiMAX [Top](#)

Name	Type	Description
TX power	Float	WiMAX TX power MS transmit power. Range: -99 – 99 Unit: dBm
TX ref. power	Float	WiMAX TX reference power Range: -99 – 99 Unit: dBm
TX power headroom	Float	WiMAX TX power headroom Range: 0 – 100 Unit: dBm
TX power BS offset	Float	WiMAX TX power BS offset Range: -99 – 99 Unit: dB
TX power IrMax	Float	WiMAX initial ranging max TX power Range: -99 – 99 Unit: dBm
BS EIRP	Float	WiMAX BS EIRP Base station effective isotropic radiated power. Range: -99 – 99 Unit: dBm
BS N+I	Float	WiMAX BS noise + interference level Range: -128 – -1 Unit: dBm

## RX power control (RXPC)

Event ID	RXPC
Cellular systems	UMTS FDD,UMTS TD-SCDMA,cdmaOne,CDMA 1x
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Parameters for UMTS FDD](#) | [Parameters for UMTS TD-SCDMA](#) | [Parameters for cdmaOne and CDMA 1x](#) |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 10 = cdmaOne 11 = CDMA 1x

### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
SIR target	Float	Signal-to-interference ratio target Current target SIR at update time. Range: -32 – 30 Unit: dB
SIR	Float	Signal-to-interference ratio See 3GPP TS 125.215 subclause 5.2.2. Range: -32 – 30 Unit: dB
BS div. state	Integer	BS diversity state Base Station TX closed loop diversity state. 0 = Not active 1 = Closed loop mode 1 2 = Closed loop mode 2
#DL pwr up	Integer	Number of "DL power up" commands Number of sent "DL power up" commands (mobile to BTS).
#DL pwr down	Integer	Number of "DL power down" commands Number of sent "DL power down" commands (mobile to BTS).
DL pwr up %	Float	Percentage of "DL power up" commands In percentage the number of "DL power up" commands from all commands. If this value is 100%, all commands request to increase power. Range: 0 – 100
DPC mode	Integer	DL Power control mode 0 = Unique TPC command in each slot 1 = Same TPC command repeated over three slots

### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
SIR target	Float	Signal-to-interference ratio target Current target SIR at update time.

		Range: -32 – 30 Unit: dB
SIR	Float	Signal-to-interference ratio See 3GPP TS 125.215 subclause 5.2.2. Range: -32 – 30 Unit: dB
#DL pwr up	Integer	Number of "DL power up" commands Number of sent "DL power up" commands (mobile to BTS).
#DL pwr down	Integer	Number of "DL power down" commands Number of sent "DL power down" commands (mobile to BTS).
DL pwr up %	Float	Percentage of "DL power up" commands In percentage the number of "DL power up" commands from all commands. If this value is 100%, all commands request to increase power. Range: 0 – 100
#Timeslots	Integer	Number of timeslots
#Params/TSL	Integer	Number of parameters per timeslot
TSL	Integer	Timeslot Range: 0 – 6
ISCP	Float	Timeslot ISCP Interference signal code power. Range: -116 – -25 Unit: dB
RSCP	Float	DPCH RSCP DPCH received signal code power. Range: -116 – -25 Unit: dB
SIR	Float	DPCH SIR DPCH Signal-to-interference ratio. Range: -35 – 40 Unit: dB

#### Parameters for cdmaOne and CDMA 1x [\[Top\]](#)

Name	Type	Description
FPC mode	Integer	Forward power control operation mode indicator Forward Power Control (FPC) is used by the Mobile Station (MS) to control the power levels on a traffic channel to optimize the Frame Error Rate (FER). There are several different FPC modes explained in 3GPP2 C.S0011-E. Range: 0 – 7
FPC subchannel	Integer	Forward power control subchannel indicator Subchannel indicator is set by the BTS to indicate to a MS if the primary inner loop estimation should be performed on the received F-FCH or F-DCH. 0 = F-FCH setpoint 1 = F-DCCH setpoint
FPC gain	Float	Forward power control subchannel gain See 3GPP2 C.S0005-F subclause 3.7.2.3.2.21. Unit: dB
#DL pwr up	Integer	Number of "DL power up" commands Number of sent "DL power up" commands (mobile to BTS).
#DL pwr down	Integer	Number of "DL power down" commands Number of sent "DL power down" commands (mobile to BTS).
DL pwr up %	Float	Percentage of "DL power up" commands In percentage the number of "DL power up" commands from all commands. If this value is 100%, all commands request to increase power. Range: 0 – 100
F-FCH cur. sp	Float	F-FCH current setpoint Unit: dB
F-FCH min. sp	Float	F-FCH minimum setpoint

		Unit: dB
F-FCH max. sp	Float	F-FCH maximum setpoint Unit: dB
F-SCH0 cur. sp	Float	F-SCH0 current setpoint Unit: dB
F-SCH0 min. sp	Float	F-SCH0 minimum setpoint Unit: dB
F-SCH0 max. sp	Float	F-SCH0 maximum setpoint Unit: dB
F-SCH1 cur. sp	Float	F-SCH1 current setpoint Unit: dB
F-SCH1 min. sp	Float	F-SCH1 minimum setpoint Unit: dB
F-SCH1 max. sp	Float	F-SCH1 maximum setpoint Unit: dB
F-DCCH cur. sp	Float	F-DCCH current setpoint Unit: dB
F-DCCH min. sp	Float	F-DCCH minimum setpoint Unit: dB
F-DCCH max. sp	Float	F-DCCH maximum setpoint Unit: dB

## Bit error rate (BER)

<b>Event ID</b>	BER
<b>Cellular systems</b>	TETRA,UMTS FDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters | Parameters for TETRA | Parameters for UMTS FDD |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 2 = TETRA 5 = UMTS FDD

### Parameters for TETRA [|Top|](#)

Name	Type	Description
BER	Float	BER Bit error rate that is calculated with training sequence algorithm. Range: 0 – 100 Unit: %

### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description

Pilot BER	Float	BER pilot bit Bit error rate of downlink DPCCH (dedicated physical control channel) pilot bits. Range: 0 – 100 Unit: %
TFCI BER	Float	BER TFCI Estimated raw BER before channel coding based on TFCI bits. Range: 0 – 100 Unit: %

## Physical channel throughput (PHRATE)

<b>Event ID</b>	PHRATE
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result. Separate measurement event is logged for each serving cell with LTE.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD and UMTS TD-SCDMA | Parameters for LTE | Parameters for LTE PBCH | Parameters for LTE PDSCH and NPDSCH | Parameters for LTE PUSCH and NPUSCH | Parameters for EVDO |

### Parameters [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 12 = EVDO

### Parameters for UMTS FDD and UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
DPDCH rate UL	Integer	Uplink DPDCH bitrate Minimum value: 0 Unit: bit/s

### Parameters for LTE [\[Top\]](#)

Name	Type	Description
Ph. ch. type	Integer	Physical channel type 1 = PBCH 2 = PDSCH or NPDSCH 3 = PUSCH or NPUSCH

### Parameters for LTE PBCH [\[Top\]](#)

Name	Type	Description
PBCH block rate	Integer	PBCH block rate Minimum value: 0

PBCH BLER	Float	<b>PBCH BLER</b> Physical Downlink Shared Channel (PDSCH) block error rate. Block error rate (BLER) is the number of received erroneous blocks per total number of sent blocks. Erroneous blocks are found with the cyclic redundancy check (CRC), see 3GPP TS 34.121-1 subclause F.6.1.1. Range: 0 – 100 Unit: %
Cell type	Integer	<b>Serving cell type</b> The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4

#### Parameters for LTE PDSCH and NPDSCH [\[Top\]](#)

Name	Type	Description
PDSCH bitrate 0	Integer	PDSCH throughput for codeword 0 Minimum value: 0 Unit: bit/s
PDSCH bitrate 1	Integer	PDSCH throughput for codeword 1 Minimum value: 0 Unit: bit/s
PDSCH block rate	Integer	PDSCH block rate The number of received transport blocks since the last report including TBs with CRC failure. Minimum value: 0
PDSCH BLER	Float	<b>PDSCH BLER</b> The ratio of transport blocks with CRC check accepted to all received TBs. Range: 0 – 100 Unit: %
Sch bitrate/PRB	Integer	<b>PDSCH scheduled throughput/PRB</b> Scheduled throughput per PRB is the average throughput per PRB over the TTIs where PRB resources are allocated. This is calculated by summing PDSCH throughput per PRB during the reporting period and this is divided by number of allocated PRBs during the reporting period. Minimum value: 0 Unit: bit/s
PDSCH bitrate	Integer	<b>PDSCH throughput</b> The throughput is calculated from all received transport blocks including TBs with CRC failure. Minimum value: 0 Unit: bit/s
PDCCH BLER est.	Float	<b>PDCCH BLER estimation</b> This parameter estimates PDCCH BLER by calculating number of undetected and missed downlink grants. The parameter does not contain all possible PDCCH errors so it is more of an indicative rather than an absolute ratio of errors in the PDCCH channel. Note that the exact calculation method of the parameter can change in the future. Range: 0 – 100 Unit: %
Cell type	Integer	<b>Serving cell type</b> The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
CFI 1	Float	<b>PDCCH CFI 1 percentage</b> Defines how many percent of subframes are using CFI 1 meaning

		that 1 symbol (2 when 1.4 MHz bandwidth) is allocated for PDCCH. See 3GPP TS 36.212 subclause 5.3.4. Range: 0 – 100 Unit: %
CFI 2	Float	PDCCH CFI 2 percentage Defines how many percent of subframes are using CFI 2 meaning that 2 symbols (3 when 1.4 MHz bandwidth) are allocated for PDCCH. See 3GPP TS 36.212 subclause 5.3.4. Range: 0 – 100 Unit: %
CFI 3	Float	PDCCH CFI 3 percentage Defines how many percent of subframes are using CFI 3 meaning that 3 symbols (4 when 1.4 MHz bandwidth) are allocated for PDCCH. See 3GPP TS 36.212 subclause 5.3.4. Range: 0 – 100 Unit: %
PDSCH BLER 0	Float	PDSCH BLER for codeword 0 Range: 0 – 100 Unit: %
PDSCH BLER 1	Float	PDSCH BLER for codeword 1 Range: 0 – 100 Unit: %
#PDCCH channel formats	Integer	Number of PDCCH channel formats
#Params/PDCCH channel format	Integer	Number of parameters per PDCCH channel format
PDCCH format count	Integer	PDCCH format count Defines how many times PDCCH format has been used during the previous reporting period.
PDCCH format	Integer	PDCCH format PDCCH format defines how much resources are allocated for PDCCH channel. See more 3GPP TS 36.211 subclause 6.8.1. 0 = PDCCH format 0 Same as aggregation level 1. 1 = PDCCH format 1 Same as aggregation level 2. 2 = PDCCH format 2 Same as aggregation level 4. 3 = PDCCH format 3 Same as aggregation level 8.

#### Parameters for LTE PUSCH and NPUSCH [|Top](#)

Name	Type	Description
PUSCH bitrate	Integer	PUSCH throughput This is calculated from all transmitted transport blocks including TBs that are not delivered successfully or are delivered redundantly. Minimum value: 0 Unit: bit/s
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4

#### Parameters for EVDO [|Top](#)

Name	Type	Description
Ph rate UL	Integer	Physical layer throughput UL Minimum value: 0 Unit: bit/s

Ph rate DL	Integer	Physical layer throughput DL Minimum value: 0 Unit: bit/s
SU rate DL	Integer	Single-user throughput DL Minimum value: 0 Unit: bit/s
MU rate DL	Integer	Multi-user throughput DL Minimum value: 0 Unit: bit/s
PER SU	Float	PER single-user Range: 0 – 100 Unit: %
PER MU	Float	PER multi-user Range: 0 – 100 Unit: %
PER	Float	PER reverse Range: 0 – 100 Unit: %
#Carriers	Integer	Number of EVDO carriers
#Params/carrier	Integer	Number of parameters per EVDO carrier
Ch	Integer	Channel number
Ph rate UL/Ch	Integer	Physical layer throughput UL per carrier Minimum value: 0 Unit: bit/s
Ph rate DL/Ch	Integer	Physical layer throughput DL per carrier Minimum value: 0 Unit: bit/s
SU rate DL/Ch	Integer	Single-user throughput DL per carrier Minimum value: 0 Unit: bit/s
MU rate DL/Ch	Integer	Multi-user throughput DL per carrier Minimum value: 0 Unit: bit/s

## Downlink control information (DCI)

<b>Event ID</b>	DCI
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result. Separate measurement event is logged for each serving cell with LTE. Currently this parameter is only logged for NB-IoT.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD



## Parameters for LTE [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
#DCIs	Integer	Number of DCIs
#Params/DCI	Integer	Number of parameters per DCI
DCI format	Integer	DCI format Currently only NB-IoT is supported. 2000 = N0 2010 = N1
DCI count	Integer	DCI count Minimum value: 0
DCI repetitions	Integer	DCI repetitions Range: 1 – 2048

## WLAN throughput (WLANRATE)

Event ID	WLANRATE
Cellular systems	GAN WLAN
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor

[Parameters](#) |

## Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 21 = GAN WLAN
WLAN rate UL	Integer	WLAN throughput uplink
WLAN rate DL	Integer	WLAN throughput downlink

## PPP layer throughput (PPPRATE)

Event ID	PPPRATE
Cellular systems	All
Record state	Packet active
Description	Recorded when data link layer data is received or transmitted. Currently minimum time interval between two measurement events is one second. If data has not been transmitted or received in two seconds, a zero-value measurement event is recorded.
Tools	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters [\[Top\]](#)

Name	Type	Description
PPP rate UL	Integer	PPP throughput uplink The value of this parameter is calculated based on the SDUs that are successfully transferred through the PPP layer. Missing and erroneous PPP packets are excluded from the throughput calculation. With Nemo Handy, the PPP layer is not used and the reported value is TCP/IP throughput instead. With Nemo Outdoor, the PPP layer carries the IP layer in order to produce a good approximation of TCP/IP throughput. However, this approximation is not exact. Also note that with Nemo Outdoor the PPP throughput is only reported when the packet session is activated using the dialup interface. Minimum value: 0 Unit: bit/s
PPP rate DL	Integer	PPP throughput downlink The value of this parameter is calculated based on the SDUs that are successfully transferred through the PPP layer. Missing and erroneous PPP packets are excluded from the throughput calculation. With Nemo Handy, the PPP layer is not used and the reported value is TCP/IP throughput instead. With Nemo Outdoor, the PPP layer carries the IP layer in order to produce a good approximation of TCP/IP throughput. However, this approximation is not exact. Also note that with Nemo Outdoor the PPP throughput is only reported when the packet session is activated using the dialup interface. Minimum value: 0 Unit: bit/s
Sent PPP bytes	Integer	Transferred PPP bytes uplink Cumulative amount of data transferred in uplink direction during the packet session. Minimum value: 0 Unit: byte
Recv. PPP bytes	Integer	Transferred PPP bytes downlink Cumulative amount of data transferred in downlink direction during the packet session. Minimum value: 0 Unit: byte

## RLP layer throughput (RLPRATE)

Event ID	RLPRATE
Cellular systems	cdmaOne,CDMA 1x,EVDO

<b>Record state</b>	Packet active
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x 12 = EVDO
RLP rev. rate	Integer	RLP reverse user throughput Minimum value: 0 Unit: bit/s
RLP for. rate	Integer	RLP forward user throughput Minimum value: 0 Unit: bit/s
RLP rev. retr. rate	Float	RLP reverse retransmission rate Range: 0 – 100 Unit: %
RLP fwd. retr. rate	Float	RLP forward retransmission rate Range: 0 – 100 Unit: %
RLP err. UL	Float	RLP error rate uplink Range: 0 – 100 Unit: %
RLP err. DL	Float	RLP error rate downlink Range: 0 – 100 Unit: %

## RLP statistics (RLPSTATISTICS)

<b>Event ID</b>	RLPSTATISTICS
<b>Cellular systems</b>	cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Packet active
<b>Description</b>	Recorded when parameter sample is received from the device.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |Parameters for cdmaOne and CDMA 1x |Parameters for EVDO |

#### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

#### Parameters for cdmaOne and CDMA 1x |Top|

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Name	Type	Description
Service ID	Integer	Service ID
Resets	Integer	Number of resets
Aborts	Integer	Number of NAK aborts
Last RTT	Integer	Last RTT Number of 20-ms time frames for the last round-trip time measurement. Unit: frame
Block of bytes used	Integer	Block of bytes used 0 = Not received 1 = Specified NAK scheme 2 = Specified RTT 3 = Specified RTT and NAK scheme
RX NAKs	Integer	Received NAKs Total number of negative acknowledgement frames received. Unit: frame
Largest Con. Erasures	Integer	Largest block of consecutive erasures
Retrans. not found	Integer	Number of retransmitted frames not found Unit: frame
RX retrans. frames	Integer	Received retransmitted frames Unit: frame
RX idle frames	Integer	Received idle frames Unit: frame
RX fill frames	Integer	Received fill frames Unit: frame
RX blank frames	Integer	Received blank frames Unit: frame
RX null frames	Integer	Received null frames Unit: frame
RX new frames	Integer	Received new data frames Unit: frame
RX fund. frames	Integer	Received fundamental data frames Unit: frame
RX bytes	Integer	Received bytes Minimum value: 0 Unit: byte
RX RLP erasures	Integer	Received RLP erasures Unit: frame
RX MUX erasures	Integer	Received multiplexer erasures Unit: frame
TX NAKs	Integer	Transmitted NAKs Unit: frame
TX retrans. frames	Integer	Transmitted retransmitted frames Unit: frame
TX idle frames	Integer	Transmitted idle frames Unit: frame
TX new frames	Integer	Transmitted new data frames Unit: frame
TX fund. frames	Integer	Transmitted fundamental data frames Unit: frame
TX bytes	Integer	Transmitted bytes Minimum value: 0 Unit: byte

#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
Service ID	Integer	Service ID Identifies RLP service.

RX NAKs	Integer	Received NAKs
RX NAKs in bytes	Integer	Received NAKs in bytes
Retrans. not found	Integer	Number of retransmitted frames not found
RX dup. bytes	Integer	Received duplicate bytes
ReRX bytes	Integer	Received retransmitted bytes
RX new bytes	Integer	Received new data bytes
RX bytes	Integer	Received bytes
TX NAKs	Integer	Transmitted NAKs
TX NAKs in bytes	Integer	Transmitted NAKs in bytes
ReTX bytes	Integer	Retransmitted bytes
TX new bytes	Integer	Transmitted new data bytes
TX bytes	Integer	Transmitted bytes
NAK timeouts	Integer	NAK timeouts Contains NAK timeouts and aborts.
Reset count	Integer	Reset count Total resets that have occurred, initiated either by the AN or the AT.
AT reset request count	Integer	Resets requested by the AT
AN reset ack count	Integer	Reset ACKs received from the AN
AN reset request count	Integer	Resets requested by the AN
RX frames	Integer	Received frames
RX new frames	Integer	Received new frames
ReRX frames	Integer	Received retransmitted frames
RX frames first	Integer	Received frames with first data unit
RX frames last	Integer	Received frames with last data unit
TX frames	Integer	Transmitted frames
TX new frames	Integer	Transmitted new frames
ReTX frames	Integer	Retransmitted frames
TX frames first	Integer	Transmitted frames with first data unit
TX frames last	Integer	Transmitted frames with last data unit
Link flow ID	Integer	Link flow ID
Route number	Integer	Route number
Flow protocol	Integer	Flow protocol
Route protocol	Integer	Route protocol
Packet stream	Integer	Packet stream Whether link flow is packet-based. 0 = Non-packet based 1 = Packet based
Sequence type	Integer	Sequence type Whether link flow is doing segment-based sequencing. 0 = Non-segment based sequencing 1 = Segment based sequencing

## Measurement event information (MEI)

<b>Event ID</b>	MEI
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA
<b>Record state</b>	Always
<b>Description</b>	Recorded when a UMTS measurement event is transmitted to the network based on signaling messages.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA | Parameters for LTE |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
Measurement event	Integer	Measurement event 1 = Event 1A A primary CPICH enters the Reporting Range (FDD only). 2 = Event 1B A primary CPICH leaves the Reporting Range (FDD only). 3 = Event 1C A non-active Primary CPICH becomes better than an active Primary CPICH (FDD only). 4 = Event 1D Change of best cell (FDD only). 5 = Event 1E A primary CPICH becomes better than an absolute threshold (FDD only). 6 = Event 1F A primary CPICH becomes worse than an absolute threshold (FDD only). 7 = Event 1G Change of best cell (TDD only). 8 = Event 1H Timeslot ISCP below a certain threshold (TDD only). 9 = Event 1I Timeslot ISCP above a certain threshold (TDD only). 10 = Event 1J A non-active E-DCH but active DCH Primary CPICH becomes better than an active E-DCH Primary CPICH (FDD only). 21 = Event 2A Change of best frequency. 22 = Event 2B The estimated quality of the currently used frequency is below a certain threshold and the estimated quality of a non-used frequency is above a certain threshold. 23 = Event 2C The estimated quality of a non-used frequency is above a certain threshold. 24 = Event 2D The estimated quality of the currently used frequency is below a certain threshold. 25 = Event 2E The estimated quality of a non-used frequency is below a certain threshold. 26 = Event 2F The estimated quality of the currently used frequency is above a certain threshold. 31 = Event 3A

		<p>The estimated quality of the currently used UTRAN frequency is below a certain threshold and the estimated quality of the other system is above a certain threshold.</p> <p>32 = Event 3B The estimated quality of other system is below a certain threshold.</p> <p>33 = Event 3C The estimated quality of other system is above a certain threshold.</p> <p>34 = Event 3D Change of best cell in other system.</p> <p>41 = Event 4A Transport Channel Traffic Volume (3GPP TS 25.321) exceeds an absolute threshold.</p> <p>42 = Event 4B Transport Channel Traffic Volume (3GPP TS 25.321) becomes smaller than an absolute threshold.</p> <p>51 = Event 5A Number of bad CRCs on a certain transport channel exceeds a threshold.</p> <p>61 = Event 6A The UE Transmitted Power becomes larger than an absolute threshold.</p> <p>62 = Event 6B The UE Transmitted Power becomes less than an absolute threshold.</p> <p>63 = Event 6C The UE Transmitted Power reaches its minimum value.</p> <p>64 = Event 6D The UE Transmitted Power reaches its maximum value.</p> <p>65 = Event 6E The UE RSSI reaches the UEs dynamic receiver range.</p> <p>66 = Event 6F The UE Rx-Tx time difference for a RL included in the active set becomes larger than an absolute threshold (FDD only). The time difference indicated by T_ADV becomes larger than an absolute threshold (TD-SCDMA only).</p> <p>67 = Event 6G The UE Rx-Tx time difference for a RL included in the active set becomes less than an absolute threshold.</p> <p>71 = Event 7A The UE position changes more than an absolute threshold.</p> <p>72 = Event 7B SFN-SFN measurement changes more than an absolute threshold.</p> <p>73 = Event 7C GPS time and SFN time have drifted apart more than an absolute threshold.</p>
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#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
Measurement event	Integer	<p>Measurement event</p> <p>1 = Event 1A A primary CPICH enters the Reporting Range (FDD only).</p> <p>2 = Event 1B A primary CPICH leaves the Reporting Range (FDD only).</p> <p>3 = Event 1C A non-active Primary CPICH becomes better than an active Primary CPICH (FDD only).</p> <p>4 = Event 1D Change of best cell (FDD only).</p> <p>5 = Event 1E A primary CPICH becomes better than an absolute threshold (FDD only).</p> <p>6 = Event 1F A primary CPICH becomes worse than an absolute threshold (FDD only).</p> <p>7 = Event 1G Change of best cell (TDD only).</p> <p>8 = Event 1H</p>

Timeslot ISCP below a certain threshold (TDD only).

9 = Event 1I  
Timeslot ISCP above a certain threshold (TDD only).

10 = Event 1J  
A non-active E-DCH but active DCH Primary CPICH becomes better than an active E-DCH Primary CPICH (FDD only).

21 = Event 2A  
Change of best frequency.

22 = Event 2B  
The estimated quality of the currently used frequency is below a certain threshold and the estimated quality of a non-used frequency is above a certain threshold.

23 = Event 2C  
The estimated quality of a non-used frequency is above a certain threshold.

24 = Event 2D  
The estimated quality of the currently used frequency is below a certain threshold.

25 = Event 2E  
The estimated quality of a non-used frequency is below a certain threshold.

26 = Event 2F  
The estimated quality of the currently used frequency is above a certain threshold.

31 = Event 3A  
The estimated quality of the currently used UTRAN frequency is below a certain threshold and the estimated quality of the other system is above a certain threshold.

32 = Event 3B  
The estimated quality of other system is below a certain threshold.

33 = Event 3C  
The estimated quality of other system is above a certain threshold.

34 = Event 3D  
Change of best cell in other system.

41 = Event 4A  
Transport Channel Traffic Volume (3GPP TS 25.321) exceeds an absolute threshold.

42 = Event 4B  
Transport Channel Traffic Volume (3GPP TS 25.321) becomes smaller than an absolute threshold.

51 = Event 5A  
Number of bad CRCs on a certain transport channel exceeds a threshold.

61 = Event 6A  
The UE Transmitted Power becomes larger than an absolute threshold.

62 = Event 6B  
The UE Transmitted Power becomes less than an absolute threshold.

63 = Event 6C  
The UE Transmitted Power reaches its minimum value.

64 = Event 6D  
The UE Transmitted Power reaches its maximum value.

65 = Event 6E  
The UE RSSI reaches the UEs dynamic receiver range.

66 = Event 6F  
The UE Rx-Tx time difference for a RL included in the active set becomes larger than an absolute threshold (FDD only). The time difference indicated by T<sub>ADV</sub> becomes larger than an absolute threshold (TD-SCDMA only).

67 = Event 6G  
The UE Rx-Tx time difference for a RL included in the active set becomes less than an absolute threshold.

71 = Event 7A  
The UE position changes more than an absolute threshold.

72 = Event 7B  
SFN-SFN measurement changes more than an absolute threshold.

73 = Event 7C



		GPS time and SFN time have drifted apart more than an absolute threshold.
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#### Parameters for LTE [|Top|](#)

Name	Type	Description
Measurement event	Integer	Measurement event See 3GPP TS 136.331 subclause 5.5.4. 1 = Event A1 Serving becomes better than threshold. 2 = Event A2 Serving becomes worse than threshold. 3 = Event A3 Neighbor becomes offset better than PCell. 4 = Event A4 Neighbor becomes better than threshold. 5 = Event A5 PCell becomes worse than threshold 1 and neighbor becomes better than threshold 2. 6 = Event A6 Neighbor becomes offset better than SCell. 21 = Event B1 Inter RAT neighbor becomes better than threshold. 22 = Event B2 PCell becomes worse than threshold 1 and inter RAT neighbor becomes better than threshold 2.
Measurement ID	Integer	Measurement ID See 3GPP TS 136.331 subclause 5.5. Range: 1 – 32

## Position report information (POSI)

Event ID	POSI
Cellular systems	GSM,UMTS FDD,LTE FDD,LTE TDD
Record state	Always
Description	Recorded when a position information is reported from mobile to the network. This information is decoded from the signaling messages.
Tools	Nemo Outdoor, Nemo Handy

Parameters [|](#)

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
Position report type	Integer	Position report type See 3GPP TS 123.271, 125.305, 136.305, 136.355, and 144.031. 1 = UE-based A-GNSS Assisted-global navigation satellite system. 2 = NW-based OTDOA

		<p>Observed time difference of arrival. When this method is used the network calculates UE's position based on known nodeB coordinates, and signal reception times measured and reported by UE.</p> <p>3 = UE-based E-OTD Enhanced observed time difference. This is similar with OTDOA but it is only used with GSM.</p> <p>4 = NW-based ECID Enhanced cell ID positioning method where network calculates mobile's position using RX/TX measurements done by mobile. When this positioning method is used the longitude and latitude parameters are n/a.</p>
Result	Integer	<p>Position report result</p> <p>1 = Success</p> <p>2 = Undefined failure</p> <p>3 = Not supported</p> <p>4 = Request denied</p> <p>50 = Assistance data not supported by server</p> <p>51 = Assistance data not available</p> <p>52 = Assistance data partly not supported or not available</p> <p>100 = Not enough satellites</p> <p>101 = Not all requested measurements are possible</p> <p>102 = Requested measurement not available</p> <p>200 = Unable to measure reference cell</p> <p>201 = Unable to measure any neighbor cell</p> <p>202 = Unable to measure some neighbor cells</p> <p>300 = Not enough base stations</p>
Lon.	Float	<p>Position report longitude</p> <p>Longitude of the measured position.</p>
Lat.	Float	<p>Position report latitude</p> <p>Latitude of the measured position.</p>
Height	Integer	<p>Position report height</p> <p>Unit: m</p>
Confidence	Float	<p>Position report confidence</p> <p>Range: 0 – 100</p> <p>Unit: %</p>

## MBMS information (MBMSI)

<b>Event ID</b>	MBMSI
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when MBMS allocation changes.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	<p>Measured system</p> <p>7 = LTE FDD This is also used with NB-IoT.</p> <p>8 = LTE TDD</p>

**Parameters for LTE** [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Services	Integer	Number of MBMS services
#Params/service	Integer	Number of parameters per MBMS service
MCC	Integer	MBMS service MCC See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	MBMS service MNC Range: 0 – 999
Service ID	Integer	MBMS service ID Uniquely identifies the identity of an MBMS service within a PLMN. See more 3GPP TS 136.331 subclause 6.3.7. Range: 0 – 16777215
Session ID	Integer	MBMS session ID Range: 0 – 255
Area ID	Integer	MBSFN area ID Multi broadcast single frequency network area identity. See more 3GPP TS 136.211 subclause 6.10.2.1. Range: 0 – 255
Data MCS	Integer	MBMS data MCS Defines the modulation and the amount of coding used. See 3GPP TS 36.213 subclause 7.1.7. Range: 0 – 31
State	Integer	MBMS service state 1 = Active 2 = Available

## Physical channel throughput broadcast (PHRATEB)

Event ID	PHRATEB
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor

[Parameters](#) | [Parameters for LTE](#) |**Parameters** [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

**Parameters for LTE** [|Top](#)

Name	Type	Description
PMCH throughput	Integer	PMCH throughput Physical layer PMCH throughput is sum of all transport blocks

		received from the PMCH disregarding CRC result. Minimum value: 0 Unit: bit/s
PMCH SNR	Float	PMCH SNR Mobile vendor specific signal-to-noise-ratio for PMCH. Unit: dB

## MAC layer throughput broadcast (MACRATEB)

<b>Event ID</b>	MACRATEB
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when measurement sample is received from the device and the received sample differs from the previous result. This UMTS measurement event is recorded simultaneously with the PLAID measurement event and only during HSDPA session.
<b>Tools</b>	Nemo Outdoor

[Parameters](#) | [Parameters for LTE](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for LTE [|Top](#)

Name	Type	Description
MCH throughput	Integer	MCH throughput MAC layer MCH throughput is sum of transport blocks with correct CRC. With some implementations it is possible that MCH throughput does not contain MAC layer headers and overhead. Minimum value: 0 Unit: bit/s
MCH block rate	Integer	MCH block rate Number of received transport blocks since last report. Minimum value: 0
MCH BLER	Float	MCH BLER Ratio of correct and incorrect transport blocks since the last report. The number of the incorrect transport blocks is Block Rate times BLER divided by 100. Range: 0 – 100 Unit: %

## RLC layer throughput broadcast (RLCRATEB)

Event ID	RLCRATEB
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor

Parameters | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for LTE |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
MTCH throughput	Integer	MTCH throughput RLC layer MTCH throughput is bit rate calculated from the RLC layer data SDUs. Minimum value: 0 Unit: bit/s
#MRBs	Integer	Number of MBMS radio bearers
#Params/MRB	Integer	Number of parameters per MBMS radio bearer
Area ID/MRB	Integer	MBSFN area ID per MRB Multi broadcast single frequency network area identity. See more 3GPP TS 136.211 subclause 6.10.2.1. Range: 0 – 255
PMCH ID/MRB	Integer	PMCH ID per MRB Range: 0 – 15
Bitrate/MRB	Integer	MTCH throughput per MRB Minimum value: 0 Unit: bit/s
Block rate/MRB	Integer	MTCH block rate per MRB Minimum value: 0

## Channel quality indicator (CQI)

Event ID	CQI
Cellular systems	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
Record state	Packet active state
Description	Recorded every 200 milliseconds to indicate distribution of HSDPA Channel Quality Indications (CQI) transmitted to the network. The measurement event is recorded simultaneously with the PLAID measurement event. One measurement event is logged

	for all serving cells with HSDPA. Separate measurement event is logged for each serving cell with LTE.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA | Parameters for LTE |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Sample dur.	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
Ph req. rate	Integer	HSDPA physical layer requested throughput Computational throughput based on the transport block sizes indicated by the CQI values. In MIMO mode, only CQI type A is used for the calculation. This is the throughput that would have been achieved if the network had sent the link adaptation parameters defined by the CQI. Minimum value: 0 Unit: bit/s
CQI repetitions	Integer	HSDPA CQI repetition factor Controls how often the UE repeats CQI information on the uplink. See 3GPP TS 25.214 subclause 6A.1.2. Range: 1 – 4
CQI cycle	Integer	HSDPA CQI feedback cycle Controls how often the UE transmits new CQI information on the uplink. See 3GPP TS 25.214 subclause 6A.1.2. Range: 0 – 160 Unit: ms
MIMO R2 req. %	Float	HSDPA MIMO rank 2 request ratio Defines the percentage of time MIMO was requested using CQI values. This is the ratio of double CQI values to total of type A CQI values. This parameter is also known as rank indicator. Range: 0 – 100 Unit: %
#CQI values	Integer	Number of CQI values
#Params/CQI value	Integer	Number of parameters per CQI value
Percentage	Float	HSDPA CQI percentage Percentage of this CQI value from the total sampling duration. Note that the sum of the percentages is 200 when the measurement event contains information about primary and secondary HSPA cells. Range: 0 – 100 Unit: %
CQI	Integer	HSDPA CQI An estimate of the link adaptation (transport block size, the modulation type, the number of parallel codes, and the spreading factor) required to enable correct reception with reasonable block error rate. The measured value is reported periodically to the network. This information can be used for data scheduling and link adaptation. When the secondary CQI has a valid value, the range of the parameter is limited to values 0-14. See 3GPP TS 125.214 subclause 6A.2. Range: 0 – 30
CQI type	Integer	HSDPA CQI type

		See 3GPP TS 125.214 subclause 6A.1.2.2. 1 = CQI type A 2 = CQI type B This type is used when MIMO is not configured.
CQI 2	Integer	HSDPA CQI 2 An estimate of the link adaptation (transport block size, the modulation type, the number of parallel codes, and the spreading factor) required to enable correct reception with reasonable block error rate. The measured value is reported periodically to the network. This information can be used for data scheduling and link adaptation. This parameter is always n/a when CQI type B is used. See 3GPP TS 125.214 subclause 6A.2. Range: 0 – 14
Cell type	Integer	HSDPA cell type 1 = Primary 2 = Secondary

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#Params	Integer	Number of parameters
Sample dur.	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
Ph req. rate	Integer	HSDPA physical layer requested throughput Computational throughput based on the transport block sizes indicated by the CQI values. In MIMO mode, only CQI type A is used for the calculation. This is the throughput that would have been achieved if the network had sent the link adaptation parameters defined by the CQI. Minimum value: 0 Unit: bit/s
#CQI values	Integer	Number of CQI values
#Params/CQI value	Integer	Number of parameters per CQI value
Percentage	Float	HSDPA CQI percentage Percentage of this CQI value from the total sampling duration. Note that the sum of the percentages is 200 when the measurement event contains information about primary and secondary HSPA cells. Range: 0 – 100 Unit: %
CQI	Integer	HSDPA CQI An estimate of the link adaptation (transport block size, the modulation type, the number of parallel codes, and the spreading factor) required to enable correct reception with reasonable block error rate. The measured value is reported periodically to the network. This information can be used for data scheduling and link adaptation. See 3GPP TS 125.224 subclause 4.11.2. Range: 0 – 127

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
#Params	Integer	Number of parameters
Sample dur.	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
Req. rate	Integer	Requested throughput Computational throughput based on the transport block sizes indicated by the wideband CQI values. It is assumed that all eNodeB resources are available for the device, three PDCCH symbols are allocated for each subframe, no PRBs are allocated for PBCH, P-SCH, or S-SCH physical channels, and BLER is zero. In situations where rank 2 or rank 4 reception would have been possible, wideband CQI values of both codewords are used in the throughput

		<p>calculation. This is the estimation of throughput that would have been achieved if the network had used the link adaptation parameters defined by the CQI. This estimation may be overestimation because of zero BLER hypothesis and since no PRBs are allocated for other physical channels or it can be underestimation since for PDCCH three symbols are always reserved.</p> <p>Minimum value: 0</p> <p>Unit: bit/s</p>
WB CQI 0	Integer	<p>Wideband CQI for codeword 0</p> <p>This is the average wideband CQI calculated over the reporting period. See 3GPP TS 36.213 subclause 7.2.</p> <p>Range: 0 – 15</p>
WB CQI 1	Integer	<p>Wideband CQI for codeword 1</p> <p>This is the average wideband CQI calculated over the reporting period. See 3GPP TS 36.213 subclause 7.2.</p> <p>Range: 0 – 15</p>
SB CQI 0	Integer	<p>Subband CQI for codeword 0</p> <p>The subband CQI is the average calculated over the subbands defined by higher layer or selected by mobile. This reported subband CQI value is furthermore averaged over the reporting period before it is logged to the measurement event. More information about CQI see 3GPP TS 36.213 subclause 7.2.</p> <p>Range: 0 – 15</p>
SB CQI 1	Integer	<p>Subband CQI for codeword 1</p> <p>The subband CQI is the average calculated over the subbands defined by higher layer or selected by mobile. This reported subband CQI value is furthermore averaged over the reporting period before it is logged to the measurement event. More information about CQI see 3GPP TS 36.213 subclause 7.2.</p> <p>Range: 0 – 15</p>
WB PMI	Integer	<p>Wideband PMI</p> <p>The logged value is the most commonly used value during the reporting period. A user equipment uses Precoding Matrix Indicator (PMI) to inform the eNodeB which precoding matrix should be used for downlink transmission according to the rank indication. See 3GPP TS 36.213 subclause 7.2.4.</p>
Cell type	Integer	<p>Serving cell type</p> <p>The value of this parameter is the same as the serving cell index.</p> <p>0 = PCell Primary serving cell.</p> <p>1 = SCell 1</p> <p>2 = SCell 2</p> <p>3 = SCell 3</p> <p>4 = SCell 4</p>
#Ranks	Integer	<p>Number of ranks</p> <p>The first requested rank value defines the ratio of rank one, the second rank value defines the ratio of rank two, etc.</p>
#Params/rank	Integer	Parameters per rank
Req. rank	Float	<p>Requested rank</p> <p>Defines based on RI reports the ratio of time when the mobile would have been able to receive data using defined rank. This is the report from the device to the network how many simultaneous data streams (or layers) it can receive when spatial multiplexing transmission scheme is used.</p> <p>Range: 0 – 100</p> <p>Unit: %</p>
Rank	Integer	<p>Rank</p> <p>Range: 1 – 4</p>
#CQI subbands	Integer	Number of CQI subbands
#Params/subband	Integer	Number of parameters per CQI subband
SB index	Integer	<p>CQI subband index</p> <p>Subband Channel Quality Indication (CQI) reports the quality on a selected set of preferred subbands by the UE. The selected set can also be configured from a higher layer. See 3GPP TS 36.213 subclause 7.2.</p>



CQI 0/SB	Integer	CQI for codeword 0 per subband The average channel quality index value over the reporting period for defined subband. Not available when the best M select mode is used. More information about CQI see 3GPP TS 36.213 subclause 7.2. Range: 0 – 15
CQI 1/SB	Integer	CQI for codeword 1 per subband The average channel quality index value over the reporting period for defined subband. Not available when the best M select mode is used. More information about CQI see 3GPP TS 36.213 subclause 7.2. Range: 0 – 15

## HARQI process information (HARQI)

<b>Event ID</b>	HARQI
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA
<b>Record state</b>	Packet active state
<b>Description</b>	Recorded every 200 milliseconds to indicate HSDPA HARQ throughput based on the trace messages of the mobile. This measurement event is recorded simultaneously with the PLAID measurement event.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
[Parameters for UMTS FDD](#) |
[Parameters for UMTS TD-SCDMA](#) |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA

### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#HARQ processes	Integer	Number of HARQ processes
#Params/HARQ	Integer	Number of parameters per HARQ process.
HARQ ID	Integer	HSDPA HARQ process Identifier Range: 0 – 15
HARQ dir.	Integer	HSDPA HARQ process direction 1 = Uplink 2 = Downlink
HARQ Rate	Integer	HSDPA HARQ process throughput The value of the parameter is calculated from the transport block sizes for each HARQ process separately. Minimum value: 0 Unit: bit/s
#HARQ packets	Integer	HSDPA HARQ process block rate The number of MAC-hs PDUs transferred per HARQ process.
HARQ BLER	Float	HSDPA HARQ process BLER The ratio of erroneously received MAC-hs PDUs to all received MAC-hs PDUs for each HARQ process separately. Range: 0 – 100 Unit: %

Cell type	Integer	HSDPA cell type 1 = Primary 2 = Secondary
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#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#HARQ processes	Integer	Number of HARQ processes
#Params/HARQ	Integer	Number of parameters per HARQ process.
HARQ ID	Integer	HSDPA HARQ process Identifier Range: 0 – 15
HARQ dir.	Integer	HSDPA HARQ process direction 1 = Uplink 2 = Downlink
HARQ Rate	Integer	HSDPA HARQ process throughput The value of the parameter is calculated from the transport block sizes for each HARQ process separately. Minimum value: 0 Unit: bit/s
#HARQ packets	Integer	HSDPA HARQ process block rate The number of MAC-hs PDUs transferred per HARQ process.
HARQ BLER	Float	HSDPA HARQ process BLER The ratio of erroneously received MAC-hs PDUs to all received MAC-hs PDUs for each HARQ process separately. Range: 0 – 100 Unit: %

## HS-SCCH channel information (HSSCCHI)

Event ID	HSSCCHI
Cellular systems	UMTS FDD,UMTS TD-SCDMA
Record state	Packet active state
Description	Recorded every 200 milliseconds to indicate HS-SCCH channel usage based on the trace messages of the mobile. This measurement event is recorded simultaneously with the PLAID measurement event.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for UMTS FDD](#) | 
 [Parameters for UMTS TD-SCDMA](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header	Integer	Number of header parameters

params		
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
HS-SCCH code	Integer	HSDPA HS-SCCH channelisation code Range: 0 – 127
HS-SCCH usage	Float	HSDPA HS-SCCH usage Defines the ratio of TTIs when new or retransmitted data is indicated using this HS-SCCH channelisation code. Note that the sum of the percentages is 200 when the measurement event contains information about primary and secondary HSDPA cells. Range: 0 – 100 Unit: %
Cell type	Integer	HSDPA cell type 1 = Primary 2 = Secondary

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
HS-SCCH 1st code	Integer	HSDPA HS-SCCH first channelisation code Range: 0 – 15
HS-SCCH 2nd code	Integer	HSDPA HS-SCCH second channelisation code Range: 0 – 15
HS-SCCH usage	Float	HSDPA HS-SCCH usage Defines the ratio of TTIs when new or retransmitted data is indicated using this HS-SCCH channelisation code. Note that the sum of the percentages is 200 when the measurement event contains information about primary and secondary HSDPA cells. Range: 0 – 100 Unit: %

## Packet link adaptation info for downlink (PLAID)

Event ID	PLAID
Cellular systems	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,WiMAX
Record state	Packet active state
Description	The measurement event contains statistical information on the usage of the downlink link adaptation based on the trace messages of the mobile. Currently recorded at a 200 millisecond interval with HSDPA. Only one measurement event is logged for all serving cells with HSDPA. Separate measurement event is logged for each serving cell with LTE.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for UMTS FDD](#) | 
 [Parameters for UMTS TD-SCDMA](#) | 
 [Parameters for LTE](#) | 
 [Parameters for WiMAX](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system

		5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 25 = WiMAX
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#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Sample duration	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
HS-PDSCH rate	Integer	HSDPA HS-PDSCH throughput High-Speed Physical Downlink Shared Channel throughput is calculated from all (also retransmitted) transport blocks received from the HS-DSCH transport channel and divided by sample duration. This parameter is also known as HSDPA physical channel throughput or served throughput. Minimum value: 0 Unit: bit/s
MIMO usage	Float	HSDPA MIMO usage ratio The percentage of TTIs during the reporting period when dual stream transfer is used. This value displays the exact amount of MIMO used with HSDPA. Range: 0 – 100 Unit: %
Scheduled rate	Integer	HSDPA HS-PDSCH scheduled throughput High-Speed Physical Downlink Shared Channel scheduled throughput is calculated from all (also retransmitted) transport blocks received from the HS-DSCH transport channel and divided by time when data is received from the network (idle time is not calculated). With DC-HSDPA the scheduled throughput is calculated separately for each cell and then the received values are summed up to get the total scheduled throughput. Minimum value: 0 Unit: bit/s
#PLA sets	Integer	Number of packet link adaptation sets
#Params/PLA set	Integer	Number of parameters per packet link adaptation set
Percentage	Float	HSDPA percentage Percentage of this set from the total sample duration. Note that the sum of the percentages is 200 when the measurement event contains information about primary and secondary HSDPA cells. Range: 0 – 100 Unit: %
Modulation	Integer	HSDPA modulation 1 = QPSK 2 = 16QAM 3 = 64QAM
Effective coding	Float	HSDPA effective coding Effective coding is transport block size divided by bits per TTI per physical channel (=U), where U is 960 bits for QPSK, 1920 bits for 16QAM, and 2880 bits for 64QAM. Range: 0 – 1
TB size	Integer	HSDPA transport block size Minimum value: 0 Unit: bit
1st code	Integer	HSDPA first channelisation code Range: 0 – 15
#codes	Integer	HSDPA number of used channelisation codes Range: 1 – 15
BLER	Float	HSDPA MAC-hs BLER

		The ratio of erroneously received MAC-hs PDUs to all MAC-hs PDUs with this link adaptation configuration. Range: 0 – 100 Unit: %
HS-SCCH type	Integer	HSDPA HS-SCCH type See 3GPP TS 125.212 subclause 4.6. 0 = No data 1 = HS-SCCH type 1 2 = HS-SCCH type 2 3 = HS-SCCH type 3 10 = No data (DRX) 100 = RX and TX order, disable HS-SCCH-less mode 101 = DRX and TX order, disable HS-SCCH-less mode 102 = RX and DTX order, disable HS-SCCH-less mode 103 = DRX and DTX order, disable HS-SCCH-less mode 104 = RX and TX order, enable HS-SCCH-less mode 105 = DRX and TX order, enable HS-SCCH-less mode 106 = RX and DTX order, enable HS-SCCH-less mode 107 = DRX and DTX order, enable HS-SCCH-less mode 110 = Secondary serving HS-DSCH deactivation order 111 = Secondary serving HS-DSCH activation order
Modulation 2	Integer	HSDPA modulation for secondary stream 1 = QPSK 2 = 16QAM 3 = 64QAM
Effective coding 2	Float	HSDPA effective coding for secondary stream Range: 0 – 1
TB size 2	Integer	HSDPA transport block size for secondary stream Minimum value: 0 Unit: bit
BLER 2	Float	HSDPA MAC-hs BLER for secondary stream Range: 0 – 100 Unit: %
Cell type	Integer	HSDPA cell type 1 = Primary 2 = Secondary

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Sample duration	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
HS-PDSCH rate	Integer	HSDPA HS-PDSCH throughput High-Speed Physical Downlink Shared Channel throughput is calculated from all (also retransmitted) transport blocks received from the HS-DSCH transport channel and divided by sample duration. This parameter is also known as HSDPA physical channel throughput or served throughput. Minimum value: 0 Unit: bit/s
#PLA sets	Integer	Number of packet link adaptation sets
#Params/PLA set	Integer	Number of parameters per packet link adaptation set
Percentage	Float	HSDPA percentage Percentage of this set from the total sample duration. Note that the sum of the percentages is 200 when the measurement event contains information about primary and secondary HSDPA cells. Range: 0 – 100 Unit: %
Modulation	Integer	HSDPA modulation 1 = QPSK 2 = 16QAM 3 = 64QAM

TB size	Integer	HSDPA transport block size Minimum value: 0 Unit: bit
1st code	Integer	HSDPA first channelisation code Range: 0 – 15
#codes	Integer	HSDPA number of used channelisation codes Range: 1 – 15
BLER	Float	HSDPA MAC-hs BLER The ratio of erroneously received MAC-hs PDUs to all MAC-hs PDUs with this link adaptation configuration. Range: 0 – 100 Unit: %
SF	Integer	TD-SCDMA spreading factor Note that only valid values at the moment are 1 and 16. 1 = SF 1 2 = SF 2 4 = SF 4 8 = SF 8 16 = SF 16

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Sample duration	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
DL PRB %	Float	PRB utilization DL Downlink PRB utilization proportional to bandwidth and reporting period. Range: 0 – 100 Unit: %
DL TBS	Integer	PDSCH average transport block size Minimum value: 0 Unit: bit
Max DL TBS	Integer	PDSCH maximum transport block size Minimum value: 0 Unit: bit
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
#PLA sets	Integer	Number of packet link adaptation sets
#Params/PLA set	Integer	Number of parameters per packet link adaptation set
Percentage	Float	PDSCH modulation percentage Range: 0 – 100 Unit: %
Rank	Integer	PDSCH rank Defines how many data streams are used for the data transmission. When spatial multiplexing transmission scheme is used, the rank is the same as the number of used layers. The value of the parameter is zero when data is not received. Range: 0 – 4
Modulation 0	Integer	PDSCH modulation for codeword 0 This is the modulation order as defined by 3GPP TS 36.213 subclause 7.1.7. 0 = BPSK 1 = QPSK 2 = 16QAM

		3 = 64QAM 4 = 256QAM
MCS 0	Integer	PDSCH MCS index for codeword 0 Defines the modulation and the amount of coding used. See 3GPP TS 36.213 subclause 7.1.7. Range: 0 – 31
Modulation 1	Integer	PDSCH modulation for codeword 1 This is the modulation order as defined by 3GPP TS 36.213 subclause 7.1.7. 0 = BPSK 1 = QPSK 2 = 16QAM 3 = 64QAM 4 = 256QAM
MCS 1	Integer	PDSCH MCS index for codeword 1 Defines the modulation and the amount of coding used. See 3GPP TS 36.213 subclause 7.1.7. Range: 0 – 31
N_rep	Integer	PDSCH repetitions Defines how many times this combination was repeated. Same as N_rep. See 3GPP TS 36.213 subclause 7.1.11 (BL/CE) and 16.4. (NB-IoT). Range: 1 – 2048
TBS 0	Integer	PDSCH transport block size for codeword 0 Minimum value: 0 Unit: bit
TBS 1	Integer	PDSCH transport block size for codeword 1 Minimum value: 0 Unit: bit
#PRBs	Integer	Number of PRBs
#Params/PRB	Integer	Number of parameters per PRB
Percentage	Float	PDSCH PRB percentage Range: 0 – 100 Unit: %
PRBs	Integer	PDSCH PRBs Range: 0 – 100
SFs	Integer	PDSCH Subframes With NB-IoT defines how many subframes were allocated. Range: 0 – 10
#PRB indexes	Integer	Number of PRB indexes This is the same as the system bandwidth. Range: 0 – 100
#Params/PRB index	Integer	Number of parameters per PRB index
DL PRB %/i	Float	PRB utilization DL/index Range: 0 – 100 Unit: %
PRB index	Integer	PRB index Range: 0 – 99

#### Parameters for WiMAX [\[Top\]](#)

Name	Type	Description
#PLA header parameters	Integer	Number of header parameters
Sample dur.	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
Burst count	Integer	WiMAX burst count Number of received or sent burst during reporting period.
#PLA sets	Integer	Number of packet link adaptation sets

#Params/PLA set	Integer	Number of parameters per packet link adaptation set
Percentage	Float	WiMAX percentage Ratio of burst that used this modulation and coding. Range: 0 – 100
Modulation	Integer	WiMAX modulation 1 = QPSK 2 = 16QAM 3 = 64QAM
Coding rate	Integer	WiMAX coding rate 1 = 1 / 2 2 = 3 / 5 3 = 5 / 8 4 = 2 / 3 5 = 3 / 4 6 = 4 / 5 7 = 5 / 6
Coding type	Integer	WiMAX coding type 1 = Tail biting convolutional Code (CC) 2 = Block turbo code (BTC) 3 = Convolutional turbo code (CTC) 4 = Zero tail convolutional code (ZTCC)
Repetition coding	Integer	WiMAX repetition coding 1 = No repetition coding 2 = Repetition coding 2 4 = Repetition coding 4 6 = Repetition coding 6

## Packet link adaptation info for uplink (PLAIU)

<b>Event ID</b>	PLAIU
<b>Cellular systems</b>	UMTS FDD,WiMAX,LTE FDD,LTE TDD
<b>Record state</b>	Packet active state
<b>Description</b>	The measurement event contains statistical information on the usage of the uplink link adaptation based on the trace messages of the mobile. Recorded every 200 milliseconds with Nokia-based mobiles and every 400 milliseconds with Qualcomm-based mobiles. Separate measurement event is logged for each serving cell with DC-HSUPA and LTE.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#)
[Parameters for UMTS FDD](#)
[Parameters for LTE](#)
[Parameters for WiMAX](#)

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 25 = WiMAX

### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters



Sample duration	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
E-DPDCH Rate	Integer	HSUPA E-DPDCH throughput E-DPDCH throughput is calculated from all (including retransmitted) transport blocks transmitted in the E-DCH transport channel. Minimum value: 0 Unit: bit/s
Lim. max power	Float	HSUPA E-TFC selection limited by max power percentage Percentage of frames when larger E-TFCI selection would cause exceeding of the maximum allowed TX power usage. Range: 0 – 100 Unit: %
Lim. grant	Float	HSUPA E-TFC selection limited by serving grant percentage Percentage of frames when larger E-TFCI cannot be selected since it would require more power than allowed by current serving grant. Range: 0 – 100 Unit: %
Lim. lack of data	Float	HSUPA E-TFC selection limited by lack of data percentage Percentage of frames when larger E-TFCI cannot be selected since mobile's output buffers doesn't contain enough data. Range: 0 – 100 Unit: %
Lim. by mux	Float	HSUPA E-TFC selection limited by mux restriction percentage Percentage of frames when larger E-TFCI cannot be selected since MAC-d flows containing data cannot be multiplexed together with currently selected MAC-d flow. Allowed multiplexing is defined by E-DCH MAC-d flow multiplexing list -parameter in 3GPP TS 125.331 subclause 10.3.5.1b. Range: 0 – 100 Unit: %
Lim. by HARQ	Float	HSUPA E-TFC selection limited by HARQ restriction percentage Percentage of frames when larger E-TFCI cannot be selected since certain MAC-d flows cannot be send using current used HARQ process. Allowed HARQ processes per MAC-d flow is controlled by 2ms non-scheduled transmission grant HARQ process allocation -parameter in 3GPP TS 125.331 subclause 10.3.5.1b. Non-zero only when 2ms subframes are used. Range: 0 – 100 Unit: %
Cell type	Integer	HSUPA cell type 1 = Primary 2 = Secondary
#PLA sets	Integer	Number of packet link adaptation sets
#Params/PLA set	Integer	Number of parameters per packet link adpatation set
Percentage	Float	HSUPA percentage Percentage of this set from the total sample duration. Note that the sum of the percentages is 200 when the measurement event contains information about primary and secondary HSDPA cells. Range: 0 – 100 Unit: %
Modulation	Integer	HSUPA modulation 1 = QPSK 2 = 16QAM
TB size	Integer	HSUPA transport block size Minimum value: 0 Unit: bit
E-TFCI	Integer	HSUPA E-TFCI Range: 0 – 127
SFs	Integer	HSUPA spreading and channelisation codes 1 = SF 256 2 = SF 128 3 = SF 64 4 = SF 32

		5 = SF 16 6 = SF 8 7 = SF 4 8 = 2 * SF 4 9 = 2 * SF 2 10 = 2 * SF 4 and 2 * SF 2
Retr.	Float	HSUPA retransmission rate per LA The ratio of erroneous MAC-e PDUs retransmitted using this link adaptation configuration. Range: 0 – 100 Unit: %
Avg. SG index	Integer	HSUPA average serving grant The most common value is reported. -1 = ZERO_GRANT 0 = 0 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 10 = 10 11 = 11 12 = 12 13 = 13 14 = 14 15 = 15 16 = 16 17 = 17 18 = 18 19 = 19 20 = 20 21 = 21 22 = 22 23 = 23 24 = 24 25 = 25 26 = 26 27 = 27 28 = 28 29 = 29 30 = 30 31 = 31 32 = 32 33 = 33 34 = 34 35 = 35 36 = 36 37 = 37
Avg. SG	Float	HSUPA average serving grant power -10.0 if ZERO_GRANT. Range: -10 – 30 Unit: dB

#### Parameters for LTE [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Sample duration	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
UL PRB %	Float	PRB utilization UL Uplink PRB utilization proportional to bandwidth and reporting period. Range: 0 – 100 Unit: %

Avg UL TBS	Integer	PUSCH average transport block size Minimum value: 0 Unit: bit
Max UL TBS	Integer	PUSCH maximum transport block size Minimum value: 0 Unit: bit
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
#PLA sets	Integer	Number of packet link adaptation sets
#Params/PLA set	Integer	Number of parameters per packet link adaptation set
Percentage	Float	PUSCH modulation percentage Range: 0 – 100 Unit: %
Rank	Integer	PUSCH rank Defines how many data streams are used for the data transmission. When spatial multiplexing transmission scheme is used, the rank is the same as the number of used layers. The value of the parameter is zero when data is not transmitted. Range: 0 – 1
Modulation 0	Integer	PUSCH modulation for codeword 0 The modulation order as defined by 3GPP TS 36.213 subclause 8.6. 1 = QPSK 2 = 16QAM 3 = 64QAM
MCS index 0	Integer	PUSCH MCS index for codeword 0 Defines the modulation and the amount of coding used for data transmission. In the case of retransmission the recorded value is the same as originally used for the data transmission (instead of values from 29 to 31 that are used to indicate redundancy version). See 3GPP TS 36.213 subclause 8.6. Range: 0 – 31
Modulation 1	Integer	PUSCH modulation for codeword 1 The modulation order as defined by 3GPP TS 36.213 subclause 8.6.
MCS index 1	Integer	PUSCH MCS index for codeword 1 Defines the modulation and the amount of coding used for data transmission. In the case of retransmission the recorded value is the same as originally used for the data transmission (instead of values from 29 to 31 that are used to indicate redundancy version). See 3GPP TS 36.213 subclause 8.6. Range: 0 – 31
N_rep	Integer	PUSCH repetitions Defines how many times this combination was repeated. Same as N_rep. See 3GPP TS 36.213 subclause 8.0 (BL/CE) and 16.5. (NB-IoT). Range: 1 – 128
TBS 0	Integer	PUSCH transport block size for codeword 0 Minimum value: 0 Unit: bit
TBS 1	Integer	PUSCH transport block size for codeword 1 Minimum value: 0 Unit: bit
#PRBs	Integer	Number of PRBs
#Params/PRB	Integer	Number of parameters per PRB
Percentage	Float	PUSCH PRB percentage Range: 0 – 100 Unit: %

PRBs	Integer	PUSCH PRBs Range: 0 – 100
SCs	Integer	PUSCH subcarriers With NB-IoT defines how many subcarriers are allocated. 0 = 1x3.75 kHz 1 = 1x15 kHz 3 = 3x15 kHz 6 = 6x15 kHz 12 = 12x15 kHz
#PRB indexes	Integer	Number of PRB indexes This is the same as the system bandwidth. Range: 0 – 100
#Params/PRB index	Integer	Number of parameters per PRB index
UL PRB %/i	Float	PRB utilization UL/index Range: 0 – 100 Unit: %
PRB index	Integer	PRB index Range: 0 – 99

#### Parameters for WiMAX [|Top|](#)

Name	Type	Description
#PLA header parameters	Integer	Number of header parameters
Sample dur.	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
Burst count	Integer	WiMAX burst count Number of received or sent burst during reporting period.
#PLA sets	Integer	Number of packet link adaptation sets
#Params/PLA set	Integer	Number of parameters per packet link adaptation set
Percentage	Float	WiMAX percentage Ratio of burst that used this modulation and coding. Range: 0 – 100
Modulation	Integer	WiMAX modulation 1 = QPSK 2 = 16QAM 3 = 64QAM
Coding rate	Integer	WiMAX coding rate 1 = 1 / 2 2 = 3 / 5 3 = 5 / 8 4 = 2 / 3 5 = 3 / 4 6 = 4 / 5 7 = 5 / 6
Coding type	Integer	WiMAX coding type 1 = Tail biting convolutional Code (CC) 2 = Block turbo code (BTC) 3 = Convolutional turbo code (CTC) 4 = Zero tail convolutional code (ZTCC)
Repetition coding	Integer	WiMAX repetition coding 1 = No repetition coding 2 = Repetition coding 2 4 = Repetition coding 4 6 = Repetition coding 6

## Happy bit indicator (HBI)

<b>Event ID</b>	HBI
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Packet active state
<b>Description</b>	The measurement event contains information on the state of the happy bit transmitted by the mobile to the network during an HSUPA session. The measurement event is recorded simultaneously with the PLAIU measurement event. The measurement event is logged only for primary serving cell with DC-HSUPA.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD |

### Parameters | [Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

### Parameters for UMTS FDD | [Top](#)

Name	Type	Description
Reporting interval	Integer	HSUPA happy bit reporting interval Defines how often HBI measurement event is reported during HSUPA transfer. Unit: ms
Happy bit	Float	HSUPA happy bit status percentage Defines how often happy bit status was set happy during previous reporting interval excluding DTX TTIs. Range: 0 – 100 Unit: %
DTX	Float	HSUPA happy bit DTX percentage How many TTIs DTX was used during previous reporting period. Range: 0 – 100 Unit: %

## MAC-E layer throughput (MACERATE)

<b>Event ID</b>	MACERATE
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Packet active state
<b>Description</b>	The measurement event contains information on the MAC-e layer throughput based on the trace messages of the mobile. The measurement event is reported during an HSUPA session simultaneously with PLAIU measurement event. Separate measurement event is logged for each serving cell with DC-HSUPA.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
MAC-e bitrate	Integer	HSUPA MAC-e throughput The value of this parameter is calculated based on the SDUs that are successfully transferred through the MAC-e layer. Missing and erroneous MAC-e blocks are excluded from the throughput calculation. Approximation of MAC-e throughput is calculated from transport block sizes if real MAC-e throughput is not provided by diagnostic interface of the device. Approximation is a little bit higher than real MAC-e throughput since it contains MAC headers and padding. Minimum value: 0 Unit: bit/s
MAC-e block rate	Integer	HSUPA MAC-e block rate The total number of MAC-e PDUs transmitted during the reporting period.
MAC-e 1st retr.	Float	HSUPA MAC-e 1st retransmission rate The ratio of MAC-e PDUs retransmitted after the first transmission attempt. Range: 0 – 100 Unit: %
MAC-e 2nd retr.	Float	HSUPA MAC-e 2nd retransmission rate The ratio of MAC-e PDUs retransmitted after the second transmission attempt. Range: 0 – 100 Unit: %
MAC-e 3rd+ retr.	Float	HSUPA MAC-e 3rd+ retransmission rate The ratio of MAC-e PDUs retransmitted after the third or later transmission attempt. Range: 0 – 100 Unit: %
Cell type	Integer	HSUPA cell type 1 = Primary 2 = Secondary

## Absolute Grant (AGRANT)

Event ID	AGRANT
Cellular systems	UMTS FDD
Record state	Packet active state
Description	Recorded when serving grant is modified using E-AGCH channel. Note that this measurement event is not necessarily recorded exactly with the correct timestamp because of limitations in the trace interface of the mobile. For the same reason, there can be multiple AGRANT measurement events with the same timestamp. In these cases, the order of the measurement events is the order of the E-AGCH modifications.

<b>Tools</b>	Nemo Outdoor, Nemo Handy
Parameters	Parameters for UMTS FDD

## Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

## Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
AGCH index	Integer	HSUPA AGCH absolute grant index Absolute grant index provides the information of how much power a user equipment can use for transmission. See more 3GPP TS 125.321 subclause 9.2.5.2.2. Range: 0 – 31
AGCH grant	Float	HSUPA AGCH absolute grant power Absolute grant power level is issued to a user equipment (UE) by the network and is the maximum amount of power the UE is allowed to use for transmission. Power ratio between E-DPDCH and DPCCH channels. See more 3GPP TS 125.212 subclause 4.10.1A. Range: -10 – 35 Unit: dB
AGCH scope	Integer	HSUPA AGCH absolute grant scope See more 3GPP TS 125.321 subclause 9.2.5.2.2. -1 = All HARQ processes 0 = HARQ process ID 0 1 = HARQ process ID 1 2 = HARQ process ID 2 3 = HARQ process ID 3 4 = HARQ process ID 4 5 = HARQ process ID 5 6 = HARQ process ID 6 7 = HARQ process ID 7
AGCH selector	Integer	HSUPA AGCH absolute grant selector 1 = Primary 2 = Secondary
E-RNTI selector	Integer	HSUPA serving grant selector Defines currently selected E-RNTI. 1 = Primary 2 = Secondary
Cell type	Integer	HSUPA cell type 1 = Primary 2 = Secondary

## Serving Grant (SGRANT)

<b>Event ID</b>	SGRANT
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Packet active state
<b>Description</b>	The measurement event contains statistical information on the used serving grant based on the trace interface. The measurement event is reported during an HSUPA session

	simultaneously with the PLAIU measurement event. Separate measurement event is logged for each serving cell with DC-HSUPA.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD |

#### Parameters | [Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

#### Parameters for UMTS FDD | [Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Sample dur.	Integer	Sample duration The time from which samples are collected for the distribution. Unit: ms
Granted rate	Integer	HSUPA granted throughput The throughput that would have been achieved if all power defined by the serving grant had been used for the data transmission. Minimum value: 0 Unit: bit/s
SG utilization	Float	HSUPA serving grant utilization SG utilization is the total of all transferred scheduled bits divided by bits that could have been transferred if the appropriate serving grant index had been used. This is approximately the same as the ratio between transferred throughput and serving grant throughput. Range: 0 – 100 Unit: %
Cell type	Integer	HSUPA cell type 1 = Primary 2 = Secondary
#SG sets	Integer	Number of serving grant sets
#Params/SG set	Integer	Number of parameters per serving grant set
Distribution	Float	HSUPA serving grant distribution Range: 0 – 100 Unit: %
SG index	Integer	HSUPA serving grant index See more 3GPP TS 125.321 subclause 9.2.5.2.1. -1 = ZERO_GRANT 0 = 0 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 10 = 10 11 = 11 12 = 12 13 = 13 14 = 14 15 = 15 16 = 16 17 = 17 18 = 18 19 = 19 20 = 20 21 = 21



		22 = 22 23 = 23 24 = 24 25 = 25 26 = 26 27 = 27 28 = 28 29 = 29 30 = 30 31 = 31 32 = 32 33 = 33 34 = 34 35 = 35 36 = 36 37 = 37
Serving grant	Float	HSUPA serving grant power Power ratio between E-DPDCH and DPCCH channels. -10.0 if ZERO_GRANT. Range: -10 – 35 Unit: dB

## E-DCH Information (EDCHI)

<b>Event ID</b>	EDCHI
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Packet active state
<b>Description</b>	The measurement event contains statistical information on the received relative grant indications based on the trace interface. The measurement event is reported during an HSUPA session simultaneously with the PLAUI measurement event. Separate measurement event is logged for each serving cell with DC-HSUPA.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD |

### Parameters [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

### Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
NS ACKs %	Float	HSUPA non-serving ACK percentage Defines how often only non-serving E-DCH cell has reported ACK. Non-transmitting frames are ignored. Range: 0 – 100 Unit: %
NS grant down %	Float	HSUPA non-serving grant down percentage Defines how often non-serving E-DCH cell has reported grant down even if serving E-DCH cell has reported grant up or hold. Non-transmitting frames are ignored.

		Range: 0 – 100 Unit: %
Cell type	Integer	HSUPA cell type 1 = Primary 2 = Secondary
#Cells	Integer	Number of E-DCH cells
#Params/cell	Integer	Number of parameters per cell
HSUPA channel	Integer	HSUPA channel
HSUPA SC	Integer	HSUPA scrambling code Range: 0 – 511
HSUPA RLS	Integer	HSUPA radio link set This parameter is the same as RG combination index defined in RRC protocol specification. Range: 0 – 5
ACK %	Float	HSUPA HIGH ACK percentage Range: 0 – 100 Unit: %
NACK %	Float	HSUPA HIGH NACK percentage Range: 0 – 100 Unit: %
DTX %	Float	HSUPA HIGH DTX percentage Range: 0 – 100 Unit: %
Grant up %	Float	HSUPA RGCH grant up percentage Range: 0 – 100 Unit: %
Grant hold %	Float	HSUPA RGCH grant hold percentage Range: 0 – 100 Unit: %
Grant down %	Float	HSUPA RGCH grant down percentage Range: 0 – 100 Unit: %

## HSUPA scheduling information (HSUPASI)

<b>Event ID</b>	HSUPASI
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Packet active state
<b>Description</b>	The measurement event contains statistical information on the transmitted Scheduling Information based on the trace interface. The measurement event is reported during an HSUPA session simultaneously with the PLAIU measurement event. The measurement event is logged only for primary serving cell with DC-HSUPA.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD |

### Parameters | Top |

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

**Parameters for UMTS FDD** |Top|

Name	Type	Description
Dur.	Integer	HSUPA Scheduling information sample duration The time from which samples are collected. Unit: ms
SI count	Integer	HSUPA scheduling information count Number of Scheduling Informations sent during reporting period.
HLID	Integer	HSUPA SI highest priority logical channel ID Range: 0 – 15
HLBS	Integer	HSUPA SI highest priority logical channel buffer status Range: 0 – 15
TEBS	Integer	HSUPA SI total E-DCH buffer status This is a mode of all E-DCH buffer status received during reporting period. Range: 0 – 31
TEBS min	Integer	HSUPA SI total E-DCH buffer status minimum This is a minimum of all E-DCH buffer status received during reporting period. Range: 0 – 31
TEBS max	Integer	HSUPA SI total E-DCH buffer status maximum This is a maximum of all E-DCH buffer status received during reporting period. Range: 0 – 31
UPH	Integer	HSUPA SI UE power headroom This is mode of all UE power headrooms received during reporting period. Range: 0 – 31
UPH min	Integer	HSUPA SI UE power headroom minimum This is minimum of all UE power headrooms received during reporting period. Range: 0 – 31
UPH max	Integer	HSUPA SI UE power headroom maximum This is maximum of all UE power headrooms received during reporting period. Range: 0 – 31

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**Data rate control info (DRCI)**

Event ID	DRCI
Cellular systems	EVDO
Record state	Packet active state
Description	Recorded when parameter sample is received from the device.
Tools	Nemo Outdoor, Nemo Handy

Parameters |

**Parameters** |Top|

Name	Type	Description
Measured sys.	Integer	Measured system

		12 = EVDO
#Header params	Integer	Number of header parameters
Sample duration	Integer	DRC sets sample duration
#DRC sets	Integer	Number of DRC set
#Params/DRC set	Integer	Number of parameters per DRC set
Percentage	Float	DRC set percentage Range: 0 – 100 Unit: %
Requested rate	Integer	DRC set requested rate
Packet length	Integer	Packet link adaptation packet length 0 = Short 1 = Long

## Reverse data rate control (RDRC)

<b>Event ID</b>	RDRC
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO |Top|

Name	Type	Description
TX rate limit	Integer	Reverse rate limit (Rev 0 only) Range: 0 – 153600
TX current rate	Integer	Current rate (Rev 0 only) Range: 0 – 153600
Comb. RAB	Integer	Combined busy bit (Rev 0 only) Reverse Activity Bit (RAB) is a control bit sent in regular intervals that indicates if the access network is busy or not. Range: 0 – 1
PA max	Integer	Maximum PA headroom available (Rev 0 only) Range: 0 – 153600 Unit: bit/s
Random variable	Integer	Random variable Random variable represents the random variable that was used to calculate the new reverse rate (Rev 0 only). Range: 0 – 255
Transition	Integer	Transition probability

probability		Transition probability that was used to calculate the new reverse rate (Rev 0 only).
Condition RRI	Integer	Condition RRI Condition reverse rate provides the reverse rate that was calculated based on the above factors (Rev 0 only). Range: 0 – 153600 Unit: bit/s
Actual RRI	Integer	Actual RRI Actual reverse rate. This should be less than condition RRI or there is not enough data to be sent (Rev 0 only). Range: 0 – 153600 Unit: bit/s
Padding bytes	Integer	Padding bytes Number of padding bytes included in the reverse link packets (Rev 0 only). Minimum value: 0 Unit: byte
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Packet carrier	Integer	Packet carrier number
FRAB	Integer	FRAB Fast reverse activity bit soft decision max.
QRAB	Integer	QRAB Quick reverse activity bit hard decision. 0 = Unloaded 1 = Loaded
QRABps	Integer	QRABps Quick reverse activity bit value based on pilot strength. 0 = Unloaded 1 = Loaded

## Forward data rate control (FDRC)

<b>Event ID</b>	FDRC
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO [|Top|](#)

Name	Type	Description
DRC index	Integer	DRC index Average over 16 samples.

DRC cover	Integer	DRC cover Cover used to transmit DRC. Range: 0 – 7
DSC value	Integer	DSC value Data source control value transmitted by the mobile (Rev A only). Range: 0 – 7
DRC boost	Integer	DRC gain boost 0 = Not applied 1 = Applied
DSC boost	Integer	DSC gain boost 0 = Not applied 1 = Applied
DRC lock upd. slot	Integer	Slot for DRC lock update
ACK channel status	Integer	ACK channel status 0 = Disabled 1 = Enabled
Forced ACK/NAK ratio	Float	Forced ACK/NAK ratio Represents the ratio of forced ACK/NAKs. Range: 0 – 100 Unit: %
ACK ratio	Float	ACK ratio Range: 0 – 100 Unit: %
Multiusers ACK ratio	Float	Multiusers ACK ratio Range: 0 – 100 Unit: %
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Packet carrier	Integer	Packet carrier number
DRC index/Ch	Integer	DRC index/Channel Average over 16 samples.

## Physical FER (PHFER)

<b>Event ID</b>	PHFER
<b>Cellular systems</b>	EVDO,WiMAX
<b>Record state</b>	Always
<b>Description</b>	Recorded when frame error rate reports are received from the device.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Parameters for EVDO](#) | [Parameters for WiMAX](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO 25 = WiMAX

**Parameters for EVDO** [|Top](#)

Name	Type	Description
PER	Float	PER instantaneous Range: 0 – 100 Unit: %
PER short	Float	PER short Range: 0 – 100 Unit: %
PER long	Float	PER long Range: 0 – 100 Unit: %
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Packet carrier	Integer	Packet carrier number
PER/Ch	Float	PER instantaneous/Channel Range: 0 – 100 Unit: %
PER short/Ch	Float	PER short/Channel Range: 0 – 100 Unit: %
PER long/Ch	Float	PER long/Channel Range: 0 – 100 Unit: %

**Parameters for WiMAX** [|Top](#)

Name	Type	Description
FER	Float	WiMAX frame lost ratio Range: 0 – 100 Unit: %

## Markov mux information (MARKOVMUX)

Event ID	MARKOVMUX
Cellular systems	cdmaOne,CDMA 1x
Record state	Always
Description	Recorded when the mobile reports the information.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for cdmaOne and CDMA 1x](#) |**Parameters** [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x

**Parameters for cdmaOne and CDMA 1x** [|Top](#)

Name	Type	Description
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#Header params	Integer	Number of header parameters Number of parameters before message data.
#Frames	Integer	Number of frames
Params/frame	Integer	Number of parameters per frame
M expected mux	Integer	Markov expected mux 0 = 9600 markov 1 = 4800 markov 2 = 2400 markov 3 = 1200 markov 4 = 8 kbps non-markov 5 = 14400 markov 6 = 7200 markov 7 = 3600 markov 8 = 1800 markov 9 = 13 kbps non-markov
M actual mux	Integer	Markov actual mux 0 = 9600 primary 1 = 9600 1/2 primary + signaling 2 = 9600 1/4 primary + signaling 3 = 9600 1/8 primary + signaling 4 = 9600 signaling (B&B) 5 = 4800 primary 6 = 2400 primary 7 = 1200 primary 8 = Erased frame (poor quality) 9 = Frame quality insufficient to decide upon rate 10 = 9600 1/2 primary + secondary 11 = 9600 1/4 primary + secondary 12 = 9600 1/8 primary + secondary 13 = 9600 secondary (B&B) 14 = 14400 primary 15 = 14400 1/2 primary + signaling 16 = 14400 1/4 primary + signaling 17 = 14400 1/8 primary + signaling 18 = 14400 signaling (B&B) 19 = 14400 1/2 primary + secondary 20 = 14400 1/4 primary + secondary 21 = 14400 1/8 primary + secondary 22 = 14400 secondary (B&B) 23 = 14400 1/8 primary + signaling + secondary 24 = 7200 primary 25 = 7200 1/4 primary + signaling 26 = 7200 1/8 primary + signaling 27 = 7200 signaling (B&B) 28 = 7200 1/4 primary + secondary 29 = 7200 1/8 primary + secondary 30 = 7200 secondary (B&B) 31 = 7200 1/8 primary + signaling + secondary 32 = 3600 primary 33 = 3600 1/8 primary + signaling 34 = 3600 signaling (B&B) 35 = 3600 1/8 primary + secondary 36 = 3600 secondary (B&B) 37 = 1800 primary 38 = 1800 secondary (B&B)

## MARKOV Statistics (MARKOVSTATS)

Event ID	MARKOVSTATS
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<b>Cellular systems</b>	cdmaOne,CDMA 1x
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded during a MARKOV call when parameter sample is received from the mobile.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x
#Header params	Integer	Number of header parameters
M FER	Float	Markov frame error rate Range: 0 – 100 Unit: %
#Expected rates	Integer	Number of expected rates
#Params	Integer	Number of parameters
M expected	Integer	Markov expected rate 1 = One eighth rate 2 = Quarter rate 3 = Half rate 4 = Full rate
M 1/1	Integer	Markov full rate frames received
M 1/2	Integer	Markov half rate frames received
M 1/4	Integer	Markov quarter rate frames received
M 1/8	Integer	Markov one eight rate frames received
M erasures	Integer	Markov erasures received

## Multi carrier reverse link metrics (MCRLMETRICS)

<b>Event ID</b>	MCRLMETRICS
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |Parameters for EVDO |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

#### Parameters for EVDO [|Top|](#)

Name	Type	Description

#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Band	Integer	<p>Band</p> <p>120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>120001 = EVDO 1900 band 1 North American PCS 1900 MHz band.</p> <p>120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band.</p> <p>120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band.</p> <p>120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band.</p> <p>120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band.</p> <p>120007 = EVDO 700 band 7 North American cellular 700 MHz band.</p> <p>120008 = EVDO 1800 band 8 1800 MHz band.</p> <p>120009 = EVDO 900 band 9 900 MHz band.</p> <p>120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band.</p> <p>120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band.</p> <p>120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band.</p> <p>120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension.</p> <p>120014 = EVDO 1900 band 14 US PCS 1.9 GHz.</p> <p>120015 = EVDO 2100 AWS band 15</p> <p>120016 = EVDO 2500 band 16 US 2.5 GHz.</p> <p>120018 = EVDO 700 public safety band 18</p> <p>120019 = EVDO 700 lower band 19</p> <p>120020 = EVDO 1500 L-band band 20</p> <p>120021 = EVDO 2000 S-band band 21</p> <p>129999 = EVDO</p>
Packet carrier	Integer	Packet carrier number
Unexpected P-ARQ NACKs	Integer	<p>Unexpected P-ARQ NACKs</p> <p>Number of P-ARQ NACKs received after an H-ARQ ACK was already received for same packet.</p>
#Channels and PSs	Integer	Number of channels and packet sizes
#Params/Channel and PS	Integer	Number of parameters per channel and packet size
Packet carrier	Integer	Packet carrier number
PS	Integer	<p>Physical layer packet size</p> <p>Minimum value: 0</p> <p>Unit: bit</p>
HiCap Subpacket 0 ACKs	Integer	HiCap Subpacket 0 ACKs
HiCap Subpacket 1 ACKs	Integer	HiCap Subpacket 1 ACKs
HiCap Subpacket 2 ACKs	Integer	HiCap Subpacket 2 ACKs
HiCap Subpacket 3	Integer	HiCap Subpacket 3 ACKs

ACKs		
HiCapp ARQ NACKs	Integer	HiCapp ARQ NACKs
LoLat Subpacket 0 ACKs	Integer	LoLat Subpacket 0 ACKs
LoLat Subpacket 1 ACKs	Integer	LoLat Subpacket 1 ACKs
LoLat Subpacket 2 ACKs	Integer	LoLat Subpacket 2 ACKs
LoLat Subpacket 3 ACKs	Integer	LoLat Subpacket 3 ACKs
LoLat P-ARQ NACKs	Integer	LoLat P-ARQ NACKs

## Multi carrier forward link statistics (MCFLSTATS)

<b>Event ID</b>	MCFLSTATS
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters Parameters for EVDO

### Parameters [Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO [Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band.

		120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Packet carrier	Integer	Packet carrier number
#DRC and PS types	Integer	Number of DRC and PS types
#Params/DRC and PS type	Integer	Number of parameters per DRC and PS type
DRC and PS type	Integer	DRC and PS type 0 = DRC 0, 128 bits 1 = DRC 0, 256 bits 2 = DRC 0, 512 bits 3 = DRC 0, 1024 bits 10 = DRC 1, 128 bits 11 = DRC 1, 256 bits 12 = DRC 1, 512 bits 13 = DRC 1, 1024 bits 20 = DRC 2, 128 bits 21 = DRC 2, 256 bits 22 = DRC 2, 512 bits 23 = DRC 2, 1024 bits 30 = DRC 3, 128 bits 31 = DRC 3, 256 bits 32 = DRC 3, 512 bits 33 = DRC 3, 1024 bits 40 = DRC 4, 128 bits 41 = DRC 4, 256 bits 42 = DRC 4, 512 bits 43 = DRC 4, 1024 bits 50 = DRC 5, 512 bits 51 = DRC 5, 1024 bits 52 = DRC 5, 2048 bits 60 = DRC 6, 128 bits 61 = DRC 6, 256 bits 62 = DRC 6, 512 bits 63 = DRC 6, 1024 bits 70 = DRC 7, 512 bits 71 = DRC 7, 1024 bits 72 = DRC 7, 2048 bits 80 = DRC 8, 1024 bits 81 = DRC 8, 3072 bits 90 = DRC 9, 512 bits 91 = DRC 9, 1024 bits 92 = DRC 9, 2048 bits 100 = DRC 10, 4096 bits 110 = DRC 11, 1024 bits 111 = DRC 11, 3072 bits 120 = DRC 12, 4096 bits 130 = DRC 13, 5120 bits 140 = DRC 14, 5120 bits 1000 = Short CC, 128 bits 1001 = Short CC, 256 bits 1002 = Short CC, 512 bits

		1010 = CC, 38400 bits 1011 = CC, 76800 bits
TC packets good	Integer	TC packets good
TC packets bad	Integer	TC packets bad
TC packets decoded in slot 1	Integer	TC packets decoded in slot 1
TC packets decoded in slot 2	Integer	TC packets decoded in slot 2
TC packets decoded in slot 3	Integer	TC packets decoded in slot 3
TC packets decoded in slot 4	Integer	TC packets decoded in slot 4
TC packets decoded in slot 5	Integer	TC packets decoded in slot 5
TC packets decoded in slot 6	Integer	TC packets decoded in slot 6
TC packets decoded in slot 7	Integer	TC packets decoded in slot 7
TC packets decoded in slot 8	Integer	TC packets decoded in slot 8
TC packets decoded in slot 9	Integer	TC packets decoded in slot 9
TC packets decoded in slot 10	Integer	TC packets decoded in slot 10
TC packets decoded in slot 11	Integer	TC packets decoded in slot 11
TC packets decoded in slot 12	Integer	TC packets decoded in slot 12
TC packets decoded in slot 13	Integer	TC packets decoded in slot 13
TC packets decoded in slot 14	Integer	TC packets decoded in slot 14
TC packets decoded in slot 15	Integer	TC packets decoded in slot 15
TC packets decoded in slot 16	Integer	TC packets decoded in slot 16

## Multilink multi-flow RLP forward link statistics (MLMFRLPFLSTATS)

<b>Event ID</b>	MLMFRLPFLSTATS
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |

### Parameters [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Link flow ID	Integer	Link flow ID
Route number	Integer	Route number
Flow protocol	Integer	Flow protocol
Route protocol	Integer	Route protocol
Packet stream	Integer	Packet stream Whether link flow is packet-based. 0 = Non-packet based 1 = Packet based
Sequence type	Integer	Sequence type Whether link flow is doing segment-based sequencing. 0 = Non-segment based sequencing 1 = Segment based sequencing
SAR sequence length	Integer	SAR sequence length
SAR sequence length short	Integer	SAR sequence length short
AT quick NACK indication count	Integer	AT quick NACK indication count Number of indicated Quick NAK records AT sent out.
AT quick NACK count	Integer	AT quick NACK count Number of Quick NAK records AT sent out.
AT delayed NACK unit count	Integer	AT delayed NACK unit count Number of delayed NAK records AT sent out.
AT delayed NACK data unit count	Integer	AT delayed NACK data unit count Number of bytes requested by AT delayed NAKs.
RX retransmitted bytes	Integer	RX retransmitted bytes Minimum value: 0 Unit: byte
RX retransmitted frames	Integer	RX retransmitted frames
RX new data bytes	Integer	RX new data bytes Minimum value: 0 Unit: byte

RX new data frames	Integer	RX new data frames
RX first data unit	Integer	RX first data unit Number of RLP frames received with First Data Unit flag on.
RX last data unit	Integer	RX last data unit Number of RLP frames received with Last Data Unit flag on.
RX duplicate data bytes	Integer	RX duplicate data bytes Minimum value: 0 Unit: byte
RX duplicate data frames	Integer	RX duplicate data frames
Called NACK timeouts	Integer	Called NACK timeouts
NACK abort data unit approximation	Integer	NACK abort data unit approximation
Called reset count	Integer	Called reset count Initiated by either the AN or AT.
AT reset request count	Integer	AT reset request count
AN reset ACK count	Integer	AN reset ACK count
AN reset request count	Integer	AN reset request count
RX resequencing queue size	Integer	RX resequencing queue size
RX NACK abort queue size	Integer	RX NACK abort queue size
RX delayed NACK queue size	Integer	RX delayed NACK queue size
#QN instances	Integer	Number of QN instances
#Params/QN instance	Integer	Parameters per QN instance
Scheduler group ID	Integer	Scheduler group ID
Number of carriers in the QN instance	Integer	Number of carriers in the QN instance
QN ID	Integer	QN ID
RX new data bytes/QN	Integer	RX new data bytes/QN Minimum value: 0 Unit: byte
RX new data frames/QN	Integer	RX new data frames/QN
Quick NACKs/QN	Integer	QN quick NACK indication count/QN

## Multilink multi-flow RLP reverse link statistics (MLMFRLPRLSTATS)

<b>Event ID</b>	MLMFRLPRLSTATS
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

#### Parameters for EVDO [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Link flow ID	Integer	Link flow ID
Route number	Integer	Route number
Packet stream	Integer	Packet stream Whether link flow is packet-based. 0 = Non-packet based 1 = Packet based
Sequence type	Integer	Sequence type Whether link flow is doing segment-based sequencing. 0 = Non-segment based sequencing 1 = Segment based sequencing
Flow protocol	Integer	Flow protocol
Route protocol	Integer	Route protocol
SAR sequence length	Integer	SAR sequence length
TX new data bytes	Integer	TX new data bytes Minimum value: 0 Unit: byte
TX new data units	Integer	TX new data units
TX first data unit frames	Integer	TX first data unit frames
TX last data unit frames	Integer	TX last data unit frames
PL NACK indications	Integer	PL NACK indications
New data units indicated by PL NACK indication	Integer	New data units indicated by PL NACK indication
Retransmitted data units indicated by PL NACK indication	Integer	Retransmitted data units indicated by PL NACK indication
Out-of-order transmissions	Integer	Out-of-order transmissions
Out-of-order bytes	Integer	Out-of-order bytes Minimum value: 0 Unit: byte
HL packes dropped	Integer	HL packes dropped Number of higher layer packets dropped due to TransmitAbortTimer.
HL bytes dropped	Integer	HL bytes dropped



NACK records received	Integer	NACK records received
Requested data units	Integer	Requested data units
Retransmitted data units	Integer	Retransmitted data units
Retransmitted bytes	Integer	Retransmitted bytes Minimum value: 0 Unit: byte
Retransmitted data units not found	Integer	Retransmitted data units not found
AT reset request count	Integer	AT reset request count
AN reset request count	Integer	AN reset request count
Max TX queue size	Integer	Max TX queue size
Max retransmission queue size	Integer	Max retransmission queue size
Max new data handles	Integer	Max new data handles Maximum number of new data handles used per slot within the logging interval.
Max retransmit data handles	Integer	Max retransmit data handles Maximum number of retransmit data handles used per slot within the logging interval.

## Multilink multi-flow RLP RX processing (MMRLPRXPROCESSING)

<b>Event ID</b>	MMRLPRXPROCESSING
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
RLP event type	Integer	RLP event type 0 = Packet reception or forward link 1 = RLP reset

		2 = Abort 3 = Flush message received
Link flow ID	Integer	Link flow ID
Route number	Integer	Route number
V(n) before	Integer	RLP V(n) before processing
V(n) after	Integer	RLP V(n) after processing
V(r) before	Integer	RLP V(r) before processing
V(r) after	Integer	RLP V(r) after processing
RLP link ID	Integer	RLP link ID
RLP scheduler group ID	Integer	RLP scheduler group ID
QN sequence number included	Integer	QN sequence number included
Data units	Integer	Data units
SAR sequence number	Integer	SAR sequence number
QN sequence number	Integer	QN sequence number
SAR sequence number short	Integer	SAR sequence number short

## Multi carrier forward link packet header info (MCFLPACKETINFO)

<b>Event ID</b>	MCFLPACKETINFO
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameters change.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
#Packets	Integer	Number of packets
#Params/packet	Integer	Number of parameters per packet
Band	Integer	Band 120000 = EVDO 800 band 0

		<p>North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>120001 = EVDO 1900 band 1</p> <p>North American PCS 1900 MHz band.</p> <p>120002 = EVDO 900 TACS band 2</p> <p>Total access communication system (TACS) 900 MHz band.</p> <p>120003 = EVDO 800 JTACS band 3</p> <p>JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>120004 = EVDO 1800 Korean band 4</p> <p>Korean PCS 1800 MHz band.</p> <p>120005 = EVDO 450 NMT band 5</p> <p>Nordic mobile telephone (NMT) 450 MHz band.</p> <p>120006 = EVDO 1900-2100 IMT band 6</p> <p>IMT-2000 1900-2100 MHz band.</p> <p>120007 = EVDO 700 band 7</p> <p>North American cellular 700 MHz band.</p> <p>120008 = EVDO 1800 band 8</p> <p>1800 MHz band.</p> <p>120009 = EVDO 900 band 9</p> <p>900 MHz band.</p> <p>120010 = EVDO 800 SMR band 10</p> <p>Specialized mobile radio (SMR) 800 MHz band.</p> <p>120011 = EVDO 400 PAMR band 11</p> <p>European PAMR 400 MHz band.</p> <p>120012 = EVDO 800 PAMR band 12</p> <p>European PAMR 800 MHz band.</p> <p>120013 = EVDO 2500 band 13</p> <p>2.5 GHz IMT-2000 extension.</p> <p>120014 = EVDO 1900 band 14</p> <p>US PCS 1.9 GHz.</p> <p>120015 = EVDO 2100 AWS band 15</p> <p>120016 = EVDO 2500 band 16</p> <p>US 2.5 GHz.</p> <p>120018 = EVDO 700 public safety band 18</p> <p>120019 = EVDO 700 lower band 19</p> <p>120020 = EVDO 1500 L-band band 20</p> <p>120021 = EVDO 2000 S-band band 21</p> <p>129999 = EVDO</p>
Packet carrier	Integer	Packet carrier number
Link ID	Integer	Link ID
Slot to decode	Integer	Slot to decode
CRC status	Integer	<p>CRC status</p> <p>0 = Failed</p> <p>1 = Passed</p> <p>2 = False pass</p>
CRC length	Integer	<p>CRC length</p> <p>0 = 16 bits</p> <p>1 = 24 bits</p>
Packet type	Integer	<p>Packet type</p> <p>0 = Unicast</p> <p>Sing user traffic channel packet.</p> <p>1 = Multicast 0</p> <p>Multiuser Traffic Channel packet decoded at MAC index MUP_PREAMBLE_BASE.</p> <p>2 = Multicast 1</p> <p>Multiuser Traffic Channel packet decoded at MAC index MUP_PREAMBLE_BASE+1.</p> <p>3 = Multicast 2</p> <p>Multiuser Traffic Channel packet decoded at MAC index MUP_PREAMBLE_BASE+2.</p> <p>4 = Multicast 3</p> <p>Multiuser Traffic Channel packet decoded at MAC index MUP_PREAMBLE_BASE+3.</p> <p>5 = Multicast 4</p> <p>Multiuser Traffic Channel packet decoded at MAC index MUP_PREAMBLE_BASE+4.</p> <p>6 = Control Rel 0</p> <p>Release 0 (std) control channel packet.</p> <p>7 = Control Rel A</p>

	Release A (short) control channel packet. 8 = Control Rel A user defined Release A control channel packet received at user defined short packet MAC index. 9 = Broadcast 10 = Enhanced broadcast 11 = Platinum broadcast
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## Searcher status (SEARCHERSTATUS)

Event ID	SEARCHERSTATUS
Cellular systems	cdmaOne,CDMA 1x,EVDO
Record state	Always
Description	Recorded when parameter sample is received from the device.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for cdmaOne and CDMA 1x | Parameters for EVDO |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

### Parameters for cdmaOne and CDMA 1x [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Searcher state	Integer	Searcher state 0 = Raw initialization state 1 = Deep sleep in start state 2 = Initial state for CDMA operation 3 = Acquisition of the pilot channel 4 = Reception of the sync channel 5 = Transition from sync to paging channel 6 = Operation on the paging channel 7 = Slotted mode sleep state 8 = Operation on the traffic channel 9 = Return from paging or traffic to sync channel 10 = Operation in PCG state 11 = Power up state
Queue	Integer	Searcher queue 0 = High priority queue 0 1 = Low priority queue 0 2 = High priority queue 1
Priority	Integer	Searcher priority
Freq. offset	Float	Searcher frequency offset Unit: Hz
#Pilots	Integer	Number of pilots
#Params/pilot	Integer	Number of parameters per pilot
PN	Integer	Pilot number Range: 0 – 511

Set	Integer	Searcher set information 0 = Active set 1 = Candidate set 2 = Neighbor set 3 = Remaining set 4 = Precandidate set
Ant. config	Integer	Searcher antenna configuration 0 = Antenna 0 1 = Antenna 1 2 = Dual antenna
Searcher QOF	Integer	Searcher QOF Range: 0 – 3
Coherent truncation control	Integer	Searcher coherent truncation control Range: 1 – 8 Unit: bit
Coherent integration length	Integer	Searcher coherent integration length Range: 0 – 4096 Unit: chip
Noncoherent integration length	Integer	Searcher noncoherent integration length Range: 0 – 128 Unit: chip
Pilot phase	Integer	Searcher pilot phase Range: 0 – 7
Walsh code	Integer	Searcher walsh code Range: 0 – 511
Window start	Float	Searcher pilot window start Range: 0 – 32767 Unit: chip
Window size	Float	Searcher pilot window size Range: 0 – 32767 Unit: chip
#Peaks	Integer	Number of peaks
#Params/peak	Integer	Number of parameters per peak
Position	Float	Searcher peak position Unit: chip
Energy	Float	Searcher peak energy Unit: dB

#### Parameters for EVDO [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Searcher state	Integer	Searcher state 0 = Start 1 = Acquisition 2 = Synchronization 3 = Idle 4 = Idle suspended 5 = Idle broadcast 6 = Idle OFS 7 = Broadcast access 8 = Sleep 9 = Reacquisition 10 = Traffic 11 = Traffic suspended 12 = Traffic OFS
Searcher window size	Integer	Searcher window size
Ch	Integer	Channel number
Band	Integer	Band 120000 = EVDO 800 band 0

		<p>North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>120001 = EVDO 1900 band 1</p> <p>North American PCS 1900 MHz band.</p> <p>120002 = EVDO 900 TACS band 2</p> <p>Total access communication system (TACS) 900 MHz band.</p> <p>120003 = EVDO 800 JTACS band 3</p> <p>JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>120004 = EVDO 1800 Korean band 4</p> <p>Korean PCS 1800 MHz band.</p> <p>120005 = EVDO 450 NMT band 5</p> <p>Nordic mobile telephone (NMT) 450 MHz band.</p> <p>120006 = EVDO 1900-2100 IMT band 6</p> <p>IMT-2000 1900-2100 MHz band.</p> <p>120007 = EVDO 700 band 7</p> <p>North American cellular 700 MHz band.</p> <p>120008 = EVDO 1800 band 8</p> <p>1800 MHz band.</p> <p>120009 = EVDO 900 band 9</p> <p>900 MHz band.</p> <p>120010 = EVDO 800 SMR band 10</p> <p>Specialized mobile radio (SMR) 800 MHz band.</p> <p>120011 = EVDO 400 PAMR band 11</p> <p>European PAMR 400 MHz band.</p> <p>120012 = EVDO 800 PAMR band 12</p> <p>European PAMR 800 MHz band.</p> <p>120013 = EVDO 2500 band 13</p> <p>2.5 GHz IMT-2000 extension.</p> <p>120014 = EVDO 1900 band 14</p> <p>US PCS 1.9 GHz.</p> <p>120015 = EVDO 2100 AWS band 15</p> <p>120016 = EVDO 2500 band 16</p> <p>US 2.5 GHz.</p> <p>120018 = EVDO 700 public safety band 18</p> <p>120019 = EVDO 700 lower band 19</p> <p>120020 = EVDO 1500 L-band band 20</p> <p>120021 = EVDO 2000 S-band band 21</p> <p>129999 = EVDO</p>
MSTR	Integer	Searcher MSTR
Equalizer status	Integer	<p>Searcher equalizer status</p> <p>0 = Off</p> <p>1 = On</p>
#Pilots	Integer	Number of pilots
#Params/pilot	Integer	Number of parameters per pilot
PN	Integer	<p>Pilot number</p> <p>Range: 0 – 511</p>
Set	Integer	<p>Searcher set information</p> <p>0 = Active set</p> <p>1 = Candidate set</p> <p>2 = Neighbor set</p> <p>3 = Remaining set</p> <p>4 = Empty set</p>
Ant. config	Integer	<p>Searcher antenna configuration</p> <p>0 = Antenna 0</p> <p>1 = Antenna 1</p> <p>2 = Dual antenna</p>
Searcher window center	Float	<p>Searcher window center</p> <p>Unit: chip</p>
Searcher earliest peak	Float	<p>Searcher earliest peak</p> <p>Unit: chip</p>
#Peaks	Integer	Number of peaks
#Params/peak	Integer	Number of parameters per peak
Position	Float	<p>Searcher peak position</p> <p>Unit: chip</p>
C/I	Float	Searcher peak C/I

Unit: dB

## Message error rate (MER)

Event ID	MER
Cellular systems	TETRA
Record state	Call connection state
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor

[Parameters](#) [Parameters for TETRA](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 2 = TETRA

### Parameters for TETRA [|Top](#)

Name	Type	Description
MER	Float	Message error rate Range: 0 – 100 Unit: %

## DVB information (DVBI)

Event ID	DVBI
Cellular systems	DVB-H
Record state	DVB-H state
Description	Recorded when DVB-H channel configuration changes.
Tools	Nemo Outdoor

[Parameters](#) [Parameters for DVB-H](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 65 = DVB-H

### Parameters for DVB-H [|Top](#)

Name	Type	Description
Service state	Integer	DVB-H service state 1 = Locked 2 = Not locked
Frequency	Float	DVB-H frequency Unit: MHz
Bandwidth	Float	DVB-H bandwidth
Cell ID	Integer	DVB-H cell ID
Tx mode	Integer	DVB-H transmission mode Also known as OFDM mode or FFT length. 2 = 2k 4 = 4k 8 = 8k
Modulation	Integer	DVB-H modulation 1 = QPSK 2 = 16QAM 3 = 64QAM
Code rate LP	Integer	DVB-H code rate low priority 1 = 1/2 2 = 2/3 3 = 3/4 4 = 5/6 5 = 7/8
Code rate HP	Integer	DVB-H code rate high priority 0 = Not used 1 = 1/2 2 = 2/3 3 = 3/4 4 = 5/6 5 = 7/8
Guard time	Integer	DVB-H guard time 1 = 1/4 2 = 1/8 3 = 1/16 4 = 1/32
MPE-FEC code rate LP	Integer	DVB-H MPE-FEC code rate low priority 0 = Not used 1 = 1/2 2 = 2/3 3 = 3/4 4 = 5/6 5 = 7/8
MPE-FEC code rate HP	Integer	DVB-H MPE-FEC code rate high priority 0 = Not used 1 = 1/2 2 = 2/3 3 = 3/4 4 = 5/6 5 = 7/8
Hierarchy	Integer	DVB-H hierarchy 0 = Disabled 1 = Enabled

## DVB frame error rate (DVBFER)



<b>Event ID</b>	DVBFER
<b>Cellular systems</b>	DVB-H
<b>Record state</b>	DVB-H state
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for DVB-H |

#### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 65 = DVB-H

#### Parameters for DVB-H |Top|

Name	Type	Description
FER	Float	DVB-H FER before FEC Range: 0 – 100 Unit: %
MFER	Float	DVB-H FER after FEC Range: 0 – 100 Unit: %
Frame count	Integer	DVB-H frame count

## DVB bit error rate (DVBBER)

<b>Event ID</b>	DVBBER
<b>Cellular systems</b>	DVB-H
<b>Record state</b>	DVB-H state
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for DVB-H |

#### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 65 = DVB-H

#### Parameters for DVB-H |Top|

Name	Type	Description
BER	Float	DVB-H BER before viterbi Range: 0 – 100 Unit: %
VBER	Float	DVB-H BER after viterbi Range: 0 – 100 Unit: %

## DVB RX level (DVBRXL)

Event ID	DVBRXL
Cellular systems	DVB-H
Record state	DVB-H state
Description	Recorded when parameter sample is received from the device.
Tools	Nemo Outdoor

Parameters | Parameters for DVB-H |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 65 = DVB-H

### Parameters for DVB-H |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Frequency	Float	DVB-H frequency Unit: MHz
RxLev	Float	DVB-H Rx level Range: -111 – -10 Unit: dBm
C/N	Float	DVB-H carrier to noise ratio Range: 0 – 40 Unit: dB
Signal quality	Float	DVB-H signal quality Range: 0 – 100 Unit: %

## DVB throughput (DVBRATE)

Event ID	DVBRATE
Cellular systems	DVB-H
Record state	DVB-H state
Description	Recorded when parameter sample is received from the device.

<b>Tools</b>	Nemo Handy
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Parameters	Parameters for DVB-H
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#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 65 = DVB-H

#### Parameters for DVB-H [|Top|](#)

Name	Type	Description
DVB-H rate	Integer	DVB-H throughput Minimum value: 0 Unit: bit/s

## Start scanning (STARTSCAN)

<b>Event ID</b>	STARTSCAN
<b>Cellular systems</b>	All
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when a scanning session is begun and the scanning state initiated.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters
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#### Parameters [|Top|](#)

Name	Type	Description
Scanning context ID	Context	Scanning context ID

## Stop scanning (STOPSCAN)

<b>Event ID</b>	STOPSCAN
<b>Cellular systems</b>	All
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when a scanning session is stopped and the scanning state terminated.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters
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#### Parameters [|Top|](#)

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Name	Type	Description
Scanning context ID	Context	Scanning context ID

## Scanning configuration (SCANCONFIG)

<b>Event ID</b>	SCANCONFIG
<b>Cellular systems</b>	All
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded at the beginning of the scanning session. Defines scanning settings.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for GSM frequency and band scanning](#) | [Parameters for UMTS frequency scanning](#) | [Parameters for LTE frequency scanning](#)  
[Parameters for cdmaOne, CDMA 1x, and EVDO frequency scanning](#) | [Parameters for WiMAX frequency scanning](#) | [Parameters for iDEN frequency scanning](#)  
[Parameters for UMTS pilot and band scanning](#) | [Parameters for cdmaOne, CDMA 1x, and EVDO pilot and band scanning](#) | [Parameters for LTE OFDM and band scanning](#) | [Parameters for NB-IoT OFDM](#) | [Parameters for WLAN OFDM and band scanning](#) | [Parameters for WiMAX scanning](#) | [Parameters for DVB-H scanning](#) | [Parameters for spectrum scanning](#) |

### Parameters [Top](#)

Name	Type	Description
Scanning context ID	Context	Scanning context ID
#Header params	Integer	Number of header parameters
Scanning sets	Integer	Scanning sets
#Params/set	Integer	Parameters per scanning set
Scanning type	Integer	Scanning type 1 = GSM frequency scanning 5 = UMTS FDD frequency scanning 6 = UMTS TD-SCDMA frequency scanning 7 = LTE FDD frequency scanning 8 = LTE TDD frequency scanning 10 = cdmaOne frequency scanning 11 = CDMA 1x frequency scanning 12 = EVDO frequency scanning 25 = WiMAX frequency scanning 55 = iDEN frequency scanning 105 = UMTS FDD pilot scanning 106 = UMTS TD-SCDMA pilot scanning 110 = cdmaOne pilot scanning 111 = CDMA 1x pilot scanning 112 = EVDO pilot scanning 207 = LTE FDD OFDM scanning 208 = LTE TDD OFDM scanning 220 = WLAN OFDM scanning 221 = LTE NB-IoT OFDM scanning 225 = WiMAX OFDM scanning 265 = DVB-H OFDM scanning 300 = Spectrum scanning 10001 = GSM band scanning 10105 = UMTS FDD band scanning 10106 = UMTS TD-SCDMA band scanning 10110 = cdmaOne band scanning 10111 = CDMA 1x band scanning 10112 = EVDO band scanning 10207 = LTE FDD band scanning

		10208 = LTE TDD band scanning 10220 = WLAN band scanning
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#### Parameters for GSM frequency and band scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
Channels	String	Channels Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None 1 = BSIC decoding 2 = Cell information decoding 1024 = C/I, SIR, or CINR
Bandwidth	Integer	Channel bandwidth Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.
BSIC decoding threshold	Float	BSIC decoding threshold This threshold has to be exceeded before BSIC decoding is attempted. Unit: dBm
Dwelling time	Integer	Dwelling time (GSM) Defines for how long BCCH channel is attempted to be decoded. Minimum value: 0 Unit: frame

#### Parameters for UMTS frequency scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3

		50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
Channels	String	Channels Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None
Bandwidth	Integer	Channel bandwidth Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.

#### Parameters for LTE frequency scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3

70004 = LTE FDD 2100 AWS band 4  
 70005 = LTE FDD 850 band 5  
 Band 850 is also known as band 800.  
 70006 = LTE FDD 850 band 6  
 70007 = LTE FDD 2600 band 7  
 70008 = LTE FDD 900 band 8  
 70009 = LTE FDD 1800 band 9  
 70010 = LTE FDD 2100 band 10  
 70011 = LTE FDD 1400 band 11  
 70012 = LTE FDD 700 band 12  
 70013 = LTE FDD 700 band 13  
 70014 = LTE FDD 700 band 14  
 70017 = LTE FDD 700 band 17  
 70018 = LTE FDD 850 band 18  
 70019 = LTE FDD 850 band 19  
 70020 = LTE FDD 800 band 20  
 70021 = LTE FDD 1500 band 21  
 70022 = LTE FDD 3500 band 22  
 70023 = LTE FDD 2200 band 23  
 70024 = LTE FDD 1500 band 24  
 70025 = LTE FDD 1900 band 25  
 70026 = LTE FDD 850 band 26  
 70027 = LTE FDD 800 band 27  
 70028 = LTE FDD 700 band 28  
 70029 = LTE FDD 700 band 29  
 This is downlink only band.  
 70030 = LTE FDD 2350 band 30  
 70031 = LTE FDD 450 band 31  
 70032 = LTE FDD 1500 L-band  
 This is downlink only band.  
 70064 = LTE FDD 390-470 band 64  
 This is a non-standard LTE FDD band.  
 70065 = LTE FDD 2100 band 65  
 70066 = LTE FDD AWS-3 2100 band 66  
 70067 = LTE FDD 700 EU band 67  
 This is downlink only band.  
 70068 = LTE FDD 700 ME band 68  
 70069 = LTE FDD 2500 band 69  
 This is downlink only band.  
 70070 = LTE FDD AWS-4 band 70  
 70071 = LTE FDD 600 band 71  
 70252 = LTE FDD 5200 NII-1 band 252  
 70255 = LTE FDD 5700 NII-3 band 255  
 79999 = LTE FDD  
 80033 = LTE TDD 1900-1920 band 33  
 80034 = LTE TDD 2010-2025 band 34  
 80035 = LTE TDD 1850-1910 band 35  
 80036 = LTE TDD 1930-1990 band 36  
 80037 = LTE TDD 1910-1930 band 37  
 80038 = LTE TDD 2570-2620 band 38  
 80039 = LTE TDD 1880-1920 band 39  
 80040 = LTE TDD 2300-2400 band 40  
 80041 = LTE TDD 2496-2690 band 41  
 80042 = LTE TDD 3400-3600 band 42  
 80043 = LTE TDD 3600-3800 band 43  
 80044 = LTE TDD 703-803 band 44  
 80045 = LTE TDD 1447-1467 band 45  
 80046 = LTE TDD 5154-5925 band 46  
 80047 = LTE TDD 5855-5925 band 47  
 80048 = LTE TDD 3550-3700 band 48  
 80061 = LTE TDD 1447-1467 band 61  
 This is a non-standard LTE TDD band.  
 80062 = LTE TDD 1785-1805 band 62  
 This is a non-standard LTE TDD band.  
 80087 = LTE TDD 1447-1467 band 87  
 This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
 This is a non-standard LTE TDD band.  
 89999 = LTE TDD

Channels

String

Channels

Defines the measured channels. In the format comma separates

		different values and hyphen can be used to mark the range, e.g. 10,11,50-100.
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None
Bandwidth	Integer	Channel bandwidth Not defined when scanned channel bandwidth is selected automatically based on scanned channel. Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.

#### Parameters for cdmaOne, CDMA 1x, and EVDO frequency scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	<p>Band</p> <p>100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band.</p> <p>100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band.</p> <p>100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band.</p> <p>100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band.</p> <p>100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band.</p> <p>100007 = cdmaOne 700 band 7 North American cellular 700 MHz band.</p> <p>100008 = cdmaOne 1800 band 8 1800 MHz band.</p> <p>100009 = cdmaOne 900 band 9 900 MHz band.</p> <p>100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band.</p> <p>100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band.</p> <p>100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band.</p> <p>100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension.</p>



100014 = cdmaOne 1900 band 14  
 US PCS 1.9 GHz.  
 100015 = cdmaOne 2100 AWS band 15  
 100016 = cdmaOne 2500 band 16  
 US 2.5 GHz.  
 100018 = cdmaOne 700 public safety band 18  
 100019 = cdmaOne 700 lower band 19  
 100020 = cdmaOne 1500 L-band band 20  
 100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
 North American cellular 800 MHz band, also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
 North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
 North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
 1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
 900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21  
 119999 = CDMA 1x  
 120000 = EVDO 800 band 0  
 North American cellular 800 MHz band. Also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 120001 = EVDO 1900 band 1  
 North American PCS 1900 MHz band.  
 120002 = EVDO 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 120003 = EVDO 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 120004 = EVDO 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 120005 = EVDO 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 120006 = EVDO 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 120007 = EVDO 700 band 7  
 North American cellular 700 MHz band.  
 120008 = EVDO 1800 band 8  
 1800 MHz band.  
 120009 = EVDO 900 band 9  
 900 MHz band.  
 120010 = EVDO 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.

		120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Channels	String	Channels Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None
Bandwidth	Integer	Channel bandwidth Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.

#### Parameters for WiMAX frequency scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 259999 = WiMAX
Frequencies	String	Frequencies Defines the measured frequencies. In the format comma separates different values, hyphen can be used to mark the range and dot is used for decimal numbers, e.g. 1800000000.0-1900000000.0. Unit: Hz
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None
Bandwidth	Integer	Channel bandwidth Unit: Hz

Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.

#### Parameters for iDEN frequency scanning [|Top|](#)

Name	Type	Description
Band	Integer	Band 550001 = iDEN proprietary 550002 = iDEN 800 standard 550003 = iDEN 800 extended 550004 = iDEN 900 550005 = iDEN 1500 559999 = iDEN
Channels	String	Channels Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.

#### Parameters for UMTS pilot and band scanning [|Top|](#)

Name	Type	Description
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD 60001 = UMTS TD-SCDMA 2000 band a

		60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
Channels	String	Channels Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None 2 = Cell information decoding 4 = SI or overhead decoding 8 = Neighbor list decoding 16 = Missing neighbor detection 1024 = C/I, SIR, or CINR 2048 = Finger 4096 = P-SCH 8192 = S-SCH 65536 = Delay Preamble delay, time of arrival, or time offset. 131072 = Delay spread 262144 = Delay profile
Reserved	Integer	Reserved
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.
Ec/N0 threshold	Float	Ec/N0 threshold This threshold has to be exceeded before Ec/N0 result is reported. Unit: dB
Finger combining mode	Integer	Finger combining mode Defines the method that is used to combine measured finger results to one measurement result. 1 = Peak 2 = Aggregate
Pilot measurement mode	Integer	Pilot measurement mode 1 = High speed 2 = High dynamic
Dwelling time	Integer	Dwelling time (UMTS) Defines for how long BCH channel is attempted to be decoded. Minimum value: 0 Unit: ms

# Parameters for cdmaOne, CDMA 1x, and EVDO pilot and band scanning [|Top](#)

Name	Type	Description
Band	Integer	<p>Band</p> <p>100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band.</p> <p>100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band.</p> <p>100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band.</p> <p>100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band.</p> <p>100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band.</p> <p>100007 = cdmaOne 700 band 7 North American cellular 700 MHz band.</p> <p>100008 = cdmaOne 1800 band 8 1800 MHz band.</p> <p>100009 = cdmaOne 900 band 9 900 MHz band.</p> <p>100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band.</p> <p>100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band.</p> <p>100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band.</p> <p>100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension.</p> <p>100014 = cdmaOne 1900 band 14 US PCS 1.9 GHz.</p> <p>100015 = cdmaOne 2100 AWS band 15</p> <p>100016 = cdmaOne 2500 band 16 US 2.5 GHz.</p> <p>100018 = cdmaOne 700 public safety band 18</p> <p>100019 = cdmaOne 700 lower band 19</p> <p>100020 = cdmaOne 1500 L-band band 20</p> <p>100021 = cdmaOne 2000 S-band band 21</p> <p>109999 = cdmaOne</p> <p>110000 = CDMA 1x 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>110001 = CDMA 1x 1900 band 1 North American PCS 1900 MHz band.</p> <p>110002 = CDMA 1x 900 TACS band 2 Total access communication system (TACS) 900 MHz band.</p> <p>110003 = CDMA 1x 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>110004 = CDMA 1x 1800 Korean band 4 Korean PCS 1800 MHz band.</p> <p>110005 = CDMA 1x 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band.</p> <p>110006 = CDMA 1x 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band.</p> <p>110007 = CDMA 1x 700 band 7 North American cellular 700 MHz band.</p> <p>110008 = CDMA 1x 1800 band 8 1800 MHz band.</p> <p>110009 = CDMA 1x 900 band 9 900 MHz band.</p> <p>110010 = CDMA 1x 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band.</p> <p>110011 = CDMA 1x 400 PAMR band 11 European PAMR 400 MHz band.</p> <p>110012 = CDMA 1x 800 PAMR band 12 European PAMR 800 MHz band.</p>

		110013 = CDMA 1x 2500 band 13 2.5 GHz IMT-2000 extension. 110014 = CDMA 1x 1900 band 14 US PCS 1.9 GHz. 110015 = CDMA 1x 2100 AWS band 15 110016 = CDMA 1x 2500 band 16 US 2.5 GHz. 110018 = CDMA 1x 700 public safety band 18 110019 = CDMA 1x 700 lower band 19 110020 = CDMA 1x 1500 L-band band 20 110021 = CDMA 1x 2000 S-band band 21 119999 = CDMA 1x 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Channels	String	Channels Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None 4 = SI or overhead decoding 65536 = Delay Preamble delay, time of arrival, or time offset. 131072 = Delay spread
Reserved	Integer	Reserved
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average

		2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.
Ec/I0 threshold	Float	Ec/I0 threshold This threshold has to be exceeded before Ec/I0 result is reported. Unit: dB
Finger combining mode	Integer	Finger combining mode Defines the method that is used to combine measured finger results to one measurement result. 1 = Peak 2 = Aggregate
Pilot search mode	Integer	Pilot search mode 1 = Standard 2 = Wide 3 = Very wide
Pilot window mode	Integer	Pilot window mode 1 = Offset 2 = Centered 3 = Edge
Correlator	Integer	Correlator
Pilot increment	Integer	Pilot increment

#### Parameters for LTE OFDM and band scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7 70008 = LTE FDD 900 band 8 70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20 70021 = LTE FDD 1500 band 21 70022 = LTE FDD 3500 band 22 70023 = LTE FDD 2200 band 23 70024 = LTE FDD 1500 band 24 70025 = LTE FDD 1900 band 25 70026 = LTE FDD 850 band 26

		<p>70027 = LTE FDD 800 band 27  70028 = LTE FDD 700 band 28  70029 = LTE FDD 700 band 29  This is downlink only band.  70030 = LTE FDD 2350 band 30  70031 = LTE FDD 450 band 31  70032 = LTE FDD 1500 L-band  This is downlink only band.  70064 = LTE FDD 390-470 band 64  This is a non-standard LTE FDD band.  70065 = LTE FDD 2100 band 65  70066 = LTE FDD AWS-3 2100 band 66  70067 = LTE FDD 700 EU band 67  This is downlink only band.  70068 = LTE FDD 700 ME band 68  70069 = LTE FDD 2500 band 69  This is downlink only band.  70070 = LTE FDD AWS-4 band 70  70071 = LTE FDD 600 band 71  70252 = LTE FDD 5200 NII-1 band 252  70255 = LTE FDD 5700 NII-3 band 255  79999 = LTE FDD  80033 = LTE TDD 1900-1920 band 33  80034 = LTE TDD 2010-2025 band 34  80035 = LTE TDD 1850-1910 band 35  80036 = LTE TDD 1930-1990 band 36  80037 = LTE TDD 1910-1930 band 37  80038 = LTE TDD 2570-2620 band 38  80039 = LTE TDD 1880-1920 band 39  80040 = LTE TDD 2300-2400 band 40  80041 = LTE TDD 2496-2690 band 41  80042 = LTE TDD 3400-3600 band 42  80043 = LTE TDD 3600-3800 band 43  80044 = LTE TDD 703-803 band 44  80045 = LTE TDD 1447-1467 band 45  80046 = LTE TDD 5154-5925 band 46  80047 = LTE TDD 5855-5925 band 47  80048 = LTE TDD 3550-3700 band 48  80061 = LTE TDD 1447-1467 band 61  This is a non-standard LTE TDD band.  80062 = LTE TDD 1785-1805 band 62  This is a non-standard LTE TDD band.  80087 = LTE TDD 1447-1467 band 87  This is a non-standard LTE TDD band.  80088 = LTE TDD 1785-1805 band 88  This is a non-standard LTE TDD band.  89999 = LTE TDD</p>
Channels	String	<p>Channels  Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.</p>
Scanning options	Integer	<p>Scanning options  Note that this parameter is bitfield.  0 = None  2 = Cell information decoding  4 = SI or overhead decoding  32 = DL allocation  This is the same as the cell load scanning.  1024 = C/I, SIR, or CINR  16384 = Sync signal  32768 = Reference signal  65536 = Delay  Preamble delay, time of arrival, or time offset.  131072 = Delay spread  524288 = MIMO scanning  1048576 = Narrow band  The scanning is done from the RS signals transmitted during the PBCH transmission.  2097152 = PRB scanning  4194304 = eMBMS scanning</p>



Bandwidth	Integer	Channel bandwidth Not defined when scanned channel bandwidth is selected automatically based on scanned channel. Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.
RSSI threshold	Float	RSSI threshold This threshold has to be exceeded before the RSSI result is reported. Unit: dBm
CP	Integer	Cyclic prefix 0 = Auto detect 1 = Normal 15 kHz 2 = Extended 15 kHz 3 = Extended 7.5 kHz
Antenna ports	Integer	Antenna ports 1 = Port 0 2 = Port 0-1 4 = Port 0-3
UL/DL config	Integer	TDD UL/DL configuration 0 = Config 0 Allocated uplink subframes are: 2, 3, 4, 7, 8, 9. 1 = Config 1 Allocated uplink subframes are: 2, 3, 7, 8. 2 = Config 2 Allocated uplink subframes are: 2, 7. 3 = Config 3 Allocated uplink subframes are: 2, 3, 4. 4 = Config 4 Allocated uplink subframes are: 2, 3. 5 = Config 5 Allocated uplink subframe is: 2. 6 = Config 6 Allocated uplink subframes are: 2, 3, 4, 7, 8.
Pilot measurement mode	Integer	Pilot measurement mode 1 = High speed 2 = High dynamic
Measurement period (DL allocation)	Integer	Measurement period (DL allocation) Minimum value: 0 Unit: ms

#### Parameters for NB-IoT OFDM [\[Top\]](#)

Name	Type	Description

Band	Integer	<p>Band</p> <p>70001 = LTE FDD 2100 band 1</p> <p>70002 = LTE FDD 1900 band 2</p> <p>70003 = LTE FDD 1800 band 3</p> <p>70004 = LTE FDD 2100 AWS band 4</p> <p>70005 = LTE FDD 850 band 5</p> <p>Band 850 is also known as band 800.</p> <p>70006 = LTE FDD 850 band 6</p> <p>70007 = LTE FDD 2600 band 7</p> <p>70008 = LTE FDD 900 band 8</p> <p>70009 = LTE FDD 1800 band 9</p> <p>70010 = LTE FDD 2100 band 10</p> <p>70011 = LTE FDD 1400 band 11</p> <p>70012 = LTE FDD 700 band 12</p> <p>70013 = LTE FDD 700 band 13</p> <p>70014 = LTE FDD 700 band 14</p> <p>70017 = LTE FDD 700 band 17</p> <p>70018 = LTE FDD 850 band 18</p> <p>70019 = LTE FDD 850 band 19</p> <p>70020 = LTE FDD 800 band 20</p> <p>70021 = LTE FDD 1500 band 21</p> <p>70022 = LTE FDD 3500 band 22</p> <p>70023 = LTE FDD 2200 band 23</p> <p>70024 = LTE FDD 1500 band 24</p> <p>70025 = LTE FDD 1900 band 25</p> <p>70026 = LTE FDD 850 band 26</p> <p>70027 = LTE FDD 800 band 27</p> <p>70028 = LTE FDD 700 band 28</p> <p>70029 = LTE FDD 700 band 29</p> <p>This is downlink only band.</p> <p>70030 = LTE FDD 2350 band 30</p> <p>70031 = LTE FDD 450 band 31</p> <p>70032 = LTE FDD 1500 L-band</p> <p>This is downlink only band.</p> <p>70064 = LTE FDD 390-470 band 64</p> <p>This is a non-standard LTE FDD band.</p> <p>70065 = LTE FDD 2100 band 65</p> <p>70066 = LTE FDD AWS-3 2100 band 66</p> <p>70067 = LTE FDD 700 EU band 67</p> <p>This is downlink only band.</p> <p>70068 = LTE FDD 700 ME band 68</p> <p>70069 = LTE FDD 2500 band 69</p> <p>This is downlink only band.</p> <p>70070 = LTE FDD AWS-4 band 70</p> <p>70071 = LTE FDD 600 band 71</p> <p>70252 = LTE FDD 5200 NII-1 band 252</p> <p>70255 = LTE FDD 5700 NII-3 band 255</p> <p>79999 = LTE FDD</p>
Channels	String	<p>Channels</p> <p>Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.</p>
Scanning options	Integer	<p>Scanning options</p> <p>Note that this parameter is bitfield.</p> <p>0 = None</p> <p>1024 = C/I, SIR, or CINR</p> <p>16384 = Sync signal</p> <p>32768 = Reference signal</p> <p>65536 = Delay</p> <p>Preamble delay, time of arrival, or time offset.</p>
Filter samples	Integer	<p>Filter samples</p> <p>Defines how many samples are filtered per reported measurement result.</p>
Sampling ratio	Integer	<p>Sampling ratio</p> <p>Defines every Nth measurement result that is reported.</p>
Top N	Integer	<p>Top N</p> <p>Only the best top N parameters are reported.</p>
RSSI threshold	Float	<p>RSSI threshold</p> <p>This threshold has to be exceeded before the RSSI result is reported.</p>

		Unit: dBm
Channel raster offset	Integer	Channel raster offset With NB-IoT this is used to define offset to the 100 kHz channel raster. See 3GPP TS 136.101 subclause 5.7.3F. -3 = Offset -7.5 kHz -1 = Offset -2.5 kHz 0 = Offset 0 kHz 1 = Offset +2.5 kHz 3 = Offset +7.5 kHz

#### Parameters for WLAN OFDM and band scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 200001 = WLAN 2.4 GHz 200002 = WLAN 3.6 GHz 200003 = WLAN 4.9 GHz 200004 = WLAN 5.0 GHz 209999 = WLAN
Channels	String	Channels Defines the measured channels. In the format comma separates different values and hyphen can be used to mark the range, e.g. 10,11,50-100.
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None
Resolution bandwidth	Integer	Resolution bandwidth To be able to scan large bandwidth spectrums, the total sweep bandwidth must be divided into smaller parts. The resolution bandwidth defines the size of the smaller parts, each of which is scanned separately. Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.

#### Parameters for WiMAX scanning [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 259999 = WiMAX
Frequencies	String	Frequencies Defines the measured frequencies. In the format comma separates

		different values, hyphen can be used to mark the range and dot is used for decimal numbers, e.g. 1800000000.0-1900000000.0. Unit: Hz
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None
Resolution bandwidth	Integer	Resolution bandwidth To be able to scan large bandwidth spectrums, the total sweep bandwidth must be divided into smaller parts. The resolution bandwidth defines the size of the smaller parts, each of which is scanned separately. Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode Defines the method that is used for sample filtering. 1 = Average 2 = Maximum 3 = Minimum 110 = 10 percentile 120 = 20 percentile 130 = 30 percentile 140 = 40 percentile 150 = 50 percentile 160 = 60 percentile 170 = 70 percentile 180 = 80 percentile 190 = 90 percentile
Filter samples	Integer	Filter samples Defines how many samples are filtered per reported measurement result.
Sampling ratio	Integer	Sampling ratio Defines every Nth measurement result that is reported.
Top N	Integer	Top N Only the best top N parameters are reported.
Reuse factor	Integer	Reuse factor 1 = Reuse factor 1 3 = Reuse factor 3
Pilot measurement mode	Integer	Pilot measurement mode 1 = High speed 2 = High dynamic

#### Parameters for DVB-H scanning [\[Top\]](#)

Name	Type	Description
Frequencies	String	Frequencies Defines the measured frequencies. In the format comma separates different values, hyphen can be used to mark the range and dot is used for decimal numbers, e.g. 1800000000.0-1900000000.0. Unit: Hz
Scanning options	Integer	Scanning options Note that this parameter is bitfield. 0 = None
Resolution bandwidth	Integer	Resolution bandwidth To be able to scan large bandwidth spectrums, the total sweep bandwidth must be divided into smaller parts. The resolution bandwidth defines the size of the smaller parts, each of which is scanned separately. Unit: Hz
Measurement period	Integer	Measurement period Minimum value: 0 Unit: ms
Filter mode	Integer	Filter mode

		<p>Defines the method that is used for sample filtering.</p> <p>1 = Average  2 = Maximum  3 = Minimum  110 = 10 percentile  120 = 20 percentile  130 = 30 percentile  140 = 40 percentile  150 = 50 percentile  160 = 60 percentile  170 = 70 percentile  180 = 80 percentile  190 = 90 percentile</p>
Filter samples	Integer	<p>Filter samples</p> <p>Defines how many samples are filtered per reported measurement result.</p>
Sampling ratio	Integer	<p>Sampling ratio</p> <p>Defines every Nth measurement result that is reported.</p>
Top N	Integer	<p>Top N</p> <p>Only the best top N parameters are reported.</p>

#### Parameters for spectrum scanning |Top|

Name	Type	Description
Frequencies	String	<p>Frequencies</p> <p>Defines the measured frequencies. In the format comma separates different values, hyphen can be used to mark the range and dot is used for decimal numbers, e.g. 1800000000.0-1900000000.0.</p> <p>Unit: Hz</p>
Scanning options	Integer	<p>Scanning options</p> <p>Note that this parameter is bitfield.</p> <p>0 = None</p>
Resolution bandwidth	Integer	<p>Resolution bandwidth</p> <p>To be able to scan large bandwidth spectrums, the total sweep bandwidth must be divided into smaller parts. The resolution bandwidth defines the size of the smaller parts, each of which is scanned separately.</p> <p>Unit: Hz</p>
Measurement period	Integer	<p>Measurement period</p> <p>Minimum value: 0</p> <p>Unit: ms</p>
Filter mode	Integer	<p>Filter mode</p> <p>Defines the method that is used for sample filtering.</p> <p>1 = Average  2 = Maximum  3 = Minimum  110 = 10 percentile  120 = 20 percentile  130 = 30 percentile  140 = 40 percentile  150 = 50 percentile  160 = 60 percentile  170 = 70 percentile  180 = 80 percentile  190 = 90 percentile</p>
Filter samples	Integer	<p>Filter samples</p> <p>Defines how many samples are filtered per reported measurement result.</p>
Sampling ratio	Integer	<p>Sampling ratio</p> <p>Defines every Nth measurement result that is reported.</p>
Top N	Integer	<p>Top N</p> <p>Only the best top N parameters are reported.</p>
Resolution samples	Integer	<p>Resolution samples</p> <p>To be able to scan large bandwidth spectrums, the total sweep bandwidth must be divided into smaller parts. The resolution samples</p>

		defines the number of samples size, each of which is scanned separately.
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## Frequency scanning results (FREQSCAN)

Event ID	FREQSCAN
Cellular systems	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO,AMPS,NAMPS,DAMPS,WiMAX,iDEN
Record state	Scanning state
Description	Recorded when parameter sample is received from the device.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for GSM](#) | [Parameters for UMTS FDD](#) | [Parameters for UMTS TD-SCDMA](#) | [Parameters for LTE](#) | [Parameters for cdmaOne and CDMA 1x](#) | [Parameters for EVDO](#) | [Parameters for WiMAX](#) | [Parameters for AMPS and NAMPS](#) | [Parameters for DAMPS](#) | [Parameters for iDEN](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 25 = WiMAX 51 = AMPS 52 = NAMPS 53 = DAMPS 55 = iDEN

### Parameters for GSM [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
ARFCN	Integer	Channel number
BSIC	Integer	Base station identification code Range: 0 – 63
RX level	Float	RX level Range: –140 – –10 Unit: dBm

C/I	Float	C/I Range: -10 – 40 Unit: dB
SCH RX level	Float	SCH RX level Range: -140 – -10 Unit: dBm

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number
RSSI	Float	Carrier RSSI (frequency scanning mode) Carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: -140 – -10 Unit: dBm

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number
RSSI	Float	Carrier RSSI (frequency scanning mode) Carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver.

		Range: -140 – -10 Unit: dBm
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#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number
RSSI	Float	Carrier RSSI (frequency scanning mode) Carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: -140 – -10 Unit: dBm

#### Parameters for cdmaOne and CDMA 1x [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number
RSSI	Float	RSSI Wide-band carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: -140 – 0 Unit: dBm

#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11



		European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number
RSSI	Float	RSSI Wide-band carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: -140 – 0 Unit: dBm

#### Parameters for WiMAX [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Frequency	Float	WiMAX frequency Unit: MHz
RSSI	Float	Carrier RSSI (frequency scanning mode) Wide-band power of all subcarriers including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm

#### Parameters for AMPS and NAMPS [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number
SAT	Integer	Setup audio tone Range: 0 – 6
RX level	Float	RX level Range: -140 – -10 Unit: dBm

#### Parameters for DAMPS [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Ch	Integer	Channel number

DCC	Integer	Digital color code Range: 0 – 255
RX level	Float	RX level Range: –140 – –10 Unit: dBm

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Ch	Integer	Channel number
CC	Integer	Color code Range: 0 – 15
RxLev	Float	RX level Range: –130 – –30 Unit: dBm
SQE	Float	SQE Range: 0 – 50 Unit: dB
N+I	Float	Noise + interference level Range: –130 – 30 Unit: dBm

## Spectrum scanning result (SPECTRUMSCAN)

Event ID	SPECTRUMSCAN
Cellular systems	All
Record state	Scanning state
Description	Recorded when parameter sample is received from the device. Separate measurement event is logged for each scanning mode, bandwidth, and frequency.
Tools	Nemo Outdoor

[Parameters](#) | [Parameters for spectrum scanning](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Scanning mode	Integer	Scanning mode 1 = Spectrum scanning

#### Parameters for spectrum scanning [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Bandwidth	Float	Resolution bandwidth To be able to scan large bandwidth spectrums, the total sweep bandwidth must be divided into smaller parts. The resolution bandwidth defines the size of the smaller parts, each of which is

		scanned separately. Unit: Hz
Sweep bandwidth	Float	Sweep bandwidth The total scanned bandwidth that is divided into smaller parts before the scanning. Unit: MHz
Sweep frequency	Float	Sweep center frequency Unit: MHz
Sweep average RX level	Float	Sweep average RX level The linear average of RX levels measured over bandwidth of 'resolution bandwidth'. Range: -160 – -10 Unit: dBm
Sweep minimum RX level	Float	Sweep minimum RX level Minimum RX levels measured over bandwidth of 'resolution bandwidth'. Range: -160 – -10 Unit: dBm
Sweep maximum RX level	Float	Sweep maximum RX level Maximum RX levels measured over bandwidth of 'resolution bandwidth'. Range: -160 – -10 Unit: dBm
Sweep total RX level	Float	Sweep total RX level Total RX level measured over full spectrum bandwidth. Range: -160 – 0 Unit: dBm
#Frequencies	Integer	Number of frequencies
#Params/frequency	Integer	#Params/frequency
Frequency	Float	Frequency Center frequency of the measured sample. Unit: MHz
RX level	Float	RX level Range: -160 – -10 Unit: dBm

## Pilot scanning results (PILOTSCAN)

<b>Event ID</b>	PILOTSCAN
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when parameter sample is received from the device. Separate measurement event is logged for each system, channel number, and channel type.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
 [Parameters for UMTS FDD](#) |
 [Parameters for UMTS TD-SCDMA](#) |
 [Parameters for cdmaOne and CDMA 1x](#) |
 [Parameters for EVDO](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 10 = cdmaOne

11 = CDMA 1x  
12 = EVDO

#### Parameters for UMTS FDD [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Ch	Integer	Channel number
Ch type	Integer	UMTS channel type 1 = CPICH 2 = P SCH 3 = S SCH 4 = CPICH (TX diversity) 5 = PPCH
RSSI	Float	Carrier RSSI (pilot scanning mode) Wide-band carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: -140 – -10 Unit: dBm
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
SC	Integer	Scrambling code Range: 0 – 511
Ec/N0	Float	Ec/N0 The average received chip power to noise ratio of the channel specified by the Ch type parameter. Range: -30 – 0 Unit: dB
RSCP	Float	RSCP The received signal code power of the channel specified by the Ch type parameter. Range: -150 – -20 Unit: dBm
SIR	Float	Signal-to-interference ratio CPICH Range: 0 – 30
Delay	Float	Delay The time difference between actual received signal and expected point in time derived from the GPS time (when available). This parameter is also known as time offset. Range: 0 – 38400 Unit: chip

Delay spread	Float	Delay spread Time between first and last pilot Ec/N0 peak above the PN threshold of the channel specified by the Ch type parameter. Unit: chip
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#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Channel type	Integer	Channel type 1 = PCCPCH 2 = Sync DL
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Ch	Integer	Channel number
Cell params ID	Integer	Cell parameters ID Range: 0 – 127
Ec/I0	Float	Ec/I0 The received energy per chip divided by the relevant measured power density (noise and signal) in the wide band. Range: –30 – 0 Unit: dB
Time offset	Float	Time offset Position of a selected pilot. Range: 0 – 6500 Unit: chip
SIR	Float	SIR Range: –30 – 25 Unit: dB
RSCP	Float	RSCP The received signal code power of a single code. Range: –116 – –20 Unit: dB
RSSI	Float	Carrier RSSI (pilot scanning mode) Wide-band carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: –140 – –10 Unit: dBm

#### Parameters for cdmaOne and CDMA 1x [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Ch	Integer	Channel number
RSSI	Float	Carrier RSSI (pilot scanning mode) Wide-band carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: –140 – –10 Unit: dBm
Band	Integer	Band
#Cells	Integer	Number of cells

#Params/cell	Integer	Number of parameters per cell
PN	Integer	Pilot number Range: 0 – 511
Ec/I0	Float	Ec/I0 Range: –35 – 3 Unit: dB
Delay	Float	Delay The time difference between actual received signal and expected point in time derived from the GPS time. This parameter is also known as time offset. Unit: chip
RSCP	Float	RSCP The received signal code power of single code. Unit: dBm
Delay spread	Float	Delay spread The time between the first and the last multi-path peak component inside the search window above the PN threshold. Unit: chip

#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Ch	Integer	Channel number
RSSI	Float	Carrier RSSI (pilot scanning mode) Wide-band carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: –140 – –10 Unit: dBm
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19

		120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
PN	Integer	Pilot number Range: 0 – 511
Ec/I0	Float	Ec/I0 Range: –35 – 3 Unit: dB
Delay	Float	Delay The time difference between actual received signal and expected point in time derived from the GPS time. This parameter is also known as time offset. Unit: chip
RSCP	Float	RSCP The received signal code power of single code. Unit: dBm
Delay spread	Float	Delay spread The time between the first and the last multi-path peak component inside the search window above the PN threshold. Unit: chip

## OFDM scanning results (OFDMSCAN)

<b>Event ID</b>	OFDMSCAN
<b>Cellular systems</b>	WiMAX,DVB-H,LTE FDD,LTE TDD,WLAN
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when parameter sample is received from the device. Separate measurement event is logged for each system, band, channel number, and channel type.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
[Parameters for LTE](#) |
[Parameters for LTE RS](#) |
[Parameters for LTE SCH](#) |
[Parameters for LTE PBCH](#) |
[Parameters for LTE PMCH](#) |
[Parameters for NB-IoT NRS](#) |
[Parameters for NB-IoT NPSS and NSSS](#) |
[Parameters for WLAN](#) |
[Parameters for WiMAX](#) |
[Parameters for DVB-H](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 20 = WLAN 25 = WiMAX 65 = DVB-H

### Parameters for LTE [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Ch	Integer	Channel number
Ph. ch type	Integer	Physical channel or signal type 1 = RS

		2 = SCH 3 = PBCH 4 = PMCH 5 = NRS 6 = NPSS
DL BW	Integer	DL bandwidth This is the scanned bandwidth when the scanned bandwidth differs from the system bandwidth. 1 = 180 kHz Used with NB-IoT. 6 = 1.4 MHz 15 = 3 MHz 25 = 5 MHz 50 = 10 MHz 75 = 15 MHz 100 = 20 MHz
RSSI	Float	E-UTRAN carrier RSSI Wide-band power of all subcarriers including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. For the reference signal scanning this is the same as E-UTRAN carrier RSSI. See 3GPP TS 136.214 subclause 5.1.5. Unit: dBm
Band	Integer	Band
Channel raster offset	Integer	Channel raster offset With NB-IoT this is used to define offset to the 100 kHz channel raster. See 3GPP TS 136.101 subclause 5.7.3F. -3 = Offset -7.5 kHz -1 = Offset -2.5 kHz 0 = Offset 0 kHz 1 = Offset +2.5 kHz 3 = Offset +7.5 kHz

#### Parameters for LTE RS [|Top|](#)

Name	Type	Description
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
PCI	Integer	Physical cell identity Range: 0 – 503
CP	Integer	Cyclic prefix DL 1 = Normal 15 kHz 2 = Extended 15 kHz 3 = Extended 7.5 kHz
Antenna ports	Integer	Detected TX antenna ports 0 = Port 0 1 = Ports 0-1 3 = Ports 0-3
RSRP	Float	RSRP Reference signal received power is the linear average of the power contributions of the resource elements that carry cell-specific reference signals within the considered measurement frequency. 3GPP TS 36.214 subclause 5.1.1. Range: -160 – 0 Unit: dBm
RSRQ	Float	RSRQ Reference signal received quality is the ratio $N * RSRP / E-UTRA$ carrier RSSI, where N is the number of resource blocks of the E-UTRA carrier RSSI measurement bandwidth. The measurements in the numerator and denominator are made over the same set of resource blocks. 3GPP TS 36.214 subclause 5.1.3. Range: -35 – 0 Unit: dB
CINR	Float	CINR Ratio between the reference signal received power (RSRP) and the interference and noise from the same reference signal set.



		Range: -40 – 50 Unit: dB
Time offset	Integer	Time offset The time difference between actual received signal and expected point in time derived from GPS reference time. The unit of the parameter is 32.552ns that is the same as the Ts parameter defined by 3GPP TS 136.211 subclause 4. Range: 0 – 307199
Delay spread	Integer	Delay spread The unit of the parameter is 32.552ns that is the same as the Ts parameter defined by 3GPP TS 136.211 subclause 4. Range: 0 – 1023 Unit: Ts
Indication	Integer	Scanning result indication The parameter contains the status of the measurement result. This is a bit field so the value of the parameter is the sum of all simultaneous measurement statuses, e.g. if the antenna power imbalance and frequency offset too large conditions happen simultaneously the recorded value would be three. 1 = Antenna power imbalance Indicates if difference in received reference signal power between antennas is greater than or equal to 15 dB when at least one of received signal power is greater than or equal to -90 dBm. 2 = Frequency offset too large Indicates if the difference between the received signal and the expected center channel frequency is greater than or equal to 1 kHz.
MIMO mode	Integer	MIMO mode information The parameter indicates the current MIMO mode of each LTE PCI. The value of the parameter specifies the received TX-RX port configuration in the following format: [number of TX ports used] x [number of RX ports used]. 11 = 1x1 1 TX port and 1 RX port used. 12 = 1x2 1 TX port and 2 RX ports used. 14 = 1x4 1 TX port and 4 RX ports used. 21 = 2x1 2 TX ports and 1 RX port used. 22 = 2x2 2 TX ports and 2 RX ports used. 24 = 2x4 2 TX ports and 4 RX ports used. 41 = 4x1 4 TX ports and 1 RX port used. 42 = 4x2 4 TX ports and 2 RX ports used. 44 = 4x4 4 TX ports and 4 RX ports used.
RSSI	Float	E-UTRAN carrier RSSI Whole band (wideband) power of all subcarriers including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. For the reference signal scanning this is the same as E-UTRAN carrier RSSI. See 3GPP TS 136.214 subclause 5.1.5. Unit: dBm
CFO	Integer	Carrier frequency offset The difference between the received signal and the expected center channel frequency. Unit: Hz
#Ports	Integer	Number of measurement results per antenna port For example if there are two physical cell identities and four antenna ports per cell identity the value of the parameter would be eight. The first four blocks would contain measurement results per antenna port for the first cell and next four blocks would contain results for the second cell.

#Params/port	Integer	Number of parameters per measurement result
PCI	Integer	Physical cell identity Range: 0 – 503
Antenna port	Integer	Antenna port 0 = Port 0 This is the same as TX0. 1 = Port 1 This is the same as TX1. 2 = Port 2 This is the same as TX2. 3 = Port 3 This is the same as TX3. 100 = TX0-RX0 channel 101 = TX0-RX1 channel 102 = TX0-RX2 channel 103 = TX0-RX3 channel 110 = TX1-RX0 channel 111 = TX1-RX1 channel 112 = TX1-RX2 channel 113 = TX1-RX3 channel 120 = TX2-RX0 channel 121 = TX2-RX1 channel 122 = TX2-RX2 channel 123 = TX2-RX3 channel 130 = TX3-RX0 channel 131 = TX3-RX1 channel 132 = TX3-RX2 channel 133 = TX3-RX3 channel
RSRP/P	Float	RSRP/antenna port Reference signal received power is the linear average of the power contributions of the resource elements that carry cell-specific reference signals within the considered measurement frequency. This is the same as NRSRP with NB-IoT. 3GPP TS 36.214 subclause 5.1.1. Range: -160 – 0 Unit: dBm
RSRQ/P	Float	RSRQ/antenna port Reference signal received quality is the ratio $N * RSRP / E-UTRA$ carrier RSSI, where N is the number of resource blocks of the E-UTRA carrier RSSI measurement bandwidth. The measurements in the numerator and denominator are made over the same set of resource blocks. This is the same as NRSRQ with NB-IoT. 3GPP TS 36.214 subclause 5.1.3. Range: -35 – 0 Unit: dB
CINR/P	Float	CINR/antenna port Ratio between the reference signal received power (RSRP) and the interference and noise from the same reference signal set. Range: -40 – 50 Unit: dB
RSSI/P	Float	E-UTRAN carrier RSSI/antenna port Whole band (wideband) power of all subcarriers including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. See 3GPP TS 36.214 subclause 5.1.5. Unit: dBm

#### Parameters for LTE SCH [Top](#)

Name	Type	Description
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
P-SCH PCI	Integer	P-SCH physical cell identity Range: 0 – 503
Cyclic prefix	Integer	P-SCH cyclic prefix 1 = Normal 15 kHz

		2 = Extended 15 kHz 3 = Extended 7.5 kHz
P-SCH RP	Float	P-SCH RP Linear average over the power contributions of the resource elements that carry primary synchronization signal. Range: -140 – 0 Unit: dBm
P-SCH RQ	Float	P-SCH RQ The ratio between P-SCH received power (P-SCH RP) and linear average of total received power measured over OFDM symbols and resource blocks, including primary synchronization (P-SCH) signal. The measurements in the numerator and denominator are made over the same set of resource blocks. Range: -30 – 0 Unit: dB
S-SCH RP	Float	S-SCH RP Linear average over the power contributions of the resource elements that carry secondary synchronization signal. Range: -140 – 0 Unit: dBm
S-SCH RQ	Float	S-SCH RQ The ratio between S-SCH received power (S-SCH RP) and linear average of total received power measured over OFDM symbols and resource blocks, including secondary synchronization (S-SCH) signal. The measurements in the numerator and denominator are made over the same set of resource blocks. Range: -30 – 0 Unit: dB
S-SCH CINR	Float	S-SCH CINR The ratio between synchronization channel received power and interference and noise from the same synchronization signal set. Range: -40 – 50 Unit: dB
Time offset	Integer	P-SCH time offset The time difference between actual received signal and expected point in time derived from GPS reference time. The unit of the parameter is 32.552ns that is the same as the Ts parameter defined by 3GPP TS 136.211 subclause 4. Range: 0 – 307199
P-SCH CINR	Float	P-SCH CINR The ratio between synchronization channel received power and interference and noise from the same synchronization signal set. Range: -40 – 50 Unit: dB

#### Parameters for LTE PBCH [\[Top\]](#)

Name	Type	Description
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
PBCH PCI	Integer	PBCH physical cell identity Range: 0 – 503
Cyclic prefix	Integer	PBCH cyclic prefix 1 = Normal 15 kHz 2 = Extended 15 kHz 3 = Extended 7.5 kHz
PBCH RP	Float	PBCH RP Currently support for this parameter has not been implemented. Range: -140 – 0 Unit: dBm
PBCH RQ	Float	PBCH RQ Currently support for this parameter has not been implemented. Range: -30 – 0 Unit: dB

PBCH CINR	Float	PBCH CINR Currently support for this parameter has not been implemented. Range: -40 – 50 Unit: dB
Time offset	Integer	PBCH time offset The time difference between actual received signal and expected point in time derived from GPS reference time. The unit of the parameter is 32.552ns that is the same as the Ts parameter defined by 3GPP TS 136.211 subclause 4. Range: 0 – 307199

#### Parameters for LTE PMCH [\[Top\]](#)

Name	Type	Description
#MBSFN areas	Integer	Number of MBSFN areas
#Params/MBSFN area	Integer	Number of parameters per MBSFN area
Area ID	Integer	MBSFN area ID Multi broadcast single frequency network area identity. See more 3GPP TS 136.211 subclause 6.10.2.1. Range: 0 – 255
PMCH RP	Float	PMCH RP Range: -140 – 0 Unit: dBm
PMCH RQ	Float	PMCH RQ Range: -30 – 0 Unit: dB
PMCH CINR	Float	PMCH CINR Range: -40 – 50 Unit: dB
PMCH RSSI	Float	PMCH RSSI Range: -120 – 30 Unit: dBm
#Cells	Integer	Number of cells These are the cells that have been detected to broadcast listed MBSFN area ID based on system information blocks. The list is not necessarily complete.
#Params/cell	Integer	Number of parameters per cell
Area ID	Integer	MBSFN area ID Multi broadcast single frequency network area identity. See more 3GPP TS 136.211 subclause 6.10.2.1. Range: 0 – 255
PCI	Integer	Physical cell identity Range: 0 – 503
Cell ID	Integer	Cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 268435455

#### Parameters for NB-IoT NRS [\[Top\]](#)

Name	Type	Description
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
PCI	Integer	Physical cell identity Range: 0 – 503
CP	Integer	Cyclic prefix DL 1 = Normal 15 kHz 2 = Extended 15 kHz 3 = Extended 7.5 kHz

Antenna ports	Integer	Detected TX antenna ports 0 = Port 0 1 = Ports 0-1 3 = Ports 0-3
RSRP	Float	RSRP Reference signal received power is the linear average of the power contributions of the resource elements that carry cell-specific reference signals within the considered measurement frequency. This is the same as NRSRP with NB-IoT. 3GPP TS 36.214 subclause 5.1.1. Range: -160 – 0 Unit: dBm
RSRQ	Float	RSRQ Reference signal received quality is the ratio $N * RSRP / E-UTRA$ carrier RSSI, where N is the number of resource blocks of the E-UTRA carrier RSSI measurement bandwidth. The measurements in the numerator and denominator are made over the same set of resource blocks. This is the same as NRSRQ with NB-IoT. 3GPP TS 36.214 subclause 5.1.3. Range: -35 – 0 Unit: dB
CINR	Float	CINR Ratio between the reference signal received power (RSRP) and the interference and noise from the same reference signal set. Range: -40 – 50 Unit: dB
Time offset	Integer	Time offset The time difference between actual received signal and expected point in time derived from GPS reference time. The unit of the parameter is 32.552ns that is the same as the Ts parameter defined by 3GPP TS 136.211 subclause 4. Range: 0 – 307199
RSSI	Float	E-UTRAN carrier RSSI Whole band (wideband) power of all subcarriers including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. For the reference signal scanning this is the same as E-UTRAN carrier RSSI. See 3GPP TS 136.214 subclause 5.1.5. Unit: dBm

#### Parameters for NB-IoT NPSS and NSSS [|Top|](#)

Name	Type	Description
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
P-SCH PCI	Integer	P-SCH physical cell identity Range: 0 – 503
Cyclic prefix	Integer	P-SCH cyclic prefix 1 = Normal 15 kHz 2 = Extended 15 kHz 3 = Extended 7.5 kHz
P-SCH RP	Float	P-SCH RP Linear average over the power contributions of the resource elements that carry primary synchronization signal. Range: -140 – 0 Unit: dBm
P-SCH RQ	Float	P-SCH RQ The ratio between P-SCH received power (P-SCH RP) and linear average of total received power measured over OFDM symbols and resource blocks, including primary synchronization (P-SCH) signal. The measurements in the numerator and denominator are made over the same set of resource blocks. Range: -30 – 0 Unit: dB
S-SCH RP	Float	S-SCH RP

		Linear average over the power contributions of the resource elements that carry secondary synchronization signal. Range: -140 – 0 Unit: dBm
S-SCH RQ	Float	S-SCH RQ The ratio between S-SCH received power (S-SCH RP) and linear average of total received power measured over OFDM symbols and resource blocks, including secondary synchronization (S-SCH) signal. The measurements in the numerator and denominator are made over the same set of resource blocks. Range: -30 – 0 Unit: dB
S-SCH CINR	Float	S-SCH CINR The ratio between synchronization channel received power and interference and noise from the same synchronization signal set. Range: -40 – 50 Unit: dB
Time offset	Integer	P-SCH time offset The time difference between actual received signal and expected point in time derived from GPS reference time. The unit of the parameter is 32.552ns that is the same as the Ts parameter defined by 3GPP TS 136.211 subclause 4. Range: 0 – 307199
P-SCH CINR	Float	P-SCH CINR The ratio between synchronization channel received power and interference and noise from the same synchronization signal set. Range: -40 – 50 Unit: dB
P-SCH RSSI	Float	P-SCH RSSI Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver.
S-SCH RSSI	Float	S-SCH RSSI Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver.

#### Parameters for WLAN [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	WLAN band 200001 = WLAN 2.4 GHz 200002 = WLAN 3.6 GHz 200003 = WLAN 4.9 GHz 200004 = WLAN 5.0 GHz 209999 = WLAN
Channel	Integer	WLAN channel number
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Protocol	Integer	WLAN protocol 1 = 802.11a 2 = 802.11b 3 = 802.11g 4 = 802.11n 5 = 802.11ac 6 = 802.11ad 7 = 802.11ah 8 = 802.11aj 9 = 802.11ax 10 = 802.11ay
BSSID	String	WLAN BSSID This is same as MAC address. Logged format is hexadecimal bytes separated by colon, for example 01:23:45:67:89:ab.

Name	String	WLAN cell name
SSID	String	WLAN service set identifier
RSSI	Float	WLAN RSSI Range: -110 – 20 Unit: dBm
Noise level	Float	WLAN noise level Range: -150 – -70 Unit: dBm
CINR	Float	WLAN CINR Unit: dB
Security	Integer	WLAN security mode 0 = Open 1 = 802.1x 2 = WEP 3 = WPA-EAP 4 = WPA-PSK 5 = WPA2-EAP 6 = WPA2-PSK
Beacon interval	Integer	WLAN beacon interval Minimum value: 0 Unit: ms
Utilization	Float	WLAN channel utilization Defines the percentage of time channel has been detected to be busy. Range: 0 – 100 Unit: %

#### Parameters for WiMAX [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Frequencies	Integer	Number of frequencies
#Params/frequency	Integer	#Params/frequency
Frequency	Float	Frequency Unit: MHz
RSSI	Float	Carrier RSSI (OFDM scanning mode) Wide-band power of all subcarriers including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm
#Preambles	Integer	Number of preambles
#Params/preamble	Integer	Number of parameters per preamble
Frequency	Float	WiMAX frequency Unit: MHz
Preamble index	Integer	WiMAX preamble index Range: 0 – 113
Preamble RSSI	Float	WiMAX preamble RSSI Range: -120 – 0 Unit: dBm
CINR	Float	WiMAX CINR Channel to interference-noise ratio. Range: -32 – 40 Unit: dB
Delay	Float	WiMAX preamble delay Range: 0 – 1055

#### Parameters for DVB-H [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters

#Frequencies	Integer	Number of frequencies
#Params/frequency	Integer	#Params/frequency
Frequency	Float	Frequency Unit: MHz
RSSI	Float	Carrier RSSI Whole band (wideband) carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Unit: dBm
MER	Float	DVB-H MER Range: 0 – 60 Unit: dB

## Physical resource block scanning results (PRBSCAN)

<b>Event ID</b>	PRBSCAN
<b>Cellular systems</b>	LTE FDD
<b>Record state</b>	Scanning state
<b>Description</b>	This measurement event is logged for each cell separately and contains scanning results per physical resource block. Recorded when measurement sample is received from the device. Currently logged about once per second with Rohde&Schwarz scanners.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE Rohde&Schwarz | Parameters for LTE PCTel | Parameters for LTE Nemo FSR1 |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT.
Scanner type	Integer	Scanner type 1 = Rohde&Schwarz 2 = PCTel 3 = Nemo FSR1
#System and device specific parameters	Integer	Number of system and device specific parameters

### Parameters for LTE Rohde&Schwarz [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7 70008 = LTE FDD 900 band 8



		70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20 70021 = LTE FDD 1500 band 21 70022 = LTE FDD 3500 band 22 70023 = LTE FDD 2200 band 23 70024 = LTE FDD 1500 band 24 70025 = LTE FDD 1900 band 25 70026 = LTE FDD 850 band 26 70027 = LTE FDD 800 band 27 70028 = LTE FDD 700 band 28 70029 = LTE FDD 700 band 29 This is downlink only band. 70030 = LTE FDD 2350 band 30 70031 = LTE FDD 450 band 31 70032 = LTE FDD 1500 L-band This is downlink only band. 70064 = LTE FDD 390-470 band 64 This is a non-standard LTE FDD band. 70065 = LTE FDD 2100 band 65 70066 = LTE FDD AWS-3 2100 band 66 70067 = LTE FDD 700 EU band 67 This is downlink only band. 70068 = LTE FDD 700 ME band 68 70069 = LTE FDD 2500 band 69 This is downlink only band. 70070 = LTE FDD AWS-4 band 70 70071 = LTE FDD 600 band 71 70252 = LTE FDD 5200 NII-1 band 252 70255 = LTE FDD 5700 NII-3 band 255 79999 = LTE FDD
Ch	Integer	Channel number
PCI	Integer	Physical cell identity Range: 0 – 503
#PRB indexes	Integer	Number of PRB indexes This is the same as the system bandwidth. Range: 0 – 100
#Params/PRB index	Integer	Number of parameters per PRB index
PRB index	Integer	PRB index Range: 0 – 99
2x2 rank	Integer	2x2 MIMO rank estimation/PRB Minimum value: 0
2x2 K	Float	2x2 MIMO condition number/PRB Minimum value: 0 Unit: dB
2x4 rank	Integer	2x4 MIMO rank estimation/PRB Minimum value: 0
2x4 K	Float	2x4 MIMO condition number/PRB Minimum value: 0 Unit: dB
4x4 rank	Integer	4x4 MIMO rank estimation/PRB Minimum value: 0
4x4 K	Float	4x4 MIMO condition number/PRB Minimum value: 0 Unit: dB

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	<p>Band</p> <p>70001 = LTE FDD 2100 band 1</p> <p>70002 = LTE FDD 1900 band 2</p> <p>70003 = LTE FDD 1800 band 3</p> <p>70004 = LTE FDD 2100 AWS band 4</p> <p>70005 = LTE FDD 850 band 5</p> <p>Band 850 is also known as band 800.</p> <p>70006 = LTE FDD 850 band 6</p> <p>70007 = LTE FDD 2600 band 7</p> <p>70008 = LTE FDD 900 band 8</p> <p>70009 = LTE FDD 1800 band 9</p> <p>70010 = LTE FDD 2100 band 10</p> <p>70011 = LTE FDD 1400 band 11</p> <p>70012 = LTE FDD 700 band 12</p> <p>70013 = LTE FDD 700 band 13</p> <p>70014 = LTE FDD 700 band 14</p> <p>70017 = LTE FDD 700 band 17</p> <p>70018 = LTE FDD 850 band 18</p> <p>70019 = LTE FDD 850 band 19</p> <p>70020 = LTE FDD 800 band 20</p> <p>70021 = LTE FDD 1500 band 21</p> <p>70022 = LTE FDD 3500 band 22</p> <p>70023 = LTE FDD 2200 band 23</p> <p>70024 = LTE FDD 1500 band 24</p> <p>70025 = LTE FDD 1900 band 25</p> <p>70026 = LTE FDD 850 band 26</p> <p>70027 = LTE FDD 800 band 27</p> <p>70028 = LTE FDD 700 band 28</p> <p>70029 = LTE FDD 700 band 29</p> <p>This is downlink only band.</p> <p>70030 = LTE FDD 2350 band 30</p> <p>70031 = LTE FDD 450 band 31</p> <p>70032 = LTE FDD 1500 L-band</p> <p>This is downlink only band.</p> <p>70064 = LTE FDD 390-470 band 64</p> <p>This is a non-standard LTE FDD band.</p> <p>70065 = LTE FDD 2100 band 65</p> <p>70066 = LTE FDD AWS-3 2100 band 66</p> <p>70067 = LTE FDD 700 EU band 67</p> <p>This is downlink only band.</p> <p>70068 = LTE FDD 700 ME band 68</p> <p>70069 = LTE FDD 2500 band 69</p> <p>This is downlink only band.</p> <p>70070 = LTE FDD AWS-4 band 70</p> <p>70071 = LTE FDD 600 band 71</p> <p>70252 = LTE FDD 5200 NII-1 band 252</p> <p>70255 = LTE FDD 5700 NII-3 band 255</p> <p>79999 = LTE FDD</p>
Ch	Integer	Channel number
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
PCI	Integer	<p>Physical cell identity</p> <p>Range: 0 – 503</p>
2x2 K	Float	<p>2x2 MIMO condition number</p> <p>Minimum value: 0</p> <p>Unit: dB</p>
OLSM 1L CQI	Integer	<p>Single layer open-loop CQI</p> <p>Range: 0 – 15</p>
OLSM 1L rate	Integer	<p>Single layer open-loop throughput</p> <p>Minimum value: 0</p> <p>Unit: bit/s</p>
CLSM 1L CQI	Integer	<p>Single layer closed-loop CQI</p> <p>Range: 0 – 15</p>

CLSM 1L rate	Integer	Single layer closed-loop throughput Minimum value: 0 Unit: bit/s
OLSM 2L CQI 0	Integer	Dual layer open-loop CQI 0 Range: 0 – 15
OLSM 2L rate 0	Integer	Dual layer open-loop throughput 0 Minimum value: 0 Unit: bit/s
OLSM 2L CQI 1	Integer	Dual layer open-loop CQI 1 Range: 0 – 15
OLSM 2L rate 1	Integer	Dual layer open-loop throughput 1 Minimum value: 0 Unit: bit/s
CLSM 2L CQI 0	Integer	Dual layer closed-loop SM CQI 0 Range: 0 – 15
CLSM 2L rate 0	Integer	Dual layer closed-loop throughput 0 Minimum value: 0 Unit: bit/s
CLSM 2L CQI 1	Integer	Dual layer closed-loop SM CQI 1 Range: 0 – 15
CLSM 2L rate 1	Integer	Dual layer closed-loop throughput 1 Minimum value: 0 Unit: bit/s
CLSM 2L rate	Integer	Dual layer closed-loop throughput Minimum value: 0 Unit: bit/s
CLSM 3L CQI 0	Integer	Three layer closed-loop SM CQI 0 Range: 0 – 15
CLSM 3L CQI 1	Integer	Three layer closed-loop SM CQI 1 Range: 0 – 15
CLSM 3L CQI 2	Integer	Three layer closed-loop SM CQI 2 Range: 0 – 15
CLSM 3L rate	Integer	Three layer closed-loop throughput Minimum value: 0 Unit: bit/s
CLSM 4L CQI 0	Integer	Four layer closed-loop SM CQI 0 Range: 0 – 15
CLSM 4L CQI 1	Integer	Four layer closed-loop SM CQI 1 Range: 0 – 15
CLSM 4L CQI 2	Integer	Four layer closed-loop SM CQI 2 Range: 0 – 15
CLSM 4L CQI 3	Integer	Four layer closed-loop SM CQI 3 Range: 0 – 15
CLSM 4L rate	Integer	Four layer closed-loop throughput Minimum value: 0 Unit: bit/s

#### Parameters for LTE Nemo FSR1 [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7

		70008 = LTE FDD 900 band 8 70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20 70021 = LTE FDD 1500 band 21 70022 = LTE FDD 3500 band 22 70023 = LTE FDD 2200 band 23 70024 = LTE FDD 1500 band 24 70025 = LTE FDD 1900 band 25 70026 = LTE FDD 850 band 26 70027 = LTE FDD 800 band 27 70028 = LTE FDD 700 band 28 70029 = LTE FDD 700 band 29 This is downlink only band. 70030 = LTE FDD 2350 band 30 70031 = LTE FDD 450 band 31 70032 = LTE FDD 1500 L-band This is downlink only band. 70064 = LTE FDD 390-470 band 64 This is a non-standard LTE FDD band. 70065 = LTE FDD 2100 band 65 70066 = LTE FDD AWS-3 2100 band 66 70067 = LTE FDD 700 EU band 67 This is downlink only band. 70068 = LTE FDD 700 ME band 68 70069 = LTE FDD 2500 band 69 This is downlink only band. 70070 = LTE FDD AWS-4 band 70 70071 = LTE FDD 600 band 71 70252 = LTE FDD 5200 NII-1 band 252 70255 = LTE FDD 5700 NII-3 band 255 79999 = LTE FDD
Ch	Integer	Channel number
PCI	Integer	Physical cell identity Range: 0 – 503
#PRB indexes	Integer	Number of PRB indexes This is the same as the system bandwidth. Range: 0 – 100
#Params/PRB index	Integer	Number of parameters per PRB index
PRB index	Integer	PRB index Range: 0 – 99
2x2 rank	Integer	2x2 MIMO rank estimation/PRB Minimum value: 0
2x2 K	Float	2x2 MIMO condition number/PRB Minimum value: 0 Unit: dB
2x4 rank	Integer	2x4 MIMO rank estimation/PRB Minimum value: 0
2x4 K	Float	2x4 MIMO condition number/PRB Minimum value: 0 Unit: dB
RSRP	Float	RSRP/PRB Reference signal received power is the linear average of the power contributions of the resource elements that carry cell-specific reference signals within the considered measurement frequency. 3GPP TS 36.214 subclause 5.1.1. Range: -160 – 0 Unit: dBm

CINR	Float	CINR/PRB Ratio between the reference signal received power (RSRP) and the interference and noise from the same reference signal set. Range: -40 – 50 Unit: dB
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## Timing profile scanning result (TPROFSCAN)

<b>Event ID</b>	TPROFSCAN
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when parameter sample is received from the device. Separate measurement event is logged for each channel and channel type.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for UMTS FDD |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

### Parameters for UMTS FDD |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
Ch	Integer	Channel number
RSSI	Float	RSSI Wide-band carrier power including thermal noise, co-carrier and adjacent carrier interference, and noise generated in the receiver. Range: -140 – 0 Unit: dBm
Ch type	Integer	UMTS channel type 1 = CPICH 2 = P SCH 3 = S SCH 4 = CPICH (TX diversity) 5 = PPCH
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14

		50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
#Params/sample	Integer	Number of parameters per sample
#Samples	Integer	Number of samples
Chip	Integer	Chip number
Ec/N0	Float	Chip Ec/N0 The received energy per chip divided by the power density of the band. Range: -30 – 0 Unit: dB

## Delay profile scanning result (DPROFSCAN)

<b>Event ID</b>	DPROFSCAN
<b>Cellular systems</b>	UMTS FDD,cdmaOne,CDMA 1x
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when parameter sample is received from the device. Separate measurement event is logged for each system and channel.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for UMTS FDD | Parameters for cdmaOne, CDMA 1x, and EVDO |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Ch	Integer	Channel number
SC	Integer	Scrambling code Range: 0 – 511
Ch type	Integer	UMTS channel type 1 = CPICH 2 = P SCH 3 = S SCH 4 = CPICH (TX diversity) 5 = PPCH
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3

		50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
#Params/sample	Integer	Number of parameters per sample
#Samples	Integer	Number of samples
Sample offset	Float	Delay profile sample offset Delay in 0.5 chip resolution. Range: -550 – 550 Unit: chip
Sample	Float	Delay profile sample

#### Parameters for cdmaOne, CDMA 1x, and EVDO [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band. 100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band. 100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 100007 = cdmaOne 700 band 7 North American cellular 700 MHz band. 100008 = cdmaOne 1800 band 8 1800 MHz band. 100009 = cdmaOne 900 band 9 900 MHz band. 100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band. 100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band. 100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension. 100014 = cdmaOne 1900 band 14 US PCS 1.9 GHz. 100015 = cdmaOne 2100 AWS band 15 100016 = cdmaOne 2500 band 16 US 2.5 GHz. 100018 = cdmaOne 700 public safety band 18 100019 = cdmaOne 700 lower band 19

100020 = cdmaOne 1500 L-band band 20  
 100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
     North American cellular 800 MHz band, also in Korea, Australia,  
     Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
     North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
     Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
     JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
     Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
     Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
     IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
     North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
     1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
     900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
     Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
     European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
     European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
     2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
     US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
     US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21  
 119999 = CDMA 1x  
 120000 = EVDO 800 band 0  
     North American cellular 800 MHz band. Also in Korea, Australia,  
     Hong Kong, China, Taiwan, and others.  
 120001 = EVDO 1900 band 1  
     North American PCS 1900 MHz band.  
 120002 = EVDO 900 TACS band 2  
     Total access communication system (TACS) 900 MHz band.  
 120003 = EVDO 800 JTACS band 3  
     JTACS 800 MHz band (Japanese 800 MHz reversed).  
 120004 = EVDO 1800 Korean band 4  
     Korean PCS 1800 MHz band.  
 120005 = EVDO 450 NMT band 5  
     Nordic mobile telephone (NMT) 450 MHz band.  
 120006 = EVDO 1900-2100 IMT band 6  
     IMT-2000 1900-2100 MHz band.  
 120007 = EVDO 700 band 7  
     North American cellular 700 MHz band.  
 120008 = EVDO 1800 band 8  
     1800 MHz band.  
 120009 = EVDO 900 band 9  
     900 MHz band.  
 120010 = EVDO 800 SMR band 10  
     Specialized mobile radio (SMR) 800 MHz band.  
 120011 = EVDO 400 PAMR band 11  
     European PAMR 400 MHz band.  
 120012 = EVDO 800 PAMR band 12  
     European PAMR 800 MHz band.  
 120013 = EVDO 2500 band 13  
     2.5 GHz IMT-2000 extension.  
 120014 = EVDO 1900 band 14



		US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Ch	Integer	Channel number
#Params/sample	Integer	Number of parameters per sample
#Samples	Integer	Number of samples
Sample offset	Integer	Delay profile sample absolute offset Delay profile sample offset. Range: 0 – 32768 Unit: chip
Sample energy	Float	Delay profile sample energy Range: –35 – 3 Unit: dB

## Rake finger allocation (FINGER)

<b>Event ID</b>	FINGER
<b>Cellular systems</b>	UMTS FDD,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameter sample is received from the device. Currently this information is only logged for serving cells.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
 [Parameters for UMTS FDD](#) |
 [Parameters for cdmaOne and CDMA 1x](#) |
 [Parameters for EVDO](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

### Parameters for UMTS FDD [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Fingers	Integer	Number of fingers
#Params/finger	Integer	Number of parameters per finger
Ch	Integer	Channel number
SC	Integer	Scrambling code Range: 0 – 511
Secondary SC	Integer	Secondary scrambling code Range: 0 – 15
Ec/N0	Float	Finger Ec/N0

		The received energy per chip divided by the power density of the band. Range: -30 – 0 Unit: dB
Finger abs offset	Float	Absolute finger offset Note that the accuracy can be greater than one chip. Unit: chip
Finger rel. offset	Float	Finger offset relative to strongest peak Finger offset to the strongest peak. Note that the accuracy can be greater than one chip. Unit: chip
Finger RSCP	Float	Finger RSCP The received signal code power of single code. Unit: dBm

#### Parameters for cdmaOne and CDMA 1x [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Agg. Ec/I0	Float	Aggregate Ec/I0 Summary of the Ec/I0 of the fingers. At least one finger has to be locked. Range: -50 – 0 Unit: dB
Ant. config	Integer	Antenna configuration 0 = RX0 1 = RX1 2 = Diversity enabled 3 = Simultaneous mode RX0 4 = Simultaneous mode RX1
#Fingers	Integer	Number of fingers
#Params/finger	Integer	Number of parameters per finger
PN	Integer	Pilot number Range: 0 – 511
Finger abs offset	Float	Absolute finger offset Note that the accuracy can be greater than one chip. Unit: chip
Finger locked	Integer	Finger locked 0 = No 1 = Yes
Ec/I0	Float	Ec/I0 If antenna configuration is 2, then this represents Ec/I0 for the paired fingers. Range: -30 – 30 Unit: dB
Ref. finger	Integer	Reference finger 0 = No 1 = Yes
Assigned finger	Integer	Assigned finger 0 = No 1 = Yes
TD mode	Integer	Transmit diversity mode 0 = None 1 = Reserver I 2 = OTD 3 = STS
TD power	Float	Transmit diversity power level Range: -9 – 0
Subchannel	Integer	Subchannel 1 = PCH 2 = Primary BCCH 4 = Secondary BCCH 1 8 = Secondary BCCH 2 16 = Secondary BCCH 3

		32 = Secondary BCCH 4 64 = Secondary BCCH 5 128 = Secondary BCCH 6 256 = Secondary BCCH 7 512 = FCCCH 1024 = QPCH 2048 = FCH 4096 = DCCH 8192 = SCCH 16384 = SCH 32768 = PDCCH 65536 = GCH 0 131072 = GCH 1 262144 = RCCH 524288 = ACKCH 1048576 = CPCCH 2097152 = CACH
Locked antennas	Integer	Locked antennas 0 = RX0 1 = RX1
RX0 Ec/I0	Float	Ec/I0 antenna 0 Ec/I0 for finger tracking RX0. Range: -30 – 30 Unit: dB
RX1 Ec/I0	Float	Ec/I0 antenna 1 Ec/I0 for finger tracking RX1. Range: -30 – 30 Unit: dB

#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Searcher state	Integer	Searcher state 0 = Start (inactive) 1 = Acquisition 2 = Synchronization 3 = Idle 4 = Idle suspended 5 = Idle broadcast 6 = Idle off-frequency searching 7 = Broadcast access 8 = Sleep 9 = Reacquisition 10 = Traffic 11 = Traffic suspended 12 = Traffic off-frequency searching
MSTR	Integer	Mobile station time reference Relative to the RTC timebase. Unit: chip
MSTR error	Integer	Mobile station time reference error Relative to the earliest arriving in-lock and enabled active set pilot. Unit: chip
MSTR PN	Integer	Mobile station PN offset Pilot PN of the finger which the MSTR is tracking. Typically the earliest arriving finger. Range: 0 – 511
Ant. config	Integer	Antenna configuration 0 = RX0 1 = RX1 2 = Diversity enabled 3 = Simultaneous mode RX0 4 = Simultaneous mode RX1
#Fingers	Integer	Number of fingers
#Params/finger	Integer	Number of parameters per finger

PN	Integer	Pilot number Range: 0 – 511
Finger index	Integer	Finger index Index of the demodulator finger. Range: 0 – 11
RPC cell index	Integer	RPC cell index Value/index assigned to a cell by AT. Range: 0 – 6
ASP index	Integer	ASP index Value/index assigned to a sector by AT. Range: 0 – 6
Ec/I0	Float	Ec/I0 If antenna configuration is 2, then this represents Ec/I0 for the paired fingers. Range: -30 – 30 Unit: dB
RX0 Ec/I0	Float	Ec/I0 antenna 0 Ec/I0 for finger tracking RX0. Range: -30 – 30 Unit: dB
RX1 Ec/I0	Float	Ec/I0 antenna 1 Ec/I0 for finger tracking RX1. Range: -30 – 30 Unit: dB
Finger locked	Integer	Finger locked 0 = No 1 = Yes
Finger abs offset	Float	Absolute finger offset Note that the accuracy can be greater than one chip. Unit: chip
Packet carrier	Integer	Packet carrier number

## Uplink interference scanning results (UISCAN)

<b>Event ID</b>	UISCAN
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when parameter sample is received from the device. Separate measurement event is logged for each channel.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for UMTS FDD |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

### Parameters for UMTS FDD |Top|

Name	Type	Description
#Header	Integer	Number of header parameters

params		
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
#Params/cell	Integer	Number of parameters per cell
#Cells	Integer	Number of scanned cells
ARFCN	Integer	Channel number
SC	Integer	Scrambling code Range: 0 – 511
UL interf.	Float	Uplink interference Uplink Interference is measured by the NodeB and broadcasted by the NodeB in SIB7. This is used by the UE to in setting the initial TX power for the first PRACH preamble. The Uplink Interference value in SIB7 uses 1 dB step. More information can be found in 3GPP TS 25.133 and 25.215 (information about SIB7 in 3GPP TS 25.331), where the Uplink Interference is referred as "Received total wide band power". Range: –110 – –52 Unit: dBm

## DL allocation scanning results (DLALLOCSCAN)

Event ID	DLALLOCSCAN
Cellular systems	LTE FDD,LTE TDD
Record state	Scanning state
Description	Recorded when parameter sample is received from the device. Separate measurement event is logged for each system, band, channel number, and channel type.
Tools	Nemo Outdoor

Parameters Parameters for LTE

### Parameters [Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT.

Parameters for LTE [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	<p>Band</p> <p>70001 = LTE FDD 2100 band 1  70002 = LTE FDD 1900 band 2  70003 = LTE FDD 1800 band 3  70004 = LTE FDD 2100 AWS band 4  70005 = LTE FDD 850 band 5  Band 850 is also known as band 800.  70006 = LTE FDD 850 band 6  70007 = LTE FDD 2600 band 7  70008 = LTE FDD 900 band 8  70009 = LTE FDD 1800 band 9  70010 = LTE FDD 2100 band 10  70011 = LTE FDD 1400 band 11  70012 = LTE FDD 700 band 12  70013 = LTE FDD 700 band 13  70014 = LTE FDD 700 band 14  70017 = LTE FDD 700 band 17  70018 = LTE FDD 850 band 18  70019 = LTE FDD 850 band 19  70020 = LTE FDD 800 band 20  70021 = LTE FDD 1500 band 21  70022 = LTE FDD 3500 band 22  70023 = LTE FDD 2200 band 23  70024 = LTE FDD 1500 band 24  70025 = LTE FDD 1900 band 25  70026 = LTE FDD 850 band 26  70027 = LTE FDD 800 band 27  70028 = LTE FDD 700 band 28  70029 = LTE FDD 700 band 29  This is downlink only band.  70030 = LTE FDD 2350 band 30  70031 = LTE FDD 450 band 31  70032 = LTE FDD 1500 L-band  This is downlink only band.  70064 = LTE FDD 390-470 band 64  This is a non-standard LTE FDD band.  70065 = LTE FDD 2100 band 65  70066 = LTE FDD AWS-3 2100 band 66  70067 = LTE FDD 700 EU band 67  This is downlink only band.  70068 = LTE FDD 700 ME band 68  70069 = LTE FDD 2500 band 69  This is downlink only band.  70070 = LTE FDD AWS-4 band 70  70071 = LTE FDD 600 band 71  70252 = LTE FDD 5200 NII-1 band 252  70255 = LTE FDD 5700 NII-3 band 255  79999 = LTE FDD  80033 = LTE TDD 1900-1920 band 33  80034 = LTE TDD 2010-2025 band 34  80035 = LTE TDD 1850-1910 band 35  80036 = LTE TDD 1930-1990 band 36  80037 = LTE TDD 1910-1930 band 37  80038 = LTE TDD 2570-2620 band 38  80039 = LTE TDD 1880-1920 band 39  80040 = LTE TDD 2300-2400 band 40  80041 = LTE TDD 2496-2690 band 41  80042 = LTE TDD 3400-3600 band 42  80043 = LTE TDD 3600-3800 band 43  80044 = LTE TDD 703-803 band 44  80045 = LTE TDD 1447-1467 band 45  80046 = LTE TDD 5154-5925 band 46  80047 = LTE TDD 5855-5925 band 47</p>

		80048 = LTE TDD 3550-3700 band 48 80061 = LTE TDD 1447-1467 band 61 This is a non-standard LTE TDD band. 80062 = LTE TDD 1785-1805 band 62 This is a non-standard LTE TDD band. 80087 = LTE TDD 1447-1467 band 87 This is a non-standard LTE TDD band. 80088 = LTE TDD 1785-1805 band 88 This is a non-standard LTE TDD band. 89999 = LTE TDD
Ch	Integer	Channel number
DL BW	Integer	DL bandwidth This is the scanned bandwidth when the scanned bandwidth differs from the system bandwidth. 1 = 180 kHz Used with NB-IoT. 6 = 1.4 MHz 15 = 3 MHz 25 = 5 MHz 50 = 10 MHz 75 = 15 MHz 100 = 20 MHz
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
PCI	Integer	Physical cell identity Range: 0 – 503
Cell ID	Integer	Cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 268435455
DL PRB %/C	Float	PRB utilization DL/cell Downlink PRB utilization proportional to cell bandwidth. Range: 0 – 100 Unit: %
Scheduled rate/C	Integer	Scheduled throughput/cell Minimum value: 0 Unit: bit/s
Min scheduled rate/C	Integer	Scheduled throughput min/cell Minimum value: 0 Unit: bit/s
Max scheduled rate/C	Integer	Scheduled throughput max/cell Minimum value: 0 Unit: bit/s
Users/cell	Integer	Users/cell
Scheduled rate/U/C	Integer	Scheduled throughput/user/cell Minimum value: 0 Unit: bit/s
Min scheduled rate/U/C	Integer	Scheduled throughput min/user/cell Minimum value: 0 Unit: bit/s
Max scheduled rate/U/C	Integer	Scheduled throughput max/user/cell Minimum value: 0 Unit: bit/s
#Users	Integer	Number of users
#Params/user	Integer	Number of parameters per user
PCI	Integer	Physical cell identity Range: 0 – 503
C-RNTI	Integer	C-RNTI Cell Radio Network Temporary Identifier. A dynamic identity assigned by eNodeB and is valid as long as the UE is connected to that eNB.
DL PRB %/U	Float	PRB utilization DL/user

		Downlink PRB utilization proportional to cell bandwidth. Range: 0 – 100 Unit: %
Scheduled rate/U	Integer	Scheduled throughput/user Minimum value: 0 Unit: bit/s
MCS/U	Integer	MCS index/user Defines the average MCS index. See 3GPP TS 36.213 subclause 7.1.7. Range: 0 – 28

## Cell scanning results (CELLSCAN)

<b>Event ID</b>	CELLSCAN
<b>Cellular systems</b>	GSM,UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	Scanning state
<b>Description</b>	Recorded when parameter sample is received from the device. With GSM the system information messages, and with UMTS and LTE the system information blocks, are decoded to produce the information required for this measurement event.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM | Parameters for UMTS FDD | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for GSM |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
ARFCN	Integer	Scanned channel number
BSIC	Integer	Scanned base station identification code Range: 0 – 63
MCC	Integer	Scanned MCC See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	Scanned MNC



		Range: 0 – 999
LAC	Integer	Scanned LAC Range: 0 – 65535
Cell ID	Integer	Scanned cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 65535

#### Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
UARFCN	Integer	Scanned channel number
SC	Integer	Scanned scrambling code Range: 0 – 511
MCC	Integer	Scanned MCC See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	Scanned MNC Range: 0 – 999
LAC	Integer	Scanned LAC Range: 0 – 65535
Cell ID	Integer	Scanned cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 268435455

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Band	Integer	Band
#Cells	Integer	Number of cells

#Params/cell	Integer	Number of parameters per cell
EARFCN	Integer	Scanned channel number
PCI	Integer	Scanned physical cell identity Range: 0 – 503
MCC	Integer	Scanned MCC See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	Scanned MNC Range: 0 – 999
TAC	Integer	Scanned TAC Range: 0 – 65535
Cell ID	Integer	Scanned cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 268435455

## Handover/handoff attempt (HOA)

<b>Event ID</b>	HOA
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when handover attempt is initiated based on signaling. For GSM, RR layer3 signaling is used. For UMTS, RRC signaling is used. Note that this measurement event is not recorded with GSM when the first TCH allocation is done. Instead, after a successful TCH assignment, a CAC measurement event is recorded. The measurement event begins the handover attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters | Current system parameters | Parameters for GSM | Parameters for TETRA | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA | Parameters for LTE | Parameters for cdmaOne, CDMA 1x, and EVDO | Parameters for GAN WLAN | Parameters for WiMAX | Parameters for DAMPS | Parameters for iDEN | Attempted system parameters | Parameters for GSM | Parameters for TETRA | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA | Parameters for LTE | Parameters for cdmaOne, CDMA 1x, and EVDO | Parameters for GAN WLAN | Parameters for WiMAX | Parameters for DAMPS | Parameters for iDEN |

### Parameters [\[Top\]](#)

Name	Type	Description
Handover context ID	Context	Handover context ID
#Header params	Integer	Number of header parameters
HOA type	Integer	Handover/handoff attempt type 101 = GSM internal handover 102 = GSM handover between cells 103 = GSM handover between systems 104 = GSM handover between bands 105 = GSM internal handover between bands 201 = DAMPS handoff between sectors or handoff to small diameter cell (SBI = 00) 202 = DAMPS handoff to small diameter cell or handoff to large diameter cell (SBI = 01 or SBI = 10) 203 = DAMPS handoff between systems

		301 = CDMA hard handoff 303 = CDMA handoff between systems 401 = UMTS FDD hard handover 403 = UMTS FDD handover between systems 501 = TD-SCDMA hard inter-frequency handover 502 = TD-SCDMA hard intra-frequency handover 503 = TD-SCDMA handover between systems 504 = TD-SCDMA baton inter-frequency handover 505 = TD-SCDMA baton intra-frequency handover 600 = TETRA announced cell reselection type 1 601 = TETRA announced cell reselection type 2 602 = TETRA announced cell reselection type 3 703 = GAN WLAN handover between systems 801 = WiMAX handover between cells 901 = LTE handover between cells 902 = LTE handover between frequencies 903 = LTE handover between bands 904 = LTE handover between systems 1001 = iDEN intra-cell 1002 = iDEN inter-cell
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#### Current system parameters [|Top|](#)

Name	Type	Description
Current system	Integer	Current cellular system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 25 = WiMAX 53 = DAMPS 55 = iDEN
Number of current system parameters	Integer	Number of current system parameters

#### Parameters for GSM [|Top|](#)

Name	Type	Description
Ch number	Integer	Channel number If the current cell does not have hopping, the value is the currently used channel number. If hopping is in use, the value is the BCCH channel number of the serving cell.
TSL	Integer	Timeslot Range: 0 – 7
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM

#### Parameters for TETRA [|Top|](#)

Name	Type	Description
Ch number	Integer	Channel number
TSL	Integer	Timeslot Range: 0 – 7

Band	Integer	Band
		20001 = TETRA band 1
		20002 = TETRA band 2
		20003 = TETRA band 3
		20004 = TETRA band 4
		20005 = TETRA band 5
		20006 = TETRA band 6
		20007 = TETRA band 7
		20008 = TETRA band 8
		20009 = TETRA band 9
		20010 = TETRA band 10
		20011 = TETRA band 11
		20012 = TETRA band 12
		20013 = TETRA band 13
		20014 = TETRA band 14
		20015 = TETRA band 15
		29999 = TETRA

#### Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
Ch number	Integer	Channel number
SC	Integer	Scrambling code Range: 0 – 511
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
Ch number	Integer	Channel number
Cell params ID	Integer	Cell parameters ID Range: 0 – 127
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description

Ch number	Integer	Channel number
PCI	Integer	Physical cell ID Range: 0 – 503
Band	Integer	<p>Band</p> <p>70001 = LTE FDD 2100 band 1</p> <p>70002 = LTE FDD 1900 band 2</p> <p>70003 = LTE FDD 1800 band 3</p> <p>70004 = LTE FDD 2100 AWS band 4</p> <p>70005 = LTE FDD 850 band 5</p> <p>Band 850 is also known as band 800.</p> <p>70006 = LTE FDD 850 band 6</p> <p>70007 = LTE FDD 2600 band 7</p> <p>70008 = LTE FDD 900 band 8</p> <p>70009 = LTE FDD 1800 band 9</p> <p>70010 = LTE FDD 2100 band 10</p> <p>70011 = LTE FDD 1400 band 11</p> <p>70012 = LTE FDD 700 band 12</p> <p>70013 = LTE FDD 700 band 13</p> <p>70014 = LTE FDD 700 band 14</p> <p>70017 = LTE FDD 700 band 17</p> <p>70018 = LTE FDD 850 band 18</p> <p>70019 = LTE FDD 850 band 19</p> <p>70020 = LTE FDD 800 band 20</p> <p>70021 = LTE FDD 1500 band 21</p> <p>70022 = LTE FDD 3500 band 22</p> <p>70023 = LTE FDD 2200 band 23</p> <p>70024 = LTE FDD 1500 band 24</p> <p>70025 = LTE FDD 1900 band 25</p> <p>70026 = LTE FDD 850 band 26</p> <p>70027 = LTE FDD 800 band 27</p> <p>70028 = LTE FDD 700 band 28</p> <p>70029 = LTE FDD 700 band 29</p> <p>This is downlink only band.</p> <p>70030 = LTE FDD 2350 band 30</p> <p>70031 = LTE FDD 450 band 31</p> <p>70032 = LTE FDD 1500 L-band</p> <p>This is downlink only band.</p> <p>70064 = LTE FDD 390-470 band 64</p> <p>This is a non-standard LTE FDD band.</p> <p>70065 = LTE FDD 2100 band 65</p> <p>70066 = LTE FDD AWS-3 2100 band 66</p> <p>70067 = LTE FDD 700 EU band 67</p> <p>This is downlink only band.</p> <p>70068 = LTE FDD 700 ME band 68</p> <p>70069 = LTE FDD 2500 band 69</p> <p>This is downlink only band.</p> <p>70070 = LTE FDD AWS-4 band 70</p> <p>70071 = LTE FDD 600 band 71</p> <p>70252 = LTE FDD 5200 NII-1 band 252</p> <p>70255 = LTE FDD 5700 NII-3 band 255</p> <p>79999 = LTE FDD</p> <p>80033 = LTE TDD 1900-1920 band 33</p> <p>80034 = LTE TDD 2010-2025 band 34</p> <p>80035 = LTE TDD 1850-1910 band 35</p> <p>80036 = LTE TDD 1930-1990 band 36</p> <p>80037 = LTE TDD 1910-1930 band 37</p> <p>80038 = LTE TDD 2570-2620 band 38</p> <p>80039 = LTE TDD 1880-1920 band 39</p> <p>80040 = LTE TDD 2300-2400 band 40</p> <p>80041 = LTE TDD 2496-2690 band 41</p> <p>80042 = LTE TDD 3400-3600 band 42</p> <p>80043 = LTE TDD 3600-3800 band 43</p> <p>80044 = LTE TDD 703-803 band 44</p> <p>80045 = LTE TDD 1447-1467 band 45</p> <p>80046 = LTE TDD 5154-5925 band 46</p> <p>80047 = LTE TDD 5855-5925 band 47</p> <p>80048 = LTE TDD 3550-3700 band 48</p> <p>80061 = LTE TDD 1447-1467 band 61</p> <p>This is a non-standard LTE TDD band.</p> <p>80062 = LTE TDD 1785-1805 band 62</p> <p>This is a non-standard LTE TDD band.</p>

80087 = LTE TDD 1447-1467 band 87  
 This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
 This is a non-standard LTE TDD band.  
 89999 = LTE TDD

#### Parameters for cdmaOne, CDMA 1x, and EVDO [|Top|](#)

Name	Type	Description
Ch number	Integer	Channel number
Band	Integer	<p>Band</p> <p>100000 = cdmaOne 800 band 0            North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>100001 = cdmaOne 1900 band 1            North American PCS 1900 MHz band.</p> <p>100002 = cdmaOne 900 TACS band 2            Total access communication system (TACS) 900 MHz band.</p> <p>100003 = cdmaOne 800 JTACS band 3            JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>100004 = cdmaOne 1800 Korean band 4            Korean PCS 1800 MHz band.</p> <p>100005 = cdmaOne 450 NMT band 5            Nordic mobile telephone (NMT) 450 MHz band.</p> <p>100006 = cdmaOne 1900-2100 IMT band 6            IMT-2000 1900-2100 MHz band.</p> <p>100007 = cdmaOne 700 band 7            North American cellular 700 MHz band.</p> <p>100008 = cdmaOne 1800 band 8            1800 MHz band.</p> <p>100009 = cdmaOne 900 band 9            900 MHz band.</p> <p>100010 = cdmaOne 800 SMR band 10            Specialized mobile radio (SMR) 800 MHz band.</p> <p>100011 = cdmaOne 400 PAMR band 11            European PAMR 400 MHz band.</p> <p>100012 = cdmaOne 800 PAMR band 12            European PAMR 800 MHz band.</p> <p>100013 = cdmaOne 2500 band 13            2.5 GHz IMT-2000 extension.</p> <p>100014 = cdmaOne 1900 band 14            US PCS 1.9 GHz.</p> <p>100015 = cdmaOne 2100 AWS band 15</p> <p>100016 = cdmaOne 2500 band 16            US 2.5 GHz.</p> <p>100018 = cdmaOne 700 public safety band 18</p> <p>100019 = cdmaOne 700 lower band 19</p> <p>100020 = cdmaOne 1500 L-band band 20</p> <p>100021 = cdmaOne 2000 S-band band 21</p> <p>109999 = cdmaOne</p> <p>110000 = CDMA 1x 800 band 0            North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>110001 = CDMA 1x 1900 band 1            North American PCS 1900 MHz band.</p> <p>110002 = CDMA 1x 900 TACS band 2            Total access communication system (TACS) 900 MHz band.</p> <p>110003 = CDMA 1x 800 JTACS band 3            JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>110004 = CDMA 1x 1800 Korean band 4            Korean PCS 1800 MHz band.</p> <p>110005 = CDMA 1x 450 NMT band 5            Nordic mobile telephone (NMT) 450 MHz band.</p> <p>110006 = CDMA 1x 1900-2100 IMT band 6            IMT-2000 1900-2100 MHz band.</p> <p>110007 = CDMA 1x 700 band 7            North American cellular 700 MHz band.</p> <p>110008 = CDMA 1x 1800 band 8            1800 MHz band.</p> <p>110009 = CDMA 1x 900 band 9</p>

900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21  
 119999 = CDMA 1x  
 120000 = EVDO 800 band 0  
 North American cellular 800 MHz band. Also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 120001 = EVDO 1900 band 1  
 North American PCS 1900 MHz band.  
 120002 = EVDO 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 120003 = EVDO 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 120004 = EVDO 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 120005 = EVDO 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 120006 = EVDO 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 120007 = EVDO 700 band 7  
 North American cellular 700 MHz band.  
 120008 = EVDO 1800 band 8  
 1800 MHz band.  
 120009 = EVDO 900 band 9  
 900 MHz band.  
 120010 = EVDO 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 120011 = EVDO 400 PAMR band 11  
 European PAMR 400 MHz band.  
 120012 = EVDO 800 PAMR band 12  
 European PAMR 800 MHz band.  
 120013 = EVDO 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 120014 = EVDO 1900 band 14  
 US PCS 1.9 GHz.  
 120015 = EVDO 2100 AWS band 15  
 120016 = EVDO 2500 band 16  
 US 2.5 GHz.  
 120018 = EVDO 700 public safety band 18  
 120019 = EVDO 700 lower band 19  
 120020 = EVDO 1500 L-band band 20  
 120021 = EVDO 2000 S-band band 21  
 129999 = EVDO

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved

#### Parameters for WiMAX [|Top|](#)

Name	Type	Description
BS ID	String	WiMAX base station ID Six colon separated hex values.

Preamble index	Integer	WiMAX preamble index Range: 0 – 113
Frequency	Float	WiMAX frequency Unit: MHz

#### Parameters for DAMPS [|Top|](#)

Name	Type	Description
Ch number	Integer	Channel number
TSL	Integer	Timeslot Range: 0 – 7

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
Ch number	Integer	Channel number
CC	Integer	Color code Range: 0 – 15
Band	Integer	Band 550001 = iDEN proprietary 550002 = iDEN 800 standard 550003 = iDEN 800 extended 550004 = iDEN 900 550005 = iDEN 1500 559999 = iDEN

#### Attempted system parameters [|Top|](#)

Name	Type	Description
Attempt. system	Integer	Attempted cellular system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 25 = WiMAX 53 = DAMPS 55 = iDEN
Number of attempted system parameters	Integer	Number of attempted system parameters

#### Parameters for GSM [|Top|](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number If hopping flag is disable (see GSM 04.08 / 10.5.2.5) the value is the same as ARFCN. If hopping is enabled and assignment command was used, the value is the same as the serving cell BCCH. If hopping is enabled and handover command was used, the value is BCCH ARFCN (see GSM 04.08/ 10.5.2.2).
Att. TSL	Integer	Attempted timeslot Range: 0 – 7
Att. Band	Integer	Attempted band 10850 = GSM 850 Band 850 is also known as band 800.



	10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
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#### Parameters for TETRA [\[Top\]](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number
Att. TSL	Integer	Attempted timeslot Range: 0 – 7
Att. Band	Integer	Attempted band 20001 = TETRA band 1 20002 = TETRA band 2 20003 = TETRA band 3 20004 = TETRA band 4 20005 = TETRA band 5 20006 = TETRA band 6 20007 = TETRA band 7 20008 = TETRA band 8 20009 = TETRA band 9 20010 = TETRA band 10 20011 = TETRA band 11 20012 = TETRA band 12 20013 = TETRA band 13 20014 = TETRA band 14 20015 = TETRA band 15 29999 = TETRA

#### Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number
Att. SC	Integer	Attempted scrambling code Range: 0 – 511
Att. Band	Integer	Attempted band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number
Att. Cell params ID	Integer	Attempted cell parameters ID Range: 0 – 127

Att. Band	Integer	Attempted band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
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#### Parameters for LTE [Top](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number
Att. PCI	Integer	Attempted physical cell ID Range: 0 – 503
Att. Band	Integer	Attempted band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7 70008 = LTE FDD 900 band 8 70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20 70021 = LTE FDD 1500 band 21 70022 = LTE FDD 3500 band 22 70023 = LTE FDD 2200 band 23 70024 = LTE FDD 1500 band 24 70025 = LTE FDD 1900 band 25 70026 = LTE FDD 850 band 26 70027 = LTE FDD 800 band 27 70028 = LTE FDD 700 band 28 70029 = LTE FDD 700 band 29 This is downlink only band. 70030 = LTE FDD 2350 band 30 70031 = LTE FDD 450 band 31 70032 = LTE FDD 1500 L-band This is downlink only band. 70064 = LTE FDD 390-470 band 64 This is a non-standard LTE FDD band. 70065 = LTE FDD 2100 band 65 70066 = LTE FDD AWS-3 2100 band 66 70067 = LTE FDD 700 EU band 67 This is downlink only band. 70068 = LTE FDD 700 ME band 68 70069 = LTE FDD 2500 band 69 This is downlink only band. 70070 = LTE FDD AWS-4 band 70 70071 = LTE FDD 600 band 71 70252 = LTE FDD 5200 NII-1 band 252 70255 = LTE FDD 5700 NII-3 band 255 79999 = LTE FDD 80033 = LTE TDD 1900-1920 band 33 80034 = LTE TDD 2010-2025 band 34 80035 = LTE TDD 1850-1910 band 35 80036 = LTE TDD 1930-1990 band 36 80037 = LTE TDD 1910-1930 band 37 80038 = LTE TDD 2570-2620 band 38 80039 = LTE TDD 1880-1920 band 39

80040 = LTE TDD 2300-2400 band 40  
 80041 = LTE TDD 2496-2690 band 41  
 80042 = LTE TDD 3400-3600 band 42  
 80043 = LTE TDD 3600-3800 band 43  
 80044 = LTE TDD 703-803 band 44  
 80045 = LTE TDD 1447-1467 band 45  
 80046 = LTE TDD 5154-5925 band 46  
 80047 = LTE TDD 5855-5925 band 47  
 80048 = LTE TDD 3550-3700 band 48  
 80061 = LTE TDD 1447-1467 band 61  
 This is a non-standard LTE TDD band.  
 80062 = LTE TDD 1785-1805 band 62  
 This is a non-standard LTE TDD band.  
 80087 = LTE TDD 1447-1467 band 87  
 This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
 This is a non-standard LTE TDD band.  
 89999 = LTE TDD

#### Parameters for cdmaOne, CDMA 1x, and EVDO [|Top|](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number
Att. Band	Integer	Attempted band 100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band. 100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band. 100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 100007 = cdmaOne 700 band 7 North American cellular 700 MHz band. 100008 = cdmaOne 1800 band 8 1800 MHz band. 100009 = cdmaOne 900 band 9 900 MHz band. 100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band. 100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band. 100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension. 100014 = cdmaOne 1900 band 14 US PCS 1.9 GHz. 100015 = cdmaOne 2100 AWS band 15 100016 = cdmaOne 2500 band 16 US 2.5 GHz. 100018 = cdmaOne 700 public safety band 18 100019 = cdmaOne 700 lower band 19 100020 = cdmaOne 1500 L-band band 20 100021 = cdmaOne 2000 S-band band 21 109999 = cdmaOne 110000 = CDMA 1x 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 110001 = CDMA 1x 1900 band 1 North American PCS 1900 MHz band. 110002 = CDMA 1x 900 TACS band 2 Total access communication system (TACS) 900 MHz band.

110003 = CDMA 1x 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
 North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
 1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
 900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21  
 119999 = CDMA 1x  
 120000 = EVDO 800 band 0  
 North American cellular 800 MHz band. Also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 120001 = EVDO 1900 band 1  
 North American PCS 1900 MHz band.  
 120002 = EVDO 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 120003 = EVDO 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 120004 = EVDO 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 120005 = EVDO 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 120006 = EVDO 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 120007 = EVDO 700 band 7  
 North American cellular 700 MHz band.  
 120008 = EVDO 1800 band 8  
 1800 MHz band.  
 120009 = EVDO 900 band 9  
 900 MHz band.  
 120010 = EVDO 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 120011 = EVDO 400 PAMR band 11  
 European PAMR 400 MHz band.  
 120012 = EVDO 800 PAMR band 12  
 European PAMR 800 MHz band.  
 120013 = EVDO 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 120014 = EVDO 1900 band 14  
 US PCS 1.9 GHz.  
 120015 = EVDO 2100 AWS band 15  
 120016 = EVDO 2500 band 16  
 US 2.5 GHz.  
 120018 = EVDO 700 public safety band 18  
 120019 = EVDO 700 lower band 19  
 120020 = EVDO 1500 L-band band 20  
 120021 = EVDO 2000 S-band band 21  
 129999 = EVDO

**Parameters for GAN WLAN** [|Top](#)

Name	Type	Description
Reserved	Integer	Reserved

**Parameters for WiMAX** [|Top](#)

Name	Type	Description
Att. BS ID	String	Attempted WiMAX base station ID Six colon separated hex values.
Att. preamble index	Integer	Attempted WiMAX preamble index Range: 0 – 113
Att. frequency	Float	Attempted WiMAX frequency Unit: MHz

**Parameters for DAMPS** [|Top](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number
Att. TSL	Integer	Attempted timeslot Range: 0 – 7

**Parameters for iDEN** [|Top](#)

Name	Type	Description
Att. ch	Integer	Attempted channel number
Att. CC	Integer	Attempted color code Range: 0 – 15
Att. Band	Integer	Attempted band 550001 = iDEN proprietary 550002 = iDEN 800 standard 550003 = iDEN 800 extended 550004 = iDEN 900 550005 = iDEN 1500 559999 = iDEN

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## Handover/handoff success (HOS)

<b>Event ID</b>	HOS
<b>Cellular systems</b>	All
<b>Record state</b>	Handover attempt state
<b>Description</b>	Recorded based on signaling when a handover is successful. This measurement event ends the handover attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |**Parameters** [|Top](#)

Name	Type	Description
Handover context ID	Context	Handover context ID

## Handover/handoff fail (HOF)

<b>Event ID</b>	HOF
<b>Cellular systems</b>	All
<b>Record state</b>	Handover attempt state
<b>Description</b>	Recorded based on signaling when a handover fails. This measurement event ends the handover attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Parameters for GSM and GAN WLAN](#) | [Parameters for TETRA, DAMPS, and CDMA](#) | [Parameters for UMTS hard handover and TD-SCDMA baton handover](#) | [Parameters for UMTS handover between systems](#) | [Parameters for WiMAX handover between cells](#) | [Parameters for LTE](#) | [Parameters for iDEN](#) |

### Parameters [\[Top\]](#)

Name	Type	Description
Handover context ID	Context	Handover context ID

### Parameters for GSM and GAN WLAN [\[Top\]](#)

Name	Type	Description
RR cause	Integer	RR cause See 3GPP TS 144.018 subclause 10.5.2.31. 0 = Normal event 1 = Abnormal release, unspecified 2 = Abnormal release, channel unacceptable 3 = Abnormal release, timer expired 4 = Abnormal release, no activity on the radio path 5 = Pre-emptive release 6 = UTRAN configuration unknown 8 = Handover impossible, timing advance out of range 9 = Channel mode unacceptable 10 = Frequency not implemented 11 = Originator or talker leaving group call area 12 = Lower layer failure 65 = Call already cleared 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message type not compatible with protocol state 100 = Conditional IE error 101 = No cell allocation available 111 = Protocol error unspecified

### Parameters for TETRA, DAMPS, and CDMA [\[Top\]](#)

Name	Type	Description
Reserved	Integer	Reserved

### Parameters for UMTS hard handover and TD-SCDMA baton handover [\[Top\]](#)

Name	Type	Description
RRC cause	Integer	RRC cause This is the same as a failure cause defined by 3GPP TS 25.331

		subclause 10.3.3.13. 0 = Configuration unsupported 1 = Physical channel failure 2 = Incompatible simultaneous reconfiguration 3 = Protocol error 4 = Compressed mode runtime error 5 = Cell update occurred 6 = Invalid configuration 7 = Configuration incomplete 8 = Unsupported measurement 9 = MBMS session already received correctly 10 = Lower priority MBMS service
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#### Parameters for UMTS handover between systems [|Top|](#)

Name	Type	Description
Inter-RAT cause	Integer	Inter-RAT handover failure cause This is the same as a failure cause defined by 3GPP TS 25.331 subclause 10.3.8.6. 0 = Configuration unacceptable 1 = Physical channel failure 2 = Protocol error 3 = Inter-RAT protocol error 4 = Unspecified

#### Parameters for WiMAX handover between cells [|Top|](#)

Name	Type	Description
HO cause	Integer	WiMAX HO cause 1 = Dropped 101 = Mobile cancel 102 = Mobile reject 201 = Ranging failure 202 = Ranging abort

#### Parameters for LTE [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
Reserved	Integer	Reserved

## Handover/handoff information (HOI)

Event ID	HOI
Cellular systems	UMTS FDD,LTE FDD,LTE TDD,WiMAX
Record state	Always
Description	Recorded when additional information is available on the handover.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) |

**Parameters** [|Top](#)

Name	Type	Description
Handover context ID	Context	Handover context ID
#Header params	Integer	Number of header parameters
HO duration	Integer	Handover duration With the LTE this defines the handover duration containing handover processing and interrupt time. Time from the handover initiating RRC signaling message to the succesfully completed RACH procedure in the new cell. Minimum value: 0 Unit: ms
HO to preamble time	Integer	Handover to preamble time Time from handover attempt (RRC signaling message) to the first random access preamble (MSG1) in the target cell. Only support for LTE to LTE handovers. Minimum value: 0 Unit: ms
HO U-plane interruption	Integer	Handover U-plane interruption time Defines the time from the last packet in the old cell to the first packet in the new cell. Minimum value: 0 Unit: ms

## Cell reselection (CREL)

Event ID	CREL
Cellular systems	GSM,TETRA,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO,GAN WLAN,iDEN
Record state	Always
Description	Recorded after cell reselection. With GSM and UMTS FDD, the measurement event is recorded based on cell ID change in non-TCH state with GSM and in non-CELL_DCH state with UMTS FDD.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Old system parameters](#) | [Parameters for GSM](#) | [Parameters for TETRA](#) | [Parameters for UMTS FDD](#) | [Parameters for UMTS TD-SCDMA](#) | [Parameters for LTE](#) | [Parameters for cdmaOne, CDMA 1x, and EVDO](#) | [Parameters for GAN WLAN](#) | [Parameters for iDEN](#) | [Current system parameters](#)  
[Parameters for GSM](#) | [Parameters for TETRA](#) | [Parameters for UMTS FDD](#) | [Parameters for UMTS TD-SCDMA](#) | [Parameters for LTE](#) | [Parameters for cdmaOne, CDMA 1x, and EVDO](#) | [Parameters for GAN WLAN](#) | [Parameters for iDEN](#) |

**Parameters** [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
CRS time	Integer	Cell reselection duration Indicates the duration of the cell reselection. Currently this parameter is only implemented for GSM. Minimum value: 0 Unit: ms
CRS reason	Integer	Cell reselection reason Note that currently this parameter is only supported with iDEN.



		1001 = iDEN comparison between serving cell and neighbor cell quality 1002 = iDEN serving cell becomes barred 1003 = iDEN serving cell failed
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#### Old system parameters [|Top|](#)

Name	Type	Description
Old system	Integer	Old cellular system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 55 = iDEN
#Params	Integer	Number of parameters

#### Parameters for GSM [|Top|](#)

Name	Type	Description
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535
Old Cell ID	Integer	Old cell identification Cell identification of the old cell. Range: 0 – 268435455
Old band	Integer	Old band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM

#### Parameters for TETRA [|Top|](#)

Name	Type	Description
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535
Old Cell ID	Integer	Old cell identification Cell identification of the old cell. Range: 0 – 65535
Old band	Integer	Old band 20001 = TETRA band 1 20002 = TETRA band 2 20003 = TETRA band 3 20004 = TETRA band 4 20005 = TETRA band 5 20006 = TETRA band 6 20007 = TETRA band 7 20008 = TETRA band 8 20009 = TETRA band 9 20010 = TETRA band 10 20011 = TETRA band 11 20012 = TETRA band 12 20013 = TETRA band 13 20014 = TETRA band 14 20015 = TETRA band 15 29999 = TETRA

**Parameters for UMTS FDD** [|Top|](#)

Name	Type	Description
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535
Old Cell ID	Integer	Old cell identification Cell identification of the old cell. Range: 0 – 268435455
Old band	Integer	Old band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD

**Parameters for UMTS TD-SCDMA** [|Top|](#)

Name	Type	Description
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535
Old Cell ID	Integer	Old cell identification Cell identification of the old cell. Range: 0 – 268435455
Old band	Integer	Old band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA

**Parameters for LTE** [|Top|](#)

Name	Type	Description
Old TAC	Integer	Old tracking area code Range: 0 – 65535
Old Cell ID	Integer	Old cell identification Cell identification of the old cell. Range: 0 – 268435455
Old band	Integer	Old band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800.

70006 = LTE FDD 850 band 6  
 70007 = LTE FDD 2600 band 7  
 70008 = LTE FDD 900 band 8  
 70009 = LTE FDD 1800 band 9  
 70010 = LTE FDD 2100 band 10  
 70011 = LTE FDD 1400 band 11  
 70012 = LTE FDD 700 band 12  
 70013 = LTE FDD 700 band 13  
 70014 = LTE FDD 700 band 14  
 70017 = LTE FDD 700 band 17  
 70018 = LTE FDD 850 band 18  
 70019 = LTE FDD 850 band 19  
 70020 = LTE FDD 800 band 20  
 70021 = LTE FDD 1500 band 21  
 70022 = LTE FDD 3500 band 22  
 70023 = LTE FDD 2200 band 23  
 70024 = LTE FDD 1500 band 24  
 70025 = LTE FDD 1900 band 25  
 70026 = LTE FDD 850 band 26  
 70027 = LTE FDD 800 band 27  
 70028 = LTE FDD 700 band 28  
 70029 = LTE FDD 700 band 29  
 This is downlink only band.  
 70030 = LTE FDD 2350 band 30  
 70031 = LTE FDD 450 band 31  
 70032 = LTE FDD 1500 L-band  
 This is downlink only band.  
 70064 = LTE FDD 390-470 band 64  
 This is a non-standard LTE FDD band.  
 70065 = LTE FDD 2100 band 65  
 70066 = LTE FDD AWS-3 2100 band 66  
 70067 = LTE FDD 700 EU band 67  
 This is downlink only band.  
 70068 = LTE FDD 700 ME band 68  
 70069 = LTE FDD 2500 band 69  
 This is downlink only band.  
 70070 = LTE FDD AWS-4 band 70  
 70071 = LTE FDD 600 band 71  
 70252 = LTE FDD 5200 NII-1 band 252  
 70255 = LTE FDD 5700 NII-3 band 255  
 79999 = LTE FDD  
 80033 = LTE TDD 1900-1920 band 33  
 80034 = LTE TDD 2010-2025 band 34  
 80035 = LTE TDD 1850-1910 band 35  
 80036 = LTE TDD 1930-1990 band 36  
 80037 = LTE TDD 1910-1930 band 37  
 80038 = LTE TDD 2570-2620 band 38  
 80039 = LTE TDD 1880-1920 band 39  
 80040 = LTE TDD 2300-2400 band 40  
 80041 = LTE TDD 2496-2690 band 41  
 80042 = LTE TDD 3400-3600 band 42  
 80043 = LTE TDD 3600-3800 band 43  
 80044 = LTE TDD 703-803 band 44  
 80045 = LTE TDD 1447-1467 band 45  
 80046 = LTE TDD 5154-5925 band 46  
 80047 = LTE TDD 5855-5925 band 47  
 80048 = LTE TDD 3550-3700 band 48  
 80061 = LTE TDD 1447-1467 band 61  
 This is a non-standard LTE TDD band.  
 80062 = LTE TDD 1785-1805 band 62  
 This is a non-standard LTE TDD band.  
 80087 = LTE TDD 1447-1467 band 87  
 This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
 This is a non-standard LTE TDD band.  
 89999 = LTE TDD

#### Parameters for cdmaOne, CDMA 1x, and EVDO [\[Top\]](#)

Name	Type	Description
Old band	Integer	Old band

100000 = cdmaOne 800 band 0  
North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.

100001 = cdmaOne 1900 band 1  
North American PCS 1900 MHz band.

100002 = cdmaOne 900 TACS band 2  
Total access communication system (TACS) 900 MHz band.

100003 = cdmaOne 800 JTACS band 3  
JTACS 800 MHz band (Japanese 800 MHz reversed).

100004 = cdmaOne 1800 Korean band 4  
Korean PCS 1800 MHz band.

100005 = cdmaOne 450 NMT band 5  
Nordic mobile telephone (NMT) 450 MHz band.

100006 = cdmaOne 1900-2100 IMT band 6  
IMT-2000 1900-2100 MHz band.

100007 = cdmaOne 700 band 7  
North American cellular 700 MHz band.

100008 = cdmaOne 1800 band 8  
1800 MHz band.

100009 = cdmaOne 900 band 9  
900 MHz band.

100010 = cdmaOne 800 SMR band 10  
Specialized mobile radio (SMR) 800 MHz band.

100011 = cdmaOne 400 PAMR band 11  
European PAMR 400 MHz band.

100012 = cdmaOne 800 PAMR band 12  
European PAMR 800 MHz band.

100013 = cdmaOne 2500 band 13  
2.5 GHz IMT-2000 extension.

100014 = cdmaOne 1900 band 14  
US PCS 1.9 GHz.

100015 = cdmaOne 2100 AWS band 15

100016 = cdmaOne 2500 band 16  
US 2.5 GHz.

100018 = cdmaOne 700 public safety band 18

100019 = cdmaOne 700 lower band 19

100020 = cdmaOne 1500 L-band band 20

100021 = cdmaOne 2000 S-band band 21

109999 = cdmaOne

110000 = CDMA 1x 800 band 0  
North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.

110001 = CDMA 1x 1900 band 1  
North American PCS 1900 MHz band.

110002 = CDMA 1x 900 TACS band 2  
Total access communication system (TACS) 900 MHz band.

110003 = CDMA 1x 800 JTACS band 3  
JTACS 800 MHz band (Japanese 800 MHz reversed).

110004 = CDMA 1x 1800 Korean band 4  
Korean PCS 1800 MHz band.

110005 = CDMA 1x 450 NMT band 5  
Nordic mobile telephone (NMT) 450 MHz band.

110006 = CDMA 1x 1900-2100 IMT band 6  
IMT-2000 1900-2100 MHz band.

110007 = CDMA 1x 700 band 7  
North American cellular 700 MHz band.

110008 = CDMA 1x 1800 band 8  
1800 MHz band.

110009 = CDMA 1x 900 band 9  
900 MHz band.

110010 = CDMA 1x 800 SMR band 10  
Specialized mobile radio (SMR) 800 MHz band.

110011 = CDMA 1x 400 PAMR band 11  
European PAMR 400 MHz band.

110012 = CDMA 1x 800 PAMR band 12  
European PAMR 800 MHz band.

110013 = CDMA 1x 2500 band 13  
2.5 GHz IMT-2000 extension.

110014 = CDMA 1x 1900 band 14  
US PCS 1.9 GHz.

110015 = CDMA 1x 2100 AWS band 15

110016 = CDMA 1x 2500 band 16

		US 2.5 GHz. 110018 = CDMA 1x 700 public safety band 18 110019 = CDMA 1x 700 lower band 19 110020 = CDMA 1x 1500 L-band band 20 110021 = CDMA 1x 2000 S-band band 21 119999 = CDMA 1x 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Old ch	Integer	Old channel number Channel number of the old cell.
Old PN	Integer	Old pilot number Pilot number of the old cell. Range: 0 – 511

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535
Old Cell ID	Integer	Old cell identification Cell identification of the old cell. Range: 0 – 65535
Old band	Integer	Old band 219999 = GAN WLAN

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
Old band	Integer	Old band

		550001 = iDEN proprietary 550002 = iDEN 800 standard 550003 = iDEN 800 extended 550004 = iDEN 900 550005 = iDEN 1500 559999 = iDEN
Old ch	Integer	Old channel number Channel number of the old cell.
Old CC	Integer	Old color code Color code of the old cell. Range: 0 – 15

#### Current system parameters [|Top|](#)

Name	Type	Description
Serving sys.	Integer	Serving system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 55 = iDEN
#Params	Integer	Number of parameters

#### Parameters for GSM [|Top|](#)

Name	Type	Description
LAC	Integer	Location area code Location area code of the new cell. Range: 0 – 65535
Cell ID	Integer	Cell identification Cell identification of the new cell. Range: 0 – 268435455
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM

#### Parameters for TETRA [|Top|](#)

Name	Type	Description
LAC	Integer	Location area code Location area code of the new cell. Range: 0 – 65535
Cell ID	Integer	Cell identification Cell identification of the new cell. Range: 0 – 65535
Band	Integer	Band 20001 = TETRA band 1 20002 = TETRA band 2 20003 = TETRA band 3 20004 = TETRA band 4 20005 = TETRA band 5 20006 = TETRA band 6 20007 = TETRA band 7 20008 = TETRA band 8

		20009 = TETRA band 9 20010 = TETRA band 10 20011 = TETRA band 11 20012 = TETRA band 12 20013 = TETRA band 13 20014 = TETRA band 14 20015 = TETRA band 15 29999 = TETRA
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#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
LAC	Integer	Location area code Location area code of the new cell. Range: 0 – 65535
Cell ID	Integer	Cell identification Cell identification of the new cell. Range: 0 – 268435455
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
LAC	Integer	Location area code Location area code of the new cell. Range: 0 – 65535
Cell ID	Integer	Cell identification Cell identification of the new cell. Range: 0 – 268435455
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA

#### Parameters for LTE [|Top|](#)

Name	Type	Description
New TAC	Integer	New tracking area code Range: 0 – 65535
Cell ID	Integer	Cell identification

Cell identification of the new cell.  
Range: 0 – 268435455

Band

Integer

Band

70001 = LTE FDD 2100 band 1  
70002 = LTE FDD 1900 band 2  
70003 = LTE FDD 1800 band 3  
70004 = LTE FDD 2100 AWS band 4  
70005 = LTE FDD 850 band 5  
Band 850 is also known as band 800.  
70006 = LTE FDD 850 band 6  
70007 = LTE FDD 2600 band 7  
70008 = LTE FDD 900 band 8  
70009 = LTE FDD 1800 band 9  
70010 = LTE FDD 2100 band 10  
70011 = LTE FDD 1400 band 11  
70012 = LTE FDD 700 band 12  
70013 = LTE FDD 700 band 13  
70014 = LTE FDD 700 band 14  
70017 = LTE FDD 700 band 17  
70018 = LTE FDD 850 band 18  
70019 = LTE FDD 850 band 19  
70020 = LTE FDD 800 band 20  
70021 = LTE FDD 1500 band 21  
70022 = LTE FDD 3500 band 22  
70023 = LTE FDD 2200 band 23  
70024 = LTE FDD 1500 band 24  
70025 = LTE FDD 1900 band 25  
70026 = LTE FDD 850 band 26  
70027 = LTE FDD 800 band 27  
70028 = LTE FDD 700 band 28  
70029 = LTE FDD 700 band 29  
This is downlink only band.  
70030 = LTE FDD 2350 band 30  
70031 = LTE FDD 450 band 31  
70032 = LTE FDD 1500 L-band  
This is downlink only band.  
70064 = LTE FDD 390-470 band 64  
This is a non-standard LTE FDD band.  
70065 = LTE FDD 2100 band 65  
70066 = LTE FDD AWS-3 2100 band 66  
70067 = LTE FDD 700 EU band 67  
This is downlink only band.  
70068 = LTE FDD 700 ME band 68  
70069 = LTE FDD 2500 band 69  
This is downlink only band.  
70070 = LTE FDD AWS-4 band 70  
70071 = LTE FDD 600 band 71  
70252 = LTE FDD 5200 NII-1 band 252  
70255 = LTE FDD 5700 NII-3 band 255  
79999 = LTE FDD  
80033 = LTE TDD 1900-1920 band 33  
80034 = LTE TDD 2010-2025 band 34  
80035 = LTE TDD 1850-1910 band 35  
80036 = LTE TDD 1930-1990 band 36  
80037 = LTE TDD 1910-1930 band 37  
80038 = LTE TDD 2570-2620 band 38  
80039 = LTE TDD 1880-1920 band 39  
80040 = LTE TDD 2300-2400 band 40  
80041 = LTE TDD 2496-2690 band 41  
80042 = LTE TDD 3400-3600 band 42  
80043 = LTE TDD 3600-3800 band 43  
80044 = LTE TDD 703-803 band 44  
80045 = LTE TDD 1447-1467 band 45  
80046 = LTE TDD 5154-5925 band 46  
80047 = LTE TDD 5855-5925 band 47  
80048 = LTE TDD 3550-3700 band 48  
80061 = LTE TDD 1447-1467 band 61  
This is a non-standard LTE TDD band.  
80062 = LTE TDD 1785-1805 band 62  
This is a non-standard LTE TDD band.  
80087 = LTE TDD 1447-1467 band 87



This is a non-standard LTE TDD band.  
80088 = LTE TDD 1785-1805 band 88  
This is a non-standard LTE TDD band.  
89999 = LTE TDD

#### Parameters for cdmaOne, CDMA 1x, and EVDO [\[Top\]](#)

Name	Type	Description
Band	Integer	<p>Band</p> <p>100000 = cdmaOne 800 band 0  North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>100001 = cdmaOne 1900 band 1  North American PCS 1900 MHz band.</p> <p>100002 = cdmaOne 900 TACS band 2  Total access communication system (TACS) 900 MHz band.</p> <p>100003 = cdmaOne 800 JTACS band 3  JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>100004 = cdmaOne 1800 Korean band 4  Korean PCS 1800 MHz band.</p> <p>100005 = cdmaOne 450 NMT band 5  Nordic mobile telephone (NMT) 450 MHz band.</p> <p>100006 = cdmaOne 1900-2100 IMT band 6  IMT-2000 1900-2100 MHz band.</p> <p>100007 = cdmaOne 700 band 7  North American cellular 700 MHz band.</p> <p>100008 = cdmaOne 1800 band 8  1800 MHz band.</p> <p>100009 = cdmaOne 900 band 9  900 MHz band.</p> <p>100010 = cdmaOne 800 SMR band 10  Specialized mobile radio (SMR) 800 MHz band.</p> <p>100011 = cdmaOne 400 PAMR band 11  European PAMR 400 MHz band.</p> <p>100012 = cdmaOne 800 PAMR band 12  European PAMR 800 MHz band.</p> <p>100013 = cdmaOne 2500 band 13  2.5 GHz IMT-2000 extension.</p> <p>100014 = cdmaOne 1900 band 14  US PCS 1.9 GHz.</p> <p>100015 = cdmaOne 2100 AWS band 15</p> <p>100016 = cdmaOne 2500 band 16  US 2.5 GHz.</p> <p>100018 = cdmaOne 700 public safety band 18</p> <p>100019 = cdmaOne 700 lower band 19</p> <p>100020 = cdmaOne 1500 L-band band 20</p> <p>100021 = cdmaOne 2000 S-band band 21</p> <p>109999 = cdmaOne</p> <p>110000 = CDMA 1x 800 band 0  North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>110001 = CDMA 1x 1900 band 1  North American PCS 1900 MHz band.</p> <p>110002 = CDMA 1x 900 TACS band 2  Total access communication system (TACS) 900 MHz band.</p> <p>110003 = CDMA 1x 800 JTACS band 3  JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>110004 = CDMA 1x 1800 Korean band 4  Korean PCS 1800 MHz band.</p> <p>110005 = CDMA 1x 450 NMT band 5  Nordic mobile telephone (NMT) 450 MHz band.</p> <p>110006 = CDMA 1x 1900-2100 IMT band 6  IMT-2000 1900-2100 MHz band.</p> <p>110007 = CDMA 1x 700 band 7  North American cellular 700 MHz band.</p> <p>110008 = CDMA 1x 1800 band 8  1800 MHz band.</p> <p>110009 = CDMA 1x 900 band 9  900 MHz band.</p> <p>110010 = CDMA 1x 800 SMR band 10  Specialized mobile radio (SMR) 800 MHz band.</p>

		110011 = CDMA 1x 400 PAMR band 11 European PAMR 400 MHz band. 110012 = CDMA 1x 800 PAMR band 12 European PAMR 800 MHz band. 110013 = CDMA 1x 2500 band 13 2.5 GHz IMT-2000 extension. 110014 = CDMA 1x 1900 band 14 US PCS 1.9 GHz. 110015 = CDMA 1x 2100 AWS band 15 110016 = CDMA 1x 2500 band 16 US 2.5 GHz. 110018 = CDMA 1x 700 public safety band 18 110019 = CDMA 1x 700 lower band 19 110020 = CDMA 1x 1500 L-band band 20 110021 = CDMA 1x 2000 S-band band 21 119999 = CDMA 1x 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Ch	Integer	Channel number Channel number of the new cell.
PN	Integer	Pilot number Pilot number of the new cell. Range: 0 – 511

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
LAC	Integer	Location area code Location area code of the new cell. Range: 0 – 65535
Cell ID	Integer	Cell identification Cell identification of the new cell.

		Range: 0 – 65535
Band	Integer	Band 219999 = GAN WLAN

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
Band	Integer	Band 550001 = iDEN proprietary 550002 = iDEN 800 standard 550003 = iDEN 800 extended 550004 = iDEN 900 550005 = iDEN 1500 559999 = iDEN
Ch	Integer	Channel number Channel number of the new cell.
CC	Integer	Color code Color code of the new cell. Range: 0 – 15

## Cell reselection information (CRELI)

<b>Event ID</b>	CRELI
<b>Cellular systems</b>	UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded during the data transfer for LTE to LTE, LTE to HSPA, and HSPA to LTE cell reselection and redirection.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters |

#### Parameters [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
CRS U-plane interruption	Integer	Cell reselection U-plane interruption time The time from the last packet in the old cell to the first packet in the new cell. This parameter is only recorded during the data transfer and only for LTE to LTE, LTE to HSPA, and HSPA to LTE cell reselections and redirections. Minimum value: 0 Unit: ms

## Soft handover (SHO)

<b>Event ID</b>	SHO
<b>Cellular systems</b>	UMTS FDD,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Call connection and packet active state
<b>Description</b>	Recorded when the active set changes. Event information is based on RRC signaling with UMTS FDD.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD | Parameters for cdmaOne, CDMA 1x, and EVDO |

#### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

#### Parameters for UMTS FDD |Top|

Name	Type	Description
SHO status	Integer	Soft handover status 1 = Successful handover 2 = Failed handover
RRC cause	Integer	RRC cause This is the same as a failure cause defined by 3GPP TS 25.331 subclause 10.3.3.13. 0 = Configuration unsupported 1 = Physical channel failure 2 = Incompatible simultaneous reconfiguration 3 = Protocol error 4 = Compressed mode runtime error 5 = Cell update occurred 6 = Invalid configuration 7 = Configuration incomplete 8 = Unsupported measurement 9 = MBMS session already received correctly 10 = Lower priority MBMS service
#SCs added	Integer	Number of scrambling codes added
#SCs removed	Integer	Number of scrambling codes removed
Added SC	Integer	Added scrambling code number
Remove SC	Integer	Removed scrambling code number

#### Parameters for cdmaOne, CDMA 1x, and EVDO |Top|

Name	Type	Description
#Pilot added	Integer	Number of pilots added
#Pilot removed	Integer	Number of pilots removed
Added PN	Integer	Added pilot number
Remove PN	Integer	Removed pilot number
SHO status	Integer	Soft handover status 1 = Successful handover 2 = Failed handover
SHO type	Integer	Soft handover type 1 = Normal 2 = Virtual

## Location area update attempt (LUA)

<b>Event ID</b>	LUA
<b>Cellular systems</b>	GSM,TETRA,UMTS FDD,UMTS TD-SCDMA,GAN WLAN
<b>Record state</b>	Always
<b>Description</b>	Recorded when the mobile starts location area update using MM layer3 signaling message. This measurement event begins the location area update state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Location area update context ID	Context	Location area update context ID
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 21 = GAN WLAN
LAU type	Integer	Location area update type 1 = Combined location and routing/tracking area update 2 = Normal location area update 3 = Periodic update 4 = IMSI/ITSI attach 5 = Roaming location updating (TETRA) 6 = Migrating location updating (TETRA) 7 = Call restoration roaming location updating (TETRA) 8 = Call restoration migrating location updating (TETRA) 9 = Demand location updating (TETRA) 10 = Disabled MS updating (TETRA)

## Location area update successful (LUS)

<b>Event ID</b>	LUS
<b>Cellular systems</b>	GSM,TETRA,UMTS FDD,UMTS TD-SCDMA,GAN WLAN
<b>Record state</b>	Location area update state
<b>Description</b>	Recorded based on MM layer3 signaling when location area update has been successful. This measurement event terminates the location area update state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters [|Top](#)

Name	Type	Description

Location area update context ID	Context	Location area update context ID
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 21 = GAN WLAN
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535
LAC	Integer	Location area code Location area code of the new cell. Range: 0 – 65535
MCC	Integer	Mobile country code See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	Mobile network code Range: 0 – 999

## Location area update fail (LUF)

<b>Event ID</b>	LUF
<b>Cellular systems</b>	GSM,TETRA,UMTS FDD,UMTS TD-SCDMA,GAN WLAN
<b>Record state</b>	Location area update state
<b>Description</b>	Recorded based on MM layer3 signaling when location area update has failed. This measurement event terminates the location area update state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM, UMTS, and GAN WLAN | Parameters for TETRA |

### Parameters |Top|

Name	Type	Description
Location area update context ID	Context	Location area update context ID
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 21 = GAN WLAN
LUF status	Integer	Location update failure status 1 = Timeout 2 = Rejected by network 3 = Rejected by network after combined location and routing area update (cause value is GMM cause)
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535

### Parameters for GSM, UMTS, and GAN WLAN |Top|

Name	Type	Description
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MM cause	Integer	Mobily management cause 1 = Unallocated TMSI 2 = IMSI unknown HLR 3 = Illegal MS 4 = IMSI unknown in VLR 5 = IMEI not accepted 6 = Illegal ME 7 = GPRS services not allowed Combined LAU and RAU only. 8 = GPRS services and non-GPRS services not allowed Combined LAU and RAU only. 9 = MS identity cannot be derived by the network Combined LAU and RAU only. 10 = Implicitly detached Combined LAU and RAU only. 11 = PLMN not allowed 12 = Location Area not allowed 13 = National roaming not allowed in this location area 14 = GPRS services not allowed in this PLMN Combined LAU and RAU only. 15 = No suitable cells in location area 16 = MSC temporarily not reachable Combined LAU and RAU only. 17 = Network failure 20 = MAC failure 21 = Synch failure 22 = Congestion 23 = GSM authentication unacceptable 32 = Service option not supported 33 = Requested service option not subscribed 34 = Service option temporarily out of order 38 = Call cannot be identified 40 = No PDP context activated Combined LAU and RAU only. 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message type not compatible with the protocol state 99 = Information element non-existent or not implemented 100 = Conditional IE error 101 = Message not compatible with the protocol state 111 = Protocol error, unspecified
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#### Parameters for TETRA [\[Top\]](#)

Name	Type	Description
MM cause	Integer	Mobily management cause 1 = ITSI unknown 2 = Illegal MS 3 = LA not allowed 4 = LA unknown 5 = Network failure 6 = Congestion 7 = Service not supported 8 = Service not subscribed 9 = Mandatory element error 10 = Message consistency error 11 = Roaming not supported 12 = Migration not supported 13 = No cipher KSG 14 = Identified cipher KSG not supported 15 = Requested cipher key type not available 16 = Identified cipher key not available 17 = Incompatible service

## Channel info (CHI)

<b>Event ID</b>	CHI
<b>Cellular systems</b>	GSM,TETRA,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO,GAN WLAN,WiMAX,AMPS,DAMPS,iDEN
<b>Record state</b>	Always
<b>Description</b>	Recorded when channel configuration information changes.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for GSM](#) | [Parameters for TETRA](#) | [Parameters for UMTS FDD](#) | [Parameters for UMTS TD-SCDMA](#) | [Parameters for LTE](#)  
[Parameters for cdmaOne and CDMA 1x](#) | [Parameters for EVDO](#) | [Parameters for GAN WLAN](#) | [Parameters for WiMAX](#) | [Parameters for AMPS and NAMPS](#)  
[Parameters for DAMPS](#) | [Parameters for iDEN](#) |

### Parameters [|Top](#)

Name	Type	Description
Serving sys.	Integer	Serving system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 25 = WiMAX 51 = AMPS 52 = NAMPS 53 = DAMPS 55 = iDEN

### Parameters for GSM [|Top](#)

Name	Type	Description
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
Ch type	Integer	GSM channel type 1 = Control channel 2 = Traffic channel
Ch	Integer	Channel number During the active state this is the TCH channel number. If the hopping is enabled the first hopping channel is reported.
Cell ID	Integer	Cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 65535
LAC	Integer	Location area code Range: 0 – 65535
DTX UL	Integer	DTX uplink 0 = DTX not in use 1 = DTX in use



RLT max	Integer	Radiolink timeout maximum Defines the maximum value for the radio link timeout counter. Range: 4 – 64
Ext. ch type	Integer	Extended channel type 1 = BCCH 2 = CCCH 3 = CBCH 4 = SDCCH 5 = RACH 10 = TCH HR/0 TCH half rate, first half. 11 = TCH HR/1 TCH half rate, second half. 12 = TCH FR TCH full rate. 13 = TCH EFR TCH enhanced full rate. 14 = TCH FR 14.4 data TCH full rate, 14.4 kbs data. 15 = TCH FR 9.6 data 16 = TCH FR 7.2 data 17 = TCH FR 4.8 data 18 = TCH FR 2.4 data 19 = TCH HR/0 4.8 data 20 = TCH HR/1 4.8 data 21 = TCH HR/0 2.4 data 22 = TCH HR/1 2.4 data 23 = TCH FR FACCH 24 = TCH HR/0 FACCH 25 = TCH HR/1 FACCH 26 = AFS AMR adaptive full rate speech. 27 = AHS AMR adaptive half rate speech. 28 = WFS AMR adaptive full rate for wideband speech. 50 = PBCCH 51 = PCCCH 60 = PDTCH
TSL	Integer	Timeslot number
BCCH ch	Integer	BCCH channel
BSIC	Integer	Base station identification code Range: 0 – 63
BCCH band	Integer	BCCH band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM

#### Parameters for TETRA [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 20001 = TETRA band 1 20002 = TETRA band 2 20003 = TETRA band 3 20004 = TETRA band 4 20005 = TETRA band 5 20006 = TETRA band 6 20007 = TETRA band 7 20008 = TETRA band 8 20009 = TETRA band 9 20010 = TETRA band 10 20011 = TETRA band 11 20012 = TETRA band 12 20013 = TETRA band 13

		20014 = TETRA band 14 20015 = TETRA band 15 29999 = TETRA
Subchannel	Integer	Subchannel 1 = MCCH (main control channel) 2 = TCH (traffic channel)
Ch	Integer	Channel number
LAC	Integer	Location area code Range: 0 – 65535
Extended subchannel	Integer	Extended subchannel 0 = Speech, TCH / S 1 = Data, Unprotected TCH / 7.2 2 = Data, Low protection, TCH / 4.8, N=1 3 = Data, Low protection, TCH / 4.8, N=4 4 = Data, Low protection, TCH / 4.8, N=8 5 = Data, High protection, TCH / 2.4, N=1 6 = Data, High protection, TCH / 2.4, N=4 7 = Data, High protection, TCH / 2.4, N=8
Encryption	Integer	Encryption 0 = Clear mode 1 = End-to-end encryption
Slot number	Integer	Slot number Range: 1 – 4

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
RRC state	Integer	RRC state 1 = Idle 2 = URA PCH 3 = Cell PCH 4 = Cell FACH 5 = Cell DCH
Ch	Integer	Channel number
Cell ID	Integer	Cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 268435455
LAC	Integer	Location area code Range: 0 – 65535
Addition window	Float	Addition window

		<p>Addition window for event 1A. Cells within addition window range from the best serving CPICH will be added to the active set. The value is calculated using the following formula: <math>R1A - H1A / 2</math> where R1A is reporting range constant for event 1A and H1A is hysteresis parameter for event 1A. See 3GPP TS 25.331.</p> <p>Range: -2 – 14</p> <p>Unit: dB</p>
Time to trigger 1A	Integer	<p>Time to trigger 1A</p> <p>Indicates the period of time during which the event condition must be satisfied before sending a Measurement Report with event 1A. See 3GPP TS 25.331.</p> <p>Range: 0 – 5000</p> <p>Unit: ms</p>
Drop window	Float	<p>Drop window</p> <p>Drop window for event 1B. Cell is removed from the active set if it falls below the drop window range from the best cell in the active set. The value is calculated using the following formula: <math>R1B + H1B / 2</math> where R1B is reporting range constant for event 1B and H1B is hysteresis parameter for event 1B. See 3GPP TS 25.331.</p> <p>Range: 0 – 16</p> <p>Unit: dB</p>
Time to trigger 1B	Integer	<p>Time to trigger 1B</p> <p>Indicates the period of time during which the event condition must be satisfied before sending a Measurement Report with event 1B. See 3GPP TS 25.331.</p> <p>Range: 0 – 5000</p> <p>Unit: ms</p>
Replacement window	Float	<p>Replacement window</p> <p>If a monitored-set cell becomes better than a cell in the active set, the active set cell will be replaced with the better one. See 3GPP TS 25.331.</p> <p>Range: 0 – 2</p> <p>Unit: dB</p>
Time to trigger 1C	Integer	<p>Time to trigger 1C</p> <p>Indicates the period of time during which the event condition must be satisfied before sending a Measurement Report with event 1C. See 3GPP TS 25.331.</p> <p>Range: 0 – 5000</p> <p>Unit: ms</p>
DL SF	Integer	<p>Spreading factor downlink</p> <p>If multiple CCTrCh channels are used, the reported spreading factor is for CCTrCh with physical control channel.</p> <p>Range: 0 – 512</p>
Min UL SF	Integer	<p>Min spreading factor uplink</p> <p>Minimum allowed uplink spreading factor.</p> <p>Range: 4 – 256</p>
DRX cycle	Integer	<p>DRX cycle length</p> <p>Defines how often paging indications are monitored.</p> <p>Range: 0 – 512</p>
Max TX power	Float	<p>Max TX power</p> <p>Maximum allowed uplink power.</p> <p>Range: -50 – 40</p> <p>Unit: dBm</p>
Treselection	Integer	<p>Treselection</p> <p>The time which the new cell has had to be ranked better than the old cell before cell reselection is possible. See 3GPP TS 25.304 subclause 5.2.6.1.4.</p> <p>Unit: s</p>

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
Band	Integer	<p>Band</p> <p>60001 = UMTS TD-SCDMA 2000 band a</p> <p>60002 = UMTS TD-SCDMA 1900 band b</p> <p>60003 = UMTS TD-SCDMA 1900 band c</p>

		60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
RRC state	Integer	RRC state 1 = Idle 2 = URA PCH 3 = Cell PCH 4 = Cell FACH 5 = Cell DCH
Ch	Integer	Channel number
Cell params ID	Integer	Cell parameters ID Range: 0 – 127
Cell ID	Integer	Cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 268435455
LAC	Integer	Location area code Range: 0 – 65535
DRX cycle	Integer	DRX cycle length Defines how often paging indications are monitored. Range: 0 – 512
Max TX power	Float	Max TX power Maximum allowed uplink power. Range: -50 – 40 Unit: dBm
Treselection	Integer	Treselection The time which the new cell has had to be ranked better than the old cell before cell reselection is possible. See 3GPP TS 25.304 subclause 5.2.6.1.4. Unit: s

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7 70008 = LTE FDD 900 band 8 70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20 70021 = LTE FDD 1500 band 21 70022 = LTE FDD 3500 band 22 70023 = LTE FDD 2200 band 23 70024 = LTE FDD 1500 band 24 70025 = LTE FDD 1900 band 25 70026 = LTE FDD 850 band 26 70027 = LTE FDD 800 band 27 70028 = LTE FDD 700 band 28 70029 = LTE FDD 700 band 29 This is downlink only band.

		<p>70030 = LTE FDD 2350 band 30  70031 = LTE FDD 450 band 31  70032 = LTE FDD 1500 L-band  This is downlink only band.  70064 = LTE FDD 390-470 band 64  This is a non-standard LTE FDD band.  70065 = LTE FDD 2100 band 65  70066 = LTE FDD AWS-3 2100 band 66  70067 = LTE FDD 700 EU band 67  This is downlink only band.  70068 = LTE FDD 700 ME band 68  70069 = LTE FDD 2500 band 69  This is downlink only band.  70070 = LTE FDD AWS-4 band 70  70071 = LTE FDD 600 band 71  70252 = LTE FDD 5200 NII-1 band 252  70255 = LTE FDD 5700 NII-3 band 255  79999 = LTE FDD  80033 = LTE TDD 1900-1920 band 33  80034 = LTE TDD 2010-2025 band 34  80035 = LTE TDD 1850-1910 band 35  80036 = LTE TDD 1930-1990 band 36  80037 = LTE TDD 1910-1930 band 37  80038 = LTE TDD 2570-2620 band 38  80039 = LTE TDD 1880-1920 band 39  80040 = LTE TDD 2300-2400 band 40  80041 = LTE TDD 2496-2690 band 41  80042 = LTE TDD 3400-3600 band 42  80043 = LTE TDD 3600-3800 band 43  80044 = LTE TDD 703-803 band 44  80045 = LTE TDD 1447-1467 band 45  80046 = LTE TDD 5154-5925 band 46  80047 = LTE TDD 5855-5925 band 47  80048 = LTE TDD 3550-3700 band 48  80061 = LTE TDD 1447-1467 band 61  This is a non-standard LTE TDD band.  80062 = LTE TDD 1785-1805 band 62  This is a non-standard LTE TDD band.  80087 = LTE TDD 1447-1467 band 87  This is a non-standard LTE TDD band.  80088 = LTE TDD 1785-1805 band 88  This is a non-standard LTE TDD band.  89999 = LTE TDD</p>
RRC state	Integer	<p>RRC state  See 3GPP TS 136.331 subclause 4.2.1.  1 = Idle  This is the same as E-UTRA RRC_IDLE state.  2 = Connected  This is the same as E-UTRA RRC_CONNECTED state.</p>
DL BW	Integer	<p>DL bandwidth  1 = 180 kHz  Used with NB-IoT.  6 = 1.4 MHz  15 = 3 MHz  25 = 5 MHz  50 = 10 MHz  75 = 15 MHz  100 = 20 MHz</p>
Ch	Integer	Channel number
PCI	Integer	<p>Physical cell identity  Range: 0 – 503</p>
Cell ID	Integer	<p>Cell identification  Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID).  Range: 0 – 268435455</p>
TAC	Integer	<p>Tracking area code  Tracking area code of the current serving cell. See 3GPP TS 124.301</p>

		subclause 9.9.3.32. Range: 0 – 65535
Max TX power	Float	Max TX power Maximum allowed uplink power. Range: –50 – 40 Unit: dBm
TM	Integer	Transmission mode See 3GPP TS 136.213 subclause 7.1. 1 = Single antenna (P0) Single-antenna port 0. Same as transmission mode 1. 2 = Transmit diversity Transmit diversity using SFBC. Same as transmission mode 2. 3 = Open SM Open-loop spatial multiplexing a.k.a. large delay cyclic delay diversity (CDD) or transmit diversity. Same as transmission mode 3. 4 = Closed SM Closed-loop spatial multiplexing or transmit diversity. Same as transmission mode 4. 5 = MU-MIMO Multi-user MIMO or transmit diversity. Same as transmission mode 5. 6 = Closed SM rank 1 Closed-loop spatial multiplexing using single transmission layer (similar with mode 5 with rank fixed to one). Same as transmission mode 6. 7 = Single antenna (P5) Single-antenna port 5, or port 0 (if one PBCH antenna port) or transmit diversity. Same as transmission mode 7. 8 = Dual-layer (P7, P8) Dual layer port 7 and 8 or single-antenna port 7 or 8 transmission. Same as transmission mode 8. 9 = 8 layer (P7-P14) Up to 8 layer transmission (P7-P14). 10 = 3 layer beamforming (P7-P9) 11 = 4 layer beamforming (P7-10)
Antenna ports	Integer	Detected TX antenna ports 0 = Port 0 1 = Ports 0-1 3 = Ports 0-3
UL/DL config	Integer	TDD UL/DL configuration TDD UL/DL configuration defines the symbols that are allocated for uplink and downlink. See 3GPP 36.211 subclause 4.2. 0 = Config 0 Allocated uplink subframes are: 2, 3, 4, 7, 8, 9. 1 = Config 1 Allocated uplink subframes are: 2, 3, 7, 8. 2 = Config 2 Allocated uplink subframes are: 2, 7. 3 = Config 3 Allocated uplink subframes are: 2, 3, 4. 4 = Config 4 Allocated uplink subframes are: 2, 3. 5 = Config 5 Allocated uplink subframe is: 2. 6 = Config 6 Allocated uplink subframes are: 2, 3, 4, 7, 8.
CP	Integer	Cyclic prefix UL This is uplink cyclic prefix. Extended cyclic prefix can reduce inter-symbol-interference when multipath components have significant arrival time deviation from each other. 1 = Normal 15 kHz 2 = Extended 15 kHz
Root sequence	Integer	RACH logical root sequence index Logical root Zadoff-Chu sequence order number. See 3GPP 136.211 subclause 5.7.2. Range: 0 – 837
C-RNTI	Integer	C-RNTI

		Cell Radio Network Temporary Identifier. A dynamic identity assigned by eNodeB and is valid as long as the UE is connected to that eNB.
#SCells	Integer	Number of secondary serving cells Range: 0 – 3
#Params/SCell	Integer	Number of parameters per secondary serving cell
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
Band	Integer	SCell band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7 70008 = LTE FDD 900 band 8 70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20 70021 = LTE FDD 1500 band 21 70022 = LTE FDD 3500 band 22 70023 = LTE FDD 2200 band 23 70024 = LTE FDD 1500 band 24 70025 = LTE FDD 1900 band 25 70026 = LTE FDD 850 band 26 70027 = LTE FDD 800 band 27 70028 = LTE FDD 700 band 28 70029 = LTE FDD 700 band 29 This is downlink only band. 70030 = LTE FDD 2350 band 30 70031 = LTE FDD 450 band 31 70032 = LTE FDD 1500 L-band This is downlink only band. 70064 = LTE FDD 390-470 band 64 This is a non-standard LTE FDD band. 70065 = LTE FDD 2100 band 65 70066 = LTE FDD AWS-3 2100 band 66 70067 = LTE FDD 700 EU band 67 This is downlink only band. 70068 = LTE FDD 700 ME band 68 70069 = LTE FDD 2500 band 69 This is downlink only band. 70070 = LTE FDD AWS-4 band 70 70071 = LTE FDD 600 band 71 70252 = LTE FDD 5200 NII-1 band 252 70255 = LTE FDD 5700 NII-3 band 255 79999 = LTE FDD 80033 = LTE TDD 1900-1920 band 33 80034 = LTE TDD 2010-2025 band 34 80035 = LTE TDD 1850-1910 band 35 80036 = LTE TDD 1930-1990 band 36 80037 = LTE TDD 1910-1930 band 37 80038 = LTE TDD 2570-2620 band 38 80039 = LTE TDD 1880-1920 band 39 80040 = LTE TDD 2300-2400 band 40 80041 = LTE TDD 2496-2690 band 41 80042 = LTE TDD 3400-3600 band 42 80043 = LTE TDD 3600-3800 band 43

		80044 = LTE TDD 703-803 band 44 80045 = LTE TDD 1447-1467 band 45 80046 = LTE TDD 5154-5925 band 46 80047 = LTE TDD 5855-5925 band 47 80048 = LTE TDD 3550-3700 band 48 80061 = LTE TDD 1447-1467 band 61 This is a non-standard LTE TDD band. 80062 = LTE TDD 1785-1805 band 62 This is a non-standard LTE TDD band. 80087 = LTE TDD 1447-1467 band 87 This is a non-standard LTE TDD band. 80088 = LTE TDD 1785-1805 band 88 This is a non-standard LTE TDD band. 89999 = LTE TDD
Bandwidth	Integer	SCell bandwidth 6 = 1.4 MHz 15 = 3 MHz 25 = 5 MHz 50 = 10 MHz 75 = 15 MHz 100 = 20 MHz
Channel	Integer	SCell channel
PCI	Integer	SCell physical cell identity Range: 0 – 503
TM	Integer	SCell transmission mode See 3GPP TS 136.213 subclass 7.1. 1 = Single antenna (P0) Single-antenna port 0. Same as transmission mode 1. 2 = Transmit diversity Transmit diversity using SFBC. Same as transmission mode 2. 3 = Open SM Open-loop spatial multiplexing a.k.a. large delay cyclic delay diversity (CDD) or transmit diversity. Same as transmission mode 3. 4 = Closed SM Closed-loop spatial multiplexing or transmit diversity. Same as transmission mode 4. 5 = MU-MIMO Multi-user MIMO or transmit diversity. Same as transmission mode 5. 6 = Closed SM rank 1 Closed-loop spatial multiplexing using single transmission layer (similar with mode 5 with rank fixed to one). Same as transmission mode 6. 7 = Single antenna (P5) Single-antenna port 5, or port 0 (if one PBCH antenna port) or transmit diversity. Same as transmission mode 7. 8 = Dual-layer (P7, P8) Dual layer port 7 and 8 or single-antenna port 7 or 8 transmission. Same as transmission mode 8. 9 = 8 layer (P7-P14) Up to 8 layer transmission (P7-P14). 10 = 3 layer beamforming (P7-P9) 11 = 4 layer beamforming (P7-10)
Antenna ports	Integer	SCell detected TX antenna ports 0 = Port 0 1 = Ports 0-1 3 = Ports 0-3
UL/DL config	Integer	SCell TDD UL/DL configuration TDD UL/DL configuration defines the symbols that are allocated for uplink and downlink. See 3GPP 36.211 subclause 4.2. 0 = Config 0 Allocated uplink subframes are: 2, 3, 4, 7, 8, 9. 1 = Config 1 Allocated uplink subframes are: 2, 3, 7, 8. 2 = Config 2 Allocated uplink subframes are: 2, 7. 3 = Config 3 Allocated uplink subframes are: 2, 3, 4.



		4 = Config 4 Allocated uplink subframes are: 2, 3. 5 = Config 5 Allocated uplink subframe is: 2. 6 = Config 6 Allocated uplink subframes are: 2, 3, 4, 7, 8.
CP	Integer	SCell cyclic prefix This is uplink cyclic prefix. Extended cyclic prefix can reduce inter-symbol-interference when multipath components have significant arrival time deviation from each other. 1 = Normal 15 kHz 2 = Extended 15 kHz
Special subframe config	Integer	SCell TDD special subframe configuration This parameter defines the duration of special subframes between uplink and downlink switching. See 3GPP 136.211 subclause 4.2. 0 = Config 0 1 = Config 1 2 = Config 2 3 = Config 3 4 = Config 4 5 = Config 5 6 = Config 6 7 = Config 7 8 = Config 8 9 = Config 9
CA	Integer	SCell carrier aggregation mode 1 = DL 2 = UL+DL
EMM substate	Integer	EMM substate See 3GPP 124.301 subclause 5.1.3. 0 = Null 100 = Deregistered, normal service 101 = Deregistered, attempting to attach 102 = Deregistered, limited service 103 = Deregistered, PLMN search 104 = Deregistered, attach needed 105 = Deregistered, no cell available 106 = Deregistered, no IMSI 200 = Registered initiated 201 = Registered initiated, waiting NW response 202 = Registered initiated, waiting ESM response 300 = Registered, normal service 301 = Registered, attempting to update 302 = Registered, limited service 303 = Registered, PLMN search 304 = Registered, update needed 305 = Registered, no cell available 306 = Registered, IMSI detach initiated 307 = Registered, attempting to update MM 400 = Deregistered initiated 500 = TAU initiated, normal service Tracking area update initiated. 501 = TAU initiated, attempting to update 502 = TAU initiated, limited service 503 = TAU initiated, PLMN search 504 = TAU initiated, update needed 505 = TAU initiated, no cell available 506 = TAU initiated, IMSI detach initiated 507 = TAU initiated, attempting to update MM 600 = SR initiated, normal service Service request initiated. 601 = SR initiated, attempting to update 602 = SR initiated, limited service 603 = SR initiated, PLMN search 604 = SR initiated, update needed 605 = SR initiated, no cell available 606 = SR initiated, IMSI detach initiated 607 = SR initiated, attempting to update MM
Periodic RM	Integer	CQI periodic reporting mode

		<p>See 3GPP TS 136.213 subclause 7.2.2.</p> <p>1 = Mode 1-0 Wideband CQI without PMI. Valid in transmission modes 1-3 and 7.</p> <p>2 = Mode 1-1 Wideband CQI with PMI. Valid in transmission modes 4-6.</p> <p>3 = Mode 2-0 UE selected CQI without PMI. Valid in transmission modes 1-3 and 7.</p> <p>4 = Mode 2-1 UE selected CQI with PMI. Valid in transmission modes 4-6.</p>
Aperiodic RM	Integer	<p>CQI aperiodic reporting mode</p> <p>This is the same as <code>cqi-ReportModeAperiodic</code> parameter in <code>CQI-ReportConfig</code>. More information see 3GPP TS 136.213 subclause 7.2.1.</p> <p>1 = Mode 1-2 Wideband CQI with multiple PMI. Valid in transmission modes 4 and 6.</p> <p>2 = Mode 2-0 UE selected CQI without PMI. Valid in transmission modes 1-3 and 7.</p> <p>3 = Mode 2-2 UE selected CQI with multiple PMI. Valid in transmission modes 4 and 6.</p> <p>4 = Mode 3-0 Higher layer-configured CQI without PMI. Valid in transmission modes 1-3 and 7.</p> <p>5 = Mode 3-1 Higher layer-configured CQI with single PMI. Valid in transmission modes 4-6.</p>
Special subframe config	Integer	<p>TDD special subframe configuration</p> <p>This parameter defines the duration of special subframes between uplink and downlink switching. See 3GPP 136.211 subclause 4.2.</p> <p>0 = Config 0 1 = Config 1 2 = Config 2 3 = Config 3 4 = Config 4 5 = Config 5 6 = Config 6 7 = Config 7 8 = Config 8 9 = Config 9</p>
TTI bundling	Integer	<p>TTI bundling</p> <p>See 3GPP TS 136.321 subclause 5.4.2.</p> <p>0 = Disabled 1 = Enabled</p>
Operation mode	Integer	<p>Operation mode</p> <p>See 3GPP TS 136.331 subclause 6.7.2 <code>MasterInformationBlock-NB</code>.</p> <p>100 = Inband same PCI 101 = Inband different PCI 102 = Guardband 103 = Standalone</p>
UL subcarrier spacing	Integer	<p>UL subcarrier spacing</p> <p>See 3GPP TS 136.221 subclause 10.1.2 and 3GPP TS 136.213 subclause 16.</p> <p>0 = 3.75 kHz 1 = 15 kHz</p>

#### Parameters for cdmaOne and CDMA 1x [|Top|](#)

Name	Type	Description
Band	Integer	<p>Band</p> <p>100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band.</p>

100002 = cdmaOne 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 100003 = cdmaOne 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 100004 = cdmaOne 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 100005 = cdmaOne 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 100006 = cdmaOne 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 100007 = cdmaOne 700 band 7  
 North American cellular 700 MHz band.  
 100008 = cdmaOne 1800 band 8  
 1800 MHz band.  
 100009 = cdmaOne 900 band 9  
 900 MHz band.  
 100010 = cdmaOne 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 100011 = cdmaOne 400 PAMR band 11  
 European PAMR 400 MHz band.  
 100012 = cdmaOne 800 PAMR band 12  
 European PAMR 800 MHz band.  
 100013 = cdmaOne 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 100014 = cdmaOne 1900 band 14  
 US PCS 1.9 GHz.  
 100015 = cdmaOne 2100 AWS band 15  
 100016 = cdmaOne 2500 band 16  
 US 2.5 GHz.  
 100018 = cdmaOne 700 public safety band 18  
 100019 = cdmaOne 700 lower band 19  
 100020 = cdmaOne 1500 L-band band 20  
 100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
 North American cellular 800 MHz band, also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
 North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
 North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
 1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
 900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20

		110021 = CDMA 1x 2000 S-band band 21 119999 = CDMA 1x
Ch type	Integer	CDMA channel type 1 = Control channel 2 = Traffic channel 3 = Synch channel 4 = Access channel
Ch	Integer	Channel number
MCC (CDMA)	Integer	MCC (CDMA) See ITU-T recommendation E.212. Range: 0 – 999
SID (System ID)	Integer	SID (System ID) Range: 0 – 32767
NID (Network ID)	Integer	NID (Network ID)
Slotted mode	Integer	Slotted mode Slotted mode is used for power conservation while a mobile station is in idle mode. The MS monitors only selected time slots on the Paging Channel. 0 = Disabled 1 = Enabled
SEARCH_WIN_A	Integer	SEARCH_WIN_A (Size of active search window) Size of active search window. Searchers are used to find multipath signals to improve signal reception. Search_Win_A (active) is used to search active and candidate pilots. Active sets are channels that are associated with the forward channel traffic which are assigned to the mobile station. Candidate pilots are searched from additional multipaths in the same channels.
SEARCH_WIN_N	Integer	SEARCH_WIN_N (Size of neighbor search window) Size of neighbor search window. Searchers are used to find multipath signals to improve signal reception. Search_Win_N (neighbor) is used to search adjacent pilots. Candidate set of pilots received by the mobile station whose power exceeds a certain threshold and could be demodulated.
SEARCH_WIN_R	Integer	SEARCH_WIN_R (Size of remaining search window) Searchers are used to find multipath signals to improve signal reception. Search_Win_R (remaining) is used to search the remaining pilot set. Remaining set of all possible pilots in the system that are not currently assigned to any of the other sets.
T_ADD	Integer	T_ADD (Pilot detection threshold) To get the actual T_ADD value, divide the value by two and change the sign.
T_DROP	Integer	T_DROP (Pilot drop threshold) To get the actual T_ADD value, divide the value by two and change the sign.
T_TDROPP	Integer	T_TDROPP (Pilot drop timer threshold)
T_COMP	Integer	T_COMP (Comparison threshold) Active set versus candidate set comparison threshold (L3 value). To get the actual T_ADD value, divide the value by two and change the sign.
P_REV	Integer	P_REV (protocol revision level) 1 = J-STD-008 in PCS Band Only 2 = IS-95 in Cellular Band Only 3 = IS-95A + TSB74 4 = IS-95B Partial 5 = IS-95B Full 6 = IS-2000 Release 0 7 = IS-2000 Release A 8 = IS-2000 Release B Partial 9 = IS-2000 Release B Full 10 = IS-2000 Release C 11 = IS-2000 Release D (1xEV-DV)
MIN_P_REV	Integer	MIN_P_REV (Minimum protocol revision level) 1 = J-STD-008 in PCS Band Only 2 = IS-95 in Cellular Band Only

		3 = IS-95A + TSB74 4 = IS-95B Partial 5 = IS-95B Full 6 = IS-2000 Release 0 7 = IS-2000 Release A 8 = IS-2000 Release B Partial 9 = IS-2000 Release B Full 10 = IS-2000 Release C 11 = IS-2000 Release D (1xEV-DV)
MNC (CDMA)	Integer	MNC (CDMA) Range: 0 – 999

#### Parameters for EVDO [|Top|](#)

Name	Type	Description
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
SID (System ID)	Integer	SID (System ID) Range: 0 – 32767

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
Band	Integer	Band 219999 = GAN WLAN
Cell ID	Integer	Cell identification Cell identity of the current cell. For GSM this is 16 bit value, for UMTS this is 28 bit value (RNC ID + 16 bit cell ID), and for LTE this is 28 bit value (eNB ID + 8 bit cell ID). Range: 0 – 268435455

LAC	Integer	Location area code Range: 0 – 65535
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#### Parameters for WiMAX [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 259999 = WiMAX
MAC state	Integer	WiMAX MAC state 0 = Not initialized 1 = Physical failure 2 = MAC failure 10 = Network entry initial synchronization 11 = Network entry initial DCD 12 = Network entry initial UCD 13 = Network entry initial ranging 14 = Network entry initial sign-on 15 = Network entry initial negotiation 16 = Network entry initial registration 17 = Network entry initial PKM 30 = Normal operation 31 = Sleep mode 40 = Handover periodic scan 41 = Handover transition 42 = Handover network entry 60 = Idle mode 61 = Idle mode location update 62 = Idle mode paging 63 = Idle mode network entry
Frequency	Float	WiMAX frequency Unit: MHz
BS ID	String	WiMAX base station ID Six colon separated hex values.
FFT Size	Integer	WiMAX FFT size
Bandwidth	Float	WiMAX bandwidth Unit: MHz
Frame ratio DL	Integer	WiMAX frame ratio downlink Range: 0 – 100
Frame ratio UL	Integer	WiMAX frame ratio uplink Range: 0 – 100
MAP coding	Integer	WiMAX coding type used on DL-MAP 1 = Tail biting convolutional code (CC) 2 = Block turbo code (BTC) 3 = Convolutional turbo code (CTC) 4 = Zero tail convolutional code (ZTCC) 5 = Low density parity check code (LDPC)
MAP repetition	Integer	WiMAX repetition coding used on DL-MAP 1 = No repetition 2 = Repetition coding 2 4 = Repetition coding 4 6 = Repetition coding 6

#### Parameters for AMPS and NAMPS [\[Top\]](#)

Name	Type	Description
Band	Integer	Band 510800 = AMPS 800 519999 = AMPS 520800 = NAMPS 800 529999 = NAMPS
Ch type	Integer	AMPS channel type 1 = Analog control channel 2 = Analog traffic channel
Ch	Integer	Channel number

**Parameters for DAMPS** [|Top|](#)

Name	Type	Description
Band	Integer	Band 530800 = DAMPS 800 531900 = DAMPS 1900 539999 = DAMPS
Ch type	Integer	TDMA channel type 1 = Digital control channel 2 = Digital traffic channel 3 = Data channel
Ch	Integer	Channel number
NW type	Integer	NW type
PSID1	Integer	PSID1 PSID (private system identification) value 1.
PSID2	Integer	PSID2 PSID (private system identification) value 2.
PSID3	Integer	PSID3 PSID (private system identification) value 3.
PSID4	Integer	PSID4 PSID (private system identification) value 4.
LAREG	Integer	LAREG Range: 0 – 1
RNUM	Integer	RNUM If LAREG parameter has the value of 1, RNUM parameter will have a value.
REG PERIOD	Integer	REG PERIOD If not available, set to -1.

**Parameters for iDEN** [|Top|](#)

Name	Type	Description
Band	Integer	Band 550001 = iDEN proprietary 550002 = iDEN 800 standard 550003 = iDEN 800 extended 550004 = iDEN 900 550005 = iDEN 1500 559999 = iDEN
Ch	Integer	Channel number
CC	Integer	Color code Range: 0 – 15
Frequency	Integer	Frequency Unit: Hz
Cell ID	Integer	Cell identifier Range: 0 – 65535
Adaptation rate	Integer	Adaptation rate Range: 0 – 4
Cutback level	Float	Cutback level Range: 0 – -100 Unit: dB
Monitor all flag	Integer	Monitor all flag Range: 0 – 255
Monitor paging subchannel	Integer	Monitor paging subchannel Range: 0 – 255
Interconnect paging subchannel	Integer	Interconnect paging subchannel Range: 0 – 255
Packet data paging subchannel	Integer	Packet data paging subchannel Range: 0 – 255

Dispatch paging subchannel	Integer	Dispatch paging subchannel Range: 0 – 255
Interleave	Integer	Interleave Range: 0 – 255
Offset	Integer	Offset Range: 0 – 255
Subslot	Integer	Subslot 0 = Subslot A 1 = Subslot B
Extended color code	Integer	Extended color code Range: 0 – 15

## Secondary system channel info (SCHl)

<b>Event ID</b>	SCHl
<b>Cellular systems</b>	cdmaOne, CDMA 1x, EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded for the secondary system with dual-radio devices when the information changes.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for cdmaOne and CDMA 1x |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x

### Parameters for cdmaOne and CDMA 1x |Top|

Name	Type	Description
Band	Integer	Band 100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band. 100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band. 100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 100007 = cdmaOne 700 band 7 North American cellular 700 MHz band. 100008 = cdmaOne 1800 band 8 1800 MHz band. 100009 = cdmaOne 900 band 9 900 MHz band.



		<p>100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band.</p> <p>100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band.</p> <p>100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band.</p> <p>100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension.</p> <p>100014 = cdmaOne 1900 band 14 US PCS 1.9 GHz.</p> <p>100015 = cdmaOne 2100 AWS band 15</p> <p>100016 = cdmaOne 2500 band 16 US 2.5 GHz.</p> <p>100018 = cdmaOne 700 public safety band 18</p> <p>100019 = cdmaOne 700 lower band 19</p> <p>100020 = cdmaOne 1500 L-band band 20</p> <p>100021 = cdmaOne 2000 S-band band 21</p> <p>109999 = cdmaOne</p> <p>110000 = CDMA 1x 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.</p> <p>110001 = CDMA 1x 1900 band 1 North American PCS 1900 MHz band.</p> <p>110002 = CDMA 1x 900 TACS band 2 Total access communication system (TACS) 900 MHz band.</p> <p>110003 = CDMA 1x 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed).</p> <p>110004 = CDMA 1x 1800 Korean band 4 Korean PCS 1800 MHz band.</p> <p>110005 = CDMA 1x 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band.</p> <p>110006 = CDMA 1x 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band.</p> <p>110007 = CDMA 1x 700 band 7 North American cellular 700 MHz band.</p> <p>110008 = CDMA 1x 1800 band 8 1800 MHz band.</p> <p>110009 = CDMA 1x 900 band 9 900 MHz band.</p> <p>110010 = CDMA 1x 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band.</p> <p>110011 = CDMA 1x 400 PAMR band 11 European PAMR 400 MHz band.</p> <p>110012 = CDMA 1x 800 PAMR band 12 European PAMR 800 MHz band.</p> <p>110013 = CDMA 1x 2500 band 13 2.5 GHz IMT-2000 extension.</p> <p>110014 = CDMA 1x 1900 band 14 US PCS 1.9 GHz.</p> <p>110015 = CDMA 1x 2100 AWS band 15</p> <p>110016 = CDMA 1x 2500 band 16 US 2.5 GHz.</p> <p>110018 = CDMA 1x 700 public safety band 18</p> <p>110019 = CDMA 1x 700 lower band 19</p> <p>110020 = CDMA 1x 1500 L-band band 20</p> <p>110021 = CDMA 1x 2000 S-band band 21</p> <p>119999 = CDMA 1x</p>
Ch type	Integer	<p>CDMA channel type</p> <p>1 = Control channel</p> <p>2 = Traffic channel</p> <p>3 = Synch channel</p> <p>4 = Access channel</p>
S.Ch	Integer	Secondary channel number
MCC (CDMA)	Integer	<p>MCC (CDMA)</p> <p>See ITU-T recommendation E.212.</p> <p>Range: 0 – 999</p>
SID (System ID)	Integer	<p>SID (System ID)</p> <p>Range: 0 – 32767</p>
NID (Network ID)	Integer	NID (Network ID)

Slotted mode	Integer	Slotted mode Slotted mode is used for power conservation while a mobile station is in idle mode. The MS monitors only selected time slots on the Paging Channel. 0 = Disabled 1 = Enabled
SEARCH_WIN_A	Integer	SEARCH_WIN_A (Size of active search window) Size of active search window. Searchers are used to find multipath signals to improve signal reception. Search_Win_A (active) is used to search active and candidate pilots. Active sets are channels that are associated with the forward channel traffic which are assigned to the mobile station. Candidate pilots are searched from additional multipaths in the same channels.
SEARCH_WIN_N	Integer	SEARCH_WIN_N (Size of neighbor search window) Size of neighbor search window. Searchers are used to find multipath signals to improve signal reception. Search_Win_N (neighbor) is used to search adjacent pilots. Candidate set of pilots received by the mobile station whose power exceeds a certain threshold and could be demodulated.
SEARCH_WIN_R	Integer	SEARCH_WIN_R (Size of remaining search window) Searchers are used to find multipath signals to improve signal reception. Search_Win_R (remaining) is used to search the remaining pilot set. Remaining set of all possible pilots in the system that are not currently assigned to any of the other sets.
T_ADD	Integer	T_ADD (Pilot detection threshold) To get the actual T_ADD value, divide the value by two and change the sign.
T_DROP	Integer	T_DROP (Pilot drop threshold) To get the actual T_ADD value, divide the value by two and change the sign.
T_TDROp	Integer	T_TDROp (Pilot drop timer threshold)
T_COMP	Integer	T_COMP (Comparison threshold) Active set versus candidate set comparison threshold (L3 value). To get the actual T_ADD value, divide the value by two and change the sign.
P_REV	Integer	P_REV (protocol revision level) 1 = J-STD-008 in PCS Band Only 2 = IS-95 in Cellular Band Only 3 = IS-95A + TSB74 4 = IS-95B Partial 5 = IS-95B Full 6 = IS-2000 Release 0 7 = IS-2000 Release A 8 = IS-2000 Release B Partial 9 = IS-2000 Release B Full 10 = IS-2000 Release C 11 = IS-2000 Release D (1xEV-DV)
MIN_P_REV	Integer	MIN_P_REV (Minimum protocol revision level) 1 = J-STD-008 in PCS Band Only 2 = IS-95 in Cellular Band Only 3 = IS-95A + TSB74 4 = IS-95B Partial 5 = IS-95B Full 6 = IS-2000 Release 0 7 = IS-2000 Release A 8 = IS-2000 Release B Partial 9 = IS-2000 Release B Full 10 = IS-2000 Release C 11 = IS-2000 Release D (1xEV-DV)
MNC (CDMA)	Integer	MNC (CDMA) Range: 0 – 999

## WLAN channel info (WLANCHI)

Event ID	WLANCHI
Cellular systems	WLAN
Record state	Always
Description	Recorded when WLAN state changes.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) [Parameters for WLAN](#)

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 20 = WLAN

### Parameters for WLAN [|Top|](#)

Name	Type	Description
WLAN state	Integer	WLAN state 0 = Disabled 1 = Enabled Note that in the future there can be other non-zero enabled-states.

## GAN Channel info (GANCHI)

Event ID	GANCHI
Cellular systems	GAN WLAN
Record state	Always
Description	Recorded when GAN-specific channel information changes.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) [Parameters for GAN WLAN](#)

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 21 = GAN WLAN

### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
GAN state	Integer	GAN state

		1 = Deregistered 2 = Registered 3 = Idle 4 = Dedicated
GAN channel	Integer	GAN channel number Range: 0 – 1023
GAN BSIC	Integer	GAN base station identification code Range: 0 – 63
GAN CI	Integer	GAN cell identification Range: 0 – 65535
GAN LAC	Integer	GAN location area code Range: 0 – 65535
GANC IP	String	GANC IP address
SEGW IP	String	GANC security gateway IP address

## Service information (SEI)

<b>Event ID</b>	SEI
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when service state or mobility information changes.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM, UMTS, and LTE | Parameters for iDEN |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 55 = iDEN
Service status	Integer	Service info status 1 = Service received 2 = Service dropped

### Parameters for GSM, UMTS, and LTE [|Top|](#)

Name	Type	Description
LAC	Integer	Location area code If the service is not available this is the last known LAC value when the service was available. Range: 0 – 65535
MCC	Integer	Mobile country code If the service is not available this is the last known MCC value when the service was available. Range: 0 – 999
MNC	Integer	Mobile network code If the service is not available this is the last known MNC value

		when the service was available. Range: 0 – 999
TMSI	String (hex)	TMSI Temporary mobile subscriber identity. See 3GPP TS 124.008 subclause 10.5.1.4 and 3GPP TS 123.003 subclause 2.4.
P-TMSI	String (hex)	P-TMSI Packet temporary mobile subscriber identity. See 3GPP TS 124.008 subclause 10.5.1.4 and 3GPP TS 123.003 subclause 2.7.
MME group ID	Integer	MME group ID Mobility Management Entity (MME) group identification is used to differentiate between pools of MMEs. See 3GPP TS 123.003.
MME code	Integer	MME code Identifies Mobility Management Entities (MME) within the MME pool areas. See 3GPP TS 123.003.
M-TMSI	String (hex)	M-TMSI M-Temporary Mobile subscriber Identity. See 3GPP TS 123.003.

#### Parameters for iDEN [|Top](#)

Name	Type	Description
Domain status	Integer	Domain status 0 = Radio is in its dispatch domain 1 = Radio is not in its dispatch domain

## Roaming information (ROAM)

<b>Event ID</b>	ROAM
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when roaming state information changes.
<b>Tools</b>	Nemo Outdoor,Nemo Handy

[Parameters](#) |

#### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
Roaming status	Integer	Roaming status 1 = Roaming 2 = Not roaming

## Data channel request (DCHR)

<b>Event ID</b>	DCHR
<b>Cellular systems</b>	GSM,UMTS FDD
<b>Record state</b>	Data call connection state
<b>Description</b>	Indicates the requested data call resources. Recorded when data call is initiated or reconfigured.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for GSM | Parameters for UMTS FDD and UMTS TD-SCDMA |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD

### Parameters for GSM [|Top|](#)

Name	Type	Description
Initiator	Integer	Initiator 1 = Mobile station initiated 2 = Network station initiated
Requested coding	Integer	Requested channel coding 1 = 9.6 2 = 14.4
Requested data mode	Integer	Requested CS data mode 0 = Non-transparent 1 = Transparent
Requested #TSL UL	Integer	Requested number of UL timeslots Number of CS data timeslots uplink.
Requested #TSL DL	Integer	Requested number of DL timeslots Number of CS data timeslots downlink.
Modem type	Integer	Modem type 0 = Analog 1 = ISDN V.110 2 = ISDN V.120
Compression	Integer	Data compression 0 = Off 1 = On (manufacturer preferred compression) 2 = V.42bis 3 = V.44

### Parameters for UMTS FDD and UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
Initiator	Integer	Initiator 1 = Mobile station initiated 2 = Network station initiated
Req. CS rate	Integer	Requested CS bitrate
Requested data mode	Integer	Requested CS data mode 0 = Non-transparent 1 = Transparent
Modem type	Integer	Modem type

		0 = Analog 1 = ISDN V.110 2 = ISDN V.120
Compression	Integer	Data compression 0 = Off 1 = On (manufacturer preferred compression) 2 = V.42bis 3 = V.44

## Data channel info (DCHI)

<b>Event ID</b>	DCHI
<b>Cellular systems</b>	GSM
<b>Record state</b>	Data call connection state
<b>Description</b>	Recorded when data call resources have changed.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for GSM |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM

### Parameters for GSM |Top|

Name	Type	Description
Coding	Integer	Channel coding 1 = 9.6 2 = 14.4
Data mode	Integer	CS data mode 0 = Non-transparent 1 = Transparent
#CS TSL UL	Integer	Number of UL timeslots Number of CS data timeslots uplink.
#CS TSL DL	Integer	Number of DL timeslots Number of CS data timeslots downlink.
CS UL TSLs	Integer	CS data timeslots uplink Allocated uplink timeslots. The number of timeslot parameters in the event is indicated by the number of CS data timeslots uplink parameter. The first timeslot in the event is the main timeslot. Range: 0 – 7
CS DL TSLs	Integer	CS data timeslots downlink Allocated downlink timeslots. The number of timeslot parameters in the event is indicated by the number of CS data timeslots downlink parameter. The first timeslot in the event is the main timeslot. Range: 0 – 7

## Frequency hopping status (HOP)

Event ID	HOP
Cellular systems	GSM
Record state	Call connection and packet active state
Description	Recorded when GSM hopping channel list is modified. If hopping is not used, the single dedicated channel is recorded. Recorded based on layer3 and RLC/MAC signaling.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for GSM](#) | [Parameters for hopping on state](#) | [Parameters for hopping off state](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM

### Parameters for GSM [|Top](#)

Name	Type	Description
Hopping	Integer	Hopping status 1 = On 2 = Off

### Parameters for hopping on state [|Top](#)

Name	Type	Description
HSN	Integer	HSN Hopping sequence number. See 3GPP TS 144.018 subclause 10.5.2.5.
MAIO	Integer	MAIO Mobile allocation index offset. See 3GPP TS 144.018 subclause 10.5.2.5.
#Hopping Chs	Integer	Number of hopping channels
Channel(s)	Integer	Hopping channels

### Parameters for hopping off state [|Top](#)

Name	Type	Description
Channel(s)	Integer	Hopping channels

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## Cell information (CELLINFO)

Event ID	CELLINFO
Cellular systems	UMTS TD-SCDMA



<b>Record state</b>	Always
<b>Description</b>	The measurement event contains semi-static cell information that is not recorded to the CELLMEAS measurement event. Recorded when the mobile reports the information.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for UMTS TD-SCDMA |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 6 = UMTS TD-SCDMA

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
Ch	Integer	Channel number
Cell params ID	Integer	Cell parameters ID Range: 0 – 127
#URA IDs	Integer	Number of ura IDs
URA ID	Integer	URA identity Range: 0 – 65535

## Neighbor list (NLIST)

<b>Event ID</b>	NLIST
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA
<b>Record state</b>	Always
<b>Description</b>	Recorded when signaling-based neighbor list changes. With UMTS, when the mobile is in the soft handover state, the neighbor lists of all active set cells are combined and reported in this measurement event.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM source cell | Parameters for UMTS FDD source cell | Parameters for UMTS TD-SCDMA source cell | Neighbor list parameters | Parameters for GSM | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA |

#### Parameters [|Top|](#)

Name	Type	Description
#Header	Integer	Number of header parameters

params		
Source system	Integer	Source system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA

#### Parameters for GSM source cell [|Top|](#)

Name	Type	Description
Source band	Integer	Source band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
Source ch	Integer	Source channel number
Source BSIC	Integer	Source BSIC Range: 0 – 63

#### Parameters for UMTS FDD source cell [|Top|](#)

Name	Type	Description
Source band	Integer	Source band This information is not recorded during soft handover. 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
Source ch	Integer	Source channel number This information is not recorded during soft handover.
Source SC	Integer	Source scrambling code This information is not recorded during soft handover. Range: 0 – 511

#### Parameters for UMTS TD-SCDMA source cell [|Top|](#)

Name	Type	Description
Source band	Integer	Source band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
Source ch	Integer	Source channel number

Source params ID	Integer	Source cell parameters id Range: 0 – 127
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#### Neighbor list parameters [|Top|](#)

Name	Type	Description
#nChs	Integer	Number of neighbor channels
#Params	Integer	Number of parameters
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA

#### Parameters for GSM [|Top|](#)

Name	Type	Description
ARFCN	Integer	Neighbor channel number (GSM)
BSIC	Integer	Neighbor BSIC Range: 0 – 63
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
Cell index	Integer	Cell index (GSM)

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
UARFCN	Integer	Neighbor channel number (UMTS)
SC	Integer	Neighbor scrambling code Range: 0 – 511
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2

		50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
Cell index	Integer	Cell index (UMTS)

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
UARFCN	Integer	Neighbor channel number
Params ID	Integer	Neighbor cell parameters ID Range: 0 – 127
Band	Integer	Band 60001 = UMTS TD-SCDMA 2000 band a 60002 = UMTS TD-SCDMA 1900 band b 60003 = UMTS TD-SCDMA 1900 band c 60004 = UMTS TD-SCDMA 2600 band d 60005 = UMTS TD-SCDMA 1900 band e 60006 = UMTS TD-SCDMA 2300 band f 69999 = UMTS TD-SCDMA
Cell index	Integer	Cell index

## Possible missing neighbor (NMISS)

<b>Event ID</b>	NMISS
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when there are possible missing neighbors. Missing neighbor detection is based on neighbor list and scanning results. Possible missing neighbor is a cell which is detected (measured) by the scanner but is not included in the neighbor list of the mobile at a given time.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for GSM source cell](#) | [Parameters for UMTS FDD source cell](#) | [Parameters for cdmaOne, CDMA 1x, and EVDO source cells](#)  
[Missing neighbor parameters](#) | [Parameters for GSM](#) | [Parameters for UMTS FDD](#) | [Parameters for cdmaOne and CDMA 1x](#) | [Parameters for EVDO](#)

#### Parameters [\[Top\]](#)

Name	Type	Description

#Header params	Integer	Number of header parameters
Source system	Integer	Source system 1 = GSM 5 = UMTS FDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

#### Parameters for GSM source cell [|Top|](#)

Name	Type	Description
Source band	Integer	Source band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
Source ch	Integer	Source channel number
Source BSIC	Integer	Source BSIC Range: 0 – 63

#### Parameters for UMTS FDD source cell [|Top|](#)

Name	Type	Description
Source band	Integer	Source band This information is not recorded during soft handover. 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
Source ch	Integer	Source channel number This information is not recorded during soft handover.
Source SC	Integer	Source scrambling code This information is not recorded during soft handover. Range: 0 – 511

#### Parameters for cdmaOne, CDMA 1x, and EVDO source cells [|Top|](#)

Name	Type	Description
Source band	Integer	Source band This information is not recorded during soft handover. 100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band.

100002 = cdmaOne 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 100003 = cdmaOne 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 100004 = cdmaOne 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 100005 = cdmaOne 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 100006 = cdmaOne 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 100007 = cdmaOne 700 band 7  
 North American cellular 700 MHz band.  
 100008 = cdmaOne 1800 band 8  
 1800 MHz band.  
 100009 = cdmaOne 900 band 9  
 900 MHz band.  
 100010 = cdmaOne 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 100011 = cdmaOne 400 PAMR band 11  
 European PAMR 400 MHz band.  
 100012 = cdmaOne 800 PAMR band 12  
 European PAMR 800 MHz band.  
 100013 = cdmaOne 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 100014 = cdmaOne 1900 band 14  
 US PCS 1.9 GHz.  
 100015 = cdmaOne 2100 AWS band 15  
 100016 = cdmaOne 2500 band 16  
 US 2.5 GHz.  
 100018 = cdmaOne 700 public safety band 18  
 100019 = cdmaOne 700 lower band 19  
 100020 = cdmaOne 1500 L-band band 20  
 100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
 North American cellular 800 MHz band, also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
 North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
 North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
 1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
 900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21

		119999 = CDMA 1x 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Source ch	Integer	Source channel number This information is not recorded during soft handover.
Source PN	Integer	Source pilot number This information is not recorded during soft handover. Range: 0 – 511

#### Missing neighbor parameters [|Top|](#)

Name	Type	Description
#Miss. neighbors	Integer	Number of missing neighbors Number of detected possible missing neighbor cells.
#Params	Integer	Number of parameters
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

#### Parameters for GSM [|Top|](#)

Name	Type	Description
ARFCN	Integer	Missing neighbor channel number
BSIC	Integer	Missing neighbor BSIC Range: 0 – 63
RxLev	Float	Missing neighbor RX level

		Range: -120 – -10 Unit: dBm
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
ARFCN	Integer	Missing neighbor channel number
SC	Integer	Missing neighbor scrambling code Range: 0 – 511
Ec/N0	Float	Missing neighbor Ec/N0 The received energy per chip divided by the power density of the band measured on the primary CPICH. See 3GPP TS 125.215 subclause 5.1.5. Range: -30 – 0 Unit: dB
RSCP	Float	Missing neighbor RSCP The received signal code power of a single code measured on the primary CPICH. See 3GPP TS 125.215 subclause 5.1.1. Range: -150 – -20 Unit: dBm
Diff. to str.	Float	Missing neighbor difference to strongest pilot Power difference from strongest cell in active or monitored set to detected missing neighbor cell. Range: -26 – 26 Unit: dB
Band	Integer	Band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD

#### Parameters for cdmaOne and CDMA 1x [|Top|](#)

Name	Type	Description
Ch	Integer	Missing neighbor channel number
PN	Integer	Missing neighbor pilot number Range: 0 – 511
Ec/I0	Float	Missing neighbor Ec/I0 Range: -50 – 0 Unit: dB



RSCP	Float	Missing neighbor RSCP The received signal code power of a single code. Range: -150 – -20 Unit: dBm
Diff. to str.	Float	Missing neighbor difference to strongest pilot Power difference from strongest cell in active, candidate, or neighbor set to detected missing neighbor cell. Range: -26 – 26 Unit: dB
Band	Integer	Band 100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band. 100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band. 100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 100007 = cdmaOne 700 band 7 North American cellular 700 MHz band. 100008 = cdmaOne 1800 band 8 1800 MHz band. 100009 = cdmaOne 900 band 9 900 MHz band. 100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band. 100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band. 100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension. 100014 = cdmaOne 1900 band 14 US PCS 1.9 GHz. 100015 = cdmaOne 2100 AWS band 15 100016 = cdmaOne 2500 band 16 US 2.5 GHz. 100018 = cdmaOne 700 public safety band 18 100019 = cdmaOne 700 lower band 19 100020 = cdmaOne 1500 L-band band 20 100021 = cdmaOne 2000 S-band band 21 109999 = cdmaOne 110000 = CDMA 1x 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 110001 = CDMA 1x 1900 band 1 North American PCS 1900 MHz band. 110002 = CDMA 1x 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 110003 = CDMA 1x 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 110004 = CDMA 1x 1800 Korean band 4 Korean PCS 1800 MHz band. 110005 = CDMA 1x 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 110006 = CDMA 1x 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 110007 = CDMA 1x 700 band 7 North American cellular 700 MHz band. 110008 = CDMA 1x 1800 band 8 1800 MHz band. 110009 = CDMA 1x 900 band 9 900 MHz band. 110010 = CDMA 1x 800 SMR band 10

	Specialized mobile radio (SMR) 800 MHz band. 110011 = CDMA 1x 400 PAMR band 11 European PAMR 400 MHz band. 110012 = CDMA 1x 800 PAMR band 12 European PAMR 800 MHz band. 110013 = CDMA 1x 2500 band 13 2.5 GHz IMT-2000 extension. 110014 = CDMA 1x 1900 band 14 US PCS 1.9 GHz. 110015 = CDMA 1x 2100 AWS band 15 110016 = CDMA 1x 2500 band 16 US 2.5 GHz. 110018 = CDMA 1x 700 public safety band 18 110019 = CDMA 1x 700 lower band 19 110020 = CDMA 1x 1500 L-band band 20 110021 = CDMA 1x 2000 S-band band 21 119999 = CDMA 1x
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#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
Ch	Integer	Missing neighbor channel number
PN	Integer	Missing neighbor pilot number Range: 0 – 511
Ec/I0	Float	Missing neighbor Ec/I0 Range: –50 – 0 Unit: dB
RSCP	Float	Missing neighbor RSCP The received signal code power of a single code. Range: –150 – 0 Unit: dBm
Diff. to str.	Float	Missing neighbor difference to strongest pilot Power difference from strongest cell in active, candidate, or neighbor set to detected missing neighbor cell. Range: –26 – 26 Unit: dB
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz.

	120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
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## Automatic neighbor relation information (ANRI)

Event ID	ANRI
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when the CGI is configured to measure or reported by the mobile.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for CGI measurement configuration and report |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
ANR type	Integer	ANR type 1 = CGI measurement configuration 2 = CGI measurement report
#Params/ANR type	Integer	Number of ANR type parameters

### Parameters for CGI measurement configuration and report |Top|

Name	Type	Description
Band	Integer	Band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14

50019 = UMTS FDD 850 band 19  
 50020 = UMTS FDD 800 band 20  
 50021 = UMTS FDD 1500 band 21  
 50022 = UMTS FDD 3500 band 22  
 50025 = UMTS FDD 1900 band 25  
 50026 = UMTS FDD 850 band 26  
 59999 = UMTS FDD  
 60001 = UMTS TD-SCDMA 2000 band a  
 60002 = UMTS TD-SCDMA 1900 band b  
 60003 = UMTS TD-SCDMA 1900 band c  
 60004 = UMTS TD-SCDMA 2600 band d  
 60005 = UMTS TD-SCDMA 1900 band e  
 60006 = UMTS TD-SCDMA 2300 band f  
 69999 = UMTS TD-SCDMA  
 70001 = LTE FDD 2100 band 1  
 70002 = LTE FDD 1900 band 2  
 70003 = LTE FDD 1800 band 3  
 70004 = LTE FDD 2100 AWS band 4  
 70005 = LTE FDD 850 band 5  
 Band 850 is also known as band 800.  
 70006 = LTE FDD 850 band 6  
 70007 = LTE FDD 2600 band 7  
 70008 = LTE FDD 900 band 8  
 70009 = LTE FDD 1800 band 9  
 70010 = LTE FDD 2100 band 10  
 70011 = LTE FDD 1400 band 11  
 70012 = LTE FDD 700 band 12  
 70013 = LTE FDD 700 band 13  
 70014 = LTE FDD 700 band 14  
 70017 = LTE FDD 700 band 17  
 70018 = LTE FDD 850 band 18  
 70019 = LTE FDD 850 band 19  
 70020 = LTE FDD 800 band 20  
 70021 = LTE FDD 1500 band 21  
 70022 = LTE FDD 3500 band 22  
 70023 = LTE FDD 2200 band 23  
 70024 = LTE FDD 1500 band 24  
 70025 = LTE FDD 1900 band 25  
 70026 = LTE FDD 850 band 26  
 70027 = LTE FDD 800 band 27  
 70028 = LTE FDD 700 band 28  
 70029 = LTE FDD 700 band 29  
 This is downlink only band.  
 70030 = LTE FDD 2350 band 30  
 70031 = LTE FDD 450 band 31  
 70032 = LTE FDD 1500 L-band  
 This is downlink only band.  
 70064 = LTE FDD 390-470 band 64  
 This is a non-standard LTE FDD band.  
 70065 = LTE FDD 2100 band 65  
 70066 = LTE FDD AWS-3 2100 band 66  
 70067 = LTE FDD 700 EU band 67  
 This is downlink only band.  
 70068 = LTE FDD 700 ME band 68  
 70069 = LTE FDD 2500 band 69  
 This is downlink only band.  
 70070 = LTE FDD AWS-4 band 70  
 70071 = LTE FDD 600 band 71  
 70252 = LTE FDD 5200 NII-1 band 252  
 70255 = LTE FDD 5700 NII-3 band 255  
 79999 = LTE FDD  
 80033 = LTE TDD 1900-1920 band 33  
 80034 = LTE TDD 2010-2025 band 34  
 80035 = LTE TDD 1850-1910 band 35  
 80036 = LTE TDD 1930-1990 band 36  
 80037 = LTE TDD 1910-1930 band 37  
 80038 = LTE TDD 2570-2620 band 38  
 80039 = LTE TDD 1880-1920 band 39  
 80040 = LTE TDD 2300-2400 band 40  
 80041 = LTE TDD 2496-2690 band 41  
 80042 = LTE TDD 3400-3600 band 42  
 80043 = LTE TDD 3600-3800 band 43

		80044 = LTE TDD 703-803 band 44 80045 = LTE TDD 1447-1467 band 45 80046 = LTE TDD 5154-5925 band 46 80047 = LTE TDD 5855-5925 band 47 80048 = LTE TDD 3550-3700 band 48 80061 = LTE TDD 1447-1467 band 61 This is a non-standard LTE TDD band. 80062 = LTE TDD 1785-1805 band 62 This is a non-standard LTE TDD band. 80087 = LTE TDD 1447-1467 band 87 This is a non-standard LTE TDD band. 80088 = LTE TDD 1785-1805 band 88 This is a non-standard LTE TDD band. 89999 = LTE TDD
Ch	Integer	Channel number
Phys. cell ID	Integer	Physical cell ID With GSM this is the BSIC with range from 0 to 63. With UMTS FDD this is the scrambling code with range from 0 to 511. With UMTS TD-SCDMA this is the cell parameters ID with range from 0 to 127. With LTE this is the physical cell ID with range from 0 to 503.
Cell ID	Integer	Cell identification Range: 0 – 268435455
LAC/TAC	Integer	Location or tracking area code With GSM and UMTS this is the LAC value. With LTE this is the TAC value. Range: 0 – 65535
MCC	Integer	Mobile country code See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	Mobile network code Range: 0 – 999

## Cell pollution (CELLPOLLUTION)

<b>Event ID</b>	CELLPOLLUTION
<b>Cellular systems</b>	UMTS FDD,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when possible cell pollution is detected by comparing scanning results to the user defined threshold.
<b>Tools</b>	Nemo Outdoor

[Parameters](#) |
[Parameters for UMTS FDD](#) |
[Parameters for cdmaOne,CDMA 1x, and EVDO](#) |
[Parameters for UMTS FDD](#) |
[Parameters for cdmaOne, CDMA 1x, and EVDO](#)

### Parameters [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Source system	Integer	Source system 5 = UMTS FDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

# Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
Source band	Integer	Source band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
Source ch	Integer	Source channel number

# Parameters for cdmaOne,CDMA 1x, and EVDO [\[Top\]](#)

Name	Type	Description
Source band	Integer	Source band 100000 = cdmaOne 800 band 0 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others. 100001 = cdmaOne 1900 band 1 North American PCS 1900 MHz band. 100002 = cdmaOne 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 100003 = cdmaOne 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 100004 = cdmaOne 1800 Korean band 4 Korean PCS 1800 MHz band. 100005 = cdmaOne 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 100006 = cdmaOne 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 100007 = cdmaOne 700 band 7 North American cellular 700 MHz band. 100008 = cdmaOne 1800 band 8 1800 MHz band. 100009 = cdmaOne 900 band 9 900 MHz band. 100010 = cdmaOne 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 100011 = cdmaOne 400 PAMR band 11 European PAMR 400 MHz band. 100012 = cdmaOne 800 PAMR band 12 European PAMR 800 MHz band. 100013 = cdmaOne 2500 band 13 2.5 GHz IMT-2000 extension. 100014 = cdmaOne 1900 band 14 US PCS 1.9 GHz. 100015 = cdmaOne 2100 AWS band 15 100016 = cdmaOne 2500 band 16 US 2.5 GHz. 100018 = cdmaOne 700 public safety band 18 100019 = cdmaOne 700 lower band 19 100020 = cdmaOne 1500 L-band band 20

100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
 North American cellular 800 MHz band, also in Korea, Australia, Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
 North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
 North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
 1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
 900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21  
 119999 = CDMA 1x  
 120000 = EVDO 800 band 0  
 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others.  
 120001 = EVDO 1900 band 1  
 North American PCS 1900 MHz band.  
 120002 = EVDO 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 120003 = EVDO 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 120004 = EVDO 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 120005 = EVDO 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 120006 = EVDO 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 120007 = EVDO 700 band 7  
 North American cellular 700 MHz band.  
 120008 = EVDO 1800 band 8  
 1800 MHz band.  
 120009 = EVDO 900 band 9  
 900 MHz band.  
 120010 = EVDO 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 120011 = EVDO 400 PAMR band 11  
 European PAMR 400 MHz band.  
 120012 = EVDO 800 PAMR band 12  
 European PAMR 800 MHz band.  
 120013 = EVDO 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 120014 = EVDO 1900 band 14  
 US PCS 1.9 GHz.

		120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Source ch	Integer	Source channel number

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
SC	Integer	Pilot pollution scrambling code Range: 0 – 511
Ec/N0	Float	Pilot pollution Ec/N0 The received energy per chip divided by the power density of the band measured on the primary CPICH. See 3GPP TS 125.215 subclause 5.1.5. Range: –30 – 0 Unit: dB
RSCP	Float	Pilot pollution RSCP The received signal code power of single code measured on the primary CPICH. See 3GPP TS 125.215 subclause 5.1.1. Range: –150 – –20 Unit: dBm

#### Parameters for cdmaOne, CDMA 1x, and EVDO [|Top|](#)

Name	Type	Description
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
PN	Integer	Pilot pollution pilot number Range: 0 – 511
Ec/I0	Float	Pilot pollution Ec/I0 Range: –50 – 0 Unit: dB
RSCP	Float	Pilot pollution RSCP The received signal code power of single code. Unit: dBm

## Interference analysis (IANALYSIS)

Event ID	IANALYSIS
Cellular systems	GSM
Record state	Always
Description	Recorded when interference analysis is enabled in Nemo Outdoor. The logged information is based on the channels used by the mobile and to the scanning results received from the scanner.
Tools	Nemo Outdoor



**Parameters** |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
Source system	Integer	Source system 1 = GSM

**Parameters for GSM** |Top|

Name	Type	Description
Band	Integer	Interference analysis band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM

**Parameters for GSM** |Top|

Name	Type	Description
#Chs	Integer	Number of channels
#Params/Ch	Integer	Number of parameters per channel
Type	Integer	Interference analysis channel type 1 = Serving channel This is the BCCH channel during the idle state and the TCH channel(s) during the active state. 2 = Co-channel Contains co-channel interfere. This is only recorded when scanner decodes different BSIC than the mobile. This indicates that there are two interfering cells using the same channel. 3 = Adj-channel This is the channel adjacent to the serving channel. Adjacent channel can cause interference to the serving channel.
Ch	Integer	Interference analysis channel number
BSIC	Integer	Interference analysis BSIC Range: 0 – 63
RxLev	Float	Interference analysis RX level Range: –120 – –10 Unit: dBm

**Cell load (CELLLOAD)**

Event ID	CELLLOAD
Cellular systems	EVDO
Record state	Always
Description	Recorded when cell load information is received from the network.
Tools	Nemo Outdoor, Nemo Handy

**Parameters** [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

**Parameters for EVDO** [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Cells	Integer	Number of cells
#Params/cell	Integer	Number of parameters per cell
Band	Integer	Band 120000 = EVDO 800 band 0 North American cellular 800 MHz band. Also in Korea, Australia, Hong Kong, China, Taiwan, and others. 120001 = EVDO 1900 band 1 North American PCS 1900 MHz band. 120002 = EVDO 900 TACS band 2 Total access communication system (TACS) 900 MHz band. 120003 = EVDO 800 JTACS band 3 JTACS 800 MHz band (Japanese 800 MHz reversed). 120004 = EVDO 1800 Korean band 4 Korean PCS 1800 MHz band. 120005 = EVDO 450 NMT band 5 Nordic mobile telephone (NMT) 450 MHz band. 120006 = EVDO 1900-2100 IMT band 6 IMT-2000 1900-2100 MHz band. 120007 = EVDO 700 band 7 North American cellular 700 MHz band. 120008 = EVDO 1800 band 8 1800 MHz band. 120009 = EVDO 900 band 9 900 MHz band. 120010 = EVDO 800 SMR band 10 Specialized mobile radio (SMR) 800 MHz band. 120011 = EVDO 400 PAMR band 11 European PAMR 400 MHz band. 120012 = EVDO 800 PAMR band 12 European PAMR 800 MHz band. 120013 = EVDO 2500 band 13 2.5 GHz IMT-2000 extension. 120014 = EVDO 1900 band 14 US PCS 1.9 GHz. 120015 = EVDO 2100 AWS band 15 120016 = EVDO 2500 band 16 US 2.5 GHz. 120018 = EVDO 700 public safety band 18 120019 = EVDO 700 lower band 19 120020 = EVDO 1500 L-band band 20 120021 = EVDO 2000 S-band band 21 129999 = EVDO
Ch	Integer	Channel number
PN	Integer	Pilot number Range: 0 – 511
Active users	Integer	Active users

## Service configuration (SERVCONF)

Event ID	SERVCONF
Cellular systems	cdmaOne,CDMA 1x
Record state	Call connection and packet active state
Description	Recorded when configuration changes.
Tools	Nemo Outdoor

Parameters | Parameters for cdmaOne and CDMA 1x |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x

### Parameters for cdmaOne and CDMA 1x |Top|

Name	Type	Description
SO	Integer	Service option See more 3GPP2 C.S0014.
FT type	Integer	Forward traffic type 0 = Service option connection does not use forward traffic channel traffic. 1 = Service option connection uses primary traffic on the forward traffic channel. 2 = Service option connection uses secondary traffic on the forward traffic channel.
RT type	Integer	Reverse traffic type 0 = Service option connection does not use reverse traffic channel traffic 1 = Service option connection uses primary traffic on the reverse traffic channel 2 = Service option connection uses secondary traffic on the reverse traffic channel
Encryption mode	Integer	Encryption mode 0 = Off 1 = On
F-FCH MUX	Integer	F-FCH and F-DCCH multiplex option
R-FCH MUX	Integer	R-FCH and R-DCCH multiplex option
F-FCH bit/frame	Integer	F-FCH bits per frame
R-FCH bit/frame	Integer	R-FCH bits per frame
F-FCH RC	Integer	F-FCH radio configuration Range: 1 – 10
R-FCH RC	Integer	R-FCH radio configuration Range: 1 – 10
F-DCCH RC	Integer	F-DCCH radio configuration Range: 1 – 10
R-DCCH RC	Integer	R-DCCH radio configuration Range: 1 – 10
F-SCH MUX	Integer	F-SCH multiplex option
F-SCH RC	Integer	F-SCH radio configuration Range: 1 – 10
F-SCH coding	Integer	F-SCH coding 0 = Convolutional

		1 = Turbo
F-SCH frame size	Integer	F-SCH frame size 0 = 40ms frames 1 = 80ms frames 2 = 40ms and 80ms frames
F-SCH frame offset	Integer	F-SCH frame offset
F-SCH max rate	Integer	F-SCH maximum rate 1 = 1X 2 = 2X 4 = 4X 8 = 8X 16 = 16X 32 = 32X
R-SCH MUX	Integer	R-SCH multiplex option
R-SCH RC	Integer	R-SCH radio configuration
R-SCH coding	Integer	R-SCH coding 0 = Convolutional 1 = Turbo
R-SCH frame size	Integer	R-SCH frame size 0 = 40ms frames 1 = 80ms frames 2 = 40ms and 80ms frames
R-SCH frame offset	Integer	R-SCH frame offset
R-SCH max rate	Integer	R-SCH maximum rate 1 = 1X 2 = 2X 4 = 4X 8 = 8X 16 = 16X 32 = 32X

## Random access channel information (RACHI)

<b>Event ID</b>	RACHI
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded after random access to the network has been attempted. With UMTS FDD, a RACHI measurement event is recorded for each random access procedure.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for UMTS FDD](#) | 
 [Parameters for UMTS TD-SCDMA](#) | 
 [Parameters for LTE](#) | 
 [Parameters for cdmaOne and CDMA 1x](#) | 
 [Parameters for EVDO](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne

		11 = CDMA 1x 12 = EVDO
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**Parameters for UMTS FDD** [\[Top\]](#)

Name	Type	Description
Init TX power	Float	RACH initial TX power TX power Initial transmission power. Range: -99 – 99 Unit: dBm
Preamble step	Float	RACH preamble step Preamble step size. Range: 1 – 8 Unit: dB
Preamble count	Integer	RACH preamble count Transmitted preamble transmission count. Range: 0 – 65
RACH TX power	Float	RACH TX power Total transmission power used in RACH message part (control + data). Range: -99 – 99 Unit: dBm
Max preamble	Integer	RACH maximum preamble count This is the same as 'Preamble Retrans Max' parameter signaled by network in RRC layer and it defines the maximum number of preamble attempts. Range: 0 – 64
UL interf.	Float	UL interference Uplink Interference is measured by the NodeB and broadcasted by the NodeB in SIB7. The UE uses this to set the initial TX power for the first PRACH or NPRACH preamble. The Uplink Interference value in SIB7 uses 1 dB steps. More information can be found in 3GPP TS 25.133 and 25.215 (information about SIB7 in 3GPP TS 25.331), where the Uplink Interference is referred to as "Received total wide band power". Range: -110 – -70 Unit: dBm
AICH status	Integer	RACH AICH status 0 = No ACK 1 = NACK 2 = ACK 3 = Abort
Data gain	Integer	RACH data channel gain Range: 0 – 15
Ctrl gain	Integer	RACH control channel gain Range: 0 – 15
Power offset	Float	RACH power offset This is the same as Pp-m parameter in RRC specification. Power offset between the last transmitted preamble and the control part of the message. Range: -5 – 10
Message length	Integer	RACH message length Range: 5 – 20 Unit: ms
Preamble cycles	Integer	RACH max preamble cycles Maximum number of preamble cycles. Range: 1 – 32

**Parameters for UMTS TD-SCDMA** [\[Top\]](#)

Name	Type	Description
SYNC UL Init. pwr.	Float	RACH SYNC UL initial TX power Initial transmission power.

		Range: -99 – 99 Unit: dBm
SYNC UL step	Float	RACH SYNC UL step Range: 0 – 3 Unit: dB
SYNC UL count	Integer	RACH SYNC UL count Transmitted preamble transmission count. Range: 1 – 8
Max SYNC UL count	Integer	RACH SYNC UL maximum count Valid values are 1, 2, 4, and 8. This is the same as _Max SYNC_UL Transmissions_ parameter signaled by network in RRC layer and it defines the maximum number of preamble attempts. Range: 1 – 8
SYNC UL power	Float	RACH SYNC UL power Power of last SYNC UL. Range: -99 – 99 Unit: dBm
RACH TX power	Float	RACH TX power Total transmission power used in RACH message part (control + data). Range: -99 – 99 Unit: dBm
PCCPCH pathloss	Float	RACH PCCPCH pathloss Range: 46 – 158 Unit: dB
RACH status	Integer	RACH FPACH status 0 = No ACK 1 = NACK 2 = ACK
Desired UpPCH RX power	Float	RACH desired UpPCH RX power Range: -120 – -58 Unit: dBm
Desired UpRACH RX power	Float	RACH desired UpRACH RX power Range: -120 – -58 Unit: dBm
Message length	Integer	RACH message length Range: 5 – 20 Unit: ms
Preamble cycles	Integer	RACH max preamble cycles Maximum number of preamble cycles. Range: 1 – 32

#### Parameters for LTE |Top|

Name	Type	Description
RACH type	Integer	RACH type More information about RACH procedure in LTE see 3GPP TS 36.213 subclause 6 and 3GPP TS 36.321 subclause 5.1. 1 = Contention based 2 = Non-contention based
RACH reason	Integer	RACH reason Reason for the RACH procedure. 1 = Channel request 2 = Radio link timeout 3 = UL data 4 = No PUCCH Recorded when scheduling request is not possible because there are no PUCCH resources available. See 3GPP TS 36.321 subclause 5.4.4. 5 = Max SR Recorded when maximum number of scheduling requests has been sent to the network without uplink resources. See 3GPP TS 36.321 subclause 5.4.4. 6 = Handover

		<p>RACH procedure after handover.</p> <p>7 = DL data</p> <p>This type is used when UE is not synchronized and downlink data is received.</p>
RACH result	Integer	<p>RACH result</p> <p>1 = Succeeded</p> <p>2 = Aborted</p> <p>3 = Failed</p>
Max preambles	Integer	<p>RACH maximum preamble count</p> <p>This is the same as preambleTransMax. See 3GPP TS 136.133 subclause 6.3.2 and 136.321 subclause 5.1.</p> <p>Range: 3 – 200</p>
Preambles	Integer	<p>RACH preamble count</p> <p>Defines the number of preambles that were sent during the RACH procedure. This is the same as PREAMBLE_TRANSMISSION_COUNTER after end of the RACH procedure.</p>
Preambles failures	Integer	RACH preamble responses with backoff time
Preambles successes	Integer	RACH preamble responses with PUSCH resource
CR failures	Integer	<p>RACH contention resolution failures</p> <p>This is the total number of contention resolution failures including timer expiries and msg4 decoding failures. Subtract RACH contention resolution decoding failures from this parameter to get the number of timer expiries.</p>
Pathloss	Float	<p>RACH pathloss</p> <p>An estimate of the radio condition for the RACH procedure. Pathloss is used for initial TX power. See 3GPP TS 36.213 subclause 6.1.</p> <p>Range: 0 – 170</p> <p>Unit: dB</p>
Init TX power	Float	<p>RACH preamble initial TX power</p> <p>TX power used for the first preamble. See 3GPP TS 36.321 subclause 5.1.3.</p> <p>Range: -50 – 40</p> <p>Unit: dBm</p>
Preamble step	Float	<p>RACH preamble step</p> <p>This parameter is the same as power ramping step. See 3GPP TS 136.321 subclause 5.1.</p> <p>Range: 0 – 6</p> <p>Unit: dB</p>
PUSCH power	Float	<p>RACH PUSCH power</p> <p>For successful RACH procedures this contains the TX power used for message sending in PUSCH.</p> <p>Range: -50 – 40</p> <p>Unit: dBm</p>
RACH preamble index	Integer	<p>RACH preamble index</p> <p>The preamble index of the last successfully transmitted preamble. This is only valid for successful RACH procedures. This parameter is same as preamble sequence or random access preamble ID (RAPID). See 3GPP TS 136.321 subclause 5.</p> <p>Range: 0 – 63</p>
Access delay	Integer	<p>RACH access delay</p> <p>Time from initial MSG1 to MSG2 for non-contention based RACH procedures and time from initial MSG1 to MSG4 for contention based RACH procedures. Valid only for succesful RACH procedures.</p> <p>Minimum value: 0</p> <p>Unit: ms</p>
RA-RNTI	Integer	<p>RACH RA-RNTI</p> <p>RNTI that is used on the PDCCH or NPDCCH when random access responses are transmitted. See 3GPP TS 136.321 subclause 5.1.</p> <p>Range: 0 – 65535</p>
Response window size	Integer	RACH response window size

		This is same as ra-ResponseWindowSize. Defines how long random access response (MSG2) is monitored after preamble is transmitted. When multiple CE levels were used during the RACH procedure this is the last used response window size. See 3GPP TS 136.321 subclause 5.1.
TA	Integer	RACH timing advance Timing advance command received in random access response (MSG2). See 3GPP TS 136.321 subclause 5.2. Range: 0 – 1282
CR MSG4 decoding failures	Integer	RACH contention resolution msg4 decoding failures
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
CE	Integer	RACH CE level The last used coverage enhancement level. CE level defines the parameter set that is used for preamble sending. See 3GPP TS 136.321 subclause 5.1.4. Range: 0 – 3
RACH reps	Integer	RACH preamble repetitions Number of times the preamble is repeated to improve coverage. This is the same as numRepetitionPerPreambleAttempt. When multiple CE levels were used during the RACH procedure this is the last used repetitions. See 3GPP TS 136.321 subclause 5.1.3 and 3GPP TS 136.213 subclause 16.3. Range: 1 – 128
Initial CE	Integer	RACH initial CE level The initial coverage enhancement level. CE level defines the parameter set that is used for preamble sending. See 3GPP TS 136.321 subclause 5.1.4. Range: 0 – 3

#### Parameters for cdmaOne and CDMA 1x [\[Top\]](#)

Name	Type	Description
NOM_PWR	Integer	Access nominal transmit power offset Nominal transmit power offset is a correction factor used by mobile stations in open-loop power estimation.
INIT_PWR	Integer	INIT_PWR (access probe initial power) Initial power is a correction factor used by mobile stations in open-loop power estimation for initial transmission on an Access Channel.
PWR_STEP	Integer	PWR_STEP (access probe power step) Mobile stations increase the transmission power in an access probe sequence.
NUM_STEP	Integer	NUM_STEP (access probe number of steps) Access probes consist of a preamble and a message for channel access. Access probes are sent in a sequence of one or more access probes. Transmitted power is incremented in each probe. Note that the parameter value is one less than the actual maximum number of steps.
TX level	Float	Probe TX level
Probe count	Integer	Probe count
Probe sequence count	Integer	Probe sequence count Access probe sequence count.
Access ch number	Integer	Access channel number
Random delay	Integer	PN randomization delay



Access RX level	Float	RX level Unit: dB
Psist	Integer	Number of persistence tests performed Persistence is a probability measurement done by the mobile station to determine if it should transmit on a given access channel. Range: 0 – 255
SEQ backoff	Integer	Sequence backoff Time between access probe sequences. Range: 0 – 255
Probe backoff	Integer	Probe backoff Time between access probes. Range: 0 – 255
Inter. corr.	Integer	Interference correction Interference correction is calculated from the Ec/I0 of the strongest active set pilot and from the interference correction threshold. Range: 0 – 255
Access TX adj.	Float	Transmit gain adjust

#### Parameters for EVDO [\[Top\]](#)

Name	Type	Description
Max #Probes	Integer	Number of probes per probe sequence
Max #Probe SEQs	Integer	Maximum number of probe sequences
Result	Integer	Probe sequence result 0 = ACAck not received 1 = ACAck received 2 = TCA message received 3 = Probe interrupted
#Probes	Integer	Number of probes sent in last probe sequence
#Probe SEQs	Integer	Number of probe sequences sent for this access attempt
Duration	Integer	Time to complete the attempt Unit: slot
Access PN	Integer	Access PN PN of the sector that sends the ACAck or the TCA message.
Access sector ID	Integer	Access sector ID Sector ID on which the access probe was sent. Range: 0 – 16777215
Access color code	Integer	Access color code Color code on which the access probe was sent. Range: 0 – 255

## Vocoder status (VOCS)

Event ID	VOCS
Cellular systems	cdmaOne, CDMA 1x
Record state	Call connection state
Description	Recorded when vocoder rate changes.
Tools	Nemo Outdoor, Nemo Handy

**Parameters** |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 10 = cdmaOne 11 = CDMA 1x
Voc. rate For.	Integer	Vocoder rate forward 0 = Full 1 = Half 2 = Quarter 3 = Eighth 4 = Blank 5 = Erasure 6 = Invalid data
Voc. rate Rev.	Integer	Vocoder rate reverse 0 = Full 1 = Half 2 = Quarter 3 = Eighth 4 = Blank 5 = Erasure 6 = Invalid data 7 = Quarter (non-critical)
SO	Integer	Service option See more 3GPP2 C.S0014.

## Physical channel information (PHCHI)

Event ID	PHCHI
Cellular systems	UMTS TD-SCDMA,cdmaOne,CDMA 1x
Record state	Always
Description	Recorded when the information is received from the device.
Tools	Nemo Outdoor, Nemo Handy

|Parameters |Parameters for UMTS TD-SCDMA |Parameters for cdmaOne and CDMA 1x |

**Parameters** |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 6 = UMTS TD-SCDMA 10 = cdmaOne 11 = CDMA 1x

**Parameters for UMTS TD-SCDMA** |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
DPCH ch	Integer	DPCH channel number
UL repetition length	Integer	TD-SCDMA uplink repetition length
UL repetition	Integer	TD-SCDMA uplink repetition period

period		Valid values are 1, 2, 4, 8, 16, 32, and 64. Range: 1 – 64
DL repetition length	Integer	TD-SCDMA downlink repetition length
DL repetition period	Integer	TD-SCDMA downlink repetition period Valid values are 1, 2, 4, 8, 16, 32, and 64. Range: 1 – 64
#Physical channels	Integer	Number of physical channels
#Params/Ch	Integer	Number of parameters per physical channel
Ph. ch type	Integer	TD-SCDMA physical channel type 1 = DPCH 2 = HS-SCCH 3 = HS-SICH 4 = HS-PDSCH
Direction	Integer	Physical channel direction 1 = Uplink 2 = Downlink 3 = Uplink and downlink
TSL	Integer	Timeslot Range: 0 – 6
SF	Integer	TD-SCDMA spreading factor 1 = SF 1 2 = SF 2 4 = SF 4 8 = SF 8 16 = SF 16
Ch. code	Integer	TD-SCDMA channelisation code Range: 0 – 15
Midamble config	Integer	Midamble configuration Valid values are 2, 4, 6, 8, 10, 12, 14, and 16. Range: 2 – 16
Midamble alloc.	Integer	Midamble allocation mode and shift -2 = Default -1 = Common 0 = 0 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = 8 9 = 9 10 = 10 11 = 11 12 = 12 13 = 13 14 = 14 15 = 15

#### Parameters for cdmaOne and CDMA 1x [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#Physical channels	Integer	Number of physical channels
#Params/Ch	Integer	Number of parameters per physical channel
Ph. type	Integer	Physical channel type 0 = SCH0 1 = SCH1

		2 = FCH 3 = DCCH
Direction	Integer	Physical channel direction 1 = Uplink 2 = Downlink 3 = Uplink and downlink
PN	Integer	Physical channel pilot number Range: 0 – 511
Walsh code	Integer	Physical channel walsh code Range: 0 – 127
Ph. rate	Integer	Physical channel rate 0 = 1x 1 = 2x 2 = 4x 3 = 8x 4 = 16x
QOF mask id	Integer	Quasiorthogonal function index Range: 0 – 3

## Quick paging channel information (QPCHI)

<b>Event ID</b>	QPCHI
<b>Cellular systems</b>	CDMA 1x
<b>Record state</b>	Idle state
<b>Description</b>	Recorded when values are received from the mobile in slotted mode.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for CDMA 1x |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 11 = CDMA 1x

### Parameters for CDMA 1x [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Rate	Integer	QPCH paging indicator rate Data rate. Currently valid values are 4800 and 9600. Range: 4800 – 9600 Unit: bit/s
Slot number	Integer	Paging slot number Range: 0 – 2047
Transfer reason	Integer	Transfer reason 0 = No XFER 1 = Slot imminent 2 = MC not valid 3 = Channel estimation bad signal 4 = XFER broadcast data 5 = BP and PG 6 = BP not supported 7 = RWUP

		8 = PI1 PI2 on 9 = BI1 BI2 on 10 = Next slot not supported 11 = CCI handoff 12 = CCI on 13 = Disable BIO switch
#Configurations	Integer	Number of configurations
#Params/configuration	Integer	Number of parameters per configuration
PN	Integer	Pilot number Range: 0 – 511
PI walsh	Integer	Walsh code for paging indicators Range: 0 – 128
PI power offset	Float	Paging indicator power offset Power difference between paging indicator and pilot channel. Unit: dB
BI supported	Integer	Broadcast indicator support 0 = Not supported 1 = Supported
BI walsh	Integer	Broadcast indicator walsh code Range: 0 – 128
BI pwr lvl	Float	Broadcast indicator power level Unit: dB
CCI supported	Integer	Configuration change indicator support 0 = Not supported 1 = Supported
CCI walsh	Integer	Configuration change walsh code Range: 0 – 128
CCI pwr lvl	Float	Configuration change power level Unit: dB
#Indicators	Integer	Number of indicators
#Params/indicator	Integer	Number of parameters per indicator
Status	Integer	Indicator demodulation result 0 = Not applicable 1 = Not detected 2 = Detected 3 = Erasure 4 = Missed
Type	Integer	Indicator type 0 = Paging indicator #1 1 = Paging indicator #2 2 = Configuration change indicator #1 3 = Configuration change indicator #2 4 = Broadcast indicator #1 5 = Broadcast indicator #2
THB	Integer	THB threshold for paging indicator Range: 0 – 255
THI	Integer	THI threshold for paging indicator Range: 0 – 255
Position	Integer	Indicator position Range: 0 – 768
Ind. I amp.	Integer	Indicator amplitude on I channel
Ind. Q amp.	Integer	Indicator amplitude on Q channel
Com. pilot energy	Float	Common pilot energy Range: –35 – 3 Unit: dB
Div. pilot energy	Float	Diversity pilot energy Range: –35 – 3 Unit: dB

## FCH packets (FCHPACKETS)

Event ID	FCHPACKETS
Cellular systems	EVDO
Record state	Always
Description	Recorded when information is received from the mobile.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for EVDO](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO [|Top](#)

Name	Type	Description
CC38400 Good	Integer	CC38400 Good Counter for 38.4 k control channel packets with good CRC.
CC38400 Bad	Integer	CC38400 Bad Counter for 38.4 k control channel packets with bad CRC.
CC76800 Good	Integer	CC76800 Good Counter for 76.8 k control channel packets with good CRC.
CC76800 Bad	Integer	CC76800 Bad Counter for 76.8 k control channel packets with bad CRC.
TC38400 Good	Integer	TC38400 Good Counter for 38.4 k traffic channel packets with good CRC.
TC38400 Bad	Integer	TC38400 Bad Counter for 38.4 k traffic channel packets with bad CRC.
TC76800 Good	Integer	TC76800 Good Counter for 76.8 k traffic channel packets with good CRC.
TC76800 Bad	Integer	TC76800 Bad Counter for 76.8 k traffic channel packets with bad CRC.
TC153600 Good	Integer	TC153600 Good Counter for 156.6 k traffic channel packets with good CRC.
TC153600 Bad	Integer	TC153600 Bad Counter for 156.6 k traffic channel packets with bad CRC.
TC307200Short Good	Integer	TC307200Short Good Counter for 302.2 (short) traffic channel packets with good CRC.
TC307200Short Bad	Integer	TC307200Short Bad Counter for 302.2 (short) traffic channel packets with bad CRC.
TC307200Long Good	Integer	TC307200Long Good Counter for 307.2 (long) traffic channel packets with good CRC.
TC307200Long Bad	Integer	TC307200Long Bad Counter for 307.2 (long) traffic channel packets with bad CRC.
TC614400Short Good	Integer	TC614400Short Good Counter for 614.4 k (short) traffic channel packets with good CRC.
TC614400Short Bad	Integer	TC614400Short Bad

		Counter for 614.4 k (short) traffic channel packets with bad CRC.
TC614400Long Good	Integer	TC614400Long Good Counter for 614.4 k (long) traffic channel packets with good CRC.
TC614400Long Bad	Integer	TC614400Long Bad Counter for 614.4 k (long) packets decoded in 2 slots.
TC921600 Good	Integer	TC921600 Good Counter for 921.6 k traffic channel packets with good CRC.
TC921600 Bad	Integer	TC921600 Bad Counter for 921.6 k traffic channel packets decoded with bad CRC.
TC1228800Short Good	Integer	TC1228800Short Good Counter for 1228.8 k (short) traffic channel packets with good CRC.
TC1228800Short Bad	Integer	TC1228800Short Bad Counter for 1228.8 k (short) traffic channel packets with bad.
TC1228800Long Good	Integer	TC1228800Long Good Counter for 1228.8 (long) traffic channel packets with good CRC.
TC1228800Long Bad	Integer	TC1228800Long Bad Counter for 1228.8 (long) traffic channel packets with bad CRC.
TC1843200 Good	Integer	TC1843200 Good Counter for 1843.2 k traffic channel packets with good CRC.
TC1843200 Bad	Integer	TC1843200 Bad Counter for 1843.2 k traffic channel packets with bad CRC.
TC2457600 Good	Integer	TC2457600 Good Counter for 2457 k traffic channel packets with good CRC.
TC2457600 Bad	Integer	TC2457600 Bad Counter for 2457 k traffic channel packets with bad CRC.

## Connection layer connection (CONNECTIONC)

<b>Event ID</b>	CONNECTIONC
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when connection layer is connected.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |

### Parameters | Top |

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

### Parameters for EVDO | Top |

Name	Type	Description
Transaction ID	Integer	Connection attempt transaction ID

		Transaction ID associated with the ConnectionDeny message; if there is no response from the AN or a ConnectionDeny message is not received, this field represents the TransactionId that was used to send the ConnectionRequest message.
Message SEQ	Integer	Connection attempt message sequence Represents message sequence present in the TCA message received; valid only if a TCA message is received.
Connection result	Integer	Connection attempt result 0 = Connection deny received with deny reason general 1 = Connection deny received with deny reason network busy 2 = Connection deny received with deny reason authentication or billing failure 3 = Maximum access probes 4 = System lost (supervision failures) 5 = Not preferred (SD told OVHD to switch systems, QC redirect, access network id) 6 = Redirect (ALMP received a redirect message) 7 = Connection setup timeout 8 = Power down received 9 = Offline received 10 = NAM change received 11 = User abort 12 = Access handoff 13 = Success
Rec. status	Integer	Connection reception status 0 = Not received either TCA or RTCAK message 1 = Received TCA message but not received RTCAK message 2 = Received both TCA and RTCAK messages
Duration	Integer	Connection attempt duration Time in slots taken to complete the attempt. Unit: slot
PN	Integer	Connection attempt PN offset Range: 0 – 511
Sector ID	Integer	Connection attempt sector ID
CC	Integer	Connection attempt color code Range: 0 – 255
#PN changes	Integer	Connection attempt pilot changes Defines how many times the active set pilot changed during the connection attempt.
Direction	Integer	Connection attempt direction 1 = Access Network 2 = Access Terminal

## Connection layer release (CONNECTIOND)

<b>Event ID</b>	CONNECTIOND
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when connection layer is released.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for EVDO |



**Parameters** [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

**Parameters for EVDO** [|Top|](#)

Name	Type	Description
Reason	Integer	Connection release reason 0 = AN connection close 1 = AT connection close 2 = System lost (supervision failures, TCA message rejected) 3 = Not preferred (SD told OVHD to switch systems, QC redirect, access network ID) 4 = Redirect (ALMP received a redirect message) 5 = Power down received 6 = Offline received 7 = NAM change received 8 = Page message received 9 = Unspecified (ALMP rude close)

## Session layer connection (SESSIONC)

Event ID	SESSIONC
Cellular systems	EVDO
Record state	Always
Description	Recorded when session layer is connected.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) [Parameters for EVDO](#)**Parameters** [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

**Parameters for EVDO** [|Top|](#)

Name	Type	Description
Transaction ID	Integer	Session attempt transaction ID
Result	Integer	Session attempt result 0 = Received UATI assignment message 1 = Did not receive UATI assignment message
RATI	Integer	Session attempt RATI RATI used for opening a session.
Duration	Integer	Session attempt duration Time in slots taken to complete the attempt. Unit: slot
PN	Integer	Session attempt PN offset Pilot number of the sector that sent the UATI assignment message. Range: 0 – 511

CC	Integer	Session attempt color code Range: 0 – 255
Full UATI	String	Session attempt full UATI Full UATI as part of the UATI assignment message.

## Radio bearer information (RBI)

<b>Event ID</b>	RBI
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA
<b>Record state</b>	Always
<b>Description</b>	Recorded when UMTS radio bearer allocation is modified. Currently based on information received from the trace interface of the device.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA
#Header params	Integer	Number of header parameters
#Params/RB	Integer	Number of parameters per radio bearer
#RBs	Integer	Number of radio bearers

### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
RB ID	Integer	Radio bearer ID Range: 0 – 32
RLC ID	Integer	Radio bearer RLC ID Same as logical channel ID. Range: 0 – 20
TrCh ID	Integer	Radio bearer transport channel ID Range: 0 – 32
Direction	Integer	Radio bearer direction 0 = Uplink 1 = Downlink
Logical Ch	Integer	Radio bearer logical channel type Logical channel type for this radio bearer. 0 = BCCH 1 = PCCH 2 = CCCH 3 = DCCH 4 = CTCH 5 = DTCH 6 = SHCCH
RLC mode	Integer	Radio bearer RLC mode 0 = TM 1 = UM 2 = AM

Radio bearer ciphering	Integer	Radio bearer ciphering 0 = Disabled 1 = Enabled
TrCh type	Integer	Radio bearer transport channel type 0 = BCH 1 = CPCH 2 = DCH 3 = HS-DSCH 4 = PCH 5 = FACH 6 = RACH 7 = E-DCH

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
RB ID	Integer	Radio bearer ID Range: 0 – 32
RLC ID	Integer	Radio bearer RLC ID Same as logical channel ID. Range: 0 – 20
TrCh ID	Integer	Radio bearer transport channel ID Range: 0 – 32
Direction	Integer	Radio bearer direction 0 = Uplink 1 = Downlink
Logical Ch	Integer	Radio bearer logical channel type Logical channel type for this radio bearer. 0 = BCCH 1 = PCCH 2 = CCCH 3 = DCCH 4 = CTCH 5 = DTCH 6 = SHCCH
RLC mode	Integer	Radio bearer RLC mode 0 = TM 1 = UM 2 = AM
Radio bearer ciphering	Integer	Radio bearer ciphering 0 = Disabled 1 = Enabled
TrCh type	Integer	Radio bearer transport channel type 0 = BCH 1 = CPCH 2 = DCH 3 = HS-DSCH 4 = PCH 5 = FACH 6 = RACH 7 = E-DCH

## Transport channel information (TRCHI)

Event ID	TRCHI

<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA
<b>Record state</b>	Always
<b>Description</b>	Recorded when UMTS transport channel allocation is modified. Currently based on information received from the trace interface of the device.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA
#Header params	Integer	Number of header parameters
#Params/TrCh	Integer	Number of parameters per transport channel
#TrChs	Integer	Number of transport channels Range: 0 – 32

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
TrCh ID	Integer	Transport channel ID Range: 0 – 32
CCTrCh ID	Integer	Coded composite transport channel ID Range: 0 – 5
Direction	Integer	Direction Transport channel direction. 0 = Uplink 1 = Downlink 2 = Relay-link (control)
TrCh type	Integer	Transport channel type MAC PDUs are delivered using this channel. 0 = BCH 1 = CPCH 2 = DCH 3 = HS-DSCH 4 = PCH 5 = FACH 6 = RACH 7 = E-DCH
TrCh coding	Integer	Transport channel coding 0 = 1/2 and convolutional 1 = 1/3 and convolutional 2 = 1/3 and turbo 3 = No coding
CRC length	Integer	CRC length Range: 0 – 24
TTI	Integer	Transmission time interval Range: 0 – 80 Unit: ms
Rate-m. attr.	Integer	Rate-matching attribute Range: 1 – 256

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
TrCh ID	Integer	Transport channel ID Range: 0 – 32
CCTrCh ID	Integer	Coded composite transport channel ID Range: 0 – 5

Direction	Integer	Direction Transport channel direction. 0 = Uplink 1 = Downlink 2 = Relay-link (control)
TrCh type	Integer	Transport channel type MAC PDUs are delivered using this channel. 0 = BCH 1 = CPCH 2 = DCH 3 = HS-DSCH 4 = PCH 5 = FACH 6 = RACH 7 = E-DCH
TrCh coding	Integer	Transport channel coding 0 = 1/2 and convolutional 1 = 1/3 and convolutional 2 = 1/3 and turbo 3 = No coding
CRC length	Integer	CRC length Range: 0 – 24
TTI	Integer	Transmission time interval Range: 0 – 80 Unit: ms
Rate-m. attr.	Integer	Rate-matching attribute Range: 1 – 256

## Radio resource connection attempt (RRA)

<b>Event ID</b>	RRA
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded based on RRC signaling when RRC connection is attempted. This measurement event begins the RRC connection attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD and UMTS TD-SCDMA | Parameters for LTE |

### Parameters [\[Top\]](#)

Name	Type	Description
RRC context ID	Context	RRC context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for UMTS FDD and UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
RRC est. cause	Integer	RRC establishment cause

		0 = Originating conversation call 1 = Originating streaming call 2 = Originating interactive call 3 = Originating background call 4 = Originating subscribed traffic call 5 = Terminating conversational call 6 = Terminating streaming call 7 = Terminating interactive call 8 = Terminating background call 9 = Emergency call 10 = Inter-RAT cell reselection 11 = Inter-RAT cell change order 12 = Registration 13 = Detach 14 = Originating high priority signaling 15 = Originating low priority signaling 16 = Call re-establishment 17 = Terminating high priority signaling 18 = Terminating low priority signaling 19 = Terminating - cause unknown
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#### Parameters for LTE [|Top|](#)

Name	Type	Description
Est. cause	Integer	RRC establishment cause See 3GPP TS 136.331 subclause 6.2.2 RRCConnectionRequest. 0 = Emergency 1 = High priority access 2 = Mobile terminating access 3 = Mobile originating signaling 4 = Mobile originating data 5 = Delay tolerance access 6 = Mobile originating voice call 100 = NB mobile terminating access 101 = NB mobile originating signaling 102 = NB mobile originating data 103 = NB mobile originating exception data 104 = NB delay tolerance access

## Radio resource connection success (RRC)

<b>Event ID</b>	RRC
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
<b>Record state</b>	RRC connection attempt state
<b>Description</b>	Recorded based on RRC signaling when RRC connection is established. This measurement event begins the RRC connection state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
[Parameters for UMTS FDD and UMTS TD-SCDMA](#) | 
[Parameters for LTE](#) |

#### Parameters [|Top|](#)

Name	Type	Description
RRC context ID	Context	RRC context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD

		6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
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#### Parameters for UMTS FDD and UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#RRC requests	Integer	Number of RRC requests Number of RRC connection attempts before the RRC connection.

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
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## Radio resource connection failure (RRF)

Event ID	RRF
Cellular systems	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
Record state	RRC connection attempt state
Description	Recorded based on RRC signaling when RRC connection attempt fails. This measurement event terminates the RRC connection attempt state.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for UMTS FDD and UMTS TD-SCDMA](#) | [Parameters for LTE](#) |

#### Parameters [\[Top\]](#)

Name	Type	Description
RRC context ID	Context	RRC context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

#### Parameters for UMTS FDD and UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#RRC request before abort	Integer	Number of RRC requests before abort
RRC rej. status	Integer	RRC rejection status 1 = Network reject
RRC rej. cause	Integer	RRC rejection cause This is the same as a rejection cause in 3GPP TS 125.331 subclause 10.3.3.31. 0 = Congestion 1 = Unspecified

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
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RRC rej. status	Integer	RRC rejection status See 3GPP TS 36.331 subclause 6.2.2 RRCConnectionReject. 1 = Network reject
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## Radio resource connection release (RRD)

<b>Event ID</b>	RRD
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
<b>Record state</b>	RRC connection state
<b>Description</b>	Recorded based on RRC signaling when RRC connection is released. This measurement event terminates the RRC connection state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD and UMTS TD-SCDMA | Parameters for LTE |

### Parameters [|Top|](#)

Name	Type	Description
RRC context ID	Context	RRC context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for UMTS FDD and UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
RRC rel. status	Integer	RRC release status 1 = Normal release 2 = Dropped RRC connection
RRC rel. cause	Integer	RRC release cause This is the same as a release cause in 3GPP TS 125.331 subclause 10.3.3.32. 0 = Normal event 1 = Unspecified 2 = Pre-emptive release 3 = Congestion 4 = Re-establishment reject 5 = Directed signaling connection re-establishment 6 = User inactivity 1000 = T313 expired

### Parameters for LTE [|Top|](#)

Name	Type	Description
RRC rel. status	Integer	RRC release status 1 = Normal release 2 = Dropped RRC connection
RRC rel. cause	Integer	RRC release cause See 3GPP TS 36.331 subclause 6.2.2 RRCConnectionRelease. 0 = Load balancing TAU required 1 = Other



		2 = CS fallback high priority 3 = RRC suspend 100 = NB load balancing TAU required 101 = NB other 102 = NB RRC suspend
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## Radio resource connection re-establishment (RRRE)

<b>Event ID</b>	RRRE
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded based on RRC signaling after successful or failed RRC connection re-establishment.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
RRC context ID	Context	RRC context ID
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for LTE |Top|

Name	Type	Description
Re-est status	Integer	RRC re-establishment status See 3GPP TS 36.331 subclause 6.2.2 RRCConnectionReestablishment. 1 = Succeeded 2 = Failed 3 = Rejected
Re-est cause	Integer	RRC re-establishment cause See 3GPP TS 36.331 subclause 6.2.2 RRCConnectionReestablishment. 0 = Reconfiguration failure 1 = Handover failure 2 = Other failure 100 = NB reconfiguration failure 101 = NB other failure

## RAB allocation attempt (RABA)

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<b>Event ID</b>	RABA
<b>Cellular systems</b>	UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when radio access bearer allocation is attempted. This is based on the RRC signaling or information received from the trace interface. Also this can be logged to the beginning of the measurement file to indicate already established RAB.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD and LTE |

#### Parameters |Top|

Name	Type	Description
RAB context ID	Context	RAB context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

#### Parameters for UMTS FDD and LTE |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
RAB type	Integer	RAB type 1 = CS 2 = PS
RAB ID	Integer	RAB ID
#RAB RBs	Integer	Number of RAB RBs
#Params/RAB RB	Integer	Number of parameters per RAB RB
RAB RB ID	Integer	RAB RB ID

## RAB allocation success (RABC)

<b>Event ID</b>	RABC
<b>Cellular systems</b>	UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	RAB allocated attempt
<b>Description</b>	Recorded when radio access bearer allocation succeeded. This is based on RRC signaling or information received from the trace interface. Also this can be logged to the beginning of the measurement file to indicate already established RAB.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD and LTE |

#### Parameters |Top|

Name	Type	Description
RAB context ID	Context	RAB context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD

		7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
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#### Parameters for UMTS FDD and LTE [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
RAB type	Integer	RAB type 1 = CS 2 = PS
RAB ID	Integer	RAB ID

## RAB allocation failure (RABF)

<b>Event ID</b>	RABF
<b>Cellular systems</b>	UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	RAB allocation attempt state
<b>Description</b>	Recorded when radio access bearer allocation is failed. This is based on RRC signaling or information received from the trace interface.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
[Parameters for UMTS FDD and LTE](#) |
[Parameters for LTE re-establishment cause](#) |
[Parameters for UMTS failure cause](#) |
[Parameters for UMTS ISHO failure cause](#) |
[Parameters for GSM RR cause](#) |

#### Parameters [|Top|](#)

Name	Type	Description
RAB context ID	Context	RAB context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

#### Parameters for UMTS FDD and LTE [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
RAB type	Integer	RAB type 1 = CS 2 = PS
RAB ID	Integer	RAB ID
RAB fail. type	Integer	RAB failure cause type 1 = LTE re-establishment cause 2 = UMTS failure cause 3 = UMTS ISHO failure cause 4 = GSM RR cause

#### Parameters for LTE re-establishment cause [|Top|](#)

Name	Type	Description
Re-est cause	Integer	RRC re-establishment cause See 3GPP TS 36.331 subclause 6.2.2 RRCConnectionReestablishment. 0 = Reconfiguration failure 1 = Handover failure 2 = Other failure 100 = NB reconfiguration failure 101 = NB other failure

#### Parameters for UMTS failure cause [|Top|](#)

Name	Type	Description
RRC cause	Integer	RRC cause This is the same as a failure cause defined by 3GPP TS 25.331 subclause 10.3.3.13. 0 = Configuration unsupported 1 = Physical channel failure 2 = Incompatible simultaneous reconfiguration 3 = Protocol error 4 = Compressed mode runtime error 5 = Cell update occurred 6 = Invalid configuration 7 = Configuration incomplete 8 = Unsupported measurement 9 = MBMS session already received correctly 10 = Lower priority MBMS service

#### Parameters for UMTS ISHO failure cause [|Top|](#)

Name	Type	Description
Inter-RAT cause	Integer	Inter-RAT handover failure cause This is the same as a failure cause defined by 3GPP TS 25.331 subclause 10.3.8.6. 0 = Configuration unacceptable 1 = Physical channel failure 2 = Protocol error 3 = Inter-RAT protocol error 4 = Unspecified

#### Parameters for GSM RR cause [|Top|](#)

Name	Type	Description
RR cause	Integer	RR cause See 3GPP TS 144.018 subclause 10.5.2.31. 0 = Normal event 1 = Abnormal release, unspecified 2 = Abnormal release, channel unacceptable 3 = Abnormal release, timer expired 4 = Abnormal release, no activity on the radio path 5 = Pre-emptive release 6 = UTRAN configuration unknown 8 = Handover impossible, timing advance out of range 9 = Channel mode unacceptable 10 = Frequency not implemented 11 = Originator or talker leaving group call area 12 = Lower layer failure 65 = Call already cleared 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message type not compatible with protocol state 100 = Conditional IE error 101 = No cell allocation available 111 = Protocol error unspecified

## RAB release (RABD)

<b>Event ID</b>	RABD
<b>Cellular systems</b>	UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	RAB allocated state
<b>Description</b>	Recorded when radio access bearer is deallocated. This is based on RRC signaling or information received from the trace interface.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD, and LTE |

### Parameters [|Top|](#)

Name	Type	Description
RAB context ID	Context	RAB context ID
Measured sys.	Integer	Measured system 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for UMTS FDD, and LTE [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
RAB type	Integer	RAB type 1 = CS 2 = PS
RAB ID	Integer	RAB ID
RAB release type	Integer	RAB release type 1 = Network release 2 = UE release

## Packet bearer allocation attempt (PBA)

<b>Event ID</b>	PBA
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when the EPS bearer allocation is attempted. This is based on the NAS signaling or information received from the trace interface. Also this can be logged to the beginning of the measurement file to indicate already established EPS bearer.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE |

**Parameters** |Top|

Name	Type	Description
Packet bearer context ID	Context	Packet bearer context ID
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

**Parameters for LTE** |Top|

Name	Type	Description
PB type	Integer	Packet bearer type 1 = Default 2 = Dedicated

## Packet bearer allocation success (PBC)

<b>Event ID</b>	PBC
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Packet bearer allocation attempt state
<b>Description</b>	Recorded when the EPS bearer allocation succeeded. This is based on NAS signaling or information received from the trace interface. Also this can be logged to the beginning of the measurement file to indicate already established EPS bearer.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

|Parameters |Parameters for LTE |

**Parameters** |Top|

Name	Type	Description
Packet bearer context ID	Context	Packet bearer context ID
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

**Parameters for LTE** |Top|

Name	Type	Description
PB ID	Integer	Packet bearer identity With the LTE this is the same as the EPS bearer ID. See 3GPP TS 125.007 subclause 11.2.3.1.5. Range: 5 – 15
Linked PB ID	Integer	Packet bearer identity (linked) Defines the default bearer ID for the dedicated bearer. Range: 5 – 15
PB QCI	Integer	Packet bearer QoS class identifier See 3GPP TS 123.203 subclause 6.1.7. 1 = QCI 1 Conversational voice. GBR, priority 2, delay 100 ms, PER 10E-2. 2 = QCI 2

		<p>Conversational video. GBR, priority 4, delay 150 ms, PER 10E-3.</p> <p>3 = QCI 3 Real time gaming. GBR, priority 3, delay 50 ms, PER 10E-3.</p> <p>4 = QCI 4 Non-conversational video (buffered streaming). GBR, priority 5, delay 300 ms, PER 10E-6.</p> <p>5 = QCI 5 IMS signaling. Non-GBR, priority 1, delay 100 ms, PER 10E-6.</p> <p>6 = QCI 6 Video (buffered streaming), TCP-based application protocols. Non-GBR, priority 6, delay 300 ms, PER 10E-6.</p> <p>7 = QCI 7 Voice, live streaming, interactive gaming. Non-GBR, priority 7, delay 100 ms, PER 10E-3.</p> <p>8 = QCI 8 Video (buffered streaming), TCB-based application protocols. Non-GBR, priority 8, delay 300 ms, PER 10E-6.</p> <p>9 = QCI 9 Video (buffered streaming), TCB-based application protocols. Non-GBR, priority 9, delay 300 ms, PER 10E-6.</p> <p>65 = QCI 65 Mission critical user plane push-to-talk voice. GBR, priority 0.7, delay 75 ms, PER 10E-2.</p> <p>66 = QCI 66 Non-mission-critical user plane push-to-talk voice. GBR, priority 2, delay 100 ms, PER 10E-2.</p> <p>69 = QCI 69 Mission critical delay sensitive signalling. Non-GBR, priority 0.5, delay 60 ms, PER 10E-6.</p> <p>70 = QCI 70 Mission critical data (e.g. example services are the same as QCI 6/8/9). Non-GBR, priority 5.5, delay 200 ms, PER 10E-6.</p> <p>75 = QCI 75 GBR V2X messages.</p> <p>79 = QCI 79 Non-GBR V2X messages.</p> <p>Range: 1 – 255</p>
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## Packet bearer allocation failure (PBF)

<b>Event ID</b>	PBF
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Packet bearer allocation attempt state
<b>Description</b>	Recorded when the EPS bearer allocation failed. This is based on NAS signaling or information received from the trace interface.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Packet bearer context ID	Context	Packet bearer context ID
Measured sys.	Integer	Measured system

		7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
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## Parameters for LTE [\[Top\]](#)

Name	Type	Description
ESM cause	Integer	EPS bearer reject cause 8 = Operator determined barring 24 = MBMS bearer capabilities insufficient for the service 25 = LLC or SMDCP failure (A/Gb mode only) 26 = Insufficient resources 27 = Missing or unknown APN 28 = Unknown PDP address or PDP type 29 = User authentication failed 30 = Activation rejected by GGSN, serving GW, or PDN GW 31 = Activation rejected, unspecified 32 = Service option not supported 33 = Requested service option not subscribed 34 = Service option temporarily out of order 35 = NSAPI/PTI already used 36 = Regular deactivation 37 = QoS not accepted 38 = Network failure 39 = Reactivation requested 40 = Feature not supported 41 = Semantic error in the TFT operation 42 = Syntactical error in the TFT operation 43 = Unknown PDP context or bearer identity 44 = Semantic errors in packet filter(s) 45 = Syntactical errors in packet filter(s) 46 = PDP context without TFT already activated 47 = Multicast group membership time-out or PTI mismatch 49 = Last PDN disconnection not allowed 50 = PDN type IPv4 only allowed 51 = PDN type IPv6 only allowed 52 = Single address bearers only allowed 53 = ESM information not received 54 = PDN connection does not exist 55 = Multiple PDN connections for a given APN not allowed 56 = Collision with network initiated request 59 = Unsupported QCI value 81 = Invalid transaction identifier or PTI value 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message not compatible with protocol state. 99 = Information element non-existent or not implemented 100 = Conditional IE error 101 = Message not compatible with protocol state 111 = Protocol error, unspecified 112 = APN restriction value incompatible with active PDP context

## Packet bearer release (PBD)

Event ID	PBD
Cellular systems	LTE FDD,LTE TDD
Record state	Packet bearer allocated state



<b>Description</b>	Recorded when the EPS bearer is released. This is based on NAS signaling or information received from the trace interface.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE |

#### Parameters [|Top|](#)

Name	Type	Description
Packet bearer context ID	Context	Packet bearer context ID
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

#### Parameters for LTE [|Top|](#)

Name	Type	Description
ESM cause	Integer	EPS bearer release cause 8 = Operator determined barring 24 = MBMS bearer capabilities insufficient for the service 25 = LLC or SMDCP failure (A/Gb mode only) 26 = Insufficient resources 27 = Missing or unknown APN 28 = Unknown PDP address or PDP type 29 = User authentication failed 30 = Activation rejected by GGSN, serving GW, or PDN GW 31 = Activation rejected, unspecified 32 = Service option not supported 33 = Requested service option not subscribed 34 = Service option temporarily out of order 35 = NSAPI/PTI already used 36 = Regular deactivation 37 = QoS not accepted 38 = Network failure 39 = Reactivation requested 40 = Feature not supported 41 = Semantic error in the TFT operation 42 = Syntactical error in the TFT operation 43 = Unknown PDP context or bearer identity 44 = Semantic errors in packet filter(s) 45 = Syntactical errors in packet filter(s) 46 = PDP context without TFT already activated 47 = Multicast group membership time-out or PTI mismatch 49 = Last PDN disconnection not allowed 50 = PDN type IPv4 only allowed 51 = PDN type IPv6 only allowed 52 = Single address bearers only allowed 53 = ESM information not received 54 = PDN connection does not exist 55 = Multiple PDN connections for a given APN not allowed 56 = Collision with network initiated request 59 = Unsupported QCI value 81 = Invalid transaction identifier or PTI value 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message not compatible with protocol state. 99 = Information element non-existent or not implemented 100 = Conditional IE error 101 = Message not compatible with protocol state 111 = Protocol error, unspecified 112 = APN restriction value incompatible with active PDP context

## Ciphering info (CIPi)

Event ID	CIPi
Cellular systems	TETRA
Record state	Always
Description	Recorded when ciphering information is modified.
Tools	Nemo Outdoor

[Parameters](#) [Parameters for TETRA](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 2 = TETRA

### Parameters for TETRA [|Top](#)

Name	Type	Description
Air encryption	Integer	Air interface encryption 0 = Disabled 1 = SCK 2 = DCK
KSG	String	Ciphering KSG
SCK	String	Ciphering SCK

## Layer 3 signaling message (L3SM)

Event ID	L3SM
Cellular systems	GSM,TETRA,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,GAN WLAN,AMPS,DAMPS,iDEN,ISDN
Record state	Always
Description	Recorded when a Layer 3 or an NAS signaling message is sent or received.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) [Parameters for GSM](#) [Parameters for TETRA](#) [Parameters for UMTS and LTE](#) [Parameters for cdmaOne and CDMA 1x](#) [Parameters for GAN WLAN](#) [Parameters for AMPS and DAMPS](#) [Parameters for iDEN](#) [Parameters for ISDN](#)

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD

		6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 21 = GAN WLAN 51 = AMPS 52 = NAMPS 53 = DAMPS 55 = iDEN 61 = ISDN
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#### Parameters for GSM [|Top|](#)

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
Subchannel	String	Layer3 subchannel The subchannel name that was used for signaling in GSM. If the specific channel name is unknown, the channel group name; e.g., BCH or CCCH, is written in file. BCH channels (FCCH, SCH, BCCH) CCCH channels (PCH, RACH, AGCH) DCCH channels (SDCCH, SACCH, FACCH) TCH channels (TCH) Packet channels (PACCH, PDTCH).
Channel	Integer	Layer3 channel
BSIC	Integer	Layer3 BSIC Range: 0 – 63
Type	Integer	Layer3 message type 1 = Normal 2 = Short L2 header 3 = 8 bit access burst 4 = 11 bit access burst 5 = 11 bit EGRPS access burst 6 = Message without header
L3 data	String (hex)	Layer3 data

#### Parameters for TETRA [|Top|](#)

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
Subchannel	String	Layer3 subchannel The channel type: MCCH, TCH.
L3 data	String (hex)	Layer3 data

#### Parameters for UMTS and LTE [|Top|](#)

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
Subchannel	String	Layer3 subchannel
Channel	Integer	Layer3 channel
SC	Integer	Layer3 scrambling code Scrambling code for UMTS FDD, cell parameters ID for UMTS

		TD-SCDMA, and physical cell id for LTE. Range: 0 – 511
L3 data	String (hex)	Layer3 data

#### Parameters for cdmaOne and CDMA 1x [|Top|](#)

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
Channel type	String	Layer3 channel type The channel type: SCH, DPCH, DACH, DTCH, FDTCH, RDTCH, and GCSNA.
P_REV	Integer	Layer3 P_REV 1 = J-STD-008 in PCS Band Only 2 = IS-95 in Cellular Band Only 3 = IS-95A + TSB74 4 = IS-95B Partial 5 = IS-95B Full 6 = IS-2000 Release 0 7 = IS-2000 Release A 8 = IS-2000 Release B Partial 9 = IS-2000 Release B Full 10 = IS-2000 Release C 11 = IS-2000 Release D (1xEV-DV)
L3 data	String (hex)	Layer3 data

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
L3 data	String (hex)	Layer3 data

#### Parameters for AMPS and DAMPS [|Top|](#)

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
Channel type	String	Layer3 channel type The channel type: ACC, AVC, DCCH, DTC, SCH, DPCH, DACH, DTCH.
L3 data	String (hex)	Layer3 data

#### Parameters for iDEN [|Top|](#)

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
Subchannel	String	Layer3 subchannel Possible channel types are BCCH, CCCH, TCCH, RACH, DCCH, PCH, PBCH.
L3 data	String (hex)	Layer3 data

**Parameters for ISDN** |Top|

Name	Type	Description
Direction	Integer	Layer3 direction 1 = Uplink 2 = Downlink
L3 msg	String	Layer3 message
Subchannel	String	Layer3 subchannel Possible channel types are CCS and CAS. See more <a href="https://en.wikipedia.org/wiki/Common-channel_signaling">https://en.wikipedia.org/wiki/Common-channel_signaling</a> .
L3 data	String (hex)	Layer3 data

## Layer 2 signaling message (L2SM)

Event ID	L2SM
Cellular systems	GSM
Record state	Always
Description	Recorded when a Layer 3 or an NAS signaling message is sent or received.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

|Parameters |Parameters for GSM |

**Parameters** |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM

**Parameters for GSM** |Top|

Name	Type	Description
Direction	Integer	Layer2 direction 1 = Uplink 2 = Downlink
L2 msg	String	Layer2 message
Subchannel	String	Layer2 subchannel The subchannel name that was used for signaling in GSM. If the specific channel name is unknown, the channel group name; e.g., BCH or CCCH, is written in file. BCH channels (FCCH, SCH, BCCH) CCCH channels (PCH, RACH, AGCH) DCCH channels (SDCCH, SACCH, FACCH) TCH channels (TCH) Packet channels (PACCH, PDTCH).
ARFCN	Integer	Layer2 channel
BSIC	Integer	Layer2 BSIC Range: 0 – 63
Type	Integer	Layer2 message type 1 = Normal 2 = Short L2 header 3 = 8 bit access burst 4 = 11 bit access burst 5 = 11 bit EGRPS access burst 6 = Message without header

L2 data	String (hex)	Layer2 data
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## RRC signaling message (RRCSM)

<b>Event ID</b>	RRCSM
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when an RRC signaling message is sent or received.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters | Parameters for UMTS | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for UMTS |Top|

Name	Type	Description
Direction	Integer	RRC direction 1 = Uplink 2 = Downlink
RRC msg	String	RRC message name
Subchannel	String	RRC subchannel Defines the used logical channel or combination of logical and transport channel. Possible values are DCCH, CCCH, PCCH, BCCH, BCCH_BCH, BCCH_FACH, and MCCH.
UARFCN	Integer	RRC channel
SC	Integer	RRC scrambling code Range: 0 – 511
RRC data	String (hex)	RRC data

### Parameters for LTE |Top|

Name	Type	Description
Direction	Integer	RRC direction 1 = Uplink 2 = Downlink
RRC msg	String	RRC message name
Subchannel	String	RRC subchannel Defines the used logical channel or combination of logical and transport channel. Possible values are BCCH-BCH, BCCH-SCH, PCCH, CCCH, DCCH, MCCH, NB-DCCH, NB-CCCH, NB-PCCH, NB-BCCH-SCH, NB-BCCH-SCH.
EARFCN	Integer	RRC channel

PCI	Integer	RRC physical cell ID Range: 0 – 503
RRC data	String (hex)	RRC data

## RLC signaling message (RLCSM)

<b>Event ID</b>	RLCSM
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when an RLC signaling message is sent or received.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

Parameters | Parameters for UMTS FDD |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

### Parameters for UMTS FDD |Top|

Name	Type	Description
Direction	Integer	RLC direction 1 = Uplink 2 = Downlink
RLC msg	String	RLC message
Subchannel	String	RLC subchannel The subchannel that was used for signaling in UMTS. For system information messages, the subchannel is a combination of the logical channel and the transport channel (CCCH, DCCH, BCCH, PCCH, SHCCH).
RB	Integer	RLC radio bearer Range: 0 – 32
RLC mode	Integer	RLC mode 0 = TM 1 = UM 2 = AM
Length indicator	Integer	RLC length indicator size Defines the size of the RLC length indicator field. Valid values are 0, 7, and 15. Range: 0 – 15 Unit: bit
RLC data	String (hex)	RLC data

## MAC signaling message (MACSM)

Event ID	MACSM
Cellular systems	GSM,WiMAX
Record state	Always
Description	Recorded when an MAC signaling message is sent or received.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Parameters for GSM](#) | [Parameters for WiMAX](#) |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 25 = WiMAX

### Parameters for GSM [|Top|](#)

Name	Type	Description
Direction	Integer	RLC/MAC direction 1 = Uplink 2 = Downlink
RLC/MAC msg	String	RLC/MAC message
Subchannel	String	RLC/MAC subchannel The subchannel name that was used for signaling (PRACH, PTCCH, PCCCH, PACCH or PDTCH).
Type	Integer	RLC/MAC message type 1 = Normal 2 = Short L2 header 3 = 8 bit access burst 4 = 11 bit access burst 5 = 11 bit EGRPS access burst 6 = Message without header
RLC/MAC data	String (hex)	RLC/MAC data

### Parameters for WiMAX [|Top|](#)

Name	Type	Description
Direction	Integer	MAC direction 1 = Uplink 2 = Downlink
MAC msg.	String	MAC message
Frame number	Integer	MAC frame number
MAC data	String (hex)	MAC data Contents of the signaling message in hexadecimal values.
MAC ver	Integer	WiMAX MAC version 5 = 802.16e-2005 6 = 802.16/cor2-2007

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## LLC signaling message (LLCSM)



<b>Event ID</b>	LLCSM
<b>Cellular systems</b>	GSM,TETRA
<b>Record state</b>	Always
<b>Description</b>	Recorded when an LLC signaling message is sent or received.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#)
[Parameters for GSM](#)
[Parameters for TETRA](#)

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA

#### Parameters for GSM [|Top|](#)

Name	Type	Description
Direction	Integer	LLC direction 1 = Uplink 2 = Downlink
LLC msg	String	LLC message The LLC message name in text format.
LLC data	String (hex)	LLC data Contents of the LLC message in hexadecimal values.

#### Parameters for TETRA [|Top|](#)

Name	Type	Description
Direction	Integer	LLC direction 1 = Uplink 2 = Downlink
LLC msg	String	LLC message The LLC message name in text format.
LLC data	String (hex)	LLC data Contents of the LLC message in hexadecimal values.

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## SNP signaling message (SNPSM)

<b>Event ID</b>	SNPSM
<b>Cellular systems</b>	EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when an SNP signaling message is sent or received.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#)
[Parameters for EVDO](#)

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 12 = EVDO

**Parameters for EVDO** [|Top](#)

Name	Type	Description
Direction	Integer	SNP direction 1 = Uplink 2 = Downlink
SNP msg. name	String	SNP message name
SNP ch type	String	SNP channel type
SNP layer	String	SNP layer
Protocol subtype	Integer	SNP protocol subtype
SNP data	String (hex)	SNP data

## RRLP signaling message (RRLPSM)

Event ID	RRLPSM
Cellular systems	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN
Record state	Always
Description	Recorded when an RRLP signaling message is sent or received.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for GSM, UMTS FDD, UMTS TD-SCDMA, and GAN WLAN](#) |**Parameters** [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 21 = GAN WLAN

**Parameters for GSM, UMTS FDD, UMTS TD-SCDMA, and GAN WLAN** [|Top](#)

Name	Type	Description
Direction	Integer	RRLP direction 1 = Uplink 2 = Downlink
RRLP msg	String	RRLP message
Subchannel	String	RRLP subchannel
RRLP data	String (hex)	RRLP data Contents of the RRLP message in hexadecimal values.

## LPP signaling message (LPPSM)

Event ID	LPPSM
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when a LTE positioning protocol signaling message is sent or received.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for LTE](#) |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for LTE [|Top|](#)

Name	Type	Description
Direction	Integer	LPP direction 1 = Uplink 2 = Downlink
LPP msg	String	LPP message
LPP data	String (hex)	LPP data Contents of the LTE positioning protocol message in hexadecimal values.

## GAN signaling message (GANSM)

Event ID	GANSM
Cellular systems	GAN WLAN
Record state	Always
Description	Recorded when a GAN signaling message is sent or received.
Tools	Nemo Outdoor

[Parameters](#) | [Parameters for GAN WLAN](#) |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 21 = GAN WLAN

### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
Direction	Integer	GAN direction 1 = Uplink 2 = Downlink

GAN msg.	String	GAN message
Subchannel	String	GAN subchannel
GAN msg. data	String (hex)	GAN message data

## SIP signaling message (SIPSM)

<b>Event ID</b>	SIPSM
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when an SIP signaling message is sent or received.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 20 = WLAN 21 = GAN WLAN 25 = WiMAX 50 = NMT 51 = AMPS 52 = NAMPS 53 = DAMPS 54 = ETACS 55 = iDEN 60 = PSTN 61 = ISDN 62 = IP 65 = DVB-H
Direction	Integer	SIP direction 1 = Uplink 2 = Downlink
SIP name	String	SIP message
SIP data	String (hex)	SIP data Contents of the SIP message in hexadecimal values.

## RTP signaling message (RTPSM)

<b>Event ID</b>	RTPSM
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when an RTP signaling message is sent or received.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO 20 = WLAN 21 = GAN WLAN 25 = WiMAX 50 = NMT 51 = AMPS 52 = NAMPS 53 = DAMPS 54 = ETACS 55 = iDEN 60 = PSTN 61 = ISDN 62 = IP 65 = DVB-H
Direction	Integer	RTP direction 1 = Uplink 2 = Downlink
RTP message	String	RTP message
RTP SEQ N	Integer	RTP message sequence number Range: 0 – 65535
RTP data	String (hex)	RTP data

## Packet session activation attempt (PAA)

<b>Event ID</b>	PAA
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,CDMA 1x,EVDO,GAN WLAN,WiMAX,iDEN
<b>Record state</b>	Idle state
<b>Description</b>	Recorded when the user initiates the packet session activation attempt. If this information is not available, the measurement event is recorded with both GSM and UMTS when ACTIVATE_PDP_CONTEXT_REQUEST signaling message is sent to the network. Note

that PAA, PAC, PAF, and PAD measurement events are not an exact match with the PDP context in GSM and UMTS but are instead used to describe "general" packet session. E.g. some modem initialization or attach can be done before the PDP CONTEXT REQUEST signaling message is sent to the network. If the packet session is active in the beginning of the measurement, the PAA and PAC pair is recorded immediately at the beginning of the measurement. This measurement event begins the packet activation attempt state.

**Tools** Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM, UMTS, and LTE | Parameters for CDMA 1x and EVDO | Parameters for iDEN |

## Parameters [\[Top\]](#)

Name	Type	Description
Packet session context ID	Context	Packet session context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 11 = CDMA 1x 12 = EVDO 55 = iDEN

## Parameters for GSM, UMTS, and LTE [\[Top\]](#)

Name	Type	Description
Initiator	Integer	Initiator 1 = Mobile station initiated 2 = Network station initiated
Protocol type	Integer	Packet protocol type 1 = IPv4 2 = IPv6 3 = IPv4v6
APN	String	Access point name
Static IP	String	Requested packet protocol address If static IP address is used, this is own IP address in string format between quotes. If dynamic IP allocation is used, IP address is 0.0.0.0.
Header compr.	Integer	Header compression 0 = Off 1 = On (manufacturer preferred compression) 2 = RFC1144 (VanJacobsen) 3 = RFC2507 (Degermark) 4 = RFC3095 (RoHC)
Compression	Integer	Data compression 0 = Off 1 = On (manufacturer preferred compression) 2 = V.42bis 3 = V.44

## Parameters for CDMA 1x and EVDO [\[Top\]](#)

Name	Type	Description
Initiator	Integer	Initiator 1 = Mobile station initiated 2 = Network station initiated
Protocol type	Integer	Packet protocol type 1 = IPv4 2 = IPv6 3 = IPv4v6

**Parameters for iDEN** |Top|

Name	Type	Description
Initiator	Integer	Initiator 1 = Mobile station initiated 2 = Network station initiated
Protocol type	Integer	Packet protocol type 1 = IPv4 2 = IPv6 3 = IPv4v6

## Packet session activation failed (PAF)

Event ID	PAF
Cellular systems	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,CDMA 1x,EVDO,GAN WLAN,WiMAX,iDEN
Record state	Packet activation attempt state
Description	Recorded when packet session activation attempt fails. The failure can be based on signaling, trace interface, or Microsoft Windows Operating System RAS causes. This measurement event terminates the packet activation attempt state.
Tools	Nemo Outdoor, Nemo Handy

Parameters |

**Parameters** |Top|

Name	Type	Description
Packet session context ID	Context	Packet session context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 25 = WiMAX 55 = iDEN
Fail status	Integer	Packet session connection failure status 1 = User abort 2 = Network reject (SM cause) 3 = Mobile reject (SM cause) 4 = Timeout 5 = PPP error (OS RAS cause) 6 = Test system failure (OS RAS cause) 7 = No service
Deact. cause	Integer	Packet session deactivation cause 8 = Operator determined barring 24 = MBMS bearer capabilities insufficient for the service 25 = LLC or SMDCP failure (A/Gb mode only) 26 = Insufficient resources 27 = Missing or unknown APN 28 = Unknown PDP address or PDP type 29 = User authentication failed 30 = Activation rejected by GGSN, serving GW, or PDN GW

31 = Activation rejected, unspecified  
32 = Service option not supported  
33 = Requested service option not subscribed  
34 = Service option temporarily out of order  
35 = NSAPI/PTI already used  
36 = Regular deactivation  
37 = QoS not accepted  
38 = Network failure  
39 = Reactivation requested  
40 = Feature not supported  
41 = Semantic error in the TFT operation  
42 = Syntactical error in the TFT operation  
43 = Unknown PDP context or bearer identity  
44 = Semantic errors in packet filter(s)  
45 = Syntactical errors in packet filter(s)  
46 = PDP context without TFT already activated  
47 = Multicast group membership time-out or PTI mismatch  
49 = Last PDN disconnection not allowed  
50 = PDN type IPv4 only allowed  
51 = PDN type IPv6 only allowed  
52 = Single address bearers only allowed  
53 = ESM information not received  
54 = PDN connection does not exist  
55 = Multiple PDN connections for a given APN not allowed  
56 = Collision with network initiated request  
59 = Unsupported QCI value  
81 = Invalid transaction identifier or PTI value  
95 = Semantically incorrect message  
96 = Invalid mandatory information  
97 = Message type non-existent or not implemented  
98 = Message not compatible with protocol state.  
99 = Information element non-existent or not implemented  
100 = Conditional IE error  
101 = Message not compatible with protocol state  
111 = Protocol error, unspecified  
112 = APN restriction value incompatible with active PDP context  
600 = An operation is pending.  
601 = An invalid port handle was detected.  
602 = The specified port is already open.  
603 = The caller's buffer is too small.  
604 = Incorrect information was specified.  
605 = The port information cannot be set.  
606 = The specified port is not connected.  
607 = An invalid event was detected.  
608 = A device was specified that does not exist.  
609 = A device type was specified that does not exist.  
610 = An invalid buffer was specified.  
611 = A route was specified that is not available.  
612 = A route was specified that is not allocated.  
613 = An invalid compression was specified.  
614 = There were insufficient buffers available.  
615 = The specified port was not found.  
616 = An asynchronous request is pending.  
617 = The modem (or other connecting device) is already disconnecting.  
618 = The specified port is not open.  
619 = The specified port is not connected.  
620 = No endpoints could be determined.  
621 = The system could not open the phone book file.  
622 = The system could not load the phone book file.  
623 = The system could not find the phone book entry for this connection.  
624 = The system could not update the phone book file.  
625 = The system found invalid information in the phone book file.  
626 = A string could not be loaded.  
627 = A key could not be found.  
628 = The connection was closed.  
629 = The connection was closed by the remote computer.  
630 = The modem (or other connecting device) was disconnected due to hardware failure.



631 = The user disconnected the modem (or other connecting device).  
632 = An incorrect structure size was detected.  
633 = The modem (or other connecting device) is already in use or is not configured properly.  
634 = Your computer could not be registered on the remote network.  
635 = There was an unknown error.  
636 = The device attached to the port is not the one expected.  
637 = A string was detected that could not be converted.  
638 = The request has timed out.  
639 = No asynchronous net is available.  
640 = An error has occurred involving NetBIOS.  
641 = The server cannot allocate NetBIOS resources needed to support the client.  
642 = One of your computer's NetBIOS names is already registered on the remote network.  
643 = A network adapter at the server failed.  
644 = You will not receive network message popups.  
645 = There was an internal authentication error.  
646 = The account is not permitted to log on at this time of day.  
647 = The account is disabled.  
648 = The password for this account has expired.  
649 = The account does not have permission to dial in.  
650 = The remote access server is not responding.  
651 = The modem (or other connecting device) has reported an error.  
652 = There was an unrecognized response from the modem (or other connecting device).  
653 = A macro required by the modem (or other connecting device) was not found in the device.INF file.  
654 = A command or response in the device.INF file section refers to an undefined macro.  
655 = The macro was not found in the device.INF file section.  
656 = The macro in the device.INF file section contains an undefined macro.  
657 = The device.INF file could not be opened.  
658 = The device name in the device.INF or media.INI file is too long.  
659 = The media.INI file refers to an unknown device name.  
660 = The device.INF file contains no responses for the command.  
661 = The device.INF file is missing a command.  
662 = There was an attempt to set a macro not listed in device.INF file section.  
663 = The media.INI file refers to an unknown device type.  
664 = The system has run out of memory.  
665 = The modem (or other connecting device) is not properly configured.  
666 = The modem (or other connecting device) is not functioning.  
667 = The system was unable to read the media.INI file.  
668 = The connection was terminated.  
669 = The usage parameter in the media.INI file is invalid.  
670 = The system was unable to read the section name from the media.INI file.  
671 = The system was unable to read the device type from the media.INI file.  
672 = The system was unable to read the device name from the media.INI file.  
673 = The system was unable to read the usage from the media.INI file.  
674 = The system was unable to read the maximum connection BPS rate from the media.INI file.  
675 = The system was unable to read the maximum carrier connection speed from the media.INI file.  
676 = The phone line is busy.  
677 = A person answered instead of a modem (or other connecting device).  
678 = There was no answer.  
679 = The system could not detect the carrier.  
680 = There was no dial tone.

681 = The modem (or other connecting device) reported a general error.  
682 = There was an error in writing the section name.  
683 = There was an error in writing the device type.  
684 = There was an error in writing the device name.  
685 = There was an error in writing the maximum connection speed.  
686 = There was an error in writing the maximum carrier speed.  
687 = There was an error in writing the usage.  
688 = There was an error in writing the default-off.  
689 = There was an error in reading the default-off.  
690 = ERROR\_EMPTY\_INI\_FILE  
691 = Access was denied because the username and/or password was invalid on the domain.  
692 = There was a hardware failure in the modem (or other connecting device).  
693 = ERROR\_NOT\_BINARY\_MACRO  
694 = ERROR\_DCB\_NOT\_FOUND  
695 = The state machines are not started.  
696 = The state machines are already started.  
697 = The response looping did not complete.  
698 = A response keyname in the device.INF file is not in the expected format.  
699 = The modem (or other connecting device) response caused a buffer overflow.  
700 = The expanded command in the device.INF file is too long.  
701 = The modem moved to a connection speed not supported by the COM driver.  
702 = Device response received when none expected.  
703 = The connection needs information from you, but the application does not allow user interaction.  
704 = The callback number is invalid.  
705 = The authorization state is invalid.  
706 = ERROR\_WRITING\_INITBPS  
707 = There was an error related to the X.25 protocol.  
708 = The account has expired.  
709 = There was an error changing the password on the domain. The password might have been too short or might have matched a previously used password.  
710 = Serial overrun errors were detected while communicating with the modem.  
711 = The Remote Access Service Manager could not start. Additional information is provided in the event log.  
712 = The two-way port is initializing. Wait a few seconds and redial.  
713 = No active ISDN lines are available.  
714 = No ISDN channels are available to make the call.  
715 = Too many errors occurred because of poor phone line quality.  
716 = The Remote Access Service IP configuration is unusable.  
717 = No IP addresses are available in the static pool of Remote Access Service IP addresses.  
718 = The connection timed out waiting for a valid response from the remote computer.  
719 = The connection was terminated by the remote computer.  
720 = The connection attempt failed because your computer and the remote computer could not agree on PPP control protocols.  
721 = The remote computer is not responding.  
722 = Invalid data was received from the remote computer. This data was ignored.  
723 = The phone number, including prefix and suffix, is too long.  
724 = The IPX protocol cannot dial out on the modem (or other connecting device) because this computer is not configured for dialing out (it is an IPX router).  
725 = The IPX protocol cannot dial in on the modem (or other connecting device) because this computer is not configured for dialing in (the IPX router is not installed).  
726 = The IPX protocol cannot be used for dialing out on more than one modem (or other connecting device) at a time.  
727 = Cannot access TCPCFG.DLL.

728 = The system cannot find an IP adapter.  
729 = SLIP cannot be used unless the IP protocol is installed.  
730 = Computer registration is not complete.  
731 = The protocol is not configured.  
732 = Your computer and the remote computer could not agree on PPP control protocols.  
733 = Your computer and the remote computer could not agree on PPP control protocols.  
734 = The PPP link control protocol was terminated.  
735 = The requested address was rejected by the server.  
736 = The remote computer terminated the control protocol.  
737 = Loopback was detected.  
738 = The server did not assign an address.  
739 = The authentication protocol required by the remote server cannot use the stored password. Redial, entering the password explicitly.  
740 = An invalid dialing rule was detected.  
741 = The local computer does not support the required data encryption type.  
742 = The remote computer does not support the required data encryption type.  
743 = The remote computer requires data encryption.  
744 = The system cannot use the IPX network number assigned by the remote computer. Additional information is provided in the event log.  
745 = ERROR\_INVALID\_SMM  
746 = ERROR\_SMM\_UNINITIALIZED  
747 = ERROR\_NO\_MAC\_FOR\_PORT  
748 = ERROR\_SMM\_TIMEOUT  
749 = ERROR\_BAD\_PHONE\_NUMBER  
750 = ERROR\_WRONG\_MODULE  
751 = The callback number contains an invalid character. Only the following 18 characters are allowed: 0 to 9, T, P, W, (, ), -, @, and space.  
752 = A syntax error was encountered while processing a script.  
753 = The connection could not be disconnected because it was created by the multi-protocol router.  
754 = The system could not find the multi-link bundle.  
755 = The system cannot perform automated dial because this connection has a custom dialer specified.  
756 = This connection is already being dialed.  
757 = Remote Access Services could not be started automatically. Additional information is provided in the event log.  
758 = Internet Connection Sharing is already enabled on the connection.  
759 = An error occurred while the existing Internet Connection Sharing settings were being changed.  
760 = An error occurred while routing capabilities were being enabled.  
761 = An error occurred while Internet Connection Sharing was being enabled for the connection.  
762 = An error occurred while the local network was being configured for sharing.  
763 = Internet Connection Sharing cannot be enabled. There is more than one LAN connection other than the connection to be shared.  
764 = No smart card reader is installed.  
765 = Internet Connection Sharing cannot be enabled. A LAN connection is already configured with the IP address that is required for automatic IP addressing.  
766 = A certificate could not be found. Connections that use the L2TP protocol over IPSec require the installation of a machine certificate, also known as a computer certificate.  
767 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network has more than one IP address configured. Please reconfigure the LAN connection with a single IP address before enabling Internet Connection Sharing.  
768 = The connection attempt failed because of failure to encrypt data.

769 = The specified destination is not reachable.  
770 = The remote computer rejected the connection attempt.  
771 = The connection attempt failed because the network is busy.  
772 = The remote computer's network hardware is incompatible with the type of call requested.  
773 = The connection attempt failed because the destination number has changed.  
774 = The connection attempt failed because of a temporary failure. Try connecting again.  
775 = The call was blocked by the remote computer.  
776 = The call could not be connected because the remote computer has invoked the Do Not Disturb feature.  
777 = The connection attempt failed because the modem (or other connecting device) on the remote computer is out of order.  
778 = It was not possible to verify the identity of the server.  
779 = To dial out using this connection you must use a smart card.  
780 = An attempted function is not valid for this connection.  
781 = The encryption attempt failed because no valid certificate was found.  
782 = Connection Sharing (NAT) is currently installed as a routing protocol, and must be removed before enabling Internet Connection Sharing.  
783 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network is either not present, or is disconnected from the network. Please ensure that the LAN adapter is connected before enabling Internet Connection Sharing.  
784 = You cannot dial using this connection at logon time, because it is configured to use a user name different than the one on the smart card. If you want to use it at logon time, you must configure it to use the user name on the smart card.  
785 = You cannot dial using this connection at logon time, because it is not configured to use a smart card. If you want to use it at logon time, you must edit the properties of this connection so that it uses a smart card.  
786 = The L2TP connection attempt failed because there is no valid machine certificate on your computer for security authentication.  
787 = The L2TP connection attempt failed because the security layer could not authenticate the remote computer.  
788 = The L2TP connection attempt failed because the security layer could not negotiate compatible parameters with the remote computer.  
789 = The L2TP connection attempt failed because the security layer encountered a processing error during initial negotiations with the remote computer.  
790 = The L2TP connection attempt failed because certificate validation on the remote computer failed.  
791 = The L2TP connection attempt failed because security policy for the connection was not found.  
792 = The L2TP connection attempt failed because security negotiation timed out.  
793 = The L2TP connection attempt failed because an error occurred while negotiating security.  
794 = The Framed Protocol RADIUS attribute for this user is not PPP.  
795 = The Tunnel Type RADIUS attribute for this user is not correct.  
796 = The Service Type RADIUS attribute for this user is neither Framed nor Callback Framed.  
797 = The connection failed because the modem (or other connecting device) was not found. Please make sure that the modem or other connecting device is installed.  
798 = A certificate could not be found that can be used with this Extensible Authentication Protocol.  
799 = Not available

## Packet session activated (PAC)

<b>Event ID</b>	PAC
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,CDMA 1x,EVDO,GAN WLAN,WiMAX,iDEN
<b>Record state</b>	Packet activation attempt state
<b>Description</b>	Recorded when packet session activation is successful on NAS layer. Normally this is based on signaling messages but there can be other basis as well (e.g. if packet session is active when measurement is started, the measurement event is recorded immediately). This measurement event starts the packet active state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Packet session context ID	Context	Packet session context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 25 = WiMAX 55 = iDEN
Packet act. state	Integer	Packet session activation state 1 = Air interface connected (in session management layer) 2 = Packet session activated
IP	String	Packet protocol address Received IP address.

## Packet session deactivated (PAD)

<b>Event ID</b>	PAD
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,CDMA 1x,EVDO,GAN WLAN,WiMAX,iDEN
<b>Record state</b>	Packet active state
<b>Description</b>	Recorded when packet session is terminated. The measurement event is not recorded before the packet session has been terminated by BOTH the NAS signaling layer AND the possible operating system-based services used for the connection (e.g. with the Microsoft Windows, the RAS has terminated the connection). This measurement event terminates the packet active state.

## Parameters |Top|

Name	Type	Description
Packet session context ID	Context	Packet session context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 11 = CDMA 1x 12 = EVDO 21 = GAN WLAN 25 = WiMAX 55 = iDEN
Deact. status	Integer	Packet session deactivation status 1 = Normal deactivation 2 = Network deactivation (SM cause) 3 = Mobile deactivation (SM cause) 4 = Timeout 5 = PPP error (OS RAS cause) 6 = Test system failure (OS RAS cause) 7 = No service
Deact. cause	Integer	Packet session deactivation cause 8 = Operator determined barring 24 = MBMS bearer capabilities insufficient for the service 25 = LLC or SMDCP failure (A/Gb mode only) 26 = Insufficient resources 27 = Missing or unknown APN 28 = Unknown PDP address or PDP type 29 = User authentication failed 30 = Activation rejected by GGSN, serving GW, or PDN GW 31 = Activation rejected, unspecified 32 = Service option not supported 33 = Requested service option not subscribed 34 = Service option temporarily out of order 35 = NSAPI/PTI already used 36 = Regular deactivation 37 = QoS not accepted 38 = Network failure 39 = Reactivation requested 40 = Feature not supported 41 = Semantic error in the TFT operation 42 = Syntactical error in the TFT operation 43 = Unknown PDP context or bearer identity 44 = Semantic errors in packet filter(s) 45 = Syntactical errors in packet filter(s) 46 = PDP context without TFT already activated 47 = Multicast group membership time-out or PTI mismatch 49 = Last PDN disconnection not allowed 50 = PDN type IPv4 only allowed 51 = PDN type IPv6 only allowed 52 = Single address bearers only allowed 53 = ESM information not received 54 = PDN connection does not exist 55 = Multiple PDN connections for a given APN not allowed 56 = Collision with network initiated request 59 = Unsupported QCI value 81 = Invalid transaction identifier or PTI value 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message not compatible with protocol state. 99 = Information element non-existent or not implemented 100 = Conditional IE error

101 = Message not compatible with protocol state  
111 = Protocol error, unspecified  
112 = APN restriction value incompatible with active PDP context  
600 = An operation is pending.  
601 = An invalid port handle was detected.  
602 = The specified port is already open.  
603 = The caller's buffer is too small.  
604 = Incorrect information was specified.  
605 = The port information cannot be set.  
606 = The specified port is not connected.  
607 = An invalid event was detected.  
608 = A device was specified that does not exist.  
609 = A device type was specified that does not exist.  
610 = An invalid buffer was specified.  
611 = A route was specified that is not available.  
612 = A route was specified that is not allocated.  
613 = An invalid compression was specified.  
614 = There were insufficient buffers available.  
615 = The specified port was not found.  
616 = An asynchronous request is pending.  
617 = The modem (or other connecting device) is already disconnecting.  
618 = The specified port is not open.  
619 = The specified port is not connected.  
620 = No endpoints could be determined.  
621 = The system could not open the phone book file.  
622 = The system could not load the phone book file.  
623 = The system could not find the phone book entry for this connection.  
624 = The system could not update the phone book file.  
625 = The system found invalid information in the phone book file.  
626 = A string could not be loaded.  
627 = A key could not be found.  
628 = The connection was closed.  
629 = The connection was closed by the remote computer.  
630 = The modem (or other connecting device) was disconnected due to hardware failure.  
631 = The user disconnected the modem (or other connecting device).  
632 = An incorrect structure size was detected.  
633 = The modem (or other connecting device) is already in use or is not configured properly.  
634 = Your computer could not be registered on the remote network.  
635 = There was an unknown error.  
636 = The device attached to the port is not the one expected.  
637 = A string was detected that could not be converted.  
638 = The request has timed out.  
639 = No asynchronous net is available.  
640 = An error has occurred involving NetBIOS.  
641 = The server cannot allocate NetBIOS resources needed to support the client.  
642 = One of your computer's NetBIOS names is already registered on the remote network.  
643 = A network adapter at the server failed.  
644 = You will not receive network message popups.  
645 = There was an internal authentication error.  
646 = The account is not permitted to log on at this time of day.  
647 = The account is disabled.  
648 = The password for this account has expired.  
649 = The account does not have permission to dial in.  
650 = The remote access server is not responding.  
651 = The modem (or other connecting device) has reported an error.  
652 = There was an unrecognized response from the modem (or other connecting device).  
653 = A macro required by the modem (or other connecting device) was not found in the device.INF file.  
654 = A command or response in the device.INF file section refers to an undefined macro.

655 = The macro was not found in the device.INF file section.  
656 = The macro in the device.INF file section contains an undefined macro.  
657 = The device.INF file could not be opened.  
658 = The device name in the device.INF or media.INI file is too long.  
659 = The media.INI file refers to an unknown device name.  
660 = The device.INF file contains no responses for the command.  
661 = The device.INF file is missing a command.  
662 = There was an attempt to set a macro not listed in device.INF file section.  
663 = The media.INI file refers to an unknown device type.  
664 = The system has run out of memory.  
665 = The modem (or other connecting device) is not properly configured.  
666 = The modem (or other connecting device) is not functioning.  
667 = The system was unable to read the media.INI file.  
668 = The connection was terminated.  
669 = The usage parameter in the media.INI file is invalid.  
670 = The system was unable to read the section name from the media.INI file.  
671 = The system was unable to read the device type from the media.INI file.  
672 = The system was unable to read the device name from the media.INI file.  
673 = The system was unable to read the usage from the media.INI file.  
674 = The system was unable to read the maximum connection BPS rate from the media.INI file.  
675 = The system was unable to read the maximum carrier connection speed from the media.INI file.  
676 = The phone line is busy.  
677 = A person answered instead of a modem (or other connecting device).  
678 = There was no answer.  
679 = The system could not detect the carrier.  
680 = There was no dial tone.  
681 = The modem (or other connecting device) reported a general error.  
682 = There was an error in writing the section name.  
683 = There was an error in writing the device type.  
684 = There was an error in writing the device name.  
685 = There was an error in writing the maximum connection speed.  
686 = There was an error in writing the maximum carrier speed.  
687 = There was an error in writing the usage.  
688 = There was an error in writing the default-off.  
689 = There was an error in reading the default-off.  
690 = ERROR\_EMPTY\_INI\_FILE  
691 = Access was denied because the username and/or password was invalid on the domain.  
692 = There was a hardware failure in the modem (or other connecting device).  
693 = ERROR\_NOT\_BINARY\_MACRO  
694 = ERROR\_DCB\_NOT\_FOUND  
695 = The state machines are not started.  
696 = The state machines are already started.  
697 = The response looping did not complete.  
698 = A response keyname in the device.INF file is not in the expected format.  
699 = The modem (or other connecting device) response caused a buffer overflow.  
700 = The expanded command in the device.INF file is too long.  
701 = The modem moved to a connection speed not supported by the COM driver.  
702 = Device response received when none expected.  
703 = The connection needs information from you, but the application does not allow user interaction.  
704 = The callback number is invalid.  
705 = The authorization state is invalid.



706 = ERROR\_WRITING\_INITBPS  
 707 = There was an error related to the X.25 protocol.  
 708 = The account has expired.  
 709 = There was an error changing the password on the domain. The password might have been too short or might have matched a previously used password.  
 710 = Serial overrun errors were detected while communicating with the modem.  
 711 = The Remote Access Service Manager could not start. Additional information is provided in the event log.  
 712 = The two-way port is initializing. Wait a few seconds and redial.  
 713 = No active ISDN lines are available.  
 714 = No ISDN channels are available to make the call.  
 715 = Too many errors occurred because of poor phone line quality.  
 716 = The Remote Access Service IP configuration is unusable.  
 717 = No IP addresses are available in the static pool of Remote Access Service IP addresses.  
 718 = The connection timed out waiting for a valid response from the remote computer.  
 719 = The connection was terminated by the remote computer.  
 720 = The connection attempt failed because your computer and the remote computer could not agree on PPP control protocols.  
 721 = The remote computer is not responding.  
 722 = Invalid data was received from the remote computer. This data was ignored.  
 723 = The phone number, including prefix and suffix, is too long.  
 724 = The IPX protocol cannot dial out on the modem (or other connecting device) because this computer is not configured for dialing out (it is an IPX router).  
 725 = The IPX protocol cannot dial in on the modem (or other connecting device) because this computer is not configured for dialing in (the IPX router is not installed).  
 726 = The IPX protocol cannot be used for dialing out on more than one modem (or other connecting device) at a time.  
 727 = Cannot access TCPCFG.DLL.  
 728 = The system cannot find an IP adapter.  
 729 = SLIP cannot be used unless the IP protocol is installed.  
 730 = Computer registration is not complete.  
 731 = The protocol is not configured.  
 732 = Your computer and the remote computer could not agree on PPP control protocols.  
 733 = Your computer and the remote computer could not agree on PPP control protocols.  
 734 = The PPP link control protocol was terminated.  
 735 = The requested address was rejected by the server.  
 736 = The remote computer terminated the control protocol.  
 737 = Loopback was detected.  
 738 = The server did not assign an address.  
 739 = The authentication protocol required by the remote server cannot use the stored password. Redial, entering the password explicitly.  
 740 = An invalid dialing rule was detected.  
 741 = The local computer does not support the required data encryption type.  
 742 = The remote computer does not support the required data encryption type.  
 743 = The remote computer requires data encryption.  
 744 = The system cannot use the IPX network number assigned by the remote computer. Additional information is provided in the event log.  
 745 = ERROR\_INVALID\_SMM  
 746 = ERROR\_SMM\_UNINITIALIZED  
 747 = ERROR\_NO\_MAC\_FOR\_PORT  
 748 = ERROR\_SMM\_TIMEOUT  
 749 = ERROR\_BAD\_PHONE\_NUMBER  
 750 = ERROR\_WRONG\_MODULE  
 751 = The callback number contains an invalid character. Only the following 18 characters are allowed: 0 to 9, T, P, W, (, ), -,

@, and space.

752 = A syntax error was encountered while processing a script.

753 = The connection could not be disconnected because it was created by the multi-protocol router.

754 = The system could not find the multi-link bundle.

755 = The system cannot perform automated dial because this connection has a custom dialer specified.

756 = This connection is already being dialed.

757 = Remote Access Services could not be started automatically. Additional information is provided in the event log.

758 = Internet Connection Sharing is already enabled on the connection.

759 = An error occurred while the existing Internet Connection Sharing settings were being changed.

760 = An error occurred while routing capabilities were being enabled.

761 = An error occurred while Internet Connection Sharing was being enabled for the connection.

762 = An error occurred while the local network was being configured for sharing.

763 = Internet Connection Sharing cannot be enabled. There is more than one LAN connection other than the connection to be shared.

764 = No smart card reader is installed.

765 = Internet Connection Sharing cannot be enabled. A LAN connection is already configured with the IP address that is required for automatic IP addressing.

766 = A certificate could not be found. Connections that use the L2TP protocol over IPSec require the installation of a machine certificate, also known as a computer certificate.

767 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network has more than one IP address configured. Please reconfigure the LAN connection with a single IP address before enabling Internet Connection Sharing.

768 = The connection attempt failed because of failure to encrypt data.

769 = The specified destination is not reachable.

770 = The remote computer rejected the connection attempt.

771 = The connection attempt failed because the network is busy.

772 = The remote computer's network hardware is incompatible with the type of call requested.

773 = The connection attempt failed because the destination number has changed.

774 = The connection attempt failed because of a temporary failure. Try connecting again.

775 = The call was blocked by the remote computer.

776 = The call could not be connected because the remote computer has invoked the Do Not Disturb feature.

777 = The connection attempt failed because the modem (or other connecting device) on the remote computer is out of order.

778 = It was not possible to verify the identity of the server.

779 = To dial out using this connection you must use a smart card.

780 = An attempted function is not valid for this connection.

781 = The encryption attempt failed because no valid certificate was found.

782 = Connection Sharing (NAT) is currently installed as a routing protocol, and must be removed before enabling Internet Connection Sharing.

783 = Internet Connection Sharing cannot be enabled. The LAN connection selected as the private network is either not present, or is disconnected from the network. Please ensure that the LAN adapter is connected before enabling Internet Connection Sharing.

784 = You cannot dial using this connection at logon time, because it is configured to use a user name different than the one on the smart card. If you want to use it at logon time, you

		<p>must configure it to use the user name on the smart card.</p> <p>785 = You cannot dial using this connection at logon time, because it is not configured to use a smart card. If you want to use it at logon time, you must edit the properties of this connection so that it uses a smart card.</p> <p>786 = The L2TP connection attempt failed because there is no valid machine certificate on your computer for security authentication.</p> <p>787 = The L2TP connection attempt failed because the security layer could not authenticate the remote computer.</p> <p>788 = The L2TP connection attempt failed because the security layer could not negotiate compatible parameters with the remote computer.</p> <p>789 = The L2TP connection attempt failed because the security layer encountered a processing error during initial negotiations with the remote computer.</p> <p>790 = The L2TP connection attempt failed because certificate validation on the remote computer failed.</p> <p>791 = The L2TP connection attempt failed because security policy for the connection was not found.</p> <p>792 = The L2TP connection attempt failed because security negotiation timed out.</p> <p>793 = The L2TP connection attempt failed because an error occurred while negotiating security.</p> <p>794 = The Framed Protocol RADIUS attribute for this user is not PPP.</p> <p>795 = The Tunnel Type RADIUS attribute for this user is not correct.</p> <p>796 = The Service Type RADIUS attribute for this user is neither Framed nor Callback Framed.</p> <p>797 = The connection failed because the modem (or other connecting device) was not found. Please make sure that the modem or other connecting device is installed.</p> <p>798 = A certificate could not be found that can be used with this Extensible Authentication Protocol.</p> <p>799 = Not available</p>
Deact. time	Integer	<p>Packet session deactivation time</p> <p>Minimum value: 0</p> <p>Unit: ms</p>

## Quality of service profile request (QSPR)

<b>Event ID</b>	QSPR
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,GAN WLAN
<b>Record state</b>	Packet activation attempt and packet active state
<b>Description</b>	Recorded when new QoS profile is requested or reconfigured. Information is based on configured QoS settings and NAS signaling.
<b>Tools</b>	Nemo Outdoor

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Packet session context ID	Context	Packet session context ID
Measured sys.	Integer	<p>Measured system</p> <p>1 = GSM</p> <p>5 = UMTS FDD</p>

		6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 21 = GAN WLAN
Req. avg. TPut class	Integer	Requested average throughput class Average transfer rate at which data is transferred across the network. 0 = Subscribed value 1 = Up to 0.22 bit/s 2 = Up to 0.44 bit/s 3 = Up to 1.11 bit/s 4 = Up to 2.2 bit/s 5 = Up to 4.4 bit/s 6 = Up to 11.1 bit/s 7 = Up to 22 bit/s 8 = Up to 44 bit/s 9 = Up to 111 bit/s 10 = Up to 0.22 kbit/s 11 = Up to 0.44 kbit/s 12 = Up to 1.11 kbit/s 13 = Up to 2.2 kbit/s 14 = Up to 4.4 kbit/s 15 = Up to 11.1 kbit/s 16 = Up to 22 kbit/s 17 = Up to 44 kbit/s 18 = Up to 111 kbit/s 31 = Best effort
Req. peak TPut class	Integer	Requested peak throughput class The maximum transfer rate at which data is transferred across the network. 0 = Subscribed value 1 = Up to 8 kbit/s 2 = Up to 16 kbit/s 3 = Up to 32 kbit/s 4 = Up to 64 kbit/s 5 = Up to 128 kbit/s 6 = Up to 256 kbit/s 7 = Up to 512 kbit/s 8 = Up to 1024 kbit/s 9 = Up to 2048 kbit/s
Req. delay class	Integer	Requested delay class 0 = Subscribed value 1 = Less than 0.5 seconds 2 = Less than 5 seconds 3 = Less than 50 seconds 4 = Best effort
Req. priority class	Integer	Requested priority class 0 = Subscribed value 1 = High 2 = Normal 3 = Low
Req. reliab. class	Integer	Requested reliability class 0 = Subscribed value 1 = Like X.25 2 = Like IP 3 = For signaling 4 = For text TV style application 5 = For video
Min avg. TPut class	Integer	Minimum accepted average throughput class 0 = Accept all 1 = Up to 0.22 bit/s 2 = Up to 0.44 bit/s 3 = Up to 1.11 bit/s 4 = Up to 2.2 bit/s 5 = Up to 4.4 bit/s 6 = Up to 11.1 bit/s 7 = Up to 22 bit/s 8 = Up to 44 bit/s

		9 = Up to 111 bit/s 10 = Up to 0.22 kbit/s 11 = Up to 0.44 kbit/s 12 = Up to 1.11 kbit/s 13 = Up to 2.2 kbit/s 14 = Up to 4.4 kbit/s 15 = Up to 11.1 kbit/s 16 = Up to 22 kbit/s 17 = Up to 44 kbit/s 18 = Up to 111 kbit/s 31 = Best effort
Min peak TPut class	Integer	Minimum accepted peak throughput class 0 = Accept all 1 = Up to 8 kbit/s 2 = Up to 16 kbit/s 3 = Up to 32 kbit/s 4 = Up to 64 kbit/s 5 = Up to 128 kbit/s 6 = Up to 256 kbit/s 7 = Up to 512 kbit/s 8 = Up to 1024 kbit/s 9 = Up to 2048 kbit/s
Min delay class	Integer	Minimum accepted delay class 0 = Accept all 1 = Less than 0.5 seconds 2 = Less than 5 seconds 3 = Less than 50 seconds 4 = Lest effort
Min priority class	Integer	Minimum accepted priority class 0 = Accept all 1 = High 2 = Normal 3 = Low
Min reliab. class	Integer	Minimum accepted reliability class 0 = Accept all 1 = Like X.25 2 = Like IP 3 = For signaling 4 = For text TV style application 5 = For video
Req. traffic class	Integer	Requested traffic class 0 = Conversational 1 = Streaming 2 = Interactive 3 = Background 4 = Subscribed value
Req. max UL TPut	Integer	Requested maximum uplink bitrate 0 = Subscribed value Minimum value: 0 Unit: kbit/s
Req. max DL TPut	Integer	Requested maximum downlink bitrate 0 = Subscribed value Minimum value: 0 Unit: kbit/s
Req. gr. UL TPut	Integer	Requested guaranteed uplink bitrate 0 = Subscribed value Minimum value: 0 Unit: kbit/s
Req. gr. DL TPut	Integer	Requested guaranteed downlink bitrate 0 = Subscribed value Minimum value: 0 Unit: kbit/s
Req. deliv. order	Integer	Requested delivery order 0 = No 1 = Yes 2 = Subscribed value

Req. max SDU size	Integer	Requested maximum SDU size 0 = Subscribed value Range: 0 – 1500 Unit: byte
Req. SDU err. ratio	String	Requested SDU error ratio E0E is subscribed value.
Req. resid. BER	String	Requested residual bit error ratio E0E is subscribed value.
Req. deliv. err. SDU	Integer	Requested delivery of erroneous SDUs 0 = No 1 = Yes 2 = No detect 3 = Subscribed value
Req. transfer delay	Integer	Requested transfer delay 0 = Subscribed value Range: 0 – 4100 Unit: ms
Req. THP	Integer	Requested traffic handling priority 1 is the highest priority. 0 = Subscribed value Range: 0 – 3
Min traffic class	Integer	Minimum accepted traffic class 0 = Conversational 1 = Streaming 2 = Interactive 3 = Background 4 = Accept all
Min max UL TPut	Integer	Minimum accepted maximum uplink bitrate 0 = Accept all Minimum value: 0 Unit: kbit/s
Min max DL TPut	Integer	Minimum accepted maximum downlink bitrate 0 = Accept all Minimum value: 0 Unit: kbit/s
Min gr. UL TPut	Integer	Minimum accepted guaranteed uplink bitrate 0 = Accept all Minimum value: 0 Unit: kbit/s
Min gr. DL TPut	Integer	Minimum accepted guaranteed downlink bitrate 0 = Accept all Minimum value: 0 Unit: kbit/s
Min deliv. order	Integer	Minimum accepted delivery order 0 = No 1 = Yes 2 = Accept all
Min max SDU size	Integer	Minimum accepted maximum SDU size 0 = Accept all Range: 0 – 1500 Unit: byte
Min SDU err.	String	Minimum accepted SDU error ratio
Min resid. BER	String	Minimum accepted residual bit error ratio
Min del. err. SDU	Integer	Minimum accepted delivery of erroneous SDUs 0 = No 1 = Yes 2 = No detect 3 = Accept all
Min tranfer delay	Integer	Minimum accepted transfer delay 0 = Accept all Range: 0 – 4100 Unit: ms
Min THP	Integer	Minimum accepted traffic handling priority

		<p>1 is the highest priority.  0 = Accept all  Range: 0 – 3</p>
Req. QCI	Integer	<p>Requested EPS QoS class identifier  See 3GPP TS 23.203 subclause 6.1.7.  0 = Subscribed value  1 = QCI 1  Conversational voice. GBR, priority 2, delay 100 ms, PER 10E-2.  2 = QCI 2  Conversational video. GBR, priority 4, delay 150 ms, PER 10E-3.  3 = QCI 3  Real time gaming. GBR, priority 3, delay 50 ms, PER 10E-3.  4 = QCI 4  Non-conversational video (buffered streaming). GBR, priority 5, delay 300 ms, PER 10E-6.  5 = QCI 5  IMS signaling. Non-GBR, priority 1, delay 100 ms, PER 10E-6.  6 = QCI 6  Video (buffered streaming), TCP-based application protocols. Non-GBR, priority 6, delay 300 ms, PER 10E-6.  7 = QCI 7  Voice, live streaming, interactive gaming. Non-GBR, priority 7, delay 100 ms, PER 10E-3.  8 = QCI 8  Video (buffered streaming), TCB-based application protocols. Non-GBR, priority 8, delay 300 ms, PER 10E-6.  9 = QCI 9  Video (buffered streaming), TCB-based application protocols. Non-GBR, priority 9, delay 300 ms, PER 10E-6.  65 = QCI 65  Mission critical user plane push-to-talk voice. GBR, priority 0.7, delay 75 ms, PER 10E-2.  66 = QCI 66  Non-mission-critical user plane push-to-talk voice. GBR, priority 2, delay 100 ms, PER 10E-2.  69 = QCI 69  Mission critical delay sensitive signalling. Non-GBR, priority 0.5, delay 60 ms, PER 10E-6.  70 = QCI 70  Mission critical data (e.g. example services are the same as QCI 6/8/9). Non-GBR, priority 5.5, delay 200 ms, PER 10E-6.  75 = QCI 75  GBR V2X messages.  79 = QCI 79  Non-GBR V2X messages.  Range: 0 – 255</p>
Req. EPS max UL TPut	Integer	<p>Requested EPS maximum uplink bitrate  Minimum value: 0  Unit: kbit/s</p>
Req. EPS max DL TPut	Integer	<p>Requested EPS maximum downlink bitrate  Minimum value: 0  Unit: kbit/s</p>
Req. EPS gr. UL TPut	Integer	<p>Requested EPS guaranteed uplink bitrate  Minimum value: 0  Unit: kbit/s</p>
Req. EPS gr. DL TPut	Integer	<p>Requested EPS guaranteed downlink bitrate  Minimum value: 0  Unit: kbit/s</p>

## Quality of service profile negotiated (QSPN)

<b>Event ID</b>	QSPN
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,GAN WLAN
<b>Record state</b>	Packet active state
<b>Description</b>	Recorded when the first QoS configuration is received or the current one is reconfigured. This information is based on NAS signaling.
<b>Tools</b>	Nemo Outdoor

Parameters |

### Parameters |Top|

Name	Type	Description
Packet session context ID	Context	Packet session context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 21 = GAN WLAN
Avg TPut class	Integer	Negotiated average throughput class Average transfer rate at which data is transferred across the network. 1 = Up to 0.22 bit/s 2 = Up to 0.44 bit/s 3 = Up to 1.11 bit/s 4 = Up to 2.2 bit/s 5 = Up to 4.4 bit/s 6 = Up to 11.1 bit/s 7 = Up to 22 bit/s 8 = Up to 44 bit/s 9 = Up to 111 bit/s 10 = Up to 0.22 kbit/s 11 = Up to 0.44 kbit/s 12 = Up to 1.11 kbit/s 13 = Up to 2.2 kbit/s 14 = Up to 4.4 kbit/s 15 = Up to 11.1 kbit/s 16 = Up to 22 kbit/s 17 = Up to 44 kbit/s 18 = Up to 111 kbit/s 31 = Best effort
Peak TPut class	Integer	Negotiated peak throughput class 1 = Up to 8 bit/s 2 = Up to 16 kbit/s 3 = Up to 32 kbit/s 4 = Up to 64 kbit/s 5 = Up to 128 kbit/s 6 = Up to 256 kbit/s 7 = Up to 512 kbit/s 8 = Up to 1024 kbit/s 9 = Up to 2048 kbit/s
Delay class	Integer	Negotiated delay class 1 = Less than 0.5 seconds 2 = Less than 5 seconds 3 = Less than 50 seconds 4 = Best effort
Priority class	Integer	Negotiated priority class 1 = High



		2 = Normal 3 = Low
Reliab. class	Integer	Negotiated reliability class 1 = Like X.25 2 = Like IP 3 = For signaling 4 = For text TV style application 5 = For video
Traffic class	Integer	Negotiated traffic class 0 = Conversational 1 = Streaming 2 = Interactive 3 = Background
Max UL TPut	Integer	Negotiated maximum uplink bitrate Minimum value: 0 Unit: kbit/s
Max DL TPut	Integer	Negotiated maximum downlink bitrate Minimum value: 0 Unit: kbit/s
Gr. UL TPut	Integer	Negotiated guaranteed uplink bitrate Minimum value: 0 Unit: kbit/s
Gr. DL TPut	Integer	Negotiated guaranteed downlink bitrate Minimum value: 0 Unit: kbit/s
Deliv. order	Integer	Negotiated delivery order 0 = No 1 = Yes
Max SDU size	Integer	Negotiated maximum SDU size Negotiated maximum service data unit (SDU) size. Range: 0 – 1500 Unit: byte
SDU err. ratio	String	Negotiated SDU error ratio
Resid. BER	String	Negotiated residual bit error ratio
Deliv. err. SDU	Integer	Negotiated delivery of erroneous SDUs 0 = No 1 = Yes 2 = No detect
Transf. delay	Integer	Negotiated transfer delay Range: 0 – 4100 Unit: ms
THP	Integer	Negotiated traffic handling priority 1 is the highest priority. Range: 0 – 3
QCI	Integer	Negotiated EPS QoS class identifier See 3GPP TS 23.203 subclause 6.1.7. 1 = QCI 1 Conversational voice. GBR, priority 2, delay 100 ms, PER 10E-2. 2 = QCI 2 Conversational video. GBR, priority 4, delay 150 ms, PER 10E-3. 3 = QCI 3 Real time gaming. GBR, priority 3, delay 50 ms, PER 10E-3. 4 = QCI 4 Non-conversational video (buffered streaming). GBR, priority 5, delay 300 ms, PER 10E-6. 5 = QCI 5 IMS signaling. Non-GBR, priority 1, delay 100 ms, PER 10E-6. 6 = QCI 6 Video (buffered streaming), TCP-based application protocols. Non-GBR, priority 6, delay 300 ms, PER 10E-6. 7 = QCI 7

		<p>Voice, live streaming, interactive gaming. Non-GBR, priority 7, delay 100 ms, PER 10E-3.</p> <p>8 = QCI 8 Video (buffered streaming), TCB-based application protocols. Non-GBR, priority 8, delay 300 ms, PER 10E-6.</p> <p>9 = QCI 9 Video (buffered streaming), TCB-based application protocols. Non-GBR, priority 9, delay 300 ms, PER 10E-6.</p> <p>65 = QCI 65 Mission critical user plane push-to-talk voice. GBR, priority 0.7, delay 75 ms, PER 10E-2.</p> <p>66 = QCI 66 Non-mission-critical user plane push-to-talk voice. GBR, priority 2, delay 100 ms, PER 10E-2.</p> <p>69 = QCI 69 Mission critical delay sensitive signalling. Non-GBR, priority 0.5, delay 60 ms, PER 10E-6.</p> <p>70 = QCI 70 Mission critical data (e.g. example services are the same as QCI 6/8/9). Non-GBR, priority 5.5, delay 200 ms, PER 10E-6.</p> <p>75 = QCI 75 GBR V2X messages.</p> <p>79 = QCI 79 Non-GBR V2X messages.</p> <p>Range: 0 – 255</p>
EPS max UL TPut	Integer	<p>Negotiated EPS maximum uplink bitrate</p> <p>Minimum value: 0</p> <p>Unit: kbit/s</p>
EPS max DL TPut	Integer	<p>Negotiated EPS maximum downlink bitrate</p> <p>Minimum value: 0</p> <p>Unit: kbit/s</p>
EPS gr. UL TPut	Integer	<p>Negotiated EPS guaranteed uplink bitrate</p> <p>Minimum value: 0</p> <p>Unit: kbit/s</p>
EPS gr. DL TPut	Integer	<p>Negotiated EPS guaranteed downlink bitrate</p> <p>Minimum value: 0</p> <p>Unit: kbit/s</p>

## Packet channel info (PCHI)

<b>Event ID</b>	PCHI
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,CDMA 1x,EVDO,WLAN,GAN WLAN
<b>Record state</b>	Always
<b>Description</b>	Recorded when packet session information is modified.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
 [Parameters for GSM](#) |
 [Parameters for UMTS FDD](#) |
 [Parameters for UMTS TD-SCDMA](#) |
 [Parameters for LTE](#) |
 [Parameters for CDMA 1x](#) |
 [Parameters for EVDO](#) |
 [Parameters for WLAN](#) |
 [Parameters for GAN WLAN](#)

### Parameters [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	<p>Measured system</p> <p>1 = GSM</p>

5 = UMTS FDD  
 6 = UMTS TD-SCDMA  
 7 = LTE FDD  
 This is also used with NB-IoT.  
 8 = LTE TDD  
 11 = CDMA 1x  
 12 = EVDO  
 20 = WLAN  
 21 = GAN WLAN

#### Parameters for GSM [|Top](#)

Name	Type	Description
Packet tech.	Integer	Packet technology 1 = GPRS 2 = EGPRS 101 = GPRS + WLAN 102 = EGPRS + WLAN
Packet state	Integer	Packet state 0 = No GPRS available 1 = Detached 2 = Attached 3 = Standby 4 = Packet session active 5 = Suspended
RAC	Integer	Routing area code
Radio priority	Integer	Radio priority The RLC/MAC radio priority level for uplink user data transmission.
Prior. acc. th.	Integer	Priority access THR Priority access threshold. Range: 0 – 7
Split PG cycle	Integer	Split PG cycle The split PG cycle parameter defines the DRX period. Unit: s
PS coding UL	Integer	Packet channel coding uplink 1 = MCS-1 CS-1 with GPRS. 2 = MCS-2 CS-2 with GPRS. 3 = MCS-3 CS-3 with GPRS. 4 = MCS-4 CS-4 with GPRS. 5 = MCS-5 6 = MCS-6 7 = MCS-7 8 = MCS-8 9 = MCS-9
PS coding DL	Integer	Packet channel coding downlink 1 = MCS-1 CS-1 with GPRS. 2 = MCS-2 CS-2 with GPRS. 3 = MCS-3 CS-3 with GPRS. 4 = MCS-4 CS-4 with GPRS. 5 = MCS-5 6 = MCS-6 7 = MCS-7 8 = MCS-8 9 = MCS-9
#PS TSL UL	Integer	Number of packet timeslots uplink
#PS TSL DL	Integer	Number of packet timeslots downlink
PS TSL	Integer	Packet timeslot Allocated uplink timeslots. Number of timeslots in list is indicated by

		previous parameter.
PS TSL	Integer	Packet timeslot Allocated downlink timeslots. Number of timeslots in list is indicated by previous parameter.
NMO	Integer	Network mode of operation 1 = NMO1 Combined routing area and location area update is done through PPCH (PBCCH is present). Paging messages can be sent through PCH or PPCH. Gs interface between SGSN and MSC is present. 2 = NMO2 Separate routing area and location area update is done through PCH (no PBCCH). All paging on PCH. Gs interface between SGSN and MSC is not present. 3 = NMO3 Separate routing area and location area update. CS paging is done on PCH and PS paging is done on PPCH (PBCCH is present). Gs interface between SGSN and MSC is not present.
NCO	Integer	Network control order 0 = NC0 Mobile controlled cell re-selection without measurement reports. 1 = NC1 Mobile controlled cell re-selection with measurement reports. 2 = NC2 Network controlled cell re-selection with measurement reports.
IR status UL	Integer	Incremental redundancy status uplink This is same as resegment bit in RLC/MAC signaling messages and also known as ARQ mode. See 3GPP TS 144.060 subclause 8.1.1. 0 = Disabled Type 1 ARQ. 1 = Enabled Type 2 ARQ.
PBCCH	Integer	PBCCH status 0 = Disabled 1 = Enabled
CLRS hyst.	Float	GPRS cell reselection hysteresis Range: 0 – 14 Unit: dB
CLRS time	Integer	GPRS cell reselection penalty time Range: 0 – 300 Unit: ms

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
Packet tech.	Integer	Packet technology 3 = UMTS FDD 5 = HSDPA Used when HS_DSCH_RECEPTION variable is true (3GPP TS 125.331). 10 = HSPA Used when both HS_DSCH_RECEPTION and E_DCH_TRANSMISSION variables are true (3GPP TS 125.331). 18 = DC-HSDPA Before version 2.21 this was logged as HSPA (10). This is DC-HSDPA and SC-HSUPA. 20 = DC-HSUPA DC-HSDPA is configured simultaneously. 103 = UMTS FDD + WLAN 105 = HSDPA + WLAN 110 = HSPA + WLAN 118 = DC-HSDPA + WLAN DC-HSDPA, SC-HSUPA, and WLAN. 120 = DC-HSUPA + WLAN DC-HSDPA is configured simultaneously.
Packet state	Integer	Packet state 0 = No GPRS available

		1 = Detached 2 = Attached 3 = Standby 4 = Packet session active 5 = Suspended
RAC	Integer	Routing area code
NMO	Integer	Network mode of operation 1 = NMO1 Combined routing area and location area update is done through PPCH (PBCCH is present). Paging messages can be sent through PCH or PPCH. Gs interface between SGSN and MSC is present. 2 = NMO2 Separate routing area and location area update is done through PCH (no PBCCH). All paging on PCH. Gs interface between SGSN and MSC is not present. 3 = NMO3 Separate routing area and location area update. CS paging is done on PCH and PS paging is done on PPCH (PBCCH is present). Gs interface between SGSN and MSC is not present.
HSDPA category	Integer	HSDPA used UE category Defines the current maximum possible HSDPA UE category. This is limited by cell configuration and UE capabilities. The value can be smaller than the maximum UE category supported by the mobile if for example the currently used cell is restricting the UE category (either MAC-e/h or dual cell mode is not supported). Range: 1 – 24
HS-DSCH SC	Integer	HSDPA serving HS-DSCH scrambling code Range: 0 – 511
#HS-SCCHs	Integer	HSDPA #HS-SCCHs Range: 1 – 4
Pwr. offset	Float	HSDPA HS-DSCH measurement power offset Measurement power offset. This parameter is configured in RRC layer. Range: -6 – 13 Unit: dB
ACK/NACK repetitions	Integer	HSDPA ACK/NACK repetition factor Controls how often the UE repeats each ACK or NACK. See 3GPP TS 25.214 subclause 6A.1.1. Range: 1 – 4
HSDPA H-RNTI	Integer	HSDPA H-RNTI Range: 0 – 65535
HSUPA UE categ.	Integer	HSUPA UE category Defines the current maximum possible HSUPA UE category. This is limited by cell configuration and UE capabilities. Range: 1 – 12
TTI	Integer	HSUPA TTI HSUPA transmission time interval. Range: 2 – 10 Unit: ms
PLnon-max	Float	HSUPA PLnon-max Puncturing limit used to determine the combination of SF and number of codes that are used for transmitting E-DCH with certain data rate. Range: 0.44 – 1
Rate matching	Integer	HSUPA rate matching mode Defines how retransmitted data is combined. 1 = Chase combining (CC) 2 = Incremental redundancy (IR)
Primary E-RNTI	Integer	HSUPA primary E-RNTI Range: 0 – 65535
Secondary E-RNTI	Integer	HSUPA secondary E-RNTI Range: 0 – 65535
E-DPCCH power offset	Float	HSUPA E-DPCCH/DPCCH power offset Range: 0 – 6

		Unit: dBm
Happy bit delay cond.	Integer	HSUPA happy bit delay condition Range: 2 – 1000 Unit: ms
AGCH OVSF	Integer	HSUPA AGCH channelisation code Range: 0 – 255
E-TFCI table	Integer	HSUPA E-TFCI table index Range: 0 – 4
HSDPA 64QAM	Integer	HSDPA 64QAM 0 = Disabled 1 = Enabled
HSDPA MIMO	Integer	HSDPA MIMO 0 = Disabled 1 = Enabled
HSDPA MAC header type	Integer	HSDPA MAC header type Defines what kind of MAC header is used for HSDPA. 0 = MAC-hs Bit aligned. See 3GPP TS 125.308 subclause 6.2.3. 1 = MAC-ehs Octet aligned. See 3GPP TS 125.308 subclause 6.2.4.
#HSDPA cells	Integer	Number of secondary HSDPA cells Range: 0 – 1
#Params/HSDPA cell	Integer	Number of parameters per secondary HSDPA cell
HSPA Ch 2	Integer	HSPA serving channel (secondary)
HSPA SC 2	Integer	HSPA serving scrambling code (secondary) Range: 0 – 511
H-RNTI 2	Integer	HSDPA H-RNTI (secondary) Range: 0 – 65535
#HS-SCCHs 2	Integer	HSDPA #HS-SCCHs (secondary) Range: 1 – 4
Pwr. offset 2	Float	HSDPA HS-DSCH measurement power offset (secondary) Measurement power offset. This parameter is configured in RRC layer. Range: -6 – 13 Unit: dB
HSDPA 64QAM 2	Integer	HSDPA 64QAM (secondary) 0 = Disabled 1 = Enabled
HSDPA MAC type 2	Integer	HSDPA MAC header type (secondary) Defines what kind of MAC header is used for HSDPA. 0 = MAC-hs Bit aligned. See 3GPP TS 125.308 subclause 6.2.3. 1 = MAC-ehs Octet aligned. See 3GPP TS 125.308 subclause 6.2.4.
Primary E-RNTI 2	Integer	HSUPA primary E-RNTI (secondary) Range: 0 – 65535
Secondary E-RNTI 2	Integer	HSUPA secondary E-RNTI (secondary) Range: 0 – 65535
AGCH OVSF 2	Integer	HSUPA AGCH channelisation code (secondary) Range: 0 – 255

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
Packet tech.	Integer	Packet technology 11 = TD-SCDMA 13 = TD-HSDPA
Packet state	Integer	Packet state 0 = No GPRS available 1 = Detached

		2 = Attached 3 = Standby 4 = Packet session active 5 = Suspended
RAC	Integer	Routing area code
NMO	Integer	Network mode of operation 1 = NMO1 Combined routing area and location area update is done through PPCH (PBCCH is present). Paging messages can be sent through PCH or PPCH. Gs interface between SGSN and MSC is present. 2 = NMO2 Separate routing area and location area update is done through PCH (no PBCCH). All paging on PCH. Gs interface between SGSN and MSC is not present. 3 = NMO3 Separate routing area and location area update. CS paging is done on PCH and PS paging is done on PPCH (PBCCH is present). Gs interface between SGSN and MSC is not present.
HSDPA UE categ.	Integer	HSDPA UE category Defines the current maximum possible HSDPA UE category. This is limited by cell configuration and UE capabilities. Range: 1 – 15
HSDPA H-RNTI	Integer	HSDPA H-RNTI Range: 0 – 65535

#### Parameters for LTE [|Top](#)

Name	Type	Description
Packet tech.	Integer	Packet technology 14 = LTE FDD 16 = LTE TDD 19 = LTE DL CA Before version 2.21 this was logged as LTE FDD (14) or LTE TDD (16). 21 = LTE UL+DL CA 22 = NB-IoT 23 = LTE-M 114 = LTE FDD + WLAN 116 = LTE TDD + WLAN 119 = LTE DL CA + WLAN 121 = LTE UL+DL CA + WLAN
Packet state	Integer	Packet state 0 = No GPRS available 1 = Detached 2 = Attached 3 = Standby 4 = Packet session active 5 = Suspended

#### Parameters for CDMA 1x [|Top](#)

Name	Type	Description
Packet tech.	Integer	Packet technology 4 = CDMA 1x
Packet state	Integer	Packet state (CDMA 1x) 0 = Null 1 = Init 2 = Connected 3 = Dormant 4 = Reconnect

#### Parameters for EVDO [|Top](#)

Name	Type	Description

Packet tech.	Integer	Packet technology 6 = EVDO rel 0 7 = EVDO rev A 15 = EVDO rev B
Access state	Integer	Access terminal state 0 = Inactivity AT switched to 1X or is in deep sleep. 1 = Acquisition 2 = Sync 3 = Idle 4 = Access 5 = Connected
Packet ch type	Integer	Packet channel type 1 = Access channel 2 = Reverse traffic channel 3 = Control channel 4 = Forward traffic channel
Packet carrier	Integer	Packet carrier number
Sector ID	String	Sector ID 128-bit sector address of the serving sector.
Subnet Mask	Integer	Sector subnet identifier Range: 0 – 255
CC	Integer	Color code Range: 0 – 255
Hybrid Mode	Integer	Hybrid mode 0 = Off 1 = On
Session state	Integer	Session state Summary session layer states. 0 = Closed 1 = AMP setup 2 = AT-initiated negotiation 3 = AN-initiated negotiation 4 = Open 5 = Closing
ALMP state	Integer	ALMP state 0 = Inactive 1 = Initialization 2 = Idle 3 = Connected
Init state	Integer	Initialization protocol state 0 = Inactive 1 = Network detection 2 = Pilot acquisition 3 = Sync
Idle state	Integer	Idle protocol state 0 = Inactive 1 = Monitor 2 = Sleep 3 = Connection setup 4 = Suspend
Connected state	Integer	Connected protocol state 0 = Inactive 1 = Open
Route update state	Integer	Route update protocol state 0 = Inactive 1 = Idle 2 = Connection setup 3 = Connected 4 = Synchronize connection
Overhead msg. state	Integer	Overhead message protocol state 0 = Inactive 1 = Process all messages 2 = Sleep 3 = Frequency change in progress



		4 = Access handoff in progress 5 = Wait for link
EVDO MCC	Integer	EVDO MCC See ITU-T recommendation E.212. Range: 0 – 999
EVDO MNC	Integer	EVDO MNC Range: 0 – 999
Window A	Integer	Search window activate set
Window C	Integer	Search window candidate set
Window N	Integer	Search window neighbor set
Pilot add	Float	Pilot add Unit: dB
Pilot drop	Float	Pilot drop Unit: dB
Pilot compare	Float	Pilot compare Unit: dB
Pilot drop timer	Integer	Pilot drop timer Minimum value: 0 Unit: ms
Soft slope	Integer	Soft slope Inequality criterion for adding or dropping a pilot from the active set.
Add intercept	Float	Add intercept Unit: dB
Drop intercept	Float	Drop intercept Unit: dB
Set maximum age	Integer	Set maximum age

#### Parameters for WLAN [|Top|](#)

Name	Type	Description
Packet tech.	Integer	Packet technology 17 = WLAN
Packet state	Integer	Packet state 1 = Detached 4 = Packet session active

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
Packet tech.	Integer	Packet technology 8 = GAN
Packet state	Integer	Packet state 0 = No GPRS available 1 = Detached 2 = Attached 3 = Standby 4 = Packet session active 5 = Suspended
RAC	Integer	Routing area code

## Attach attempt (GAA)

<b>Event ID</b>	GAA
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN,LTE FDD,LTE TDD
<b>Record state</b>	Idle state
<b>Description</b>	Recorded based on signaling when attach is attempted. This measurement event begins the attach attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Attach context ID	Context	Attach context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 21 = GAN WLAN

## Attach failed (GAF)

<b>Event ID</b>	GAF
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN,LTE FDD,LTE TDD
<b>Record state</b>	Attach attempt state
<b>Description</b>	Recorded based on signaling when attach attempt fails. This measurement event terminates the attach attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Attach context ID	Context	Attach context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 21 = GAN WLAN
Attach fail	Integer	Attach failure status This is same as GMM cause value. Note that 'PPP error'-value is deprecated and it is not used anymore. 1 = User abort 2 = Network reject 3 = Mobile reject 4 = Timeout 5 = PPP error (OS RAS cause) (not used anymore) Deprecated. This value is not logged anymore.

		6 = Test system failure (OS RAS cause) 7 = No service
Att. fail. cause	Integer	Attach failure cause 2 = IMSI unknown in HLR/HSS 3 = Illegal MS 5 = IMEI not accepted 6 = Illegal ME 7 = GPRS/EPS services not allowed 8 = GPRS/EPS services and non-GPRS/non-EPS services not allowed 9 = MS identity cannot be derived by the network 10 = Implicitly detached 11 = PLMN not allowed 12 = Location/tracking area not allowed 13 = Roaming not allowed in this location area 14 = GPRS/EPS services not allowed in this PLMN 15 = No suitable cells in location/tracking area 16 = MSC temporarily not reachable 17 = Network failure 18 = CS domain not available LTE only. 19 = ESM failure LTE only. 20 = MAC failure 21 = Synch failure 22 = Congestion 23 = MS security capabilities mismatch 24 = Security mode rejected, unspecified 25 = Not authorized for this CSG LTE only. 26 = Non-EPS authentication unacceptable LTE only. 39 = CS domain temporarily not available LTE only. 40 = No PDP/EPS bearer context activated 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message type not compatible with the protocol state 99 = Information element non-existent or not implemented 100 = Conditional IE error 101 = Message not compatible with the protocol state 111 = Protocol error, unspecified 1000 = Radio switch off

## Attach connected (GAC)

Event ID	GAC
Cellular systems	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN,LTE FDD,LTE TDD
Record state	Attach attempt state
Description	Recorded based on signaling when attach attempt is successful. This measurement event begins the attach state.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters |

### Parameters | Top |

Name	Type	Description
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**Parameters** |Top|

Name	Type	Description
Attach context ID	Context	Attach context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 21 = GAN WLAN

## Detach (GAD)

<b>Event ID</b>	GAD
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN,LTE FDD,LTE TDD
<b>Record state</b>	Attach state
<b>Description</b>	Recorded when detach is completed. This measurement event terminates the attach state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

**Parameters** |Top|

Name	Type	Description
Attach context ID	Context	Attach context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 21 = GAN WLAN
Detach status	Integer	GPRS detach status 1 = User detach 2 = Network detach (GMM cause) 3 = Mobile detach (GMM cause) 6 = Test system failure 7 = No service
Detach cause	Integer	Detach cause With GSM and UMTS see 3GPP TS 124.008 subclause 10.5.5.14. With LTE see 3GPP TS 124.301 9.9.3.9. 2 = IMSI unknown in HLR/HSS 3 = Illegal MS 5 = IMEI not accepted 6 = Illegal ME 7 = GPRS/EPS services not allowed 8 = GPRS/EPS services and non-GPRS/non-EPS services not allowed 9 = MS identity cannot be derived by the network 10 = Implicitly detached 11 = PLMN not allowed

		12 = Location/tracking area not allowed 13 = Roaming not allowed in this location area 14 = GPRS/EPS services not allowed in this PLMN 15 = No suitable cells in location/tracking area 16 = MSC temporarily not reachable 17 = Network failure 18 = CS domain not available LTE only. 19 = ESM failure LTE only. 20 = MAC failure 21 = Synch failure 22 = Congestion 23 = MS security capabilities mismatch 24 = Security mode rejected, unspecified 25 = Not authorized for this CSG LTE only. 26 = Non-EPS authentication unacceptable LTE only. 39 = CS domain temporarily not available LTE only. 40 = No PDP/EPS bearer context activated 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message type not compatible with the protocol state 99 = Information element non-existent or not implemented 100 = Conditional IE error 101 = Message not compatible with the protocol state 111 = Protocol error, unspecified 1000 = Radio switch off
Detach time	Integer	Detach time Time from detach attempt to detach. Minimum value: 0 Unit: ms

## Packet RX power control (PRXPC)

<b>Event ID</b>	PRXPC
<b>Cellular systems</b>	UMTS TD-SCDMA
<b>Record state</b>	Packet active state
<b>Description</b>	Recorded when the information is received from the device.
<b>Tools</b>	Nemo Outdoor

[Parameters](#) | [Parameters for UMTS TD-SCDMA](#) |

### Parameters [\[Top\]](#)

Name	Type	Description
Measured sys.	Integer	Measured system 6 = UMTS TD-SCDMA

### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters

HS-SCCH SIR	Float	HSDPA HS-SCCH SIR Range: -30 – 25 Unit: dB
HS-SCCH ISCP	Float	HSDPA HS-SCCH ISCP Range: -116 – -25 Unit: dB
HS-SCCH RSCP	Float	HSDPA HS-SCCH RSCP Range: -116 – -25 Unit: dB
HS-SCCH C/I	Float	HSDPA HS-SCCH C/I Range: -30 – 40 Unit: dB
HS-PDSCH SIR	Float	HSDPA HS-PDSCH SIR Range: -30 – 25 Unit: dB
#Timeslots	Integer	Number of timeslots
#Params/TSL	Integer	Number of parameters per timeslot
TSL	Integer	Timeslot Range: 0 – 6
HS-PDSCH ISCP	Float	HSDPA HS-PDSCH ISCP Range: -116 – -25 Unit: dB
HS-PDSCH RSCP	Float	HSDPA HS-PDSCH RSCP Range: -116 – -25 Unit: dB
HS-PDSCH C/I	Float	HSDPA HS-PDSCH C/I Range: -30 – 40 Unit: dB

## RLC block error rate (RLCBLER)

<b>Event ID</b>	RLCBLER
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA
<b>Record state</b>	Call connection, attach, and packet active state
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM | Parameters for UMTS FDD | Parameters for UMTS TD-SCDMA |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA

### Parameters for GSM [|Top|](#)

Name	Type	Description
BLER	Float	BLER DL This information is only recorded with (E)GPRS.

		Range: 0 – 100 Unit: %
#RLC blocks	Integer	RLC blocks total The total number of received RLC layer PDUs.
#RLC errors	Integer	RLC blocks erroneous The number of erroneously received RLC layer PDUs.

#### Parameters for UMTS FDD [|Top|](#)

Name	Type	Description
BLER	Float	BLER DL The average RLC layer block error rate is calculated from the transport blocks. Range: 0 – 100 Unit: %
#TrCh blocks	Integer	TrCh blocks received total The total number of received transport blocks.
#TrCh errors	Integer	TrCh blocks received erroneously total The number of erroneously received transport blocks.
TrChs	Integer	Number of transport channels
#Params/TrCh	Integer	Number of parameters per transport channel
TrCh ID	Integer	Transport channel ID Range: 0 – 32
BLER/TrCh	Float	BLER per transport channel The ratio of erroneously received transport blocks to total number of received transport blocks for the defined transport channel. Range: 0 – 100 Unit: %
#Blocks/TrCh	Integer	TrCh blocks received per TrCh The number of received transport blocks for the defined transport channel.
#Errors/TrCh	Integer	TrCh blocks received erroneously per TrCh The number of erroneously received transport blocks for the defined transport channel.

#### Parameters for UMTS TD-SCDMA [|Top|](#)

Name	Type	Description
BLER	Float	BLER DL The average RLC layer block error rate is calculated from the transport blocks. Range: 0 – 100 Unit: %
#TrCh blocks	Integer	TrCh blocks received total The total number of received transport blocks.
#TrCh errors	Integer	TrCh blocks received erroneously total The number of erroneously received transport blocks.
TrChs	Integer	Number of transport channels
#Params/TrCh	Integer	Number of parameters per transport channel
TrCh ID	Integer	Transport channel ID Range: 0 – 32
BLER/TrCh	Float	BLER per transport channel The ratio of erroneously received transport blocks to total number of received transport blocks for the defined transport channel. Range: 0 – 100 Unit: %
#Blocks/TrCh	Integer	TrCh blocks received per TrCh The number of received transport blocks for the defined transport channel.
#Errors/TrCh	Integer	TrCh blocks received erroneously per TrCh

		The number of erroneously received transport blocks for the defined transport channel.
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## RLC layer throughput (RLCRATE)

<b>Event ID</b>	RLCRATE
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for GSM | Parameters for UMTS | Parameters for LTE |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for GSM [|Top|](#)

Name	Type	Description
RLC rate UL	Integer	RLC throughput uplink The value of this parameter is calculated based on the SDUs that are successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC rate DL	Integer	RLC throughput downlink The value of this parameter is calculated based on the SDUs that are successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC retr. UL	Float	RLC retransmission rate uplink Range: 0 – 100 Unit: %

### Parameters for UMTS [|Top|](#)

Name	Type	Description
RLC rate UL	Integer	RLC throughput uplink The value of this parameter is calculated based on the SDUs that are successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC rate DL	Integer	RLC throughput downlink The value of this parameter is calculated based on the SDUs that are



		successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC retr. UL	Float	RLC retransmission rate uplink Range: 0 – 100 Unit: %
#RBs	Integer	Number of radio bearers
Params/RB	Integer	Number of parameters per radio bearer
RB ID	Integer	Radio bearer ID Range: 0 – 32
RLC rate UL	Integer	RLC throughput uplink per radio bearer Uplink RLC throughput for specified radio bearer. Minimum value: 0 Unit: bit/s
RLC rate DL	Integer	RLC throughput downlink per radio bearer Downlink RLC throughput for specified radio bearer. Minimum value: 0 Unit: bit/s
RLC retr. UL	Float	RLC retransmission rate uplink per radio bearer Range: 0 – 100

#### Parameters for LTE [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
RLC DL bitrate	Integer	RLC downlink throughput Total downlink RLC throughput is calculated over all radio bearers. The value of this parameter is calculated based on the SDUs that are successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC DL block rate	Integer	RLC downlink block rate Total number of correctly or incorrectly received RLC PDUs calculated from all active radio bearers. Minimum value: 0
RLC DL BLER	Float	RLC downlink BLER Total downlink RLC BLER calculated from all activate radio bearers. Range: 0 – 100 Unit: %
#RBs	Integer	Number of radio bearers
Params/RB	Integer	Number of parameters per radio bearer
RB ID	Integer	Radio bearer ID Range: 0 – 34
RLC DL bitrate/RB	Integer	RLC downlink throughput per RB The value of this parameter is calculated based on the SDUs that are successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC DL block rate/RB	Integer	RLC downlink block rate per RB The number of correctly or incorrectly received RLC PDUs from the defined radio bearer. Minimum value: 0
RLC DL BLER/RB	Float	RLC downlink BLER per RB Range: 0 – 100 Unit: %

## RLC layer throughput uplink (RLCRATEU)

Event ID	RLCRATEU
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for LTE |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
RLC UL bitrate	Integer	RLC uplink throughput Total uplink RLC throughput. The value of this parameter is calculated based on the SDUs that are successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC UL block rate	Integer	RLC uplink block rate Total number of correctly or incorrectly transmitted RLC PDUs calculated from all active radio bearers. Minimum value: 0
RLC UL retr.	Float	RLC uplink retransmission rate Total uplink RLC retransmission rate calculated from all active radio bearers. Range: 0 – 100 Unit: %
#RBs	Integer	Number of radio bearers
Params/RB	Integer	Number of parameters per radio bearer
RB ID	Integer	Radio bearer ID Range: 0 – 34
RLC UL bitrate/RB	Integer	RLC uplink throughput per RB The value of this parameter is calculated based on the SDUs that are successfully transferred through the RLC layer. Missing and erroneous RLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
RLC UL block rate/RB	Integer	RLC uplink block rate per RB The number of correctly or incorrectly transmitted RLC PDUs from the defined radio bearer. Minimum value: 0
RLC UL retr./RB	Float	RLC uplink retransmission rate per RB Range: 0 – 100

		Unit: %
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## PDCP layer throughput downlink (PDCPRATED)

Event ID	PDCPRATED
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for LTE |

### Parameters | [Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for LTE | [Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
PDCP DL bitrate	Integer	PDCP downlink throughput Total downlink PDCP throughput is calculated over all radio bearers. The value of this parameter is calculated based on the SDUs that are successfully transferred through the PDCP layer. Missing and erroneous PDCP blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
PDCP DL block rate	Integer	PDCP downlink block rate Total number of correctly or incorrectly received PDCP PDUs calculated from all active radio bearers. Minimum value: 0
#RBs	Integer	Number of radio bearers
Params/RB	Integer	Number of parameters per radio bearer
RB ID	Integer	Radio bearer ID Range: 0 – 34
PDCP DL bitrate/RB	Integer	PDCP downlink throughput per RB The value of this parameter is calculated based on the SDUs that are successfully transferred through the PDCP layer. Missing and erroneous PDCP blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
PDCP DL block rate/RB	Integer	PDCP downlink block rate per RB The number of correctly or incorrectly received PDCP PDUs from the defined radio bearer. Minimum value: 0

## PDCP layer throughput uplink (PDCPRATEU)

Event ID	PDCPRATEU
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for LTE](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD

### Parameters for LTE [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
PDCP UL bitrate	Integer	PDCP uplink throughput Total uplink PDCP throughput. The value of this parameter is calculated based on the SDUs that are successfully transferred through the PDCP layer. Missing and erroneous PDCP blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
PDCP UL block rate	Integer	PDCP uplink block rate Total number of correctly or incorrectly transmitted PDCP PDUs calculated from all active radio bearers. Minimum value: 0
#RBs	Integer	Number of radio bearers
Params/RB	Integer	Number of parameters per radio bearer
RB ID	Integer	Radio bearer ID Range: 0 – 34
PDCP UL bitrate/RB	Integer	PDCP uplink throughput per RB The value of this parameter is calculated based on the SDUs that are successfully transferred through the PDCP layer. Missing and erroneous PDCP blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
PDCP UL block rate/RB	Integer	PDCP uplink block rate per RB The number of correctly or incorrectly transmitted PDCP PDUs from the defined radio bearer. Minimum value: 0

## LLC layer throughput (LLCRATE)

Event ID	LLCRATE
Cellular systems	GSM,GAN WLAN
Record state	Attach and packet active state
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
Tools	Nemo Outdoor

[Parameters](#) | [Parameters for GSM](#) | [Parameters for GAN WLAN](#) |

### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 21 = GAN WLAN

### Parameters for GSM [|Top|](#)

Name	Type	Description
LLC rate UL	Integer	LLC throughput uplink The value of this parameter is calculated based on the SDUs that are transferred through the LLC layer. Missing and erroneous LLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
LLC rate DL	Integer	LLC throughput downlink The value of this parameter is calculated based on the SDUs that are successfully transferred through the LLC layer. Missing and erroneous LLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
LLC retrans. UL	Float	LLC retransmission rate uplink Range: 0 – 100 Unit: %

### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
LLC rate UL	Integer	LLC throughput uplink The value of this parameter is calculated based on the SDUs that are transferred through the LLC layer. Missing and erroneous LLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
LLC rate DL	Integer	LLC throughput downlink The value of this parameter is calculated based on the SDUs that are successfully transferred through the LLC layer. Missing and erroneous LLC blocks are excluded from the throughput calculation. Minimum value: 0 Unit: bit/s
LLC retrans. UL	Float	LLC retransmission rate uplink Range: 0 – 100 Unit: %

## Routing area update attempt (RUA)

<b>Event ID</b>	RUA
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN
<b>Record state</b>	Attach state
<b>Description</b>	Recorded based on GMM signaling when routing area update is attempted. This measurement event begins the routing area update attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Routing area update context ID	Context	Routing area update context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 21 = GAN WLAN
RAU type	Integer	Routing area update type 1 = Routing area update 2 = Combined routing area and location area update 3 = Combined routing area and location area update with IMSI attach 4 = Periodic update

## Routing area update successful (RUS)

<b>Event ID</b>	RUS
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN
<b>Record state</b>	Routing area update attempt state
<b>Description</b>	Recorded based on GMM signaling when routing area update is successful. This measurement event terminates the routing area update attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Routing area update context ID	Context	Routing area update context ID

Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 21 = GAN WLAN
Old RAC	Integer	Old RAC Routing area code of the old cell. Range: 0 – 255
Old LAC	Integer	Old location area code Location area code of the old cell. Range: 0 – 65535
RAC	Integer	Routing area code
LAC	Integer	Location area code Range: 0 – 65535

## Routing area update fail (RUF)

<b>Event ID</b>	RUF
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,GAN WLAN
<b>Record state</b>	Routing area update attempt state
<b>Description</b>	Recorded based on GMM signaling when routing area update is successful. This measurement event terminates the routing area update attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters

### Parameters [Top](#)

Name	Type	Description
Routing area update context ID	Context	Routing area update context ID
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 21 = GAN WLAN
Att. RAC	Integer	Attempted RAC Attempted routing area code Routing area code of the attempted cell. Range: 0 – 255
Att. LAC	Integer	Attempted LAC Attempted location area code Location area code of the attempted cell. Range: 0 – 65535
GMM cause	Integer	Routing area update failure cause With GSM and UMTS see 3GPP TS 124.008 subclause 10.5.5.14. With LTE see 3GPP TS 124.301 9.9.3.9. 2 = IMSI unknown in HLR/HSS 3 = Illegal MS 5 = IMEI not accepted 6 = Illegal ME 7 = GPRS/EPS services not allowed 8 = GPRS/EPS services and non-GPRS/non-EPS services not allowed

		9 = MS identity cannot be derived by the network 10 = Implicitly detached 11 = PLMN not allowed 12 = Location/tracking area not allowed 13 = Roaming not allowed in this location area 14 = GPRS/EPS services not allowed in this PLMN 15 = No suitable cells in location/tracking area 16 = MSC temporarily not reachable 17 = Network failure 18 = CS domain not available LTE only. 19 = ESM failure LTE only. 20 = MAC failure 21 = Synch failure 22 = Congestion 23 = MS security capabilities mismatch 24 = Security mode rejected, unspecified 25 = Not authorized for this CSG LTE only. 26 = Non-EPS authentication unacceptable LTE only. 39 = CS domain temporarily not available LTE only. 40 = No PDP/EPS bearer context activated 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message type not compatible with the protocol state 99 = Information element non-existent or not implemented 100 = Conditional IE error 101 = Message not compatible with the protocol state 111 = Protocol error, unspecified 1000 = Radio switch off
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## Tracking area update attempt (TUA)

<b>Event ID</b>	TUA
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Idle
<b>Description</b>	Recorded based on EMM signaling when tracking area update is attempted. For more information about the tracking area update procedure, see 3GPP TS 124.301 subclause 5.5.3. This measurement event begins the tracking area update attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters [|Top](#)

Name	Type	Description
Tracking area update context ID	Context	Tracking area update context ID
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
TAU type	Integer	Tracking area update type This is the same as EPS update type parameter in 3GPP TS



		124.301 subclause 9.9.3.14. 0 = TA updating 1 = Combined TA/LA updating 2 = Combined TA/LA updating with IMSI attach 3 = Periodic updating
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## Tracking area update successful (TUS)

<b>Event ID</b>	TUS
<b>Cellular systems</b>	LTE FDD,LTE TDD
<b>Record state</b>	Tracking area update attempt state
<b>Description</b>	Recorded based on EMM signaling when tracking area update is successful. For more information about the tracking area update procedure, see 3GPP TS 124.301 subclause 5.5.3. This measurement event terminates the tracking area update attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Tracking area update context ID	Context	Tracking area update context ID
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
#TACs	Integer	Number of tracking area identities
#Params/TAC	Integer	Number of parameters per tracking area identity
MCC	Integer	Mobile country code See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	Mobile network code Range: 0 – 999
TAC	Integer	Tracking area code The tracking area code in the tracking area identity list. See 3GPP TS 124.301 subclause 9.9.3.33. Range: 0 – 65535

## Tracking area update fail (TUF)

<b>Event ID</b>	TUF
<b>Cellular systems</b>	LTE FDD,LTE TDD

<b>Record state</b>	Tracking area update attempt state
<b>Description</b>	Recorded based on EMM signaling when tracking area update is successful. For more information about the tracking area update procedure, see 3GPP TS 124.301 subclause 5.5.3. This measurement event terminates the routing area update attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [\[Top\]](#)

Name	Type	Description
Tracking area update context ID	Context	Tracking area update context ID
Measured sys.	Integer	Measured system 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD
EMM cause	Integer	Tracking area update failure cause Tracking area update rejection events see 3GPP TS 24.301 subclause 8.2.28. 2 = IMSI unknown in HLR/HSS 3 = Illegal MS 5 = IMEI not accepted 6 = Illegal ME 7 = GPRS/EPS services not allowed 8 = GPRS/EPS services and non-GPRS/non-EPS services not allowed 9 = MS identity cannot be derived by the network 10 = Implicitly detached 11 = PLMN not allowed 12 = Location/tracking area not allowed 13 = Roaming not allowed in this location area 14 = GPRS/EPS services not allowed in this PLMN 15 = No suitable cells in location/tracking area 16 = MSC temporarily not reachable 17 = Network failure 18 = CS domain not available LTE only. 19 = ESM failure LTE only. 20 = MAC failure 21 = Synch failure 22 = Congestion 23 = MS security capabilities mismatch 24 = Security mode rejected, unspecified 25 = Not authorized for this CSG LTE only. 26 = Non-EPS authentication unacceptable LTE only. 39 = CS domain temporarily not available LTE only. 40 = No PDP/EPS bearer context activated 95 = Semantically incorrect message 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message type not compatible with the protocol state 99 = Information element non-existent or not implemented 100 = Conditional IE error 101 = Message not compatible with the protocol state 111 = Protocol error, unspecified 1000 = Radio switch off

## TBF information (TBFI)

<b>Event ID</b>	TBFI
<b>Cellular systems</b>	GSM
<b>Record state</b>	Attach and packet active state
<b>Description</b>	Recorded when TBF allocation is modified. This information can be based on RLC/MAC and layer3 signaling, or on trace messages received from the device.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM
#Header params	Integer	Number of header parameters
TLLI	String	Temporary logical link identity
#Params/TBF	Integer	Number of parameters per TBF
#UL TBFs	Integer	Number of uplink TBFs
TFI	Integer	TFI Temporary flow identity. Range: 0 – 31
RLC win.	Integer	RLC window size RLC layer send buffer size. Range: 64 – 1024
#DL TBFs	Integer	Number of downlink TBFs
TFI	Integer	TFI Temporary flow identity. Range: 0 – 31
RLC win.	Integer	RLC window size RLC layer send buffer size. Range: 64 – 1024

## TBF uplink establishment (TBFULE)

<b>Event ID</b>	TBFULE
<b>Cellular systems</b>	GSM
<b>Record state</b>	Attach and packet active state
<b>Description</b>	Recorded after TBF uplink establishment attempt. The recorded information is based on RLC/MAC and layer3 signaling messages.
<b>Tools</b>	Nemo Outdoor

Parameters |

### Parameters |Top|

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Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM
UL TBF est. cause	Integer	Uplink TBF establishment cause 1 = One phase access in channel request 2 = Single block or two phase access in channel request 11 = One phase access in packet channel request 12 = Two phase access in packet channel request 13 = Page response in packet channel request 14 = Cell update in packet channel request 15 = MM procedure in packet channel request 16 = Single block without TBF establishment in packet channel request 17 = One phase access in RLC unack mode in packet channel request 21 = One phase access in EGPRS packet channel request 22 = Two phase access in EGPRS packet channel request 23 = Signalling in EGPRS packet channel request 24 = One phase access in RLC unack mode in EGPRS packet channel request 31 = Channel request in packet downlink ack/nack 32 = Channel request in EGPRS packet downlink ack/nack 51 = User data in DTM request 52 = Page response in DTM request 53 = Cell update in DTM request 54 = MM procedure in DTM request
UL TBF est. type	Integer	Uplink TBF establishment type 1 = One phase access 2 = Two phase access 3 = Single block or multi block access 4 = (EGPRS) Packet downlink ACK/NACK channel request 5 = DTM request
UL TBF est. status	Integer	Uplink TBF establishment status 1 = Succeeded 2 = Failed 3 = Rejected 4 = Aborted (e.g. Downlink TBF assignment)
#UL TBF est. req	Integer	Uplink TBF establishment request count

## MAC layer info (MACI)

<b>Event ID</b>	MACI
<b>Cellular systems</b>	UMTS FDD,LTE FDD,LTE TDD
<b>Record state</b>	Always
<b>Description</b>	Recorded when L1/MAC layer information changes.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for UMTS FDD | Parameters for LTE |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 7 = LTE FDD This is also used with NB-IoT.

**Parameters for UMTS FDD** [|Top|](#)

Name	Type	Description
#Serving cells	Integer	Number of serving cells
#Params/serving cell	Integer	Number of parameters per serving cell
Cell type	Integer	HSDPA cell type 2 = Secondary
Cell state	Integer	HSDPA cell state Defines if the cell is activated or deactivated in the physical/MAC layer. 0 = Deactive 1 = Active

**Parameters for LTE** [|Top|](#)

Name	Type	Description
#Serving cells	Integer	Number of serving cells
#Params/serving cell	Integer	Number of parameters per serving cell
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4
Cell state	Integer	SCell state Defines if the cell is activated or deactivated in the physical/MAC layer. 0 = Deactive 1 = Active

## MAC layer throughput (MACRATE)

<b>Event ID</b>	MACRATE
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,WiMAX
<b>Record state</b>	Always
<b>Description</b>	Recorded when measurement sample is received from the device and the received sample differs from the previous result. This UMTS measurement event is recorded simultaneously with the PLAID measurement event and only during HSDPA session. Separate measurement event is logged for each serving cell with LTE.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
 [Parameters for UMTS FDD](#) |
 [Parameters for UMTS TD-SCDMA](#) |
 [Parameters for LTE](#) |
 [Parameters for WiMAX](#) |

**Parameters** [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT.

		8 = LTE TDD 25 = WiMAX
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#### Parameters for UMTS FDD [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#TrCh	Integer	Number of transport channels
#Params/TrCh	Integer	Number of parameters per transport channel
TrCh ID	Integer	Transport channel ID Range: 0 – 32
TrCh type	Integer	Transport channel type 3 = HS-DSCH
MAC-hs bitrate	Integer	HSDPA MAC-hs throughput The value of this parameter is calculated based on the SDUs that are successfully received through the MAC-hs layer. Missing and erroneous MAC-hs blocks are excluded from the throughput calculation. When exact MAC-hs SDUs are not available the approximation of the MAC-hs throughput is calculated based on transport block sizes ignoring incorrect or duplicated transport blocks. This causes a minor error between reported throughput and real MAC-hs throughput but it still provides a very good approximation of the real MAC-hs throughput. Minimum value: 0 Unit: bit/s
MAC-hs block rate	Integer	HSDPA MAC-hs block rate The total number of MAC-hs PDUs received during the reporting interval.
MAC-hs 1st retr.	Float	HSDPA MAC-hs 1st retransmission rate The ratio of MAC-hs PDUs retransmitted after the first transmission attempt. Range: 0 – 100 Unit: %
MAC-hs 2nd retr.	Float	HSDPA MAC-hs 2nd retransmission rate The ratio of MAC-hs PDUs retransmitted after the second transmission attempt. Range: 0 – 100 Unit: %
MAC-hs 3rd+ retr.	Float	HSDPA MAC-hs 3rd+ retransmission rate The ratio of MAC-hs PDUs retransmitted after the third or later transmission attempt. Range: 0 – 100 Unit: %
MAC-hs redundant retr.	Float	HSDPA MAC-hs redundant retransmission rate The ratio of MAC-hs PDUs that has already been correctly received and has unnecessarily been retransmitted (duplicated transmission). This happens when the ACK message sent by the mobile is decoded or received incorrectly, or not received at all, by the the base station. Range: 0 – 100 Unit: %
Cell type	Integer	HSDPA cell type 1 = Primary 2 = Secondary

#### Parameters for UMTS TD-SCDMA [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#TrCh	Integer	Number of transport channels
#Params/TrCh	Integer	Number of parameters per transport channel
TrCh ID	Integer	Transport channel ID Range: 0 – 32
TrCh type	Integer	Transport channel type

		3 = HS-DSCH
MAC-hs bitrate	Integer	HSDPA MAC-hs throughput The value of this parameter is calculated based on the SDUs that are successfully received through the MAC-hs layer. Missing and erroneous MAC-hs blocks are excluded from the throughput calculation. When exact MAC-hs SDUs are not available the approximation of the MAC-hs throughput is calculated based on transport block sizes ignoring incorrect or duplicated transport blocks. This causes a minor error between reported throughput and real MAC-hs throughput but it still provides a very good approximation of the real MAC-hs throughput. Minimum value: 0 Unit: bit/s
MAC-hs block rate	Integer	HSDPA MAC-hs block rate The total number of MAC-hs PDUs received during the reporting interval.
MAC-hs 1st retransmission rate	Float	HSDPA MAC-hs 1st retransmission rate Number of blocks retransmitted after the first transmission attempt. Range: 0 – 100 Unit: %
MAC-hs 2nd retransmission rate	Float	HSDPA MAC-hs 2nd retransmission rate Number of blocks retransmitted after the second transmission attempt. Range: 0 – 100 Unit: %
MAC-hs 3rd+ retransmission rate	Float	HSDPA MAC-hs 3rd+ retransmission rate Number of blocks retransmitted after the third or later transmission attempt. Range: 0 – 100 Unit: %

#### Parameters for LTE [\[Top\]](#)

Name	Type	Description
MAC DL bitrate	Integer	MAC downlink throughput MAC throughput that is calculated from successfully received SDUs. With the devices that do not support MAC throughput parameter the estimation of MAC throughput is calculated from successfully received transport blocks. The estimation is a little bit higher than the real MAC throughput since it includes MAC header, MAC control data, and padding to the throughput. Minimum value: 0 Unit: bit/s
MAC DL block rate	Integer	MAC downlink block rate Number of successfully received transport blocks excluding redundant TBs. Minimum value: 0
MAC DL BLER	Float	MAC downlink BLER The ratio of erroneously received transport blocks to all received transport blocks. Range: 0 – 100 Unit: %
MAC DL BLER 1st	Float	MAC downlink BLER 1st The ratio of 1st retransmissions to all received TBs. Range: 0 – 100 Unit: %
MAC DL BLER 2nd	Float	MAC downlink BLER 2nd The ratio of 2nd retransmissions to all received TBs. Range: 0 – 100 Unit: %
MAC DL BLER 3rd+	Float	MAC downlink BLER 3rd+ The ratio of 3rd or more retransmission to all received TBs. Range: 0 – 100 Unit: %
MAC DL residual BLER	Float	MAC downlink residual BLER Defines the ratio of transport blocks that HARQ was not able to correct and RLC layer has to fix. The ratio of HARQ failed transport blocks to

		new transmissions. Range: 0 – 100 Unit: %
MAC DL new	Integer	MAC downlink new blocks The number of received new (1st attempt) transport blocks since the last report. Minimum value: 0
MAC DL redundant retransmission	Float	MAC downlink redundant retransmission The ratio of transport blocks that were already correctly received and have unnecessarily been retransmitted (duplicated transmission). This happens when the ACK message sent by the mobile is decoded or received incorrectly, or not received at all, by the the base station. Range: 0 – 100 Unit: %
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4

#### Parameters for WiMAX [|Top|](#)

Name	Type	Description
#MAC header params	Integer	Number of header parameters
MAC rate UL	Integer	WiMAX MAC throughput uplink Minimum value: 0 Unit: bit/s
MAC rate DL	Integer	WiMAX MAC throughput downlink Minimum value: 0 Unit: bit/s
MAC packet rate UL	Integer	WiMAX MAC packet rate uplink
MAC packet rate DL	Integer	WiMAX MAC packet rate downlink

## MAC layer throughput uplink (MACRATEU)

Event ID	MACRATEU
Cellular systems	LTE FDD,LTE TDD
Record state	Always
Description	Recorded when measurement sample is received from the device.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for LTE](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 7 = LTE FDD



This is also used with NB-IoT.  
8 = LTE TDD

#### Parameters for LTE [|Top](#)

Name	Type	Description
MAC UL bitrate	Integer	MAC uplink throughput The throughput that is calculated from successfully transmitted MAC SDUs. With the devices that do not support MAC throughput parameter the estimation of MAC throughput is calculated from successfully delivered transport blocks. The estimation is a little bit higher than the real MAC throughput since it includes MAC headers, MAC control data, and padding. Minimum value: 0 Unit: bit/s
MAC UL block rate	Integer	MAC uplink block rate The number of successfully transmitted transport blocks since previous report. Minimum value: 0
MAC UL retr.	Float	MAC uplink retransmission rate The ratio of retransmitted transport blocks to all transmitted TBs. Range: 0 – 100 Unit: %
MAC UL retr. 1st	Float	MAC uplink retransmission rate 1st The ratio of 1st retransmissions to all transmitted TBs. Range: 0 – 100 Unit: %
MAC UL retr. 2nd	Float	MAC uplink retransmission rate 2nd The ratio of 2nd retransmissions to all transmitted TBs. Range: 0 – 100 Unit: %
MAC UL retr. 3rd+	Float	MAC uplink retransmission rate 3rd+ The ratio of 3rd or more retransmissions to all transmitted TBs. Range: 0 – 100 Unit: %
MAC UL residual BLER	Float	MAC uplink residual BLER Defines the ratio of transport blocks that HARQ was not able to correct and RLC layer have to fix. The ratio of HARQ failed transport blocks to new transmissions. Range: 0 – 100 Unit: %
MAC UL new	Integer	MAC uplink new blocks The number of transmitted new (1st attempt) transport blocks since the last report. Minimum value: 0
Cell type	Integer	Serving cell type The value of this parameter is the same as the serving cell index. 0 = PCell Primary serving cell. 1 = SCell 1 2 = SCell 2 3 = SCell 3 4 = SCell 4

## MAC layer block error rate (MACBLER)

Event ID	MACBLER
Cellular systems	UMTS FDD,UMTS TD-SCDMA,WiMAX
Record state	Always
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result. This UMTS measurement event is recorded simultaneously with the PLAID measurement event and only during HSDPA session.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for UMTS FDD](#) | [Parameters for UMTS TD-SCDMA](#) | [Parameters for WiMAX](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD 6 = UMTS TD-SCDMA 25 = WiMAX

### Parameters for UMTS FDD [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#TrCh	Integer	Number of transport channels
#Params/TrCh	Integer	Number of parameters per transport channel
TrCh ID	Integer	Transport channel ID Transport channel ID is always n/a for HS-DSCH transport channel type. Range: 0 – 32
TrCh type	Integer	Transport channel type 3 = HS-DSCH
#ACK/NACK	Integer	HSDPA MAC-hs ACK/NACK count The total number of ACK and NACK status messages sent to the uplink by MAC-hs layer.
MAC-hs BLER	Float	HSDPA MAC-hs block error rate The ratio of erroneously received MAC-hs PDUs to all received MAC-hs PDUs. Range: 0 – 100 Unit: %
#Data blocks	Integer	HSDPA MAC-hs data blocks The total number of data blocks transferred during the reporting period.
MAC-hs residual BLER	Float	HSDPA MAC-hs residual block error rate The ratio of transport blocks that have not been fixed by HARQ (in the MAC-hs layer) to all 'new data' indicated transport blocks (= first attempts). Range: 0 – 100 Unit: %
Cell type	Integer	HSDPA cell type 1 = Primary 2 = Secondary

### Parameters for UMTS TD-SCDMA [|Top](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
#TrCh	Integer	Number of transport channels
#Params/TrCh	Integer	Number of parameters per transport channel
TrCh ID	Integer	Transport channel ID Transport channel ID is always n/a for HS-DSCH transport channel

		type. Range: 0 – 32
TrCh type	Integer	Transport channel type 3 = HS-DSCH
#ACK/NACK	Integer	HSDPA MAC-hs ACK/NACK count The total number of ACK and NACK status messages sent to the uplink by MAC-hs layer.
MAC-hs BLER	Float	HSDPA MAC-hs block error rate The ratio of erroneously received MAC-hs PDUs to all received MAC-hs PDUs. Range: 0 – 100 Unit: %
#Data blocks	Integer	HSDPA MAC-hs data blocks The total number of data blocks transferred during the reporting period.
MAC-hs residual BLER	Float	HSDPA MAC-hs residual block error rate The ratio of transport blocks that have not been fixed by HARQ (in the MAC-hs layer) to all 'new data' indicated transport blocks (= first attempts). Range: 0 – 100 Unit: %

#### Parameters for WiMAX [|Top|](#)

Name	Type	Description
PER	Float	WiMAX PER Range: 0 – 100 Unit: %

## AMR information (AMRI)

Event ID	AMRI
Cellular systems	GSM,GAN WLAN
Record state	Call connection state
Description	Recorded when AMR information is modified based on the trace messages of the device.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for GSM](#) | 
 [Parameters for GAN WLAN](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 21 = GAN WLAN

#### Parameters for GSM [|Top|](#)

Name	Type	Description
AMR init. mode	Integer	AMR initial codec mode 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4

		5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR ICM1	Integer	AMR initial codec mode indicator 0 = Implicit rule 1 = RATSCCH/L3
AMR TH1	Float	AMR first threshold Range: 0 – 32 Unit: dB
AMR HYS1	Float	AMR first hysteresis Range: 0 – 8 Unit: dB
AMR TH2	Float	AMR second threshold Range: 0 – 32 Unit: dB
AMR HYS2	Float	AMR second hysteresis Range: 0 – 8 Unit: dB
AMR TH3	Float	AMR third threshold Range: 0 – 32 Unit: dB
AMR HYS3	Float	AMR third hysteresis Range: 0 – 8 Unit: dB
#Active codecs	Integer	AMR number of active codecs
AMR codecs	Integer	AMR active codecs 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85

#### Parameters for GAN WLAN [\[Top\]](#)

Name	Type	Description
AMR init. mode	Integer	AMR initial codec mode 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6

		101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR ICM1	Integer	AMR initial codec mode indicator 0 = Implicit rule 1 = RATSCCH/L3
AMR TH1	Float	AMR first threshold Range: 0 – 50 Unit: %
AMR HYS1	Float	AMR first hysteresis Range: 0 – 17 Unit: %
AMR TH2	Float	AMR second threshold Range: 0 – 50 Unit: %
AMR HYS2	Float	AMR second hysteresis Range: 0 – 17 Unit: %
AMR TH3	Float	AMR third threshold Range: 0 – 50 Unit: %
AMR HYS3	Float	AMR third hysteresis Range: 0 – 17 Unit: %
#Active codecs	Integer	AMR number of active codecs
AMR codecs	Integer	AMR active codecs 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85

## AMR status (AMRS)

<b>Event ID</b>	AMRS
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,GAN WLAN
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded when AMR information is modified based on the trace messages of the device.

## Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 21 = GAN WLAN

## Parameters for GSM [|Top|](#)

Name	Type	Description
AMR mode UL	Integer	AMR mode uplink Current UL mode within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR mode DL	Integer	AMR mode downlink Current DL mode within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR mode cmd.	Integer	AMR last mode command Last mode command within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85

		102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR mode req.	Integer	AMR last mode request Last mode request within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR channel type	Integer	AMR channel type 1 = Half rate 2 = Full rate 3 = Wideband rate

**Parameters for UMTS FDD and UMTS TD-SCDMA** [\[Top\]](#)

Name	Type	Description
AMR mode UL	Integer	AMR mode uplink Current UL mode within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR mode DL	Integer	AMR mode downlink Current DL mode within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25

106 = WB 19.85  
107 = WB 23.05  
108 = WB 23.85

# Parameters for LTE [\[Top\]](#)

Name	Type	Description
AMR mode UL	Integer	<p>AMR mode uplink Current UL mode within mode set.</p> <p>0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85 184 = EVS primary 5.9 (VBR) 185 = EVS primary 7.2 186 = EVS primary 8.0 187 = EVS primary 9.6 188 = EVS primary 13.2 189 = EVS primary 16.4 190 = EVS primary 24.4 191 = EVS primary 32 192 = EVS primary 48 193 = EVS primary 64 194 = EVS primary 96 195 = EVS primary 128 200 = EVS NB 5.9 (VBR) 201 = EVS NB 7.2 202 = EVS NB 8.0 203 = EVS NB 9.6 204 = EVS NB 13.2 205 = EVS NB 16.4 206 = EVS NB 24.4 216 = EVS AMR-WB IO 6.6 217 = EVS AMR-WB IO 8.85 218 = EVS AMR-WB IO 12.65 219 = EVS AMR-WB IO 14.25 220 = EVS AMR-WB IO 15.85 221 = EVS AMR-WB IO 18.25 222 = EVS AMR-WB IO 19.85 223 = EVS AMR-WB IO 23.05 224 = EVS AMR-WB IO 23.85 232 = EVS WB 5.9 (VBR) 233 = EVS WB 7.2 234 = EVS WB 8.0 235 = EVS WB 9.6 236 = EVS WB 13.2 237 = EVS WB 16.4 238 = EVS WB 24.4 239 = EVS WB 32 240 = EVS WB 48 241 = EVS WB 64 242 = EVS WB 96 243 = EVS WB 128 251 = EVS SWB 9.6 252 = EVS SWB 13.2 253 = EVS SWB 16.4 254 = EVS SWB 24.4 255 = EVS SWB 32</p>



		256 = EVS SWB 48 257 = EVS SWB 64 258 = EVS SWB 96 259 = EVS SWB 128 269 = EVS FB 16.4 270 = EVS FB 24.4 271 = EVS FB 32 272 = EVS FB 48 273 = EVS FB 64 274 = EVS FB 96 275 = EVS FB 128
AMR mode DL	Integer	AMR mode downlink Current DL mode within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85 184 = EVS primary 5.9 (VBR) 185 = EVS primary 7.2 186 = EVS primary 8.0 187 = EVS primary 9.6 188 = EVS primary 13.2 189 = EVS primary 16.4 190 = EVS primary 24.4 191 = EVS primary 32 192 = EVS primary 48 193 = EVS primary 64 194 = EVS primary 96 195 = EVS primary 128 200 = EVS NB 5.9 (VBR) 201 = EVS NB 7.2 202 = EVS NB 8.0 203 = EVS NB 9.6 204 = EVS NB 13.2 205 = EVS NB 16.4 206 = EVS NB 24.4 216 = EVS AMR-WB IO 6.6 217 = EVS AMR-WB IO 8.85 218 = EVS AMR-WB IO 12.65 219 = EVS AMR-WB IO 14.25 220 = EVS AMR-WB IO 15.85 221 = EVS AMR-WB IO 18.25 222 = EVS AMR-WB IO 19.85 223 = EVS AMR-WB IO 23.05 224 = EVS AMR-WB IO 23.85 232 = EVS WB 5.9 (VBR) 233 = EVS WB 7.2 234 = EVS WB 8.0 235 = EVS WB 9.6 236 = EVS WB 13.2 237 = EVS WB 16.4 238 = EVS WB 24.4 239 = EVS WB 32 240 = EVS WB 48 241 = EVS WB 64 242 = EVS WB 96 243 = EVS WB 128 251 = EVS SWB 9.6

		252 = EVS SWB 13.2 253 = EVS SWB 16.4 254 = EVS SWB 24.4 255 = EVS SWB 32 256 = EVS SWB 48 257 = EVS SWB 64 258 = EVS SWB 96 259 = EVS SWB 128 269 = EVS FB 16.4 270 = EVS FB 24.4 271 = EVS FB 32 272 = EVS FB 48 273 = EVS FB 64 274 = EVS FB 96 275 = EVS FB 128
CMR UL	Integer	AMR channel mode request uplink Received maximum allowed uplink channel mode. This is also known as channel mode command. Currently this is only logged with EVS. See more 3GPP TS 126.445 subclause A.2.2.1.1. 184 = EVS primary 5.9 (VBR) 185 = EVS primary 7.2 186 = EVS primary 8.0 187 = EVS primary 9.6 188 = EVS primary 13.2 189 = EVS primary 16.4 190 = EVS primary 24.4 191 = EVS primary 32 192 = EVS primary 48 193 = EVS primary 64 194 = EVS primary 96 195 = EVS primary 128 200 = EVS NB 5.9 (VBR) 201 = EVS NB 7.2 202 = EVS NB 8.0 203 = EVS NB 9.6 204 = EVS NB 13.2 205 = EVS NB 16.4 206 = EVS NB 24.4 216 = EVS AMR-WB IO 6.6 217 = EVS AMR-WB IO 8.85 218 = EVS AMR-WB IO 12.65 219 = EVS AMR-WB IO 14.25 220 = EVS AMR-WB IO 15.85 221 = EVS AMR-WB IO 18.25 222 = EVS AMR-WB IO 19.85 223 = EVS AMR-WB IO 23.05 224 = EVS AMR-WB IO 23.85 232 = EVS WB 5.9 (VBR) 233 = EVS WB 7.2 234 = EVS WB 8.0 235 = EVS WB 9.6 236 = EVS WB 13.2 237 = EVS WB 16.4 238 = EVS WB 24.4 239 = EVS WB 32 240 = EVS WB 48 241 = EVS WB 64 242 = EVS WB 96 243 = EVS WB 128 251 = EVS SWB 9.6 252 = EVS SWB 13.2 253 = EVS SWB 16.4 254 = EVS SWB 24.4 255 = EVS SWB 32 256 = EVS SWB 48 257 = EVS SWB 64 258 = EVS SWB 96 259 = EVS SWB 128 269 = EVS FB 16.4 270 = EVS FB 24.4 271 = EVS FB 32

		272 = EVS FB 48 273 = EVS FB 64 274 = EVS FB 96 275 = EVS FB 128
CMR DL	Integer	AMR channel mode request downlink Transmitted maximum allowed downlink channel mode. This is also known as channel mode request. Currently this is only logged with EVS. See more 3GPP TS 126.445 subclause A.2.2.1.1. 184 = EVS primary 5.9 (VBR) 185 = EVS primary 7.2 186 = EVS primary 8.0 187 = EVS primary 9.6 188 = EVS primary 13.2 189 = EVS primary 16.4 190 = EVS primary 24.4 191 = EVS primary 32 192 = EVS primary 48 193 = EVS primary 64 194 = EVS primary 96 195 = EVS primary 128 200 = EVS NB 5.9 (VBR) 201 = EVS NB 7.2 202 = EVS NB 8.0 203 = EVS NB 9.6 204 = EVS NB 13.2 205 = EVS NB 16.4 206 = EVS NB 24.4 216 = EVS AMR-WB IO 6.6 217 = EVS AMR-WB IO 8.85 218 = EVS AMR-WB IO 12.65 219 = EVS AMR-WB IO 14.25 220 = EVS AMR-WB IO 15.85 221 = EVS AMR-WB IO 18.25 222 = EVS AMR-WB IO 19.85 223 = EVS AMR-WB IO 23.05 224 = EVS AMR-WB IO 23.85 232 = EVS WB 5.9 (VBR) 233 = EVS WB 7.2 234 = EVS WB 8.0 235 = EVS WB 9.6 236 = EVS WB 13.2 237 = EVS WB 16.4 238 = EVS WB 24.4 239 = EVS WB 32 240 = EVS WB 48 241 = EVS WB 64 242 = EVS WB 96 243 = EVS WB 128 251 = EVS SWB 9.6 252 = EVS SWB 13.2 253 = EVS SWB 16.4 254 = EVS SWB 24.4 255 = EVS SWB 32 256 = EVS SWB 48 257 = EVS SWB 64 258 = EVS SWB 96 259 = EVS SWB 128 269 = EVS FB 16.4 270 = EVS FB 24.4 271 = EVS FB 32 272 = EVS FB 48 273 = EVS FB 64 274 = EVS FB 96 275 = EVS FB 128

#### Parameters for GAN WLAN [|Top|](#)

Name	Type	Description
AMR mode UL	Integer	AMR mode uplink

		Current UL mode within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR mode DL	Integer	AMR mode downlink Current DL mode within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR mode cmd.	Integer	AMR last mode command Last mode command within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25 104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR mode req.	Integer	AMR last mode request Last mode request within mode set. 0 = NB 4.75 1 = NB 5.15 2 = NB 5.9 3 = NB 6.7 4 = NB 7.4 5 = NB 7.95 6 = NB 10.2 7 = NB 12.2 100 = WB 6.6 101 = WB 8.85 102 = WB 12.65 103 = WB 14.25

		104 = WB 15.85 105 = WB 18.25 106 = WB 19.85 107 = WB 23.05 108 = WB 23.85
AMR channel type	Integer	AMR channel type 1 = Half rate 2 = Full rate 3 = Wideband rate

## AMR link quality estimate (AMRQ)

<b>Event ID</b>	AMRQ
<b>Cellular systems</b>	GSM
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM
AMR C/I	Float	AMR link quality estimate With AMR calls, Link Quality Estimation is reported normally. Codec mode adaptation is based on a normalized, one-dimensional measure of the channel quality, called the Quality Indicator. For reference purposes, the Quality Indicator is defined as an equivalent carrier to interferer ratio, C/I <sub>norm</sub> . The reference channel conditions for the normalized Quality Indicator C/I <sub>norm</sub> shall be Typical Urban 3 km/h with ideal frequency hopping at 900 MHz. The corresponding reference receiver performance is specified as the minimum performance requirement in 3GPP TS 05.05. The MS and BSSs shall continuously update the Quality Indicator estimates. The Quality Indicator may be derived from an estimate of the current carrier to interferer ratio, C/I <sub>est</sub> , or from an estimate of the current raw bit error rate (BER <sub>est</sub> ). A normalization factor >0 dB may be applied between the estimate (C/I <sub>est</sub> or BER <sub>est</sub> ) and the Quality Indicator to compensate for higher receiver performance than the minimum performance requirement in 3GPP TS 05.05. This normalization factor may be dependent on the C/I at the antenna connector. The MS shall apply a second normalization factor to be applied to normalize the estimate with respect to different channel types, such that, with given C/I <sub>norm</sub> and given codec mode, the FER after channel decoding becomes independent of the channel type. Based on the LQE estimation terminal sent the codec mode request to network requesting correct AMR codecs. Therefore during the AMR calls the LQE can be used with confidence instead of C/I. See 3GPP TS 145.009 Annex A. Range: 0 – 40 Unit: dB

## Audio quality uplink (AQUL)

Event ID	AQUL
Cellular systems	All
Record state	Call connection state
Description	Recorded after voice quality sample is received and the MOS score of the sample is calculated. This measurement event is recorded only during voice quality measurements.
Tools	Nemo Outdoor, Nemo Handy, Nemo Server

[Parameters](#) | [Parameters for EMOS, PESQ, 3SQM, POLQA, and Sevana AQuA](#) | [Parameters for Telchemy VQmon](#) |

### Parameters [\[Top\]](#)

Name	Type	Description
AQ type UL	Integer	Audio quality type UL 1 = EMOS 2 = PESQ NB This is the same as P.862.1 standard. 3 = 3SQM 6 = PESQ WB This is the same as P.862.2 standard. 7 = POLQA NB This is the same as ITU-T P.863 standard. 8 = POLQA SWB This is the same as ITU-T P.863 standard. 9 = Sevana AQuA NB 10 = Sevana AQuA WB 11 = Telchemy VQmon

### Parameters for EMOS, PESQ, 3SQM, POLQA, and Sevana AQuA [\[Top\]](#)

Name	Type	Description
AQ MOS	Float	Audio quality MOS UL Audio quality mean Average quality value during one audio sample. Range: 0 – 5 Unit: MOS
AQ sample file	String	Audio quality sample filename UL
AQ ref. file	String	Audio quality reference sample filename UL
AQ timestamp	String	Audio quality timestamp UL Timestamp written when the audio sample analyzed is fully received. This is needed since it can take a little while before measurement event is written after voice quality sample is received.
AQ sample duration UL	Integer	Audio sample duration UL Minimum value: 0 Unit: ms
AQ activity UL	Float	Audio quality speech activity UL P.862 states that the speech activity in a test signal reference and the degraded sample used with PESQ should be between 40% and 80%. A low speech activity could cause the PESQ score to be inaccurate. Although the typical speech activity for a test signal can vary depending on the language used in the signal. If the activity ratio is above 85%, it is likely that there is

		background noise, etc. If the activity ratio is below 35%, it is likely that the call is silent or audio information has been lost. Muting of a signal typically occurs when an error concealment algorithm at the receiver has insufficient information to replace missing or corrupted data audio quality mean delay. Range: 0 – 100 Unit: %
AQ delay UL	Float	Audio quality delay mean UL Frame-by-frame delay is the delay measure used in calculating the PESQ quality score. The delay is calculated for each 16 ms frame separately. Average, minimum, and maximum delay is reported. Delay changes are most likely to be caused by jitter buffer adaptation with VoIP. These adaptations occur when there is a large change in the jitter on an IP network. As jitter on the VoIP network increases, the delay measured by PESQ Tools will typically increase as the jitter buffer grows in size. As the jitter decreases, the delay measured will typically decrease as the jitter buffer decreases in size. Minimum value: 0 Unit: ms
AQ min delay UL	Float	Audio quality delay min UL See description for audio quality delay mean -parameter. Minimum value: 0 Unit: ms
AQ max delay UL	Float	Audio quality delay max UL See description for audio quality delay mean -parameter. Minimum value: 0 Unit: ms
AQ stdev delay UL	Float	Audio quality delay standard deviation UL See description for audio quality delay mean -parameter. Minimum value: 0 Unit: ms
AQ SNR UL	Float	Audio quality SNR UL Estimated signal-to-noise ratio. SNR measures the signal strength of the speech stream relative to background noise, i.e. the relative loudness of speech compared to noise. The higher the signal to noise ratio, the better the possible listening quality. An SNR value of 20 dB can begin to impair conversational quality. Typical value is 45dB. Range: 10 – 60 Unit: dB
AQ insertion gain UL	Float	Audio quality insertion gain UL Gain calculated for active signal in active periods. dB difference between active signal of reference and degraded signals (calculated as of degraded minus of reference signal). Typical value is 0 dB for digital signal. Unit: dB
AQ noise gain UL	Float	Audio quality noise gain UL Gain calculated for noise in silent periods. dB difference between mean noise level of reference and degraded signals. Calculated as of degraded minus of reference signal. Insertion / noise gain has typical range from -20 dB to 20 dB and typical value of -6 dB. Gain statistics provide information on the active speech level difference between the reference and the degraded signal as well as on the amount of background noise in the degraded signal. For example, if the system being tested introduces background noise, the PESQ scores for this system will be lower than those of systems that do not introduce noise. The value of the parameter "noise gain" indicates the presence of background noise, making it unnecessary to listen to the samples in order to find out the reason for the low score. Unit: dB

#### Parameters for Telchemy VQmon [\[Top\]](#)

Name	Type	Description
MOS-LQ UL	Float	Audio quality MOS-LQ UL

		Estimated listening quality MOS is calculated from the listening quality R-factor that ignores the effect of delay and recency. The value should be comparable with PESQ score. Range: 0 – 5 Unit: MOS
MOS-CQ UL	Float	Audio quality MOS-CQ UL Estimated conversation quality MOS is calculated from the conversation quality R-factor. Range: 0 – 5 Unit: MOS
R-LQ UL	Float	Audio quality R-factor LQ UL Listening quality R-factor is calculated from E-model by ignoring the effect of delay and recency. Range: 0 – 177
R-CQ UL	Float	Audio quality R-factor CQ UL Conversation quality R-factor is calculated including delay and recency to the result. Range: 0 – 177

## Audio quality downlink (AQDL)

<b>Event ID</b>	AQDL
<b>Cellular systems</b>	All
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded after voice quality sample is received and the MOS score of the sample is calculated. This measurement event is recorded only during voice quality measurements.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for EMOS, PESQ, 3SQM, and POLQA](#) | 
 [Parameters for Streaming Quality](#) | 
 [Parameters for NiQA-DSP-LQ](#) | 
 [Parameters for Telchemy VQmon](#)

### Parameters [|Top](#)

Name	Type	Description
AQ type DL	Integer	Audio quality type DL 1 = EMOS 2 = PESQ NB This is the same as P.862.1 standard. 3 = 3SQM 4 = Streaming quality 5 = NiQA-DSP-LQ This is also known as PSM. 6 = PESQ WB This is the same as P.862.2 standard. 7 = POLQA NB This is the same as ITU-T P.863 standard. 8 = POLQA SWB This is the same as ITU-T P.863 standard. 11 = Telchemy VQmon

### Parameters for EMOS, PESQ, 3SQM, and POLQA [|Top](#)

Name	Type	Description
AQ MOS	Float	Audio quality MOS DL Average quality value during one audio sample.



		Range: 0 – 5 Unit: MOS
AQ sample file	String	Audio quality sample filename DL Name of the audio sample file stored on disk during measurement. Empty if the file is not saved.
AQ ref. file	String	Audio quality reference sample filename DL
AQ timestamp	String	Audio quality timestamp DL Timestamp written when the audio sample analyzed is fully received. This is needed since it can take a little while before AQDL event is written after voice quality sample is received.
AQ sample duration	Integer	Audio quality sample duration DL Minimum value: 0 Unit: ms
AQ activity	Float	Audio quality speech activity DL P.862 states that the speech activity in a test signal reference and the degraded sample used with PESQ should be between 40% and 80%. A low speech activity could cause the PESQ score to be inaccurate. Although the typical speech activity for a test signal can vary depending on the language used in the signal. If the activity ratio is above 85%, it is likely that there is background noise, etc. If the activity ratio is below 35%, it is likely that the call is silent or audio information has been lost. Muting of a signal typically occurs when an error concealment algorithm at the receiver has insufficient information to replace missing or corrupted data audio quality mean delay. Range: 0 – 100 Unit: %
AQ delay	Float	Audio quality delay mean DL Frame-by-frame delay is the delay measure used in calculating the PESQ quality score. The delay is calculated for each 16 ms frame separately. Average, minimum, and maximum delay is reported. Delay changes are most likely to be caused by jitter buffer adaptation with VoIP. These adaptations occur when there is a large change in the jitter on an IP network. As jitter on the VoIP network increases, the delay measured by PESQ Tools will typically increase as the jitter buffer grows in size. As the jitter decreases, the delay measured will typically decrease as the jitter buffer decreases in size. Minimum value: 0 Unit: ms
AQ min delay	Float	Audio quality delay min DL See description for audio quality delay mean -parameter. Minimum value: 0 Unit: ms
AQ max delay	Float	Audio quality delay max DL See description for audio quality delay mean -parameter. Minimum value: 0 Unit: ms
AQ stdev delay	Float	Audio quality delay standard deviation DL See description for audio quality delay mean -parameter. Minimum value: 0 Unit: ms
AQ SNR	Float	Audio quality SNR DL Estimated signal-to-noise ratio. SNR measures the signal strength of the speech stream relative to background noise, i.e. the relative loudness of speech compared to noise. The higher the signal to noise ratio, the better the possible listening quality. An SNR value of 20 dB can begin to impair conversational quality. Typical value is 45dB. Range: 10 – 60 Unit: dB
AQ insertion gain	Float	Audio quality insertion gain DL Gain calculated for active signal in active periods. dB difference between active signal of reference and degraded signals (calculated as of degraded minus of reference signal). Typical

		value is 0 dB for digital signal. Unit: dB
AQ noise gain	Float	Audio quality noise gain DL Gain calculated for noise in silent periods. dB difference between mean noise level of reference and degraded signals. Calculated as of degraded minus of reference signal. Insertion / noise gain has typical range from -20 dB to 20 dB and typical value of -6 dB. Gain statistics provide information on the active speech level difference between the reference and the degraded signal as well as on the amount of background noise in the degraded signal. For example, if the system being tested introduces background noise, the PESQ scores for this system will be lower than those of systems that do not introduce noise. The value of the parameter "noise gain" indicates the presence of background noise, making it unnecessary to listen to the samples in order to find out the reason for the low score. Unit: dB

#### Parameters for Streaming Quality [|Top|](#)

Name	Type	Description
AQ MOS streaming	Float	Audio quality MOS streaming DL Average quality value during one audio sample. Range: 1 – 5 Unit: MOS

#### Parameters for NiQA-DSP-LQ [|Top|](#)

Name	Type	Description
AQ MOS DL	Float	Audio quality MOS DL (Nemo Handy only) Average quality value during one audio sample. Range: 0 – 5 Unit: MOS

#### Parameters for Telchemy VQmon [|Top|](#)

Name	Type	Description
MOS-LQ DL	Float	Audio quality MOS-LQ DL Estimated listening quality MOS is calculated from the listening quality R-factor that ignores effect of delay and recency. The value should be comparable with PESQ score. Range: 0 – 5 Unit: MOS
MOS-CQ DL	Float	Audio quality MOS-CQ DL Estimated conversation quality MOS is calculated from the conversation quality R-factor. Range: 0 – 5 Unit: MOS
R-LQ DL	Float	Audio quality R-factor LQ DL Listening quality R-factor is calculated from E-model by ignoring the effect of delay and recency. Range: 0 – 177
R-CQ DL	Float	Audio quality R-factor CQ DL Conversation quality R-factor is calculated including delay and recency to the result. Range: 0 – 177

## Audio quality echo (AQECHO)

Event ID	AQECHO
Cellular systems	All
Record state	Call connection state
Description	Recorded after voice quality sample is transmitted and the echo of the sample is calculated. This measurement event is recorded only during voice quality measurements.
Tools	Nemo Outdoor

Parameters | Parameters for Opticom advanced echo model |

### Parameters |Top|

Name	Type	Description
AQ echo type	Integer	Audio quality echo type 1 = Opticom advanced echo model

### Parameters for Opticom advanced echo model |Top|

Name	Type	Description
#Header params	Integer	Number of header parameters
Sample type	Integer	Audio quality echo sample type 1 = Transmitted sample
#Echo samples	Integer	Number of echo samples
#Params/echo sample	Integer	Number of parameters per echo sample
#AQ echo annoyance	Integer	Audio quality echo annoyance 1 = Acceptable 2 = Unacceptable 3 = Sidetone
ERL	Float	Audio quality echo level This is same as echo return loss parameter. Range: 0 – 60 Unit: dB
Echo delay	Integer	Audio quality echo delay Range: 0 – 1000 Unit: ms
Echo occurrence	Float	Audio quality echo occurrence Defines the ratio of echo in the reported echo sample. Range: 0 – 100 Unit: %
Echo diff to tol.	Float	Audio quality diff to tolerance Defines the measured echo level difference to the tolerance curve defined by ITU-T record G.131. Unit: dB

## Audio reception state (AQRX)

Event ID	AQRX
Cellular systems	All
Record state	Call connection state

<b>Description</b>	Recorded during audio reception. Nemo Server records this only when it is searching synchronization.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Server

Parameters | Parameters for mute detection |

#### Parameters [|Top|](#)

Name	Type	Description
AQ RX type	Integer	Audio RX detection type 1 = Mute detection

#### Parameters for mute detection [|Top|](#)

Name	Type	Description
AQ RX state	Integer	Audio RX state 1 = Audio off 2 = Audio on

## Audio quality info (AQI)

<b>Event ID</b>	AQI
<b>Cellular systems</b>	All
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded when the measurement tool achieves synchronization with the transferred voice quality sample. This measurement event is recorded only during voice quality measurements.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Server

Parameters |

#### Parameters [|Top|](#)

Name	Type	Description
AQ type DL	Integer	Audio quality type DL 1 = EMOS 2 = PESQ NB This is the same as P.862.1 standard. 3 = 3SQM 4 = Streaming quality 5 = NiQA-DSP-LQ This is also known as PSM. 6 = PESQ WB This is the same as P.862.2 standard. 7 = POLQA NB This is the same as ITU-T P.863 standard. 8 = POLQA SWB This is the same as ITU-T P.863 standard. 11 = Telchemy VQmon
AQ type	Integer	Audio quality test type 1 = Loop-back 2 = Uplink 3 = Downlink 4 = Uplink/downlink 5 = Off
AQ signal	Integer	Audio quality signal status

		This parameter has never been logged and it is deprecated. 1 = Not detected 2 = Detected
AQ synch.	Integer	Audio quality synchronization status 0 = No synchronization 1 = Synchronized

## Video quality downlink (VQDL)

<b>Event ID</b>	VQDL
<b>Cellular systems</b>	All
<b>Record state</b>	Data transfer state
<b>Description</b>	Recorded when received video call or video stream quality is measured. Exact reporting period is video quality algorithm dependent.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for Streaming Quality](#) | 
 [Parameters for Psytechnics PVI mobile streaming quality](#) | 
 [Parameters for Psytechnics PVI streaming quality](#) | 
 [Parameters for Opticom PEVQ-S streaming quality](#) | 
 [Parameters for Telchemy VQmon](#) | 
 [Parameters for Huawei U-vMOS](#)

### Parameters [|Top](#)

Name	Type	Description
VQ type	Integer	Video quality type 1 = Genista streaming quality 2 = Psytechnics PVI mobile streaming quality 3 = Psytechnics PVI streaming quality 4 = Opticom PEVQ-S streaming quality 5 = Telchemy VQmon 6 = Huawei U-vMOS

### Parameters for Streaming Quality [|Top](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
MOS-V	Float	Video quality MOS Video quality is measured passively from media streams carried over packet-based networks. Factors that affect quality include delay variations, packet losses and other distortions which may be visible in the video. Also factors such as the video codec itself are included in the final result. However, end-to-end and round-trip delays are not taken into account. Video quality is normally displayed as MOS (Mean Opinion Score), which is expressed as a single number. The range varies from 1 to 5, where 1 is poor quality and 5 is perfect. Usually the MOS value does not reach 5, the practical maximum being most commonly between the values 3 and 4. Range: 0 – 5 Unit: MOS
VQ blockiness	Float	Video quality blockiness Perceptual measure of the extent blocky, patchy images. Cause is compression, bit errors, packet loss and high motion. Unit: %
VQ blurriness	Float	Video quality blurriness Perceptual measure of the loss of fine detail and the smearing of edges. Cause is compression, bit errors, packet loss and

		low-pass filtering. Unit: %
VQ jerkiness	Float	Video quality jerkiness Perceptual measure of frozen pictures or motion that does not look smooth. Cause is network congestion, packet loss, frames dropped by the encoder, reduced frame rate. Unit: %

#### Parameters for Psytechnics PVI mobile streaming quality [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
MOS-V	Float	Video quality MOS Video quality is measured passively from media streams carried over packet-based networks. Factors that affect quality include delay variations, packet losses and other distortions which may be visible in the video. Also factors such as the video codec itself are included in the final result. However, end-to-end and round-trip delays are not taken into account. Video quality is normally displayed as MOS (Mean Opinion Score), which is expressed as a single number. The range varies from 1 to 5, where 1 is poor quality and 5 is perfect. Usually the MOS value does not reach 5, the practical maximum being most commonly between the values 3 and 4. Range: 0 – 5 Unit: MOS
VQ jitter	Integer	Video quality jitter Jitter is the delay variation of the streaming process. It records the delay of received UDP datagrams carrying the video data. If the delay is too large, video will not play seamlessly. Minimum value: 0 Unit: ms
VQ PER	Float	Video quality packet error rate Displays the rate of lost packets between the last and the current request. The UDP protocol does not require all packets to arrive to the client. This is why some packets might be lost during the transfer due to bad network or long delay variations (jitter). Unit: %

#### Parameters for Psytechnics PVI streaming quality [|Top|](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
MOS-V	Float	Video quality MOS Video quality is measured passively from media streams carried over packet-based networks. Factors that affect quality include delay variations, packet losses and other distortions which may be visible in the video. Also factors such as the video codec itself are included in the final result. However, end-to-end and round-trip delays are not taken into account. Video quality is normally displayed as MOS (Mean Opinion Score), which is expressed as a single number. The range varies from 1 to 5, where 1 is poor quality and 5 is perfect. Usually the MOS value does not reach 5, the practical maximum being most commonly between the values 3 and 4. Range: 0 – 5 Unit: MOS
VQ jitter	Integer	Video quality jitter Jitter is the delay variation of the streaming process. It records the delay of received UDP datagrams carrying the video data. If the delay is too large, video will not play seamlessly. Minimum value: 0 Unit: ms
VQ PER	Float	Video quality packet error rate Displays the rate of lost packets between the last and the

		current request. The UDP protocol does not require all packets to arrive to the client. This is why some packets might be lost during the transfer due to bad network or long delay variations (jitter). Unit: %
MOS degradation	Float	Video quality MOS degradation This is the current video quality difference compared to a 'perfect network'. Range: 0 – 5 Unit: MOS
Deg. due PER	Float	Video quality degradation due to packet errors The current proportion of current quality degradation that is due to packet loss. Shows the extent to which packet loss has contributed to the current quality loss. Range: 0 – 100 Unit: %
Deg. due compress	Float	Video quality degradation due to compression The proportion of current quality degradation that is due to video compression. Shows the extent to which video compression has contributed to the current quality loss. Range: 0 – 100 Unit: %
Video frame rate	Float	Video frame rate Defines the number of picture frames displayed during one second. The result is equivalent to FPS (frames per second), which is usually around 10 with mobile content. For example, when viewing a normal DVD, the FPS is 23.976 with NTSC and 25 with PAL. Range: 0 – 120 Unit: frame
Video protocol	String	Video protocol Defines the protocol used to transfer the file through the network. This version of PVI is calibrated with RealPlayer and supports mostly RTP (Real Time Protocol). RDT streams can be played back but diagnostics are not available. Streams with RDT protocol are displayed as "Unknown/Not supported".
Video codec	String	Video codec Defines the video codec used in the container format. Usually this is H.263, H.263+, H.264 (MPEG4 Part 10) or MPEG4 Visual (MPEG4 Part 2) when streaming mobile content.

#### Parameters for Opticom PEVQ-S streaming quality [\[Top\]](#)

Name	Type	Description
Data transfer context ID	Context	Data transfer context ID
MOS-V	Float	Video quality MOS Video quality is measured passively from media streams carried over packet-based networks. Factors that affect quality include delay variations, packet losses and other distortions which may be visible in the video. Also factors such as the video codec itself are included in the final result. However, end-to-end and round-trip delays are not taken into account. Video quality is normally displayed as MOS (Mean Opinion Score), which is expressed as a single number. The range varies from 1 to 5, where 1 is poor quality and 5 is perfect. Usually the MOS value does not reach 5, the practical maximum being most commonly between the values 3 and 4. Range: 0 – 5 Unit: MOS
VQ MOS BVQA	Float	Video quality MOS BVQA Best video quality MOS available at the current point. Range: 0 – 5 Unit: MOS
Video frame rate	Float	Video frame rate Defines the number of picture frames displayed during one second. The result is equivalent to FPS (frames per second),

		which is usually around 10 with mobile content. For example, when viewing a normal DVD, the FPS is 23.976 with NTSC and 25 with PAL. Range: 0 – 120 Unit: frame
VQ bitrate	Integer	Video quality average bitrate DL Minimum value: 0 Unit: bit/s
VQ buffer fill	Float	Video quality buffer fill The number of frames in the buffer per second.
VQ timestamp	String	Video quality timestamp Timestamp written when the video quality MOS analyzed is fully received. This is needed since it can take a little while before VQDL event is written after MOS is received.

#### Parameters for Telchemy VQmon [\[Top\]](#)

Name	Type	Description
MOS-V abs	Float	Video quality MOS absolute DL Video quality is measured passively from media streams carried over packet-based networks. Factors that affect quality include delay variations, packet losses and other distortions which may be visible in the video. Also factors, such as the video codec itself are included in the final result. However, end-to-end and round-trip delays are not taken into account. Video quality is normally displayed as MOS (Mean Opinion Score), which is expressed as a single number. The range varies from 1 to 5, where 1 is poor quality and 5 is perfect. Usually the MOS value does not reach 5, the practical maximum being most commonly between the values 3 and 4. Range: 0 – 5 Unit: MOS
MOS-V rel	Float	Video quality MOS relative DL Relative MOS is calculated similar to absolute MOS except without using resolution. Video streams with different resolutions should get comparable MOS results. Range: 0 – 5 Unit: MOS
MOS-AV abs	Float	Video/audio quality MOS absolute DL Combined audio and video MOS. Range: 0 – 5 Unit: MOS
MOS-AV rel	Float	Video/audio quality MOS relative DL Combined audio and video MOS excluding resolution from the calculation. Range: 0 – 5 Unit: MOS
VQ bitrate	Integer	Video quality average bitrate DL Minimum value: 0 Unit: bit/s
Video codec	String	Video codec Defines the video codec used in the container format. Usually this is H.263, H.263+, H.264 (MPEG4 Part 10) or MPEG4 Visual (MPEG4 Part 2) when streaming mobile content.

#### Parameters for Huawei U-vMOS [\[Top\]](#)

Name	Type	Description
MOS-V	Float	Video quality MOS Huawei's Proprietary formula to calculate video quality. Range: 0 – 5 Unit: MOS
VQ sQuality	Float	Video quality sQuality Absolute MOS score where the codec and the resolution of the video affects to the result.



		Range: 0 – 5 Unit: MOS
VQ sStalling	Float	Video quality sStalling MOS score related to video interruptions during the playback. Range: 0 – 5 Unit: MOS
VQ sLoading	Float	Video quality sLoading MOS score related to initial loading time before the playback starts. Range: 0 – 5 Unit: MOS

## Video quality uplink (VQUL)

<b>Event ID</b>	VQUL
<b>Cellular systems</b>	All
<b>Record state</b>	Data transfer state
<b>Description</b>	Recorded when transmitted video call or video stream quality is measured. Exact reporting period is video quality algorithm dependent.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for Telchemy VQmon |

### Parameters [|Top|](#)

Name	Type	Description
VQ type	Integer	Video quality type 5 = Telchemy VQmon

### Parameters for Telchemy VQmon [|Top|](#)

Name	Type	Description
MOS-V abs UL	Float	Video quality MOS absolute UL Video quality is measured passively from media streams carried over packet-based networks. Factors that affect quality include delay variations, packet losses and other distortions which may be visible in the video. Also factors, such as the video codec itself are included in the final result. However, end-to-end and round-trip delays are not taken into account. Video quality is normally displayed as MOS (Mean Opinion Score), which is expressed as a single number. The range varies from 1 to 5, where 1 is poor quality and 5 is perfect. Usually the MOS value does not reach 5, the practical maximum being most commonly between the values 3 and 4. Range: 0 – 5 Unit: MOS
MOS-V rel UL	Float	Video quality MOS relative UL Relative MOS is calculated similar to absolute MOS except without using resolution. Video streams with different resolutions should get comparable MOS results. Range: 0 – 5 Unit: MOS
MOS-AV abs UL	Float	Video/audio quality MOS absolute UL Combined audio and video MOS.

		Range: 0 – 5 Unit: MOS
MOS-AV rel UL	Float	Video/audio quality MOS relative UL Combined audio and video MOS excluding resolution from the calculation. Range: 0 – 5 Unit: MOS
VQ bitrate UL	Integer	Video quality average bitrate UL Minimum value: 0 Unit: bit/s
Video codec UL	String	Video codec UL Defines the video codec used in the container format. Usually this is H.263, H.263+, H.264 (MPEG4 Part 10) or MPEG4 Visual (MPEG4 Part 2) when streaming mobile content.

## Video throughput (VRATE)

<b>Event ID</b>	VRATE
<b>Cellular systems</b>	UMTS FDD
<b>Record state</b>	Call connection state
<b>Description</b>	Recorded for video call when parameter sample is received from the device and the received sample differs from the previous result.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for UMTS FDD |

### Parameters | Top |

Name	Type	Description
Measured sys.	Integer	Measured system 5 = UMTS FDD

### Parameters for UMTS FDD | Top |

Name	Type	Description
Video protocol	Integer	Video protocol 1 = HDLC
Video rate UL	Integer	Video rate uplink Minimum value: 0 Unit: bit/s
Video rate DL	Integer	Video rate downlink Minimum value: 0 Unit: bit/s
Video frame rate UL	Integer	Video frame rate uplink
Video frame rate DL	Integer	Video frame rate downlink
Video FER	Float	Video FER Number of erroneous frames received. Unit: %
VQI	Float	Video call quality index Range: 1 – 5

## Message sending/receiving attempt (MSGGA)

<b>Event ID</b>	MSGGA
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,iDEN
<b>Record state</b>	Always
<b>Description</b>	Recorded when SMS, MMS, or USSD message sending is attempted or a message is received. This measurement event begins the SMS, MMS, and USSD transmission state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | [Parameters for SMS and IMS SMS message](#) | [Parameters for MMS message](#) | [Parameters for CDMA SMS message](#) | [Parameters for USSD message](#) | [Parameters for Kodiak IPA](#) | [Parameters for USSD message sequence](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 55 = iDEN
Message type	Integer	Message type 1 = SMS 2 = MMS 3 = CDMA SMS 4 = USSD 5 = Kodiak IPA Kodiak instant private alert. 6 = USSD sequence Logged to indicate the beginning and ending of sending multiple separate USSD messages. 7 = IMS SMS

### Parameters for SMS and IMS SMS message [|Top](#)

Name	Type	Description
SMS context ID	Context	SMS context ID
SMS msg. type	Integer	SMS message type 1 = Receive 2 = Send 3 = Status report 4 = Command 5 = Broadcast
SMS number	String	SMS phone number
SMSC	String	SMS service center address
SMS coding scheme	Integer	SMS data coding scheme GSM 03.38 defines the meaning of this parameter. Range: 0 – 255
SMS data	String (hex)	SMS message data SMS data in hexadecimal values.
SMS timeout	Integer	SMS timeout The timeout value from SMS send attempt (MSGGA) to success

		(MSGF). If SMS has not been sent during this time the MSGF measurement event is recorded. Minimum value: 0 Unit: ms
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#### Parameters for MMS message [\[Top\]](#)

Name	Type	Description
MMS context ID	Context	MMS context ID
MMS msg. type	Integer	MMS message type 1 = Send 2 = Retrieve 3 = Notification 4 = Delivery report
MMS ser. center	String	MMS service center
MMS tr. protocol	Integer	MMS transport protocol 1 = WAP 1.0 2 = SMS 3 = WAP 2.0
#MMS files	Integer	Number of MMS files
MMS filename	String	MMS filename For send MMS message type this is a name of the MMS message file. For retrieved and notification MMS types this is a MMS message reference (that is in a practice a content location in a URI form).
MMS timeout	Integer	MMS timeout The timeout value from MMS send attempt (MSGF) to success (MSGF). If MMS has not been sent during this time the MSGF measurement event is recorded. Minimum value: 0 Unit: ms

#### Parameters for CDMA SMS message [\[Top\]](#)

Name	Type	Description
SMS context ID	Context	SMS context ID
SMS msg. type	Integer	SMS message type 1 = Receive 2 = Send 3 = Status report 4 = Command 5 = Broadcast
SMS number	String	SMS phone number
SMS data	String (hex)	SMS message data SMS data in hexadecimal values.
SMS timeout	Integer	SMS timeout The timeout value from SMS send attempt (MSGF) to success (MSGF). If SMS has not been sent during this time the MSGF measurement event is recorded. Minimum value: 0 Unit: ms

#### Parameters for USSD message [\[Top\]](#)

Name	Type	Description
USSD context ID	Context	USSD context ID
USSD sequence context ID	Context	USSD sequence context ID
USSD type	Integer	USSD message type See 3GPP TS 123.090. 1 = Mobile request Mobile originated request to the network for which the mobile station waits for the answer.

		2 = Mobile response Mobile originated response to the network request. 3 = Network request Network originated request of information for the mobile station. 4 = Network response Network originated response to the request received from the mobile station. 5 = Network notification Network originated notification that does not require further action from the mobile station.
USSD gateway	String	USSD gateway
USSD data	String (hex)	USSD message data

#### Parameters for Kodiak IPA [|Top|](#)

Name	Type	Description
Kodiak IPA context ID	Context	Kodiak IPA context ID
IPA type	Integer	Kodiak IPA message type 1 = Send 2 = Receive
IPA address	String	Kodiak IPA address This is the address where the IPA is received or where it is sent.

#### Parameters for USSD message sequence [|Top|](#)

Name	Type	Description
USSD sequence context ID	Context	USSD sequence context ID
USSD gateway	String	USSD gateway
USSD data	String (hex)	USSD message data This parameter contains all USSD messages that are transmitted in this session. Different messages are separated using semicolon.

## Message sending/receiving success (MSGs)

<b>Event ID</b>	MSGs
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,iDEN
<b>Record state</b>	SMS, MMS, and USSD transmission state
<b>Description</b>	Recorded when SMS, MMS, or USSD message is sent or received successfully. The SMS message is considered successfully received when the response from the SMS server is received. Terminates the SMS, MMS, and USSD transmission state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) |
[Parameters for SMS and IMS SMS message](#) |
[Parameters for MMS message](#) |
[Parameters for CDMA SMS message](#) |
[Parameters for USSD message](#) |
[Parameters for Kodiak IPA](#) |
[Parameters for USSD message sequence](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD

		6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 55 = iDEN
Message type	Integer	Message type 1 = SMS 2 = MMS 3 = CDMA SMS 4 = USSD 5 = Kodiak IPA Kodiak instant private alert. 6 = USSD sequence Logged to indicate the beginning and ending of sending multiple separate USSD messages. 7 = IMS SMS

#### Parameters for SMS and IMS SMS message [\[Top\]](#)

Name	Type	Description
SMS context ID	Context	SMS context ID
Ref. number	Integer	SMS reference number Reference number for sent SMS message.
SMS msg. type	Integer	SMS message type 1 = Receive 2 = Send 3 = Status report 4 = Command 5 = Broadcast

#### Parameters for MMS message [\[Top\]](#)

Name	Type	Description
MMS context ID	Context	MMS context ID
MMS msg. ID	String	MMS message ID
MMS msg. type	Integer	MMS message type 1 = Send 2 = Retrieve 3 = Notification 4 = Delivery report

#### Parameters for CDMA SMS message [\[Top\]](#)

Name	Type	Description
SMS context ID	Context	SMS context ID
SMS duration	Integer	SMS transmission duration Defines how long the SMS transmission has taken. Calculated from origination or paging message to the SMS acknowledgement message. Minimum value: 0 Unit: ms

#### Parameters for USSD message [\[Top\]](#)

Name	Type	Description
USSD context ID	Context	USSD context ID
USSD type	Integer	USSD message type See 3GPP TS 123.090. 1 = Mobile request Mobile originated request to the network for which the mobile station waits for the answer. 2 = Mobile response

		Mobile originated response to the network request. 3 = Network request Network originated request of information for the mobile station. 4 = Network response Network originated response to the request received from the mobile station. 5 = Network notification Network originated notification that does not require further action from the mobile station.
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#### Parameters for Kodiak IPA [|Top|](#)

Name	Type	Description
Kodiak IPA context ID	Context	Kodiak IPA context ID
IPA type	Integer	Kodiak IPA message type 1 = Send 2 = Receive

#### Parameters for USSD message sequence [|Top|](#)

Name	Type	Description
USSD sequence context ID	Context	USSD sequence context ID

## Message sending/receiving failed (MSGF)

Event ID	MSGF
Cellular systems	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,iDEN
Record state	SMS, MMS, and USSD transmission state
Description	Recorded when SMS, MMS, or USSD message sending fails. This measurement event terminates the SMS, MMS, and USSD transmission state.
Tools	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q

[Parameters](#) | 
 [Parameters for SMS and IMS SMS message](#) | 
 [Parameters for MMS message](#) | 
 [Parameters for CDMA SMS message](#) | 
 [Parameters for USSD message](#) | 
 [Parameters for Kodiak IPA](#) | 
 [Parameters for USSD message sequence](#) |

#### Parameters [|Top|](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 55 = iDEN
Message type	Integer	Message type 1 = SMS 2 = MMS 3 = CDMA SMS 4 = USSD 5 = Kodiak IPA

Kodiak instant private alert.  
6 = USSD sequence  
Logged to indicate the beginning and ending of sending multiple separate USSD messages.  
7 = IMS SMS

#### Parameters for SMS and IMS SMS message [\[Top\]](#)

Name	Type	Description
SMS context ID	Context	SMS context ID
SMS cause	Integer	<p>SMS cause</p> <p>1 = Unassigned (unallocated) number</p> <p>8 = Operator determined barring</p> <p>10 = Call barred</p> <p>21 = Short message transfer rejected</p> <p>27 = Destination out of service</p> <p>28 = Unidentified subscriber</p> <p>29 = Facility rejected</p> <p>30 = Unknown subscriber</p> <p>38 = Network out of order</p> <p>41 = Temporary failure</p> <p>42 = Congestion</p> <p>47 = Resources unavailable, unspecified</p> <p>50 = Requested facility not subscribed</p> <p>69 = Requested facility not implemented</p> <p>81 = Invalid short message transfer referencevalue</p> <p>95 = Invalid message, unspecified</p> <p>96 = Invalid mandatory information</p> <p>97 = Message type non-existent or not implemented</p> <p>98 = Message not compatible with short message protocol state</p> <p>99 = Information element non-existent or notimplemented</p> <p>111 = Protocol error, unspecified</p> <p>127 = Interworking, unspecified</p> <p>128 = Telematic interworking not supported</p> <p>129 = Short message Type 0 not supported</p> <p>130 = Cannot replace short message</p> <p>143 = Unspecified TP-PID error</p> <p>144 = Data coding scheme (alphabet) not supported</p> <p>145 = Message class not supported</p> <p>159 = Unspecified TP-DCS error</p> <p>160 = Command cannot be actioned</p> <p>161 = Command unsupported</p> <p>175 = Unspecified TP-Command error</p> <p>176 = TPDU not supported</p> <p>192 = SC busy</p> <p>193 = No SC subscription</p> <p>194 = SC system failure</p> <p>195 = Invalid SME address</p> <p>196 = Destination SME barred</p> <p>197 = SM Rejected-Duplicate SM</p> <p>198 = TP-VPF not supported</p> <p>199 = TP-VP not supported</p> <p>208 = SIM SMS storage full</p> <p>209 = No SMS storage capability in SIM</p> <p>210 = Error in MS</p> <p>211 = Memory Capacity Exceeded</p> <p>212 = SIM Application Toolkit Busy</p> <p>255 = Unspecified error cause</p> <p>300 = ME failure</p> <p>301 = SMS service of ME reserved</p> <p>302 = Operation not allowed</p> <p>303 = Operation not supported</p> <p>304 = Invalid PDU mode parameter</p> <p>305 = Invalid text mode parameter</p> <p>310 = SIM not inserted</p> <p>311 = SIM PIN required</p> <p>312 = PH-SIM PIN required</p> <p>313 = SIM failure</p> <p>314 = SIM busy</p> <p>315 = SIM wrong</p>



		316 = SIM PUK required 317 = SIM PIN2 required 318 = SIM PUK2 required 320 = Memory failure 321 = invalid memory index 322 = memory full 330 = SMSC address unknown 331 = no network service 332 = network timeout 340 = No +CNMA acknowledgement expected 500 = Unknown error 512 = Manufacturer specific
SMS msg. type	Integer	SMS message type 1 = Receive 2 = Send 3 = Status report 4 = Command 5 = Broadcast

#### Parameters for MMS message [Top](#)

Name	Type	Description
MMS context ID	Context	MMS context ID
MMS cause	Integer	MMS cause 1 = Timeout 2 = Invalid remote address 4 = Invalid remote file 5 = Invalid local file 50 = Unknown Only used with the MMS protocol. 51 = Protocol error Only used with the MMS protocol. 52 = Invalid TID Only used with the MMS protocol. 53 = Not implemented class 2 Only used with the MMS protocol. 54 = Not implemented SAR Only used with the MMS protocol. 55 = Not implemented user acknowledgement Only used with the MMS protocol. 56 = WTP version zero Only used with the MMS protocol. 57 = Capacity temporarily exceeded Only used with the MMS protocol. 58 = No response Only used with the MMS protocol. 59 = Message too large Only used with the MMS protocol. 100 = Continue 101 = Switching Protocols 129 = Unspecified Only used with the MMS protocol. 130 = Service denied Only used with the MMS protocol. 131 = Message format corrupt Only used with the MMS protocol. 132 = Sending address unresolved Only used with the MMS protocol. 133 = Message not found Only used with the MMS protocol. 134 = Network problem Only used with the MMS protocol. 135 = Content not accepted Only used with the MMS protocol. 136 = Unsupported message Only used with the MMS protocol. 200 = OK, success 201 = Created 202 = Accepted 203 = Non-Authoritative information

		204 = No content 205 = Reset content 206 = Partial content 300 = Multiple choices 301 = Moved permanently 302 = Moved temporarily 303 = See other 304 = Not modified 305 = Use proxy 306 = Reserved 307 = Temporary redirect 400 = Bad request - server could not understand request 401 = Unauthorized 402 = Payment required 403 = Forbidden - operation is understood but refused 404 = Not found 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout 409 = Conflict 410 = Gone 411 = Length required 412 = Precondition failed 413 = Request entity too large 414 = Request-URI too large 415 = Unsupported media type 416 = Requested range not satisfiable 417 = Expectation failed 500 = Internal server error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Gateway timeout 505 = HTTP version not supported
MMS msg. type	Integer	MMS message type 1 = Send 2 = Retrieve 3 = Notification 4 = Delivery report

#### Parameters for CDMA SMS message [|Top](#)

Name	Type	Description
SMS context ID	Context	SMS context ID
SMS cause	Integer	SMS cause 1 = Unassigned (unallocated) number 8 = Operator determined barring 10 = Call barred 21 = Short message transfer rejected 27 = Destination out of service 28 = Unidentified subscriber 29 = Facility rejected 30 = Unknown subscriber 38 = Network out of order 41 = Temporary failure 42 = Congestion 47 = Resources unavailable, unspecified 50 = Requested facility not subscribed 69 = Requested facility not implemented 81 = Invalid short message transfer referencevalue 95 = Invalid message, unspecified 96 = Invalid mandatory information 97 = Message type non-existent or not implemented 98 = Message not compatible with short message protocol state 99 = Information element non-existent or notimplemented 111 = Protocol error, unspecified 127 = Interworking, unspecified 128 = Telematic interworking not supported 129 = Short message Type 0 not supported

		130 = Cannot replace short message 143 = Unspecified TP-PID error 144 = Data coding scheme (alphabet) not supported 145 = Message class not supported 159 = Unspecified TP-DCS error 160 = Command cannot be actioned 161 = Command unsupported 175 = Unspecified TP-Command error 176 = TPDU not supported 192 = SC busy 193 = No SC subscription 194 = SC system failure 195 = Invalid SME address 196 = Destination SME barred 197 = SM Rejected-Duplicate SM 198 = TP-VPF not supported 199 = TP-VP not supported 208 = SIM SMS storage full 209 = No SMS storage capability in SIM 210 = Error in MS 211 = Memory Capacity Exceeded 212 = SIM Application Toolkit Busy 255 = Unspecified error cause 300 = ME failure 301 = SMS service of ME reserved 302 = Operation not allowed 303 = Operation not supported 304 = Invalid PDU mode parameter 305 = Invalid text mode parameter 310 = SIM not inserted 311 = SIM PIN required 312 = PH-SIM PIN required 313 = SIM failure 314 = SIM busy 315 = SIM wrong 316 = SIM PUK required 317 = SIM PIN2 required 318 = SIM PUK2 required 320 = Memory failure 321 = invalid memory index 322 = memory full 330 = SMSC address unknown 331 = no network service 332 = network timeout 340 = No +CNMA acknowledgement expected 500 = Unknown error 512 = Manufacturer specific
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#### Parameters for USSD message [\[Top\]](#)

Name	Type	Description
USSD context ID	Context	USSD context ID
USSD type	Integer	USSD message type See 3GPP TS 123.090. 1 = Mobile request Mobile originated request to the network for which the mobile station waits for the answer. 2 = Mobile response Mobile originated response to the network request. 3 = Network request Network originated request of information for the mobile station. 4 = Network response Network originated response to the request received from the mobile station. 5 = Network notification Network originated notification that does not require further action from the mobile station.

**Parameters for Kodiak IPA** [|Top|](#)

Name	Type	Description
Kodiak IPA context ID	Context	Kodiak IPA context ID
IPA type	Integer	Kodiak IPA message type 1 = Send 2 = Receive

**Parameters for USSD message sequence** [|Top|](#)

Name	Type	Description
USSD context ID	Context	USSD context ID

## SIP server registration attempt (SIPREGA)

<b>Event ID</b>	SIPREGA
<b>Cellular systems</b>	All
<b>Record state</b>	Packet active state
<b>Description</b>	Recorded when the user initiates the SIP server (or similar) registration attempt. This measurement event begins the SIP server registration attempt state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for SIP server registration](#) | [Parameters for Skype server registration](#) | [Parameters for IMS SIP server registration](#) | [Parameters for Kodiak server registration](#) |

**Parameters** [|Top|](#)

Name	Type	Description
SIP server registration type	Integer	SIP server registration type 1 = SIP server registration 2 = Skype server registration 3 = LTE IMS SIP server registration 4 = Kodiak server registration 5 = WLAN IMS SIP server registration

**Parameters for SIP server registration** [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Packet session context ID	Context	Packet session context ID
SIP server	String	SIP server address SIP server address is recorded in URI format.

**Parameters for Skype server registration** [|Top|](#)

Name	Type	Description
Skype server context ID	Context	Skype server context ID
Packet session context ID	Context	Packet session context ID
Skype server username	String	Skype server username

**Parameters for IMS SIP server registration** [|Top|](#)

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Name	Type	Description
SIP server context ID	Context	SIP server context ID
Packet session context ID	Context	Packet session context ID
SIP server	String	SIP server address SIP server address is recorded in URI format.

#### Parameters for Kodiak server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Packet session context ID	Context	Packet session context ID
SIP server	String	SIP server address SIP server address is recorded in URI format.

## SIP server registration failed (SIPREGF)

Event ID	SIPREGF
Cellular systems	All
Record state	SIP server registration attempt state
Description	Recorded when registration to the SIP server (or similar) fails. This measurement event terminates the SIP server registration attempt state.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for SIP server registration](#) | 
 [Parameters for Skype server registration](#) | 
 [Parameters for IMS SIP server registration](#) | 
 [Parameters for Kodiak server registration](#) |

#### Parameters [|Top|](#)

Name	Type	Description
SIP server registration type	Integer	SIP server registration type 1 = SIP server registration 2 = Skype server registration 3 = LTE IMS SIP server registration 4 = Kodiak server registration 5 = WLAN IMS SIP server registration

#### Parameters for SIP server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Fail. status	Integer	SIP server failure status 1 = User abort 2 = Server reject 3 = Mobile reject 4 = Timeout 5 = Test system failure
Fail. cause	Integer	SIP server failure cause 100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response. 180 = Ringing 181 = Call is being forwarded 182 = Queued

183 = Session progress  
199 = Early dialog terminated  
200 = OK  
202 = Accepted  
The request has been understood but cannot be processed.  
204 = No notification  
300 = Multiple choices  
301 = Moved permanently  
302 = Moved temporarily  
305 = Use proxy  
380 = Alternative service  
400 = Bad request  
401 = Unauthorized  
Used only by registrars or user agents. Proxies should use proxy authorization 407.  
402 = Payment required  
403 = Forbidden  
404 = Not found  
User not found.  
405 = Method not allowed  
406 = Not acceptable  
407 = Proxy authentication required  
408 = Request timeout (could not find the user in time)  
409 = Conflict  
410 = Gone  
The user existed once, but is not available here any more.  
411 = Length required  
412 = Conditional request failed  
413 = Request entity too large  
414 = Request-URI too long  
415 = Unsupported media type  
416 = Unsupported URI scheme  
417 = Unknown resource priority  
420 = Bad extension  
Bad SIP protocol extension used, not understood by the server.  
421 = Extension required  
422 = Session interval too small  
423 = Interval too brief  
424 = Bad location information  
428 = Use identity header  
429 = Provide referrer identity  
430 = Flow failed  
433 = Anonymity disallowed  
436 = Bad identity-info  
437 = Unsupported certificate  
438 = Invalid identity header  
439 = First hop lacks outbound support  
470 = Consent needed  
480 = Temporarily unavailable  
481 = Call/transaction does not exist  
482 = Loop detected  
483 = Too many hops  
484 = Address incomplete  
485 = Ambiguous  
486 = Busy here  
487 = Request terminated  
488 = Not acceptable here  
489 = Bad event  
491 = Request pending  
493 = Undecipherable  
Could not decrypt S/MIME body part.  
494 = Security agreement required  
500 = Server internal error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Server time-out  
505 = Version not supported  
513 = Message too large  
580 = Precondition failure  
600 = Busy everywhere

		603 = Decline 604 = Does not exist anywhere 606 = Not acceptable
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#### Parameters for Skype server registration [|Top|](#)

Name	Type	Description
Skype server context ID	Context	Skype server context ID
Fail. status	Integer	Skype server failure status 1 = User abort 2 = Server reject 3 = Mobile reject 4 = Timeout
Fail. cause	Integer	Skype server failure cause Currently this is always n/a.

#### Parameters for IMS SIP server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Fail. status	Integer	SIP server failure status 1 = User abort 2 = Server reject 3 = Mobile reject 4 = Timeout 5 = Test system failure
Fail. cause	Integer	SIP server failure cause 100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response. 180 = Ringing 181 = Call is being forwarded 182 = Queued 183 = Session progress 199 = Early dialog terminated 200 = OK 202 = Accepted The request has been understood but cannot be processed. 204 = No notification 300 = Multiple choices 301 = Moved permanently 302 = Moved temporarily 305 = Use proxy 380 = Alternative service 400 = Bad request 401 = Unauthorized Used only by registrars or user agents. Proxies should use proxy authorization 407. 402 = Payment required 403 = Forbidden 404 = Not found User not found. 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout (could not find the user in time) 409 = Conflict 410 = Gone The user existed once, but is not available here any more. 411 = Length required 412 = Conditional request failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Unsupported URI scheme 417 = Unknown resource priority 420 = Bad extension

		<p>Bad SIP protocol extension used, not understood by the server.</p> <p>421 = Extension required</p> <p>422 = Session interval too small</p> <p>423 = Interval too brief</p> <p>424 = Bad location information</p> <p>428 = Use identity header</p> <p>429 = Provide referrer identity</p> <p>430 = Flow failed</p> <p>433 = Anonymity disallowed</p> <p>436 = Bad identity-info</p> <p>437 = Unsupported certificate</p> <p>438 = Invalid identity header</p> <p>439 = First hop lacks outbound support</p> <p>470 = Consent needed</p> <p>480 = Temporarily unavailable</p> <p>481 = Call/transaction does not exist</p> <p>482 = Loop detected</p> <p>483 = Too many hops</p> <p>484 = Address incomplete</p> <p>485 = Ambiguous</p> <p>486 = Busy here</p> <p>487 = Request terminated</p> <p>488 = Not acceptable here</p> <p>489 = Bad event</p> <p>491 = Request pending</p> <p>493 = Undecipherable</p> <p>Could not decrypt S/MIME body part.</p> <p>494 = Security agreement required</p> <p>500 = Server internal error</p> <p>501 = Not implemented</p> <p>502 = Bad gateway</p> <p>503 = Service unavailable</p> <p>504 = Server time-out</p> <p>505 = Version not supported</p> <p>513 = Message too large</p> <p>580 = Precondition failure</p> <p>600 = Busy everywhere</p> <p>603 = Decline</p> <p>604 = Does not exist anywhere</p> <p>606 = Not acceptable</p>
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**Parameters for Kodiak server registration** |[Top](#)|

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Fail. status	Integer	<p>SIP server failure status</p> <p>1 = User abort</p> <p>2 = Server reject</p> <p>3 = Mobile reject</p> <p>4 = Timeout</p> <p>5 = Test system failure</p>
Fail. cause	Integer	<p>SIP server failure cause</p> <p>Currently this is always n/a.</p>

## SIP server registration completed (SIPREGC)

Event ID	SIPREGC



<b>Cellular systems</b>	All
<b>Record state</b>	SIP registration attempt state
<b>Description</b>	Recorded when registration to the SIP server (or similar) succeeded and the connection is now established to the SIP server. This measurement event begins the SIP server registerion state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for SIP server registration](#) | 
 [Parameters for Skype server registration](#) | 
 [Parameters for IMS SIP server registration](#) | 
 [Parameters for Kodiak server registration](#) |

#### Parameters [|Top|](#)

Name	Type	Description
SIP server registration type	Integer	SIP server registration type 1 = SIP server registration 2 = Skype server registration 3 = LTE IMS SIP server registration 4 = Kodiak server registration 5 = WLAN IMS SIP server registration

#### Parameters for SIP server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID

#### Parameters for Skype server registration [|Top|](#)

Name	Type	Description
Skype server context ID	Context	Skype server context ID

#### Parameters for IMS SIP server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID

#### Parameters for Kodiak server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID

## SIP server deregistered (SIPREGD)

<b>Event ID</b>	SIPREGD
<b>Cellular systems</b>	All
<b>Record state</b>	SIP server registration
<b>Description</b>	Recorded when the device is deregistered from the SIP server (or similar). This measurement event terminates the SIP server registration state.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | 
 [Parameters for SIP server registration](#) | 
 [Parameters for Skype server registration](#) | 
 [Parameters for IMS SIP server registration](#) | 
 [Parameters for Kodiak server registration](#) |

**Parameters** [|Top](#)

Name	Type	Description
SIP server registration type	Integer	SIP server registration type 1 = SIP server registration 2 = Skype server registration 3 = LTE IMS SIP server registration 4 = Kodiak server registration 5 = WLAN IMS SIP server registration

**Parameters for SIP server registration** [|Top](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Deact. status	Integer	SIP server deactivation status 1 = Normal disconnect 2 = Server initiated disconnect 3 = Abnormal release 5 = Test system failure
Deact. cause	Integer	SIP server deactivation cause 100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response. 180 = Ringing 181 = Call is being forwarded 182 = Queued 183 = Session progress 199 = Early dialog terminated 200 = OK 202 = Accepted The request has been understood but cannot be processed. 204 = No notification 300 = Multiple choices 301 = Moved permanently 302 = Moved temporarily 305 = Use proxy 380 = Alternative service 400 = Bad request 401 = Unauthorized Used only by registrars or user agents. Proxies should use proxy authorization 407. 402 = Payment required 403 = Forbidden 404 = Not found User not found. 405 = Method not allowed 406 = Not acceptable 407 = Proxy authentication required 408 = Request timeout (could not find the user in time) 409 = Conflict 410 = Gone The user existed once, but is not available here any more. 411 = Length required 412 = Conditional request failed 413 = Request entity too large 414 = Request-URI too long 415 = Unsupported media type 416 = Unsupported URI scheme 417 = Unknown resource priority 420 = Bad extension Bad SIP protocol extension used, not understood by the server. 421 = Extension required 422 = Session interval too small 423 = Interval too brief 424 = Bad location information 428 = Use identity header 429 = Provide referrer identity 430 = Flow failed

		433 = Anonymity disallowed 436 = Bad identity-info 437 = Unsupported certificate 438 = Invalid identity header 439 = First hop lacks outbound support 470 = Consent needed 480 = Temporarily unavailable 481 = Call/transaction does not exist 482 = Loop detected 483 = Too many hops 484 = Address incomplete 485 = Ambiguous 486 = Busy here 487 = Request terminated 488 = Not acceptable here 489 = Bad event 491 = Request pending 493 = Undecipherable Could not decrypt S/MIME body part. 494 = Security agreement required 500 = Server internal error 501 = Not implemented 502 = Bad gateway 503 = Service unavailable 504 = Server time-out 505 = Version not supported 513 = Message too large 580 = Precondition failure 600 = Busy everywhere 603 = Decline 604 = Does not exist anywhere 606 = Not acceptable
Deact. time	Integer	SIP server deactivation time Minimum value: 0 Unit: ms

#### Parameters for Skype server registration [|Top|](#)

Name	Type	Description
Skype server context ID	Context	Skype server context ID
Deact. status	Integer	Skype server deactivation status 1 = Normal disconnect 2 = Server initiated disconnect 3 = Abnormal release
Deact. cause	Integer	Skype server deactivation cause Currently this is always n/a.
Deact. time	Integer	Skype server deactivation time Minimum value: 0 Unit: ms

#### Parameters for IMS SIP server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Deact. status	Integer	SIP server deactivation status 1 = Normal disconnect 2 = Server initiated disconnect 3 = Abnormal release 5 = Test system failure
Deact. cause	Integer	SIP server deactivation cause 100 = Trying Extended search being performed may take a significant time so a forking proxy must send a 100 Trying response. 180 = Ringing 181 = Call is being forwarded 182 = Queued

183 = Session progress  
199 = Early dialog terminated  
200 = OK  
202 = Accepted  
The request has been understood but cannot be processed.  
204 = No notification  
300 = Multiple choices  
301 = Moved permanently  
302 = Moved temporarily  
305 = Use proxy  
380 = Alternative service  
400 = Bad request  
401 = Unauthorized  
Used only by registrars or user agents. Proxies should use proxy authorization 407.  
402 = Payment required  
403 = Forbidden  
404 = Not found  
User not found.  
405 = Method not allowed  
406 = Not acceptable  
407 = Proxy authentication required  
408 = Request timeout (could not find the user in time)  
409 = Conflict  
410 = Gone  
The user existed once, but is not available here any more.  
411 = Length required  
412 = Conditional request failed  
413 = Request entity too large  
414 = Request-URI too long  
415 = Unsupported media type  
416 = Unsupported URI scheme  
417 = Unknown resource priority  
420 = Bad extension  
Bad SIP protocol extension used, not understood by the server.  
421 = Extension required  
422 = Session interval too small  
423 = Interval too brief  
424 = Bad location information  
428 = Use identity header  
429 = Provide referrer identity  
430 = Flow failed  
433 = Anonymity disallowed  
436 = Bad identity-info  
437 = Unsupported certificate  
438 = Invalid identity header  
439 = First hop lacks outbound support  
470 = Consent needed  
480 = Temporarily unavailable  
481 = Call/transaction does not exist  
482 = Loop detected  
483 = Too many hops  
484 = Address incomplete  
485 = Ambiguous  
486 = Busy here  
487 = Request terminated  
488 = Not acceptable here  
489 = Bad event  
491 = Request pending  
493 = Undecipherable  
Could not decrypt S/MIME body part.  
494 = Security agreement required  
500 = Server internal error  
501 = Not implemented  
502 = Bad gateway  
503 = Service unavailable  
504 = Server time-out  
505 = Version not supported  
513 = Message too large  
580 = Precondition failure  
600 = Busy everywhere

		603 = Decline 604 = Does not exist anywhere 606 = Not acceptable
Deact. time	Integer	SIP server deactivation time Minimum value: 0 Unit: ms

#### Parameters for Kodiak server registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Deact. status	Integer	SIP server deactivation status 1 = Normal disconnect 2 = Server initiated disconnect 3 = Abnormal release 5 = Test system failure
Deact. cause	Integer	SIP server deactivation cause Currently this is always n/a.
Deact. time	Integer	SIP server deactivation time Minimum value: 0 Unit: ms

## SIP server re-registration (SIPREGRE)

<b>Event ID</b>	SIPREGRE
<b>Cellular systems</b>	All
<b>Record state</b>	Packet active state
<b>Description</b>	Recorded after successful or failed SIP server re-registration attempt.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for IMS SIP server re-registration](#) |

#### Parameters [|Top|](#)

Name	Type	Description
SIP server registration type	Integer	SIP server registration type 3 = LTE IMS SIP server registration 5 = WLAN IMS SIP server registration

#### Parameters for IMS SIP server re-registration [|Top|](#)

Name	Type	Description
SIP server context ID	Context	SIP server context ID
Re-reg. result	Integer	SIP server re-registration result 1 = Success 2 = Rejected 3 = Failed 4 = Timeout
SIP server	String	Attempted SIP server address Attempted SIP server address is recorded in URI format.

## Push-to-talk information (PTTI)

<b>Event ID</b>	PTTI
<b>Cellular systems</b>	UMTS FDD,UMTS TD-SCDMA,GSM,TETRA
<b>Record state</b>	Packet active state
<b>Description</b>	Recorded when the push-to-talk state changes.
<b>Tools</b>	Nemo Outdoor

[Parameters](#) | [Parameters for POC](#) |

### Parameters [|Top](#)

Name	Type	Description
Measured sys.	Integer	Measured system 1 = GSM 2 = TETRA 5 = UMTS FDD 6 = UMTS TD-SCDMA
PTT tech.	Integer	Push-to-talk technology 1 = POC

### Parameters for POC [|Top](#)

Name	Type	Description
POC context ID	Context	POC context ID
PTT state	Integer	Push-to-talk state 1 = Idle 2 = Receiving 3 = Preparing to transmit 4 = Transmitting
PTT user identity	String	Push-to-talk user identity
PTT status	Integer	Push-to-Talk status -1 = Not available or PTT state not changed 1 = User attempt 2 = Attempt succeeded 11 = Stream start 12 = Stream continue 13 = Stream start during transmit 21 = Normal end 22 = Server initiated end 23 = Abnormal end 24 = User abort

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## RTP jitter (RTPJITTER)

<b>Event ID</b>	RTPJITTER
<b>Cellular systems</b>	All

<b>Record state</b>	Packet active state
<b>Description</b>	Recorded when parameter sample is received from the device and the received sample differs from the previous result. Sampling period is approximately about 500ms.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters | Parameters for POC | Parameters for VoIP | Parameters for IMS voice | Parameters for IMS video |

#### Parameters [\[Top\]](#)

Name	Type	Description
RTP jitter type	Integer	RTP jitter type 1 = POC 2 = VoIP 3 = IMS voice 4 = IMS video

#### Parameters for POC [\[Top\]](#)

Name	Type	Description
Jitter	Integer	RTP jitter downlink Minimum value: 0 Unit: ms
RTP jitter UL	Integer	RTP jitter uplink Minimum value: 0 Unit: ms
IAT DL	Integer	RTP interarrival time downlink During the reporting period the maximum duration between two received voice RTP packets. Minimum value: 0 Unit: ms
IAT UL	Integer	RTP interarrival time uplink Minimum value: 0 Unit: ms

#### Parameters for VoIP [\[Top\]](#)

Name	Type	Description
Jitter	Integer	RTP jitter downlink Minimum value: 0 Unit: ms
RTP RTT	Integer	RTP round-trip-time Minimum value: 0 Unit: ms
RTP PER	Float	RTP packet error rate Ratio of missing RTP packets to all RTP packets that should have been received during the reporting period. Number of lost and total number of RTP packets are derived from RTP sequence number (packets are either lost or arrive too late). Range: 0 – 100 Unit: %

#### Parameters for IMS voice [\[Top\]](#)

Name	Type	Description
Jitter	Integer	RTP jitter downlink This is average packet delay variation during the reporting period based on RFC 5481 subclause 4.2. $PDV = (R_i - R_{min}) - (S_i - S_{min}) = (R_i - S_i) - (R_{min} - S_{min})$ , where R is receive time and S is sent time based on RTP timestamps. Minimum value: 0 Unit: ms
RTP PER	Float	RTP packet error rate Ratio of missing RTP packets to all RTP packets that should have been received during the reporting period. Number of lost

		and total number of RTP packets are derived from RTP sequence number (packets are either lost or arrive too late). Range: 0 – 100 Unit: %
IAT DL	Integer	RTP interarrival time downlink During the reporting period the maximum duration between two received voice RTP packets. Minimum value: 0 Unit: ms
RTP DL bytes	Integer	RTP bytes downlink Number of RTP downlink bytes transferred after last update. Minimum value: 0
RTP DL packets	Integer	RTP packets downlink Number of RTP downlink packets transferred after last update. Minimum value: 0
RTP UL bytes	Integer	RTP bytes uplink Number of RTP uplink bytes transferred after last update. Minimum value: 0
RTP UL packets	Integer	RTP packets uplink Number of RTP uplink packets transferred after last update. Minimum value: 0
RTP BEL	Integer	RTP burst error length Maximum length of sequential erroneous or missing RTP packets during the last reporting period. Minimum value: 0

#### Parameters for IMS video [|Top|](#)

Name	Type	Description
Video jitter	Integer	RTP video jitter downlink This parameter is not logged currently. Minimum value: 0 Unit: ms
Video RTP PER	Float	RTP video packet error rate Range: 0 – 100 Unit: %
Video IAT DL	Integer	RTP video interarrival time downlink During the reporting period the maximum duration between two received video RTP packets. Minimum value: 0 Unit: ms
Video RTP DL bytes	Integer	RTP video bytes downlink Number of video RTP downlink bytes transferred after last update. Minimum value: 0
Video RTP DL packets	Integer	RTP video packets downlink Number of video RTP downlink packets transferred after last update. Minimum value: 0
Video RTP UL bytes	Integer	RTP video bytes uplink Number of video RTP uplink bytes transferred after last update. Minimum value: 0
Video RTP UL packets	Integer	RTP video packets uplink Number of video RTP uplink packets transferred for after last update. Minimum value: 0
Video RTP BEL	Integer	RTP video burst error length Maximum length of sequential erroneous or missing RTP packets during the last reporting period. Minimum value: 0



## RTP jitter uplink (RTPJITTERU)

Event ID	RTPJITTERU
Cellular systems	All
Record state	Packet active state
Description	Recorded when INFO SIP message contains the logged parameters.
Tools	Nemo Outdoor

[Parameters](#) | [Parameters for IMS](#) |

### Parameters [|Top](#)

Name	Type	Description
RTP jitter type	Integer	RTP jitter type 3 = IMS

### Parameters for IMS [|Top](#)

Name	Type	Description
RTP jitter UL	Float	RTP jitter uplink Minimum value: 0 Unit: ms
RTP PER UL	Float	RTP packet error rate uplink Range: 0 – 100 Unit: %

## RTP buffer status (RTPBUFFER)

Event ID	RTPBUFFER
Cellular systems	All
Record state	Packet active state
Description	Recorded when parameter sample is received from the device and the received sample differs from the previous result. Sampling period is approximately 500ms.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) | [Parameters for IMS voice](#) |

### Parameters [|Top](#)

Name	Type	Description
RTP buffer type	Integer	RTP buffer type 3 = IMS voice

### Parameters for IMS voice [|Top](#)

Name	Type	Description

Talk rate	Float	Talk rate Ratio of talk frames to all frames. Range: 0 – 100
Dequeue underflow	Integer	Dequeue underflow The number of the audio frames that have not been available in the de-jitter buffer during the playback. Minimum value: 0
Consecutive dequeue underflow	Integer	Consecutive dequeue underflow The longest consecutive missed audio frames during the playback. The audio interruption time is this parameter multiplied by frame length that is currently 20 ms. Minimum value: 0
Q size	Integer	Queue size (talk) The maximum size of the dejitter buffer during the reporting period. Minimum value: 0 Unit: ms
Q size (silence)	Integer	Queue size (silence) The maximum size of the dejitter buffer during the reporting period. Minimum value: 0 Unit: ms
Frame delay	Integer	Frame delay (talk) During the reporting period the maximum duration the RTP packet has been in the dejitter buffer before the usage. Minimum value: 0 Unit: ms
Frame delay (silence)	Integer	Frame delay (silence) During the reporting period the maximum duration the RTP packet has been in the dejitter buffer before the usage. Minimum value: 0 Unit: ms

## Robust header compression (ROHC)

Event ID	ROHC
Cellular systems	All
Record state	Packet active state
Description	Recorded to collect robust header compression (ROHC) IP header compression algorithm usage statistics during IMS based calls.
Tools	Nemo Outdoor, Nemo Handy

Parameters | Parameters for ROHC |

### Parameters |Top|

Name	Type	Description
IP header compression type	Integer	IP header compression type Sometimes transmitted/received application layer payload size is relatively small compared to TCP/IP header size. This is especially true with IMS based voice services where audio packet size can be one fifth or even less compared to TCP/IP headers. To optimize network resource usage various algorithms have been developed to compress and to remove redundant parts of the TCP/IP header. 1 = ROHC Robust header compression. See more RFC 3095 and RFC 4995.

## Parameters for ROHC [\[Top\]](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
ROHC CR UL	Float	ROHC compression rate UL This is the ratio of transmitted compressed bytes to uncompressed bytes. In some cases (especially at the beginning of the session) this ratio can be higher than 100% meaning that compressed result is larger than uncompressed data. Range: 0 – 110 Unit: %
ROHC CR DL	Float	ROHC compression rate DL This is the ratio of received compressed bytes to uncompressed bytes. In some cases (especially at the beginning of the session) this ratio can be higher than 100% meaning that compressed data is larger than uncompressed result. Sometimes this parameter is called decompression rate. Range: 0 – 110 Unit: %
#ROHC profiles	Integer	Number of ROHC profiles
#Params/ROHC profile	Integer	Number of parameters per ROHC profile
ROHC profile	Integer	ROHC profile ROHC IP header compression standard defines multiple different header compression schemes for different purposes. This section defines each compression profile its own separate compression statistic. See more about compression profiles in RFC 4995. 0 = Uncompressed See more RFC 4995. 1 = RTP See more RFC 3095. 2 = UDP See more RFC 3095. 3 = ESP See more RFC 3095. 4 = IP See more RFC 3843. 5 = LLA See more RFC 3242. 6 = TCP See more RFC 4996. 7 = RTP/UDP-lite See more RFC 3408. 8 = UDP-lite See more RFC 4019. 261 = LLA R-mode See more RFC 4019.
ROHC CR UL/profile	Float	ROHC compression ratio UL/profile This is the ratio of transmitted compressed bytes to uncompressed bytes. In some cases (especially at the beginning of the session) this ratio can be higher than 100% meaning that compressed result is larger than uncompressed data. Range: 0 – 110 Unit: %
ROHC CR DL/profile	Float	ROHC compression ratio DL/profile This is the ratio of received compressed bytes to uncompressed bytes. In some cases (especially at the beginning of the session) this ratio can be higher than 100% meaning that compressed data is larger than uncompressed result. Sometimes this parameter is called decompression rate. Range: 0 – 110 Unit: %

## GPS information (GPS)

<b>Event ID</b>	GPS
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when GPS information is received from the device.
<b>Tools</b>	Nemo Outdoor, Nemo Handy, Nemo Autonomous, Nemo Q, Nemo Server

Parameters |

### Parameters |Top|

Name	Type	Description
Lon.	Float	Longitude Longitude of the measured position.
Lat.	Float	Latitude Latitude of the measured position.
Height	Integer	Height Unit: m
Distance	Integer	Distance Unit: m
Quality	Integer	GPS fix quality -1 = Simulated GPS fix 0 = No fix 1 = GPS fix 2 = DGPS fix 3 = DR in use 4 = GPS estimation 5 = GPS fix with DR 6 = DGPS fix with DR 11 = Glonass fix 21 = GPS + Glonass fix
Satellites	Integer	GPS satellites
Velocity	Integer	Velocity Unit: km/h
PDOP	Float	Position dilution of precision See <a href="http://en.wikipedia.org/wiki/PDOP">http://en.wikipedia.org/wiki/PDOP</a> .
HDOP	Float	Horizontal dilution of precision See <a href="http://en.wikipedia.org/wiki/PDOP">http://en.wikipedia.org/wiki/PDOP</a> .
VDOP	Float	Vertical dilution of precision See <a href="http://en.wikipedia.org/wiki/PDOP">http://en.wikipedia.org/wiki/PDOP</a> .
Status	Integer	GPS status 0 = No fix 1 = Fix The normal state. 2 = Time drift GPS time drift is detected. 3 = Stale position GPS position has been the same over a predefined time period.

## Textual user note (TNOTE)

<b>Event ID</b>	TNOTE
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when textual note is recorded by the user.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
TNote	String	Textual note

## Service quality note (QNOTE)

<b>Event ID</b>	QNOTE
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when a service quality note is recorded by the user. This is an answer to a predefined question presented to the user.
<b>Tools</b>	Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
ID	Integer	Service quality ID This value uniquely identifies each service quality question in the measurement.
Parent ID	Integer	Service quality parent ID Identifier of the parent question. -1 if this is a root question.
Question	String	Service quality question Question in double quotes.
Answer	String	Service quality answer Predefined answer in double quotes.
Description	String	Service quality description Additional user written information for the question in double quotes. It is also possible that Answer field is for example _Other_ and this field explains exactly what happened.

## Service trigger note (QTRIGGER)

<b>Event ID</b>	QTRIGGER
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded to indicate service trigger description.
<b>Tools</b>	Nemo Q

Parameters |

### Parameters |Top|

Name	Type	Description
Description	String	Service trigger description

## User marker (MARK)

<b>Event ID</b>	MARK
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when the user adds a marker to the measurement.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
#Marker SEQ	Integer	Marker sequence number The ordinal number of the marker during measurement session.
Marker#	Integer	Marker number Marker identification number for measuring location. Range: 0 – 9

## Textual error note (ERR)

<b>Event ID</b>	ERR
<b>Cellular systems</b>	All
<b>Record state</b>	Always

<b>Description</b>	Recorded when critical measurement tool or device errors occur (e.g. connection to the device trace interface is lost).
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Error	String	Error text

## Change of day (DATE)

<b>Event ID</b>	DATE
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when data changes.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Date	String	Date Date in format dd.mm.yyyy, where dd is the day of the month, mm is the month of the year and yyyy is the year.

## Pause (PAUSE)

<b>Event ID</b>	PAUSE
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when the measurement is paused by the user.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Pause context ID	Context	Pause context ID

## Resume (RESUME)

<b>Event ID</b>	RESUME
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when the paused measurement is resumed. If the measurement is stopped during the paused state, the RESUME measurement event is recorded before the #STOP measurement event.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

### Parameters |Top|

Name	Type	Description
Pause context ID	Context	Pause context ID

## External application launch (APP)

<b>Event ID</b>	APP
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when an external application is launched by a script.
<b>Tools</b>	Nemo Outdoor

Parameters |

### Parameters |Top|

Name	Type	Description
Ext. app. state	Integer	External application state 1 = Started asynchronously 2 = Started synchronously 3 = Stopped
#Ext. app. launch	Integer	Number of external application launches This counter is incremented everytime external application is launched. When external application is stopped the same number is used as the one what was used when application was started.
Ext. app. name	String	External application name
Ext. app. params	String	External application parameters



## Application list (APPLIST)

<b>Event ID</b>	APPLIST
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded to indicate a snapshot of the currently running applications.
<b>Tools</b>	Nemo Handy, Nemo CEM

Parameters |

### Parameters |Top|

Name	Type	Description
#Apps	Integer	Running applications
#Params/app	Integer	Number of parameters per running application
App name	String	Running application name
App component	String	Running component name This is the name of the launched component in Android.
App version	String	Running application version
App state	Integer	Running application state 1 = Foreground 2 = Visible 3 = Perceptible 4 = Service 5 = Background 6 = Empty

## Modem message (MODEM)

<b>Event ID</b>	MODEM
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when modem message is sent to or received from the device. At the moment this message is only logged when Send Modem Message functionality is used from Nemo Outdoor.
<b>Tools</b>	Nemo Outdoor

Parameters |Parameters for modem message |

### Parameters |Top|

Name	Type	Description
Modem message type	Integer	Modem message type 1 = Modem

**Parameters for modem message** [|Top|](#)

Name	Type	Description
Direction	Integer	Modem message direction 1 = Send 2 = Receive
Modem message	String (hex)	Modem message

## Script information (SCRIPT)

Event ID	SCRIPT
Cellular systems	All
Record state	Always
Description	Recorded when the script engine is started to indicate used script.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) |**Parameters** [|Top|](#)

Name	Type	Description
#Header params	Integer	Number of header parameters
Test script file	String	Test script filename Defines the test script that was used during measurements.
Test script version	String	Test script version
#Repeats	Integer	Test script repeats
Sync group	String	Test script sync group ID
#Test script lines	Integer	Number of commands in test script
#Params/test script line	Integer	Number of parameters per test script command
Cmd index	Integer	Test script command index
Cmd	String	Test script command name Name of the command that is executed, e.g. MakeVoiceCall or StartFTPTransfer.
Cmd arguments	String	Test script command arguments Defines the arguments that are given to the command. From the NMF version 2.31 on this is base64 coded zipped XML format.

## Command request (CMDREQ)

<b>Event ID</b>	CMDREQ
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when the script engine executes a new line from the script.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Script CMD context ID	Context	Script CMD context ID
Cmd index	Integer	Test script command index
Cmd	String	Test script command name Name of the command that is executed, e.g. MakeVoiceCall or StartFTPTransfer.
Cmd arguments	String	Test script command arguments Defines the arguments that are given to the command. From the NMF version 2.31 on this is base64 coded zipped XML format.

## Command completed (CMDCOMP)

<b>Event ID</b>	CMDCOMP
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when the executed command is completed and there is a result for it.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

Parameters |

#### Parameters [|Top](#)

Name	Type	Description
Script CMD context ID	Context	Script CMD context ID
Cmd index	Integer	Test script command index
Cmd result	Integer	Test script command result 1 = Succeeded 2 = Failed 3 = Skipped 4 = User abort

## Lock info (LOCK)

<b>Event ID</b>	LOCK
<b>Cellular systems</b>	GSM,UMTS FDD,UMTS TD-SCDMA,LTE FDD,LTE TDD,cdmaOne,CDMA 1x,EVDO
<b>Record state</b>	Always
<b>Description</b>	Recorded when any forcing function is activated or deactivated. This measurement event is also written at the beginning of the measurement.
<b>Tools</b>	Nemo Outdoor, Nemo Handy

[Parameters](#) |
[Parameters for channel lock](#) |
[Parameters for UMTS sector lock](#) |
[Parameters for system lock](#) |
[Parameters for band lock](#) |
[Parameters for cell barring](#) |
[Parameters for handover suppression](#) |
[Parameters for GSM handover forcing](#) |
[Parameters for UMTS FDD handover forcing](#) |
[Parameters for radio state off](#) |
[Parameters for LTE sector lock](#) |
[Parameters for LTE handover forcing](#) |
[Parameters for PLMN lock](#) |
[Parameters for LTE carrier aggregation disabled](#) |

#### Parameters [\[Top\]](#)

Name	Type	Description
#Forcings	Integer	Number of active forcings
Lock type	Integer	Lock type 1 = Channel lock 2 = UMTS sector lock This type is also used for UMTS carrier lock. 3 = System lock 4 = Band lock 5 = Cell barring 6 = Handover suppression 7 = GSM handover forcing 8 = UMTS FDD handover forcing 9 = Radio state off 10 = LTE sector lock 11 = LTE handover forcing 12 = PLMN lock 13 = LTE carrier aggregation disabled
#Params	Integer	Number of parameters

#### Parameters for channel lock [\[Top\]](#)

Name	Type	Description
Locked channel	Integer	Locked channel
Locked band	Integer	Locked band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25

50026 = UMTS FDD 850 band 26  
59999 = UMTS FDD  
60001 = UMTS TD-SCDMA 2000 band a  
60002 = UMTS TD-SCDMA 1900 band b  
60003 = UMTS TD-SCDMA 1900 band c  
60004 = UMTS TD-SCDMA 2600 band d  
60005 = UMTS TD-SCDMA 1900 band e  
60006 = UMTS TD-SCDMA 2300 band f  
69999 = UMTS TD-SCDMA  
70001 = LTE FDD 2100 band 1  
70002 = LTE FDD 1900 band 2  
70003 = LTE FDD 1800 band 3  
70004 = LTE FDD 2100 AWS band 4  
70005 = LTE FDD 850 band 5  
Band 850 is also known as band 800.  
70006 = LTE FDD 850 band 6  
70007 = LTE FDD 2600 band 7  
70008 = LTE FDD 900 band 8  
70009 = LTE FDD 1800 band 9  
70010 = LTE FDD 2100 band 10  
70011 = LTE FDD 1400 band 11  
70012 = LTE FDD 700 band 12  
70013 = LTE FDD 700 band 13  
70014 = LTE FDD 700 band 14  
70017 = LTE FDD 700 band 17  
70018 = LTE FDD 850 band 18  
70019 = LTE FDD 850 band 19  
70020 = LTE FDD 800 band 20  
70021 = LTE FDD 1500 band 21  
70022 = LTE FDD 3500 band 22  
70023 = LTE FDD 2200 band 23  
70024 = LTE FDD 1500 band 24  
70025 = LTE FDD 1900 band 25  
70026 = LTE FDD 850 band 26  
70027 = LTE FDD 800 band 27  
70028 = LTE FDD 700 band 28  
70029 = LTE FDD 700 band 29  
This is downlink only band.  
70030 = LTE FDD 2350 band 30  
70031 = LTE FDD 450 band 31  
70032 = LTE FDD 1500 L-band  
This is downlink only band.  
70064 = LTE FDD 390-470 band 64  
This is a non-standard LTE FDD band.  
70065 = LTE FDD 2100 band 65  
70066 = LTE FDD AWS-3 2100 band 66  
70067 = LTE FDD 700 EU band 67  
This is downlink only band.  
70068 = LTE FDD 700 ME band 68  
70069 = LTE FDD 2500 band 69  
This is downlink only band.  
70070 = LTE FDD AWS-4 band 70  
70071 = LTE FDD 600 band 71  
70252 = LTE FDD 5200 NII-1 band 252  
70255 = LTE FDD 5700 NII-3 band 255  
79999 = LTE FDD  
80033 = LTE TDD 1900-1920 band 33  
80034 = LTE TDD 2010-2025 band 34  
80035 = LTE TDD 1850-1910 band 35  
80036 = LTE TDD 1930-1990 band 36  
80037 = LTE TDD 1910-1930 band 37  
80038 = LTE TDD 2570-2620 band 38  
80039 = LTE TDD 1880-1920 band 39  
80040 = LTE TDD 2300-2400 band 40  
80041 = LTE TDD 2496-2690 band 41  
80042 = LTE TDD 3400-3600 band 42  
80043 = LTE TDD 3600-3800 band 43  
80044 = LTE TDD 703-803 band 44  
80045 = LTE TDD 1447-1467 band 45  
80046 = LTE TDD 5154-5925 band 46  
80047 = LTE TDD 5855-5925 band 47

80048 = LTE TDD 3550-3700 band 48  
 80061 = LTE TDD 1447-1467 band 61  
     This is a non-standard LTE TDD band.  
 80062 = LTE TDD 1785-1805 band 62  
     This is a non-standard LTE TDD band.  
 80087 = LTE TDD 1447-1467 band 87  
     This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
     This is a non-standard LTE TDD band.  
 89999 = LTE TDD  
 100000 = cdmaOne 800 band 0  
     North American cellular 800 MHz band, also in Korea, Australia,  
     Hong Kong, China, Taiwan, and others.  
 100001 = cdmaOne 1900 band 1  
     North American PCS 1900 MHz band.  
 100002 = cdmaOne 900 TACS band 2  
     Total access communication system (TACS) 900 MHz band.  
 100003 = cdmaOne 800 JTACS band 3  
     JTACS 800 MHz band (Japanese 800 MHz reversed).  
 100004 = cdmaOne 1800 Korean band 4  
     Korean PCS 1800 MHz band.  
 100005 = cdmaOne 450 NMT band 5  
     Nordic mobile telephone (NMT) 450 MHz band.  
 100006 = cdmaOne 1900-2100 IMT band 6  
     IMT-2000 1900-2100 MHz band.  
 100007 = cdmaOne 700 band 7  
     North American cellular 700 MHz band.  
 100008 = cdmaOne 1800 band 8  
     1800 MHz band.  
 100009 = cdmaOne 900 band 9  
     900 MHz band.  
 100010 = cdmaOne 800 SMR band 10  
     Specialized mobile radio (SMR) 800 MHz band.  
 100011 = cdmaOne 400 PAMR band 11  
     European PAMR 400 MHz band.  
 100012 = cdmaOne 800 PAMR band 12  
     European PAMR 800 MHz band.  
 100013 = cdmaOne 2500 band 13  
     2.5 GHz IMT-2000 extension.  
 100014 = cdmaOne 1900 band 14  
     US PCS 1.9 GHz.  
 100015 = cdmaOne 2100 AWS band 15  
 100016 = cdmaOne 2500 band 16  
     US 2.5 GHz.  
 100018 = cdmaOne 700 public safety band 18  
 100019 = cdmaOne 700 lower band 19  
 100020 = cdmaOne 1500 L-band band 20  
 100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
     North American cellular 800 MHz band, also in Korea, Australia,  
     Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
     North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
     Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
     JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
     Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
     Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
     IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
     North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
     1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
     900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
     Specialized mobile radio (SMR) 800 MHz band.

110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21  
 119999 = CDMA 1x  
 120000 = EVDO 800 band 0  
 North American cellular 800 MHz band. Also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 120001 = EVDO 1900 band 1  
 North American PCS 1900 MHz band.  
 120002 = EVDO 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 120003 = EVDO 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 120004 = EVDO 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 120005 = EVDO 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 120006 = EVDO 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 120007 = EVDO 700 band 7  
 North American cellular 700 MHz band.  
 120008 = EVDO 1800 band 8  
 1800 MHz band.  
 120009 = EVDO 900 band 9  
 900 MHz band.  
 120010 = EVDO 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 120011 = EVDO 400 PAMR band 11  
 European PAMR 400 MHz band.  
 120012 = EVDO 800 PAMR band 12  
 European PAMR 800 MHz band.  
 120013 = EVDO 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 120014 = EVDO 1900 band 14  
 US PCS 1.9 GHz.  
 120015 = EVDO 2100 AWS band 15  
 120016 = EVDO 2500 band 16  
 US 2.5 GHz.  
 120018 = EVDO 700 public safety band 18  
 120019 = EVDO 700 lower band 19  
 120020 = EVDO 1500 L-band band 20  
 120021 = EVDO 2000 S-band band 21  
 129999 = EVDO

#### Parameters for UMTS sector lock [\[Top\]](#)

Name	Type	Description
Locked scr.	Integer	Locked scrambling code This parameter is n/a for UMTS carrier lock. Range: 0 – 511
Locked channel	Integer	Locked channel
Locked band	Integer	Locked band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5

Band 850 is also known as band 800.  
 50006 = UMTS FDD 850 band 6  
 50007 = UMTS FDD 2600 band 7  
 50008 = UMTS FDD 900 band 8  
 50009 = UMTS FDD 1800 band 9  
 50010 = UMTS FDD 2100 band 10  
 50011 = UMTS FDD 1400 band 11  
 50012 = UMTS FDD 700 band 12  
 50013 = UMTS FDD 700 band 13  
 50014 = UMTS FDD 700 band 14  
 50019 = UMTS FDD 850 band 19  
 50020 = UMTS FDD 800 band 20  
 50021 = UMTS FDD 1500 band 21  
 50022 = UMTS FDD 3500 band 22  
 50025 = UMTS FDD 1900 band 25  
 50026 = UMTS FDD 850 band 26  
 59999 = UMTS FDD  
 60001 = UMTS TD-SCDMA 2000 band a  
 60002 = UMTS TD-SCDMA 1900 band b  
 60003 = UMTS TD-SCDMA 1900 band c  
 60004 = UMTS TD-SCDMA 2600 band d  
 60005 = UMTS TD-SCDMA 1900 band e  
 60006 = UMTS TD-SCDMA 2300 band f  
 69999 = UMTS TD-SCDMA

#### Parameters for system lock [\[Top\]](#)

Name	Type	Description
Locked system	Integer	Locked system 1 = GSM 5 = UMTS FDD 6 = UMTS TD-SCDMA 7 = LTE FDD This is also used with NB-IoT. 8 = LTE TDD 10 = cdmaOne 11 = CDMA 1x 12 = EVDO

#### Parameters for band lock [\[Top\]](#)

Name	Type	Description
Band	Integer	Locked band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25



50026 = UMTS FDD 850 band 26  
59999 = UMTS FDD  
60001 = UMTS TD-SCDMA 2000 band a  
60002 = UMTS TD-SCDMA 1900 band b  
60003 = UMTS TD-SCDMA 1900 band c  
60004 = UMTS TD-SCDMA 2600 band d  
60005 = UMTS TD-SCDMA 1900 band e  
60006 = UMTS TD-SCDMA 2300 band f  
69999 = UMTS TD-SCDMA  
70001 = LTE FDD 2100 band 1  
70002 = LTE FDD 1900 band 2  
70003 = LTE FDD 1800 band 3  
70004 = LTE FDD 2100 AWS band 4  
70005 = LTE FDD 850 band 5  
Band 850 is also known as band 800.  
70006 = LTE FDD 850 band 6  
70007 = LTE FDD 2600 band 7  
70008 = LTE FDD 900 band 8  
70009 = LTE FDD 1800 band 9  
70010 = LTE FDD 2100 band 10  
70011 = LTE FDD 1400 band 11  
70012 = LTE FDD 700 band 12  
70013 = LTE FDD 700 band 13  
70014 = LTE FDD 700 band 14  
70017 = LTE FDD 700 band 17  
70018 = LTE FDD 850 band 18  
70019 = LTE FDD 850 band 19  
70020 = LTE FDD 800 band 20  
70021 = LTE FDD 1500 band 21  
70022 = LTE FDD 3500 band 22  
70023 = LTE FDD 2200 band 23  
70024 = LTE FDD 1500 band 24  
70025 = LTE FDD 1900 band 25  
70026 = LTE FDD 850 band 26  
70027 = LTE FDD 800 band 27  
70028 = LTE FDD 700 band 28  
70029 = LTE FDD 700 band 29  
This is downlink only band.  
70030 = LTE FDD 2350 band 30  
70031 = LTE FDD 450 band 31  
70032 = LTE FDD 1500 L-band  
This is downlink only band.  
70064 = LTE FDD 390-470 band 64  
This is a non-standard LTE FDD band.  
70065 = LTE FDD 2100 band 65  
70066 = LTE FDD AWS-3 2100 band 66  
70067 = LTE FDD 700 EU band 67  
This is downlink only band.  
70068 = LTE FDD 700 ME band 68  
70069 = LTE FDD 2500 band 69  
This is downlink only band.  
70070 = LTE FDD AWS-4 band 70  
70071 = LTE FDD 600 band 71  
70252 = LTE FDD 5200 NII-1 band 252  
70255 = LTE FDD 5700 NII-3 band 255  
79999 = LTE FDD  
80033 = LTE TDD 1900-1920 band 33  
80034 = LTE TDD 2010-2025 band 34  
80035 = LTE TDD 1850-1910 band 35  
80036 = LTE TDD 1930-1990 band 36  
80037 = LTE TDD 1910-1930 band 37  
80038 = LTE TDD 2570-2620 band 38  
80039 = LTE TDD 1880-1920 band 39  
80040 = LTE TDD 2300-2400 band 40  
80041 = LTE TDD 2496-2690 band 41  
80042 = LTE TDD 3400-3600 band 42  
80043 = LTE TDD 3600-3800 band 43  
80044 = LTE TDD 703-803 band 44  
80045 = LTE TDD 1447-1467 band 45  
80046 = LTE TDD 5154-5925 band 46  
80047 = LTE TDD 5855-5925 band 47

80048 = LTE TDD 3550-3700 band 48  
 80061 = LTE TDD 1447-1467 band 61  
     This is a non-standard LTE TDD band.  
 80062 = LTE TDD 1785-1805 band 62  
     This is a non-standard LTE TDD band.  
 80087 = LTE TDD 1447-1467 band 87  
     This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
     This is a non-standard LTE TDD band.  
 89999 = LTE TDD  
 100000 = cdmaOne 800 band 0  
     North American cellular 800 MHz band, also in Korea, Australia,  
     Hong Kong, China, Taiwan, and others.  
 100001 = cdmaOne 1900 band 1  
     North American PCS 1900 MHz band.  
 100002 = cdmaOne 900 TACS band 2  
     Total access communication system (TACS) 900 MHz band.  
 100003 = cdmaOne 800 JTACS band 3  
     JTACS 800 MHz band (Japanese 800 MHz reversed).  
 100004 = cdmaOne 1800 Korean band 4  
     Korean PCS 1800 MHz band.  
 100005 = cdmaOne 450 NMT band 5  
     Nordic mobile telephone (NMT) 450 MHz band.  
 100006 = cdmaOne 1900-2100 IMT band 6  
     IMT-2000 1900-2100 MHz band.  
 100007 = cdmaOne 700 band 7  
     North American cellular 700 MHz band.  
 100008 = cdmaOne 1800 band 8  
     1800 MHz band.  
 100009 = cdmaOne 900 band 9  
     900 MHz band.  
 100010 = cdmaOne 800 SMR band 10  
     Specialized mobile radio (SMR) 800 MHz band.  
 100011 = cdmaOne 400 PAMR band 11  
     European PAMR 400 MHz band.  
 100012 = cdmaOne 800 PAMR band 12  
     European PAMR 800 MHz band.  
 100013 = cdmaOne 2500 band 13  
     2.5 GHz IMT-2000 extension.  
 100014 = cdmaOne 1900 band 14  
     US PCS 1.9 GHz.  
 100015 = cdmaOne 2100 AWS band 15  
 100016 = cdmaOne 2500 band 16  
     US 2.5 GHz.  
 100018 = cdmaOne 700 public safety band 18  
 100019 = cdmaOne 700 lower band 19  
 100020 = cdmaOne 1500 L-band band 20  
 100021 = cdmaOne 2000 S-band band 21  
 109999 = cdmaOne  
 110000 = CDMA 1x 800 band 0  
     North American cellular 800 MHz band, also in Korea, Australia,  
     Hong Kong, China, Taiwan, and others.  
 110001 = CDMA 1x 1900 band 1  
     North American PCS 1900 MHz band.  
 110002 = CDMA 1x 900 TACS band 2  
     Total access communication system (TACS) 900 MHz band.  
 110003 = CDMA 1x 800 JTACS band 3  
     JTACS 800 MHz band (Japanese 800 MHz reversed).  
 110004 = CDMA 1x 1800 Korean band 4  
     Korean PCS 1800 MHz band.  
 110005 = CDMA 1x 450 NMT band 5  
     Nordic mobile telephone (NMT) 450 MHz band.  
 110006 = CDMA 1x 1900-2100 IMT band 6  
     IMT-2000 1900-2100 MHz band.  
 110007 = CDMA 1x 700 band 7  
     North American cellular 700 MHz band.  
 110008 = CDMA 1x 1800 band 8  
     1800 MHz band.  
 110009 = CDMA 1x 900 band 9  
     900 MHz band.  
 110010 = CDMA 1x 800 SMR band 10  
     Specialized mobile radio (SMR) 800 MHz band.

110011 = CDMA 1x 400 PAMR band 11  
 European PAMR 400 MHz band.  
 110012 = CDMA 1x 800 PAMR band 12  
 European PAMR 800 MHz band.  
 110013 = CDMA 1x 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 110014 = CDMA 1x 1900 band 14  
 US PCS 1.9 GHz.  
 110015 = CDMA 1x 2100 AWS band 15  
 110016 = CDMA 1x 2500 band 16  
 US 2.5 GHz.  
 110018 = CDMA 1x 700 public safety band 18  
 110019 = CDMA 1x 700 lower band 19  
 110020 = CDMA 1x 1500 L-band band 20  
 110021 = CDMA 1x 2000 S-band band 21  
 119999 = CDMA 1x  
 120000 = EVDO 800 band 0  
 North American cellular 800 MHz band. Also in Korea, Australia,  
 Hong Kong, China, Taiwan, and others.  
 120001 = EVDO 1900 band 1  
 North American PCS 1900 MHz band.  
 120002 = EVDO 900 TACS band 2  
 Total access communication system (TACS) 900 MHz band.  
 120003 = EVDO 800 JTACS band 3  
 JTACS 800 MHz band (Japanese 800 MHz reversed).  
 120004 = EVDO 1800 Korean band 4  
 Korean PCS 1800 MHz band.  
 120005 = EVDO 450 NMT band 5  
 Nordic mobile telephone (NMT) 450 MHz band.  
 120006 = EVDO 1900-2100 IMT band 6  
 IMT-2000 1900-2100 MHz band.  
 120007 = EVDO 700 band 7  
 North American cellular 700 MHz band.  
 120008 = EVDO 1800 band 8  
 1800 MHz band.  
 120009 = EVDO 900 band 9  
 900 MHz band.  
 120010 = EVDO 800 SMR band 10  
 Specialized mobile radio (SMR) 800 MHz band.  
 120011 = EVDO 400 PAMR band 11  
 European PAMR 400 MHz band.  
 120012 = EVDO 800 PAMR band 12  
 European PAMR 800 MHz band.  
 120013 = EVDO 2500 band 13  
 2.5 GHz IMT-2000 extension.  
 120014 = EVDO 1900 band 14  
 US PCS 1.9 GHz.  
 120015 = EVDO 2100 AWS band 15  
 120016 = EVDO 2500 band 16  
 US 2.5 GHz.  
 120018 = EVDO 700 public safety band 18  
 120019 = EVDO 700 lower band 19  
 120020 = EVDO 1500 L-band band 20  
 120021 = EVDO 2000 S-band band 21  
 129999 = EVDO

#### Parameters for cell barring [\[Top\]](#)

Name	Type	Description
Cell barring state	Integer	Cell barring state 1 = Normal 2 = Ignored 3 = Reversed

#### Parameters for handover suppression [\[Top\]](#)

Name	Type	Description
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#### Parameters for GSM handover forcing [\[Top\]](#)

Name	Type	Description
HO forcing band	Integer	HO forcing target band 10850 = GSM 850 Band 850 is also known as band 800. 10900 = GSM 900 11800 = GSM 1800 11900 = GSM 1900 19999 = GSM
HO forcing channel	Integer	HO forcing target channel
HO forcing BSIC	Integer	HO forcing target BSIC This is the BSIC of the target cell. Range: 0 – 63
Target RXL bias	Float	HO forcing target RX level bias Unit: dBm
Target RXQ bias	Integer	HO forcing target quality bias
Non-target RXL bias	Float	HO forcing non-target RX level bias Unit: dBm
Non-target RXQ bias	Integer	HO forcing non-target quality bias

#### Parameters for UMTS FDD handover forcing [\[Top\]](#)

Name	Type	Description
HO forcing band	Integer	HO forcing target band 50001 = UMTS FDD 2100 band 1 50002 = UMTS FDD 1900 band 2 50003 = UMTS FDD 1800 band 3 50004 = UMTS FDD 2100 AWS band 4 50005 = UMTS FDD 850 band 5 Band 850 is also known as band 800. 50006 = UMTS FDD 850 band 6 50007 = UMTS FDD 2600 band 7 50008 = UMTS FDD 900 band 8 50009 = UMTS FDD 1800 band 9 50010 = UMTS FDD 2100 band 10 50011 = UMTS FDD 1400 band 11 50012 = UMTS FDD 700 band 12 50013 = UMTS FDD 700 band 13 50014 = UMTS FDD 700 band 14 50019 = UMTS FDD 850 band 19 50020 = UMTS FDD 800 band 20 50021 = UMTS FDD 1500 band 21 50022 = UMTS FDD 3500 band 22 50025 = UMTS FDD 1900 band 25 50026 = UMTS FDD 850 band 26 59999 = UMTS FDD
HO forcing channel	Integer	HO forcing target channel
HO forcing SC	Integer	HO forcing target scrambling code This is the scrambling code of the target cell. Range: 0 – 511
Target RSCP bias	Float	HO forcing target RSCP bias Unit: dBm
Target Ec/N0 bias	Float	HO forcing target Ec/N0 bias Unit: dB
Non-target RSCP bias	Float	HO forcing non-target RSCP bias Unit: dBm
Non-target Ec/N0 bias	Float	HO forcing non-target Ec/N0 bias Unit: dB

#### Parameters for radio state off [\[Top\]](#)

Name	Type	Description
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# Parameters for LTE sector lock [Top](#)

Name	Type	Description
Locked PCI	Integer	Locked physical cell identity Range: 0 – 503
Locked channel	Integer	Locked channel
Locked band	Integer	<p>Locked band</p> <p>70001 = LTE FDD 2100 band 1  70002 = LTE FDD 1900 band 2  70003 = LTE FDD 1800 band 3  70004 = LTE FDD 2100 AWS band 4  70005 = LTE FDD 850 band 5  Band 850 is also known as band 800.  70006 = LTE FDD 850 band 6  70007 = LTE FDD 2600 band 7  70008 = LTE FDD 900 band 8  70009 = LTE FDD 1800 band 9  70010 = LTE FDD 2100 band 10  70011 = LTE FDD 1400 band 11  70012 = LTE FDD 700 band 12  70013 = LTE FDD 700 band 13  70014 = LTE FDD 700 band 14  70017 = LTE FDD 700 band 17  70018 = LTE FDD 850 band 18  70019 = LTE FDD 850 band 19  70020 = LTE FDD 800 band 20  70021 = LTE FDD 1500 band 21  70022 = LTE FDD 3500 band 22  70023 = LTE FDD 2200 band 23  70024 = LTE FDD 1500 band 24  70025 = LTE FDD 1900 band 25  70026 = LTE FDD 850 band 26  70027 = LTE FDD 800 band 27  70028 = LTE FDD 700 band 28  70029 = LTE FDD 700 band 29  This is downlink only band.  70030 = LTE FDD 2350 band 30  70031 = LTE FDD 450 band 31  70032 = LTE FDD 1500 L-band  This is downlink only band.  70064 = LTE FDD 390-470 band 64  This is a non-standard LTE FDD band.  70065 = LTE FDD 2100 band 65  70066 = LTE FDD AWS-3 2100 band 66  70067 = LTE FDD 700 EU band 67  This is downlink only band.  70068 = LTE FDD 700 ME band 68  70069 = LTE FDD 2500 band 69  This is downlink only band.  70070 = LTE FDD AWS-4 band 70  70071 = LTE FDD 600 band 71  70252 = LTE FDD 5200 NII-1 band 252  70255 = LTE FDD 5700 NII-3 band 255  79999 = LTE FDD  80033 = LTE TDD 1900-1920 band 33  80034 = LTE TDD 2010-2025 band 34  80035 = LTE TDD 1850-1910 band 35  80036 = LTE TDD 1930-1990 band 36  80037 = LTE TDD 1910-1930 band 37  80038 = LTE TDD 2570-2620 band 38  80039 = LTE TDD 1880-1920 band 39  80040 = LTE TDD 2300-2400 band 40  80041 = LTE TDD 2496-2690 band 41  80042 = LTE TDD 3400-3600 band 42  80043 = LTE TDD 3600-3800 band 43  80044 = LTE TDD 703-803 band 44</p>

80045 = LTE TDD 1447-1467 band 45  
 80046 = LTE TDD 5154-5925 band 46  
 80047 = LTE TDD 5855-5925 band 47  
 80048 = LTE TDD 3550-3700 band 48  
 80061 = LTE TDD 1447-1467 band 61  
 This is a non-standard LTE TDD band.  
 80062 = LTE TDD 1785-1805 band 62  
 This is a non-standard LTE TDD band.  
 80087 = LTE TDD 1447-1467 band 87  
 This is a non-standard LTE TDD band.  
 80088 = LTE TDD 1785-1805 band 88  
 This is a non-standard LTE TDD band.  
 89999 = LTE TDD

#### Parameters for LTE handover forcing [\[Top\]](#)

Name	Type	Description
HO forcing band	Integer	HO forcing target band 70001 = LTE FDD 2100 band 1 70002 = LTE FDD 1900 band 2 70003 = LTE FDD 1800 band 3 70004 = LTE FDD 2100 AWS band 4 70005 = LTE FDD 850 band 5 Band 850 is also known as band 800. 70006 = LTE FDD 850 band 6 70007 = LTE FDD 2600 band 7 70008 = LTE FDD 900 band 8 70009 = LTE FDD 1800 band 9 70010 = LTE FDD 2100 band 10 70011 = LTE FDD 1400 band 11 70012 = LTE FDD 700 band 12 70013 = LTE FDD 700 band 13 70014 = LTE FDD 700 band 14 70017 = LTE FDD 700 band 17 70018 = LTE FDD 850 band 18 70019 = LTE FDD 850 band 19 70020 = LTE FDD 800 band 20 70021 = LTE FDD 1500 band 21 70022 = LTE FDD 3500 band 22 70023 = LTE FDD 2200 band 23 70024 = LTE FDD 1500 band 24 70025 = LTE FDD 1900 band 25 70026 = LTE FDD 850 band 26 70027 = LTE FDD 800 band 27 70028 = LTE FDD 700 band 28 70029 = LTE FDD 700 band 29 This is downlink only band. 70030 = LTE FDD 2350 band 30 70031 = LTE FDD 450 band 31 70032 = LTE FDD 1500 L-band This is downlink only band. 70064 = LTE FDD 390-470 band 64 This is a non-standard LTE FDD band. 70065 = LTE FDD 2100 band 65 70066 = LTE FDD AWS-3 2100 band 66 70067 = LTE FDD 700 EU band 67 This is downlink only band. 70068 = LTE FDD 700 ME band 68 70069 = LTE FDD 2500 band 69 This is downlink only band. 70070 = LTE FDD AWS-4 band 70 70071 = LTE FDD 600 band 71 70252 = LTE FDD 5200 NII-1 band 252 70255 = LTE FDD 5700 NII-3 band 255 79999 = LTE FDD 80033 = LTE TDD 1900-1920 band 33 80034 = LTE TDD 2010-2025 band 34 80035 = LTE TDD 1850-1910 band 35 80036 = LTE TDD 1930-1990 band 36 80037 = LTE TDD 1910-1930 band 37 80038 = LTE TDD 2570-2620 band 38

		80039 = LTE TDD 1880-1920 band 39 80040 = LTE TDD 2300-2400 band 40 80041 = LTE TDD 2496-2690 band 41 80042 = LTE TDD 3400-3600 band 42 80043 = LTE TDD 3600-3800 band 43 80044 = LTE TDD 703-803 band 44 80045 = LTE TDD 1447-1467 band 45 80046 = LTE TDD 5154-5925 band 46 80047 = LTE TDD 5855-5925 band 47 80048 = LTE TDD 3550-3700 band 48 80061 = LTE TDD 1447-1467 band 61 This is a non-standard LTE TDD band. 80062 = LTE TDD 1785-1805 band 62 This is a non-standard LTE TDD band. 80087 = LTE TDD 1447-1467 band 87 This is a non-standard LTE TDD band. 80088 = LTE TDD 1785-1805 band 88 This is a non-standard LTE TDD band. 89999 = LTE TDD
HO forcing channel	Integer	HO forcing target channel
HO forcing PCI	Integer	HO forcing target physical cell identity Range: 0 – 503

#### Parameters for PLMN lock [|Top](#)

Name	Type	Description
PLMN selection mode	Integer	PLMN selection mode 1 = Manual 2 = Deregistered
MCC	Integer	Mobile country code See ITU-T recommendation E.212. Range: 0 – 999
MNC	Integer	Mobile network code Range: 0 – 999

#### Parameters for LTE carrier aggregation disabled [|Top](#)

Name	Type	Description
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## Device information (DEVI)

Event ID	DEVI
Cellular systems	All
Record state	Always
Description	Recorded when device information changes.
Tools	Nemo Outdoor, Nemo Handy

[Parameters](#) |

#### Parameters [|Top](#)

Name	Type	Description
Battery temp.	Float	Battery temperature Battery temperature in degree Celsius.

		Unit: C
Battery charge	Float	Battery charge Battery charge state in percents. Range: 0 – 100 Unit: %
Battery status	Integer	Battery status 1 = Full 2 = Charging 3 = Not charging 4 = Discharging 5 = Failure
Device status	Integer	Device status 1 = Disconnected 3 = Connected
Device battery current	Float	Device battery current Positive when the battery is charging. Unit: A
CPU	Float	Device CPU usage Range: 0 – 100 Unit: %

## Power save mode (PSM)

<b>Event ID</b>	PSM
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when power save mode state changes.
<b>Tools</b>	Nemo Outdoor

Parameters

### Parameters [Top](#)

Name	Type	Description
PSM	Integer	Power save mode 1 = PSM This is highest power save mode where the device is most of the time in sleep. During this mode the diagnostic interface may not work. See 3GPP TS 24.301 subclause 5.3.11 and 23.682 subclause 4.5.4. 10 = I-DRX Idle DRX mode where the device wakes up to read paging messages every now and then. 20 = Idle 30 = C-DRX During connected DRX mode the device is using less power than in connected mode and reads downlink indications occasionally. Currently this is not implemented. 40 = Connected



## Invex and Autonomous Probe health information (IHI)

<b>Event ID</b>	IHI
<b>Cellular systems</b>	All
<b>Record state</b>	Always
<b>Description</b>	Recorded when Invex or Autonomous Probe health information changes.
<b>Tools</b>	Nemo Outdoor

Parameters | Parameters for Invex I and II backplane. | Parameters for Invex I and II UIC. | Parameters for Invex II HIM. | Parameters for Autonomous Probe.

### Parameters [\[Top\]](#)

Name	Type	Description
Invex module type	Integer	Invex module type 10 = Invex I backplane 11 = Invex I UIC 20 = Invex II backplane 21 = Invex II UIC 22 = Invex II HIM 30 = Autonomous Probe
#Params/module type	Integer	Number of parameters per module type

### Parameters for Invex I and II backplane. [\[Top\]](#)

Name	Type	Description
Chassis	Integer	Invex chassis number
BP voltage	Float	Invex backplane voltage Unit: V
BP current	Float	Invex backplane current Unit: A
BP temp.	Float	Invex backplane temperature Unit: C
Invex battery voltage	Float	Invex battery voltage Unit: V
Invex battery current	Float	Invex battery current Unit: A
Invex battery charge	Float	Invex battery charge Range: 0 – 100 Unit: %
Invex battery status	Integer	Invex battery status 0 = Not used 4 = Discharging

### Parameters for Invex I and II UIC. [\[Top\]](#)

Name	Type	Description
Chassis	Integer	Invex chassis number
UIC slot number	Integer	UIC slot number
UIC voltage	Float	Invex UIC voltage Unit: V
UIC current	Float	Invex UIC current Unit: A
UIC temp.	Float	Invex UIC temperature Unit: C

Device connector current	Float	Device connector current Unit: A
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#### Parameters for Invex II HIM. [\[Top\]](#)

Name	Type	Description
Chassis	Integer	Invex chassis number
HIM slot number	Integer	HIM slot number
HIM voltage	Float	Invex HIM voltage Unit: V
UE current	Float	UE current Unit: A
HIM temp.	Float	Invex HIM temperature Unit: C

#### Parameters for Autonomous Probe. [\[Top\]](#)

Name	Type	Description
Autonomous Probe voltage	Float	Autonomous Probe voltage Unit: V
Autonomous Probe system current	Float	Autonomous Probe system current Unit: A
Autonomous Probe input current	Float	Autonomous Probe input current Unit: A
Temperature	Float	Autonomous Probe temperature Unit: C
Charger status	Integer	Autonomous Probe backup battery charger status 0 = Off 1 = On