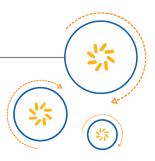


Qualcomm Technologies, Inc.



# QMI CAT 2.27 for MPSS.TH.1.0

QMI Card Application Toolkit Spec

80-NV400-11 B

March 20, 2015

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# **Revision History**

Revision	Date	Description		
A	Oct 2014	Initial release. Created from 80-NH952-11 AF.		
		Updates for this revision include minor version 26.		
		Added:		
		• Section 2.4.7		
		• Figure A-11		
		Added new message QMI_CAT_GET_CACHED_PROACTIVE_CMD (Section 3.24).		
В	Mar 2015	Updates for this revision include minor version 27.		
		<b>Note:</b> Gobi support was removed for MSM8909/MDM9635M/MDM9645 and newer devices.		
		Updates for Contactless State Request were made in Sections 2.4.2, 2.4.3, B.4 and Appendix D.		
		Updated Sections 2.5.1, 2.5.2, and 2.5.3.		
		Updated TLVs:		
		• Event Reporting Request (Section 3.2.1)		
		Decoded Event Reporting Request (Section 3.2.1)		
		• Proactive Command Event Report Registration Status (Section 3.2.2)		
		<ul> <li>Proactive Command Decoded Event Report Registration Status (Section 3.2.2)</li> <li>Decoded Header ID (Sections 3.2.3 and 3.8.2)</li> </ul>		
		• CAT Service State (Section 3.5.2)		
		• Decoded CAT Service State (Section 3.5.2)		
		• Envelope Command (Sections 3.7.1 and 3.10.1)		
		Terminal Response (Section 3.9.1)		
		Added new TLVs:		
		Contactless State Changed Event (Sections 3.2.3 and 3.8.2)		
		• Contactless Functionality State (Sections 3.2.3 and 3.8.2)		
		Contactless State Request (Section 3.10.1)		

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3-1 QMI_CAT messages

# 1 Introduction

## 1.1 Purpose

This specification documents Major Version 2 of the Qualcomm Messaging Interface (QMI) for the Card Application Toolkit (QMI\_CAT).

# 1.2 Scope

This document is intended for software developers who will be using the QMI\_CAT. This document provides the following details:

- Theory of operation Chapter 2 provides the theory of operation for the QMI\_CAT. This chapter
  includes messaging conventions, assigned QMI service type, fundamental service concepts, and state
  variables related to the service.
- Message formats, syntax, and semantics Chapter 3 provides the specific syntax and semantics of messages included in this version of the QMI\_CAT specification.
- Call flows and additional information Appendix A through Appendix D provide call flows, a list of supplementary Type-Length-Values (TLVs), a table of application responses, and TLVs for envelope commands.

## 1.3 Conventions

Function declarations, function names, type declarations, and code samples appear in a different font, for example, #include.

### 1.4 Technical Assistance

For assistance or clarification on information in this document, submit a case to Qualcomm Technologies at <a href="https://support.cdmatech.com">https://support.cdmatech.com</a>.

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# 2 Theory of Operation

# 2.1 Generalized QMI Service Compliance

The QMI\_CAT service complies with the generalized QMI service specification, including the rules for messages, indications and responses, byte ordering, arbitration, constants, result, and error code values described in 80-VB816-1. Extensions to the generalized QMI service theory of operation are noted in subsequent sections of this chapter.

# 2.2 CAT Service Type

CAT is assigned QMI service type 0x0A.

CAT is also assigned QMI service type 0xE0. However, support for type 0xE0 has been deprecated, and its use should be avoided.

# 2.3 Message Definition Template

## 2.3.1 Response Message Result TLV

This TLV is present in all Response messages defined in this document. It is not present in the Indication messages.

Name	Version introduced	Version last modified
Result Code	Corresponding	N/A
	command's Version	
	introduced	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x02			1	Result Code
Length	4			2	
Value	$\rightarrow$	uint16	qmi_result	2	Result code • QMI_RESULT_SUCCESS • QMI_RESULT_FAILURE
		uint16	qmi_error	2	Error code – Possible error code values are described in the error codes section of each message definition

# 2.4 QMI\_CAT Fundamental Concepts

#### 2.4.1 Overview of CAT

CAT provides mechanisms that allow applications existing in the Universal Integrated Circuit Card (UICC) to interact and operate with any terminal that supports the specific mechanisms required by the application. For more detail regarding the defined mechanisms and the commands and protocols related to CAT, refer to ETSI TS 102 223.

### 2.4.2 SAT/USAT Proactive Capability

The Subscriber Identity Module (SIM) Application Toolkit (SAT)/Universal Subscriber Identity Module (USIM) Application Toolkit (USAT) proactive capability is a mechanism whereby the UICC can request specific actions to be taken by the Mobile Equipment (ME) by issuing proactive commands, thus establishing and maintaining an interactive dialog with the user and/or communicating with the network or an external device.

The ME informs the UICC of the success of each command issued to it by the UICC, indicates the command details, and, if applicable, adds more specific information. The proactive command set allows the UICC to instruct the ME to:

- Display text supplied by the UICC on the display, with an indication of priority (normal or high) and a defined action (user activity or timeout) to terminate the text display
- Display a text string, obtain the response as a single user keystroke or a string of keys entered by the user, and pass the response to the UICC; if the response is designated as private by the UICC, the ME will not display the user response on the screen
- Set up a voice call to an address with a specific priority, as indicated by the UICC, with all parameters indicated by the UICC
- Set up a data call to an address with specific bearer capability and priority; all parameters are indicated by the UICC
- Send to the network a short message that contains text that is supplied by the UICC to the ME in either packed or unpacked Short Message Service (SMS) 7-bit alphabet or two-byte Universal Character Set (UCS2) alphabet
- Refresh the image (if applicable) of the USIM data contained in the ME memory, entirely or partially, or instruct the ME to completely reinitialize

## 2.4.3 Proactive Commands Supported via QMI\_CAT

The SAT/USAT proactive commands supported via QMI\_CAT are:

- Display Text
- · Get Inkey
- Get Input
- Play Tone
- Setup Menu
- · Select Item

- Send SMS
- Setup Call
- Setup Event List Events User Activity, Idle Screen Available, Language Selection, Browser Termination, and Host Controller Interface (HCI) Connectivity
- Activate
- Setup Idle Mode Text
- Send DTMF
- Language Notification
- · Refresh
- · Launch Browser
- Send SS
- · Send USSD
- Provide Local Information
- · Open Channel
- · Close Channel
- · Receive Data
- Send Data
- Bearer Independent Protocol Status
- Activate
- · Contactless State
- End Proactive Session

A control point can register for a notification of each of the supported proactive commands. Once registered for a particular event, the QMI\_CAT service passes the proactive command in raw format or decoded format to the control point using the event report mechanism (see Section 3.2). The detailed mechanisms for this processing are as defined in ETSI TS 102 223, Section 6.4, and may include a terminal response (see Section 3.6). If there is no control point registered for a given proactive command, the default behavior from QMI\_CAT will be to immediately send an error to the card.

There can be only one control point registered for each type of proactive command at the same time. If a control point subsequently tries to register for a proactive command event that has previously been registered, the registration request will fail (see Section 3.2).

Alpha identifier events are for user confirmation and/or display purposes only. Refresh and Setup Event List proactive commands include the event details that are passed to the control point. When a subsequent event indicated in the Setup Event list occurs, this notification is sent via an envelope event download command (see Section 2.4.4). No terminal response is expected for network-related commands Send SMS, Send DTMF, Send SS, Send USSD, Setup Call, Open Channel, Close Channel, Receive Data, Send Data, and End Proactive session proactive commands.

The proactive commands Setup Menu, Setup Idle Mode Text, and Setup Event List are stored by QMI\_CAT, regardless of whether a control point has registered for each event. If no registered control point is active, the proactive command is buffered and sent as an event report indication when a control point registers for this event. Note that only the latest proactive command received (for each type) is buffered; older ones are discarded.

The following types of Open Channel proactive commands are supported in the current implementation:

- Open Channel related to packet data service bearer
- Open Channel related to default (network) bearer

## 2.4.4 Envelope Commands Supported via QMI CAT

The envelope commands supported via QMI\_CAT are:

- Menu Selection
- Event DL User Activity
- Event DL Idle Screen Available
- Event DL Language Selection
- Event DL Browser Termination
- Event DL HCI Connectivity
- Event DL MT Call
- Event DL Call Connected
- Event DL Call Disconnected
- Send Call Control
- SMS-PP Data Download
- Contactless State Request

Each of these envelope commands is sent encoded in the raw or decoded format as defined in ETSI TS 102 223. The control point sends these envelope commands as a response to events for which it has previously registered. For all event downloads (listed as Event DL above), the control point must reissue the envelope command request if the envelope response message indicates Card Busy, as defined in ETSI TS 102 223, Section 7.

#### 2.4.5 Refresh Command

The refresh command with mode/stage information is only available when QMI\_CAT configuration mode is set to 1 (Gobi<sup>TM</sup> mode – see Section 2.5.1). In other QMI\_CAT configuration modes, the command with refresh mode/stage information is provided to clients by the QMI\_UIM service (80-NH952-12), and only the Refresh Alpha or Icon TLV is provided to clients by the QMI\_CAT service, even if it is a proactive command originated by the card. The reason for this behavior is that the refresh command has a deep impact on the modem, affecting multiple modules. For this reason, the single proactive command is split into various stages and requires logic to combine the responses from many modules.

## 2.4.6 Routing Events for Third-party IMS Clients on the AP

A control point (for example, a third-party IP Multimedia Subsystem (IMS) client) can register for full function events with QMI\_CAT at runtime using the event report mechanism (see Section 3.2). The same mechanism can be used to disable event routing to a third-party IMS on the Application Processor (AP) and results in restoring the existing event call flow.

When a control point registers for the proactive command for full function event routing, the control point is expected to handle the proactive command completely with no assistance from the modem. A terminal response is expected, instead of user confirmation, for proactive commands registered as full function events.

The proactive commands that support event routings are as follows:

- Setup Call
- · Send SMS
- · Send SS
- · Send USSD
- · Send DTMF

Because of the ability of the control point to dynamically register for some of the modem functions, the modem does not propagate the availability of MT Call, Call Connected, and Call Disconnected events in the SETUP\_EVENT\_LIST command to the control point. For this reason, the client is expected to send the ENVELOPE commands in any case where it is appropriate and required by specifications. If the event for a requested ENVELOPE of the control point is not part of the SETUP\_EVENT, the request is ignored and QMI\_ERR\_INVALID\_OPERATION is returned. This is the correct behavior.

#### 2.4.7 Get Cached Proactive Command

Get Cached Proactive Command is only supported when the QMI\_CAT configuration mode is either Android or Custom Raw mode.

The supported proactive commands are:

- · Setup Menu
- Setup Event List
- Setup Idle Mode Text

Cached proactive commands are available throughout the life cycle of UICC until a UICC reset, hot swap, recovery, or power cycle occurs.

For a call flow diagram of Get Cached Proactive Command, see Figure A-11.

# 2.5 Configuration File

#### 2.5.1 Mode

Note: Mode 1 (Gobi mode) is not supported in MSM8909, MDM9635M, MDM9645, and newer chipsets.

Due to limitations in the modem, to handle proactive commands in both decoded and raw formats, the current implementation supports only one mode at a time.

The behavior of the QMI\_CAT interface is controlled using NV item 65683, which is stored on the device in /nv/item\_files/modem/qmi/cat/qmi\_cat\_mode.

The file has 1 byte only, with the following possible mode values:

- 0 QMI\_CAT is disabled
- 1 Gobi mode. Indications are in raw format, but only alpha is passed for Send SMS (compatible with Rev 1.0 of the QMI\_CAT interface)
- 2 Indications are in raw format, with complete messages also passed for network-related commands
- 3 Indications are in decoded format
- 4 QMI\_CAT works in decoded format, but indications are not sent to the control point and must be pulled
- 5 Indications are in raw format and allow a customizable terminal profile
- 6 Indications are in decoded format and allow a customizable terminal profile

All other mode values are reserved for future use.

#### 2.5.2 Customized Terminal Profile

A customizable terminal profile encoded as in ETSI TS 102 223, Section 5.2, is used when QMI\_CAT configuration mode is set to 5 or 6. The customizable terminal profile is controlled using NV item 65683, which is stored in the file /nv/item\_files/modem/qmi/cat/qmi\_cat\_custom\_tp.

By setting the respective Boolean value in NV 73597,

/nv/item\_files/modem/qmi/cat/qmi\_cat\_raw\_unsupported\_features, the terminal profile for the following features can be enabled or disabled:

- skip\_language\_notification
- skip\_user\_activity\_event
- support\_class\_r

This configuration applies to QMI CAT configuration modes 2 and 3. See Section 2.5.1.

#### 2.5.3 VS Service ID

**Note:** The VS Service ID feature pertains to mode 1 (Gobi mode). See Section 2.5.1.

QMI\_CAT is assigned QMI service types 0x0A and 0xE0. However, there are cases when it is convenient to disable service type 0xE0, to avoid conflicts with another service using the same service ID. This behavior is controlled using the NV item 66032, stored in the file /nv/item\_files/modem/qmi/cat/qmi\_cat\_vs\_id.

The file has 1 byte only, with the following possible values:

- 0 Disabled
- 1 Enabled

### 2.5.4 Null Alpha

Depending on the modem configuration (bit 2 and bit 26 of NV item 65674), QMI\_CAT has a different behavior in the case of a network-related command with Null Alpha and no icon:

- When bit 2 = 0 Indication with a proactive command is sent only when alpha is present and has a length greater than 0
- When bit 2 = 1 and bit 26 = 0 Indication with a proactive command that contains No Alpha and Null Alpha is sent, and the client is responsible for implementing the correct behavior, as per ETSI TS 102 223, and sending the confirmation back to the modem
- When bit 2 = 1 and bit 26 = 1 Indication with a proactive command that contains No Alpha and Null Alpha is not sent

Note that if the Alpha TLV is present with a length of 0, it means that alpha is a Null Alpha. On the other hand, if there is no Alpha TLV, it means that alpha is missing.

## 2.5.5 Default Language

When the proactive command Provide Local Information – Language is received and QMI\_CAT does not have a client registered to handle it, QMI\_CAT automatically sends a response using the value in NV item 69729, which is stored in the file /nv/item\_files/modem/qmi/cat/qmi\_cat\_default\_lang. The NV item contains two bytes with the default language coding, which is sent back to the SIM card in the Terminal Response.

If the NV item is not set, QMI\_CAT caches the Provide Local Information – Language proactive command and waits for a client to register to handle it.

# 2.5.6 Setup Call Display Alpha Event Confirmation

How QMI CAT handles the Setup Call Display Alpha event confirmation can be configured using QMI CAT Display Alpha NV item 71588 with the following values:

- 0 The client processes the Setup Call Display Alpha event and no action is required from QMI CAT.
- 1 The client does not process the Setup Call Display Alpha event; QMI CAT intercepts the event
  and sends an automatic user confirmation with "Display Alpha Confirmation = NO" back to the
  modem.
- 2 The client does not process the Setup Call Display Alpha event; QMI CAT intercepts the event and sends an automatic user confirmation with "Display Alpha Confirmation = YES" back to the modem.

All other values are reserved for future use.

If the NV is inactive, the current implementation has a different default behavior based on the value of QMI CAT configuration mode NV item 65683 (see Section 2.5.1):

- QMI CAT mode = 2 QMI CAT has a default behavior as Display Alpha NV = 2
- QMI CAT mode = 5 QMI CAT has a default behavior as Display Alpha NV = 1
- All other values of QMI CAT mode QMI CAT has a default behavior as Display Alpha NV = 0

### 2.5.7 Blocking SMS-PP Download Envelope Functionality

Because access to the API to send SMS-PP Download Envelope commands to the SIM card can be used for specific attacks, the SMS-PP Download Envelope functionality is blocked by default. Block SMS-PP Envelope NV item 71557 is available for customer who need to enable the SMS-PP Download Envelope functionality. Valid values:

- 1 SMS-PP Download Envelope functionality is blocked
- 0 SMS-PP Download Envelope functionality is enabled

**Note:** This is a security-related NV item and can be updated only when the modem is in Factory mode.

# 3 QMI\_CAT Messages

Table 3-1 QMI\_CAT messages

Command	ID	Description
QMI_CAT_RESET	0x0000	Resets the QMI_CAT service state
		variables of the requesting control point.
QMI_CAT_SET_EVENT_REPORT	0x0001	Sets the QMI_CAT event reporting
		conditions for the requesting control
		point and indicates a QMI_CAT event.
QMI_CAT_GET_SUPPORTED_MSGS	0x001E	Queries the set of messages
		implemented by the currently running
		software.
QMI_CAT_GET_SUPPORTED_FIELDS	0x001F	Queries the fields supported for a single
	33 5	command as implemented by the
	3.00	currently running software.
QMI_CAT_GET_SERVICE_STATE	0x0020	Queries the QMI_CAT service state.
1	25	
QMI_CAT_SEND_TR	0x0021	Sends the terminal response to the
E. G. Halle		proactive commands coming from the
		card.
QMI_CAT_SEND_ENVELOPE_CMD	0x0022	Sends an envelope command to the
		card.
QMI_CAT_GET_EVENT_REPORT	0x0023	Retrieves the last proactive command
		from the modem.
QMI_CAT_SEND_DECODED_TR	0x0024	Sends the Terminal Response (TR) in
		decoded format to the proactive
		commands coming from the card.
QMI_CAT_SEND_DECODED_ENVELOPE_	0x0025	Sends an envelope command in decoded
CMD		format to the card.
QMI_CAT_EVENT_CONFIRMATION	0x0026	Sends user and icon confirmation for
	0.0025	network-related commands.
QMI_CAT_SCWS_OPEN_CHANNEL	0x0027	Sends the Open Channel indication to
		the Smart Card Web Server (SCWS)
	0.0000	agent and indicates a QMI_CAT event.
QMI_CAT_SCWS_CLOSE_CHANNEL	0x0028	Sends the Close Channel indication to
		the SCWS agent and indicates a
OM CAT GOWG GENE DATE	0.0020	QMI_CAT event.
QMI_CAT_SCWS_SEND_DATA	0x0029	Sends data to the SCWS agent and
ONE CATE COME DATE ANAMARY	0.0024	indicates a QMI_CAT event.
QMI_CAT_SCWS_DATA_AVAILABLE	0x002A	Indicates that data is available.

Table 3-1 QMI\_CAT messages (cont.)

Command	ID	Description
QMI_CAT_SCWS_CHANNEL_STATUS	0x002B	Informs the modem about a change in
		the channel state.
QMI_CAT_GET_TERMINAL_PROFILE	0x002C	Retrieves the current modem terminal
		profile.
QMI_CAT_SET_CONFIGURATION	0x002D	Changes the configuration of the
		QMI_CAT service.
QMI_CAT_GET_CONFIGURATION	0x002E	Gets the configuration of the QMI_CAT
		service.
QMI_CAT_GET_CACHED_PROACTIVE_CMD	0x002F	Retrieves a cached proactive command
		from the modem.



## 3.1 QMI CAT RESET

Resets the QMI\_CAT service state variables of the requesting control point.

**CAT message ID** 

0x0000

**Version introduced** 

Major - 1, Minor - 0

# 3.1.1 Request - QMI\_CAT\_RESET\_REQ

Message type

Request

Sender

Control point

**Mandatory TLVs** 

None

**Optional TLVs** 

None

# 3.1.2 Response - QMI\_CAT\_RESET\_RESP

Message type

Response

Sender

Service

#### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs** 

None

**Error codes** 

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formatted correctly by the control point or
	the message was corrupted during the transmission

## 3.1.3 Description of QMI\_CAT\_RESET REQ/RESP

This message resets the issuing control point's state kept by the service. Each shared state variable may change as a result according to its arbitration policy (see Section 2.4.3). This is equivalent to closing the service and reopening it, although it is done as one operation; hence, the client ID of the requesting control point does not change.

The control point's state variables are changed to their default values before the response is issued.

2016-05-17 06:23:23 PDT IN



# 3.2 QMI\_CAT\_SET\_EVENT\_REPORT

Sets the QMI\_CAT event reporting conditions for the requesting control point and indicates a QMI\_CAT event.

#### **CAT message ID**

0x0001

#### Version introduced

Major - 1, Minor - 0

# 3.2.1 Request - QMI\_CAT\_SET\_EVENT\_REPORT\_REQ

#### Message type

Request

#### Sender

Control point

#### **Mandatory TLVs**

None

#### **Optional TLVs**

At least one of the following optional TLVs must be included in this request.

Name	Version introduced	Version last modified
Event Reporting Request	1.0	2.27
Decoded Event Reporting Request	2.0	2.27
Slot	2.6	2.20
Full Function Event Reporting Request	2.18	2.19

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Event Reporting Request
Length	4			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint32	pc_evt_report_req_mask	4	Event report request bitmask:
					• Bit 0 – Display Text
					• Bit 1 – Get Inkey
					• Bit 2 – Get Input
					• Bit 3 – Setup Menu
					• Bit 4 – Select Item
					• Bit 5 – Send SMS
					• Bit 6 – Setup Event – User Activity
					• Bit 7 – Setup Event – Idle Screen
					Notify
					• Bit 8 – Setup Event – Language Select
					Notify
					• Bit 9 – Setup Idle Mode Text
				900	• Bit 10 – Language Notification
					• Bit 11 – Refresh/Refresh Alpha
			4		(Refresh when QMI_CAT is configured
					in Gobi mode, Refresh Alpha in other
				,	cases)
				~Ó	• Bit 12 – End Proactive Session
				3	Bit 13 – Play Tone
				10 M	• Bit 14 – Setup Call
			6.	7.C	• Bit 15 – Send DTMF
			100		• Bit 16 – Launch Browser
			2016-05-1700 ask		• Bit 17 – Send SS
			0, 300		• Bit 18 – Send USSD
			70 111		• Bit 19 – Provide Local Information –
			2, 601,		Language
			00		• Bit 20 – Bearer Independent Protocol
					• Bit 21 – Setup Event – Browser
					Termination
					• Bit 22 – Provide Local Information –
					Time
					• Bit 23 – Clients must set this bit to zero
					• Bit 24 – Activate
					• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Clients must set this bit to zero
					• Bit 27 – Contactless Support: including
					handling the Contactless State Changed
					proactive command and the setup event
					Contactless State Request
					Each bit set indicates a request made to
					QMI_CAT to register the corresponding
					proactive command to the control point.
					All unlisted bits are reserved for future
					use and must be set to zero.
					use and must be set to zero.

Field	Field value	Field type	Parameter	Size (byte)	Description
Туре	0x11			1	Decoded Event Reporting Request
Length	4			2	
		uint32	pc_dec_evt_report_req_ mask	2 4	Decoded event report request bitmask:  Bit 0 – Display Text  Bit 1 – Get Inkey  Bit 2 – Get Input  Bit 3 – Setup Menu  Bit 4 – Select Item  Bit 5 – Send SMS  Bit 6 – Setup Event – User Activity  Bit 7 – Setup Event – Idle Screen  Notify  Bit 9 – Setup Idle Mode Text  Bit 10 – Language Notification  Bit 11 – Refresh Alpha (not supported when QMI CAT is configured in Gobi mode)  Bit 12 – End Proactive Session  Bit 13 – Play Tone  Bit 14 – Setup Call  Bit 15 – Send DTMF  Bit 16 – Launch Browser  Bit 17 – Send SS  Bit 18 – Send USSD  Bit 19 – Provide Local Information – Language  Bit 20 – Bearer Independent Protocol  Bit 21 – Setup Event – Browser  Termination  Bit 22 – Clients must set this bit to zero  Bit 23 – Smart Card Web Server  Bit 24 – Activate  Bit 25 – Setup Event – HCI connectivity  Bit 26 – Bearer Independent Protocol Status  Bit 27 – Contactless Support: including handling the Contactless State Changed proactive command and the setup event Contactless State Request  Each bit set indicates a request made to QMI_CAT to register the corresponding proactive command to the control point. All unlisted bits are reserved for future

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x12			1	Slot
Length	1			2	
Value	$\rightarrow$	mask8	slot_mask	1	Slot used for the registration:
					• Bit 0 – Slot 1
					• Bit 1 – Slot 2
					• Bit 2 – Slot 3
					• Bit 3 – Slot 4
					• Bit 4 – Slot 5
					All other bits are reserved for future use.
					If the TLV is missing, the client is
					implicitly registering for all available
				- 0	slots.
Туре	0x13			1	Full Function Event Reporting Request
Length	4			2	
Value	$\rightarrow$	mask32	pc_full_func_evt_report_	4	Full function event report request
			req_mask	1	bitmask:
				F	• Bit 0 – Send SMS
				6	• Bit 1 – Setup Call
				200	• Bit 2 – Send DTMF
				20	• Bit 3 – Send SS
			63	, 10,	• Bit 4 – Send USSD
			100	0	Each bit set indicates a request made to
			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		QMI_CAT to enable/disable full
		1	0, 340		function capability of the control point
			10. The		for the corresponding proactive
			Jo 041		command. All unlisted bits are reserved
			2016-05-17 06:18 2016-05-17 06:18		for future use and must be set to zero.
					The control point must register the
					corresponding proactive command with
					a raw or decoded event report bitmask
					for receiving events.

# 3.2.2 Response - QMI\_CAT\_SET\_EVENT\_REPORT\_RESP

Message type
--------------

Response

#### Sender

Service

#### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## **Optional TLVs**

The following optional TLVs are present if the result code is QMI\_ERR\_EVT\_REGISTRATION\_FAILED.

Name	Version introduced	Version last modified
Proactive Command Event Report Registration	1.0	2.27
Status		
Proactive Command Decoded Event Report	2.0	2.27
Registration Status		
Full Function Event Report Registration Status	2.18	2.19

(3)

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Proactive Command Event Report
					Registration Status
Length	4			2	
Value	$\rightarrow$	uint32	pc_evt_report_req_err_	4	Proactive command event report
			mask		registration error bitmask:
				r	• Bit 0 – Display Text
				\Q	• Bit 1 – Get Inkey
				3	• Bit 2 – Get Input
				10	• Bit 3 – Setup Menu
			-6.	7.00	• Bit 4 – Select Item
			100	2	• Bit 5 – Send SMS
			( ) ( ) ( ) ( )		• Bit 6 – Setup Event – User Activity
		1	0, 300		• Bit 7 – Setup Event – Idle Screen
			76 111		Notify
			2016-05-17 06.5 2016-05-17 dead		• Bit 8 – Setup Event – Language Select
			0.0		Notify
					• Bit 9 – Setup Idle Mode Text
					• Bit 10 – Language Notification
					• Bit 11 – Refresh/Refresh Alpha
					(Refresh when QMI_CAT is configured
					in Gobi mode, Refresh Alpha in other cases)
					• Bit 12 – End Proactive Session
					• Bit 13 – Play Tone
					• Bit 14 – Setup Call
					• Bit 15 – Send DTMF
					• Bit 16 – Launch Browser
					• Bit 17 – Send SS
					• Bit 18 – Send USSD
					• Bit 19 – Provide Local Information –
					Language
					• Bit 20 – Bearer Independent Protocol
					• Bit 21 – Setup Event – Browser
					Termination
					• Bit 22 – Provide Local Information –
					Time

Field	Field value	Field type	Parameter	Size (byte)	Description
			pc_evt_report_req_err_ mask (cont.)		<ul> <li>Bit 23 – Clients are to ignore this bit</li> <li>Bit 24 – Activate</li> <li>Bit 25 – Setup Event – HCI connectivity</li> <li>Bit 26 – Clients are to ignore this bit</li> <li>Bit 27 – Contactless Support: including handling the Contactless State Changed proactive command and the setup event Contactless State Request</li> </ul>
				77	A set bit indicates that the corresponding proactive command has already been registered by another control point. If a bit that was not set by the control point is included, the control point is to ignore the bit.
Туре	0x11			1	Proactive Command Decoded Event
Length	4			2 <	Report Registration Status
Value	$\rightarrow$	uint32	pc_dec_evt_report_req_	4	Proactive command decoded event report
			err_mask	ey. Corn	registration error bitmask:  Bit 0 – Display Text  Bit 1 – Get Inkey  Bit 2 – Get Input  Bit 3 – Setup Menu  Bit 4 – Select Item  Bit 5 – Send SMS  Bit 6 – Setup Event – User Activity  Bit 7 – Setup Event – Idle Screen  Notify  Bit 8 – Setup Event – Language Select  Notify  Bit 9 – Setup Idle Mode Text  Bit 10 – Language Notification  Bit 11 – Refresh Alpha (not supported when QMI CAT is configured in Gobi mode)  Bit 12 – End Proactive Session  Bit 13 – Play Tone  Bit 14 – Setup Call  Bit 15 – Send DTMF  Bit 16 – Launch Browser  Bit 17 – Send SS  Bit 18 – Send USSD  Bit 19 – Provide Local Information – Language  Bit 20 – Bearer Independent Protocol

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			pc_dec_evt_report_req_		• Bit 21 – Setup Event – Browser
			err_mask (cont.)		Termination
					• Bit 22 – Clients are to ignore this bit
					• Bit 23 – Smart Card Web Server
					• Bit 24 – Activate
					• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Bearer Independent Protocol
					Status
					• Bit 27 – Contactless Support: including
					handling the Contactless State Changed
					proactive command and the setup event
					Contactless State Request
					A set bit indicates that the corresponding
					proactive command has already been
					registered by another control point. If a
					bit that was not set by the control point is
				_<	included, the control point is to ignore
				80	the bit.
Туре	0x12			$\sqrt{1}$	Full Function Event Report Registration
				5. 601.	Status
Length	4		00.	2	
Value	$\rightarrow$	mask32	pc_full_func_evt_report_	4	Full function event report request
			err_mask		bitmask:
			16, 1kg.		• Bit 0 – Send SMS
			err_mask		• Bit 1 – Setup Call
			98		• Bit 2 – Send DTMF
					• Bit 3 – Send SS
					• Bit 4 – Send USSD
					A set bit indicates that QMI_CAT failed
					to enable/disable full function capability
					handling for the corresponding proactive
					command. If a bit that was not set by the
					control point is included, the control
					point is to ignore the bit.

# 3.2.3 Indication - QMI\_CAT\_EVENT\_REPORT\_IND

Message	type
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Indication

#### Sender

Service

#### Scope

Unicast (per control point)

## **Mandatory TLVs**

None

#### **Optional TLVs**

One or more of the following optional TLVs must be included in this indication.

Name	Version introduced	Version last modified
Display Text Event	1.0	1.0
Get Inkey Event	1.0	1.0
Get Input Event	1.0	1.0
Setup Menu Event	1.0	1.0
Select Item Event	1.0	1.0
Alpha Identifier Available	1.0	1.0
Setup Event List Event	1.0	1.0
Setup Idle Mode Text Event	1.0	1.0
Language Notification Event	1.0	1.0
Refresh Event	1.0	1.0
End Proactive Session	1.0	1.0
Decoded Header ID	2.0	2.27
Text String	2.0	2.0
High Priority	2.0	2.0
User Control	2.0	2.0
Icon	2.0	2.0
Duration	2.0	2.0
Response Format	2.0	2.0
Help Available	2.0	2.0
Response Packing Format	2.0	2.0
Response Length	2.0	2.0
Show User Input	2.0	2.0
Tone	2.0	2.9
Softkey Selection	2.0	2.0
Items	2.0	2.0
Default Item	2.0	2.0
Next Action Indicator	2.0	2.0
Icon ID List	2.0	2.12
Presentation	2.0	2.0
Packing Required	2.0	2.0
SMS TPDU	2.0	2.0
Is CDMA SMS	2.0	2.0

Address       2.0       2.0         Call Setup Requirement       2.0       2.0         Redial       2.0       2.0         Subaddress       2.0       2.0         Capability Configuration       2.0       2.0         DTMF       2.0       2.0         Specific Language Notification       2.0       2.0         Language       2.0       2.0         Launch Mode       2.0       2.0         URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0         Provisioning Files       2.0       2.0	
Redial       2.0       2.0         Subaddress       2.0       2.0         Capability Configuration       2.0       2.0         DTMF       2.0       2.0         Specific Language Notification       2.0       2.0         Language       2.0       2.0         Launch Mode       2.0       2.0         URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0	
Subaddress         2.0         2.0           Capability Configuration         2.0         2.0           DTMF         2.0         2.0           Specific Language Notification         2.0         2.0           Language         2.0         2.0           Launch Mode         2.0         2.0           URL         2.0         2.0           Browser ID         2.0         2.0           Bearer List         2.0         2.0	
Capability Configuration       2.0       2.0         DTMF       2.0       2.0         Specific Language Notification       2.0       2.0         Language       2.0       2.0         Launch Mode       2.0       2.0         URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0	
DTMF       2.0       2.0         Specific Language Notification       2.0       2.0         Language       2.0       2.0         Launch Mode       2.0       2.0         URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0	
DTMF       2.0       2.0         Specific Language Notification       2.0       2.0         Language       2.0       2.0         Launch Mode       2.0       2.0         URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0	
Specific Language Notification         2.0         2.0           Language         2.0         2.0           Launch Mode         2.0         2.0           URL         2.0         2.0           Browser ID         2.0         2.0           Bearer List         2.0         2.0	
Language       2.0       2.0         Launch Mode       2.0       2.0         URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0	
Launch Mode       2.0       2.0         URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0	
URL       2.0       2.0         Browser ID       2.0       2.0         Bearer List       2.0       2.0	
Browser ID         2.0         2.0           Bearer List         2.0         2.0	
Bearer List 2.0 2.0	
USSD String 2.0 2.0	
Default Text 2.0 2.0	
Immediate Response Required 2.0 2.0	
User Confirmation Alpha 2.0 2.0	
Setup Call Display Alpha 2.0 2.0	
User Confirmation Icon 2.0 2.0	
Setup Call Display Icon 2.0 2.0	
Gateway Proxy 2.0 2.0	
1	
1	
~ Y	
Launch Browser Event 2.2 2.2	
Send SMS Event 2.2 2.2	
Send SS Event 2.2 2.2	
Send USSD Event 2.2 2.2	
Provide Local Information Event 2.2 2.2	
Setup Event List Raw Event 2.2 2.2	
Slot 2.2 2.20	
Open Channel Event 2.3 2.3	
Close Channel Event 2.3 2.3	
Send Data Event 2.3 2.3	
Receive Data Event 2.3 2.3	
On Demand Link Establish 2.4 2.4	
CSD Bearer Description 2.4 2.4	
GPRS Bearer Description 2.4 2.4	
EUTRAN External Parameter Bearer Description 2.4 2.4	
EUTRAN External Mapped UTRAN PS Bearer 2.4 2.4	
Description	
Buffer Size 2.4 2.4	
Network Access Name 2.4 2.4	
Other Address 2.4 2.4	
User Login 2.4 2.4	

Name	Version introduced	Version last modified
User Password	2.4	2.4
Transport Level	2.4	2.4
Data Destination Address	2.4	2.4
Channel Data Length	2.4	2.4
Send Data Immediately	2.4	2.4
Channel Data	2.4	2.4
Channel ID	2.4	2.4
Items with DCS	2.8	2.8
Activate Event	2.9	2.9
Activate Descriptor Target	2.9	2.9
Response Type	2.18	2.18
Bearer Independent Protocol Status	2.22	2.22
Refresh Alpha	2.23	2.23
Contactless State Changed Event	2.27	2.27
Contactless Functionality State	2.27	2.27

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			100	Display Text Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
			27 005		elements:
			(5) (d)		• pc_display_text
		opaque	pc_display_text	Var	Display Text proactive command,
			pc_display_text		encoded as in ETSI TS 102 223,
			25,		Section 6.6.1.
Туре	0x11			1	Get Inkey Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_get_inkey
		opaque	pc_get_inkey	Var	Get Inkey proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.2.
Туре	0x12			1	Get Input Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_get_input
		opaque	pc_get_input	Var	Get Input proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.3.
Туре	0x13			1	Setup Menu Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_setup_menu
		opaque	pc_setup_menu	Var	Setup Menu proactive command,
					encoded as in ETSI TS 102 223,
					Section 6.6.7.
Туре	0x14			1	Select Item Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_select_item
		opaque	pc_select_item	Var	Select Item proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.8.
Туре	0x15			1	Alpha Identifier Available
				"	(used only when QMI_CAT is
					configured in Gobi mode)
Length	Var			2 <	
Value	$\rightarrow$	uint8	pc_cmd_type	100	Proactive command type that includes
				3	the alpha identifier:
				5.00	• 0x01 – Sends an SMS proactive
			6.	04.	command
			1 2		All other values are reserved.
		uint16	alpha_id_len	2	Number of sets of the following
			5.0 Kalls		elements:
			07 77		<ul><li>alpha_identifier</li></ul>
		opaque	alpha_identifier	Var	Alpha identifier, as in ETSI TS 102 223,
			<u> </u>		Section 8.2.
Туре	0x16			1	Setup Event List Event
					(used only when QMI_CAT is
					configured in Gobi mode)
Length	4			2	
Value	$\rightarrow$	uint32	pc_setup_evt_list	4	Setup event list bitmask:
					• Bit 0 – User Activity Notify
					• Bit 1 – Idle Screen Available
					• Bit 2 – Language Selection Notify
					Each set bit indicates the availability of
					the corresponding event in the Setup
					Event list proactive command. All
					unlisted bits are reserved for future use
					and are ignored.
Туре	0x17			1	Setup Idle Mode Text Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
Value	_ ′	uint32	cmd_len	2	Number of sets of the following
		unit10	51110_1011		elements:
					• pc_setup_idle_mode_text
					- pc_scrup_rare_mode_text

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	pc_setup_idle_mode_text	Var	Setup Idle mode text proactive
					command, encoded as in ETSI TS
					102 223, Section 6.6.22.
Туре	0x18			1	Language Notification Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_lang_notification
		opaque	pc_lang_notification	Var	Language Notification proactive
					command, encoded as in ETSI TS
					102 223, Section 6.6.25.
Туре	0x19			1	Refresh Event
					(used only when QMI_CAT is
					configured in Gobi mode)
Length	4			2	
Value	$\rightarrow$	uint16	refresh_mode	2	As indicated in ETSI TS 102 223,
				_	Section 8.6.
		enum16	refresh_stage	200	Stage of the refresh procedure:
				3	• 0x01 – Refresh start
			· ·	5.00	• 0x02 – Refresh success
			26.	34.	• 0x03 – Refresh failed
Туре	0x1A		1 25	1	End Proactive Session
Length	1		55	2	
Value	$\rightarrow$	enum8	proactive_session_end_	1	Proactive session end type:
			type		• 0x01 – End proactive session command
			120		received from the card
			Ů.		• 0x02 – End proactive session internal
					to the ME
Туре	0x1B			1	Decoded Header ID
Length	6			2	
Value	$\rightarrow$	enum8	command_id	1	ID of the proactive command:
			<del>_</del>		• CAT_COMMAND_ID_DISPLAY_
					TEXT (0x01) – Display Text
					• CAT_COMMAND_ID_GET_INKEY
					(0x02) – Get Inkey
					• CAT_COMMAND_ID_GET_INPUT
					(0x03) – Get Input
					• CAT_COMMAND_ID_LAUNCH_
					BROWSER (0x04) – Launch Browser
					• CAT_COMMAND_ID_PLAY_TONE
					(0x05) – Play Tone
					• CAT_COMMAND_ID_SELECT_
					ITEM (0x06) – Select Item
					• CAT_COMMAND_ID_SEND_SMS
					(0x07) – Send SMS
					(UAUI) — Belia Bivis

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			command_id (cont.)		• CAT_COMMAND_ID_SEND_SS
					(0x08) – Send SS
					• CAT_COMMAND_ID_SEND_USSD
					(0x09) – Send USSD
					• CAT_COMMAND_ID_SETUP_
					CALL_USER_CONFIRMATION
					(0x0A) – Setup Call – User Confirmation
					• CAT_COMMAND_ID_SETUP_
					CALL_ALPHA_DISPLAY (0x0B) – Setup Call – Alpha Display
					• CAT_COMMAND_ID_SETUP_
					MENU (0x0C) – Setup Menu
				1	• CAT_COMMAND_ID_SETUP_
				0	IDLE_TEXT (0x0D) – Setup Idle Text
					• CAT COMMAND ID PROVIDE
					LOCAL_LANG_INFO (0x0E) –
					Provide Local Information – Language
				8	• CAT_COMMAND_ID_SEND_DTMF
				~	(0x0F) – Send DTMF
				3	• CAT_COMMAND_ID_LANG_
				100	NOTIFICATION (0x10) – Language
			26.1	24.0	Notification
			100		• CAT_COMMAND_ID_SETUP_
			5,7,60		EVENT_USER_ACTIVITY (0x11) -
			S.O. Value		Setup Event – User Activity
			07077		• CAT_COMMAND_ID_SETUP_
			2016.05.117 @ask		EVENT_IDLE_SCREEN_NOTIFY
			Ů,		(0x12) – Setup Event – Idle Screen
					Notify
					• CAT_COMMAND_ID_SETUP_
					EVENT_LANGUAGE_SEL_NOTIFY
					(0x13) – Setup Event – Language
					Selection Notify
					• CAT_COMMAND_ID_OPEN_
					CHANNEL (0x14) – Open Channel
					• CAT_COMMAND_ID_CLOSE_ CHANNEL (0x15) – Close Channel
					• CAT_COMMAND_ID_RECEIVE_
					DATA (0x16) – Receive Data
					• CAT_COMMAND_ID_SEND_DATA
					(0x17) – Send Data
					• CAT_COMMAND_ID_ACTIVATE
					(0x18) – Activate
					• CAT_COMMAND_ID_SETUP_
					EVENT_HCI_CONNECTIVITY (0x19)
					– Setup Event – HCI Connectivity
					• CAT_COMMAND_ID_REFRESH_
					ALPHA (0x1A) – Refresh Alpha

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			command_id (cont.)		• CAT_COMMAND_ID_SETUP_
					EVENT_BROWSER_TERMINATION
					(0x20) – Setup Event – Browser
					Termination
					• CAT_COMMAND_ID_
					CONTACTLESS_STATE_CHANGED
					(0x21) – Contactless State Changed
					<ul><li>CAT_COMMAND_ID_SETUP_</li></ul>
					EVENT_CONTACTLESS_STATE_
					REQ (0x22) – Setup Event – Contactless
					State Request
					All other values are reserved.
		uint32	uim_ref_id	4	Proactive command reference ID (used
					internally by the QMI_CAT service).
		uint8	command_number	1	Command number sent to the client in
					the proactive command for tracking
					purposes to match with the command
				_	number in the terminal response.
Туре	0x1C			100	Text String
Length	Var			2	
Value	$\rightarrow$	enum8	dcs	5 10,	Data coding scheme:
			00.	E.J.	• $0x00 - 7$ -bit GSM
			V1 025		• 0x01 – 8-bit GSM
			5 ,5		• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
			20,000		elements:
			200		• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x1D			1	High Priority
Length	1			2	
Value	$\rightarrow$	enum8	high_priority	1	High priority value:
					• 0x00 – Do not clear the screen
					• 0x01 – Clear anything that is on the
					screen
Туре	0x1E			1	User Control
Length	1			2	
Value	$\rightarrow$	enum8	user_control	1	User control:
					• $0x00$ – Do not allow the user to clear
					the screen
					• $0x01$ – Allow the user to clear the
					screen
Туре	0x1F			1	Icon
Length	Var			2	
9					

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	-
Value	$\rightarrow$	enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
					Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
					Represents the number of raster image
					points.
		enum8	ics	1	Image coding scheme:
				- 1	• 0x00 – Unknown
					• 0x01 – Basic
					• 0x02 – Color
		uint8	rec_num	1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
				_	elements:
				0	• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x20			1. 194	Duration
Length	2		06.	2	
Value	$\rightarrow$	enum8	units	1	Time units:
			5 20		• 0x00 – Minutes
			6. Chair		• 0x01 – Seconds
			Coloop Thandow		• 0x02 – Tenths of seconds
		uint8	interval	1	Time interval; this number must be
					greater than zero (see ETSI TS 102 223,
					Section 8.8).
Туре	0x21			1	Response Format
Length	1	_		2	
Value	$\rightarrow$	enum8	response_format	1	Response format:
					• 0x00 – SMS default alphabet
					• 0x01 – Yes/No
					• 0x02 – Numerical only
					• 0x03 – UCS2
					• 0x04 – Immediate digit response
					• 0x05 – Yes/No and immediate digit
	0.7-				response
Туре	0x22			1	Help Available
Length	1			2	***
Value	$\rightarrow$	boolean	help_available	1	Whether help is available:
					• $0x00 - No$ help is available
					• 0x01 – Help is available
Туре	0x23			1	Response Packing Format
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	response_packing_format	1	Response packing format:
					• 0x00 – Unpacked format
					• 0x01 – Packed format
Туре	0x24			1	Response Length
Length	2			2	
Value	$\rightarrow$	uint8	maximum_user_input	1	Maximum user input. A value of 0xFF
					indicates no maximum.
		uint8	minimum_user_input	1	Minimum user input. A value of 0x00
					indicates no minimum.
Туре	0x25			1	Show User Input
Length	1			2	0-1
Value	$\rightarrow$	enum8	show_user_input	1 @	Show user input:
			_	-	• 0x00 – ME can show * characters
					• 0x01 – ME can show user input
Туре	0x26			1	Tone
Length	1			2	
Value	$\rightarrow$	enum8	tone	1	Tone to be played:
					• 0x01 – Dial tone
				00	• 0x02 – Called subscriber busy tone
			2016.05.17.06? deon.zhandeas	3	• 0x03 – Congestion tone
				9.00	• 0x04 – Radio path ACK tone
			6.	04.	• 0x05 – Radio path not available, call
			1 25	-	drop tone
			5,00		• 0x06 – Error tone
			5.0 Kalls		• 0x07 – Call waiting tone
			07077		• 0x08 – Ringing tone
			7201		• 0x09 – General beep
			0		• 0x0A – Positive ACK tone
					• 0x0B – Negative ACK tone
					• 0x0C – Ring tone selected by the user
					• $0x0D - SMS$ alert tone selected by the
					user
					• -1 – Not in use
Туре	0x27			1	Softkey Selection
Length	1			2	.,
Value	$\rightarrow$	enum8	softkey_selection	1	Softkey selection:
				-	• 0x00 – Softkey is not selected
					• 0x01 – Softkey is selected
Туре	0x28			1	Items
Length	Var			2	
Value	$\rightarrow$	uint8	number_of_items	1	Number of sets of the following
		30		-	elements:
					• item_id
					• item_text_length
					• item_text
		uint8	item_id	1	ID of the item. Each item has a unique
		61110	13111_14	•	identifier from 0x01 to 0xFF.
l					identified from OAUT to OAIT.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint8	item_text_length	1	Number of sets of the following
					elements:
					• item_text
		opaque	item_text	Var	Item text. Coded the same way that
					alpha is coded in the EF-ADN file (see
					3GPP TS 24.008, clause 4.4.2.3).
Туре	0x29			1	Default Item
Length	1			2	
Value	$\rightarrow$	uint8	default_item	1	Default item to be selected. All values
					are valid, except 0xFF, which is reserved
					(see ETSI TS 102 223, Section 8.10).
Туре	0x2A			1	Next Action Indicator
Length	Var			2	
Value	$\rightarrow$	uint8	num_of_items	1	Number of sets of the following
					elements:
			A (	30	• next_action_list
		enum8	next_action_list	Var	Item in the action list:
		Circinio	meat_detron_mst	, ,	• 0x00 – Setup Call
				~	• 0x01 – Send SS
				23	• 0x02 – Send USSD
				20	• 0x02 – Send OSSD • 0x03 – Send Short Message
			3	1.00	• 0x04 – Launch Browser
			2016.05.17 06.3 deon. Zhand@ash	0	• 0x05 – Play Tone
			N 62		
		1	05 419		• 0x06 – Display Text
			16. The		• 0x07 – Get Inkey
			30,00		• 0x08 – Get Input
			95		• 0x09 – Select Item
					• 0x0A – Setup Menu
					• 0x0B – Setup Idle Mode Text
					• 0x0C – End of the Proactive Session
					• 0x0D – Provide Local Information
Туре	0x2B			1	Icon ID List
Length	Var			2	
Value	$\rightarrow$	boolean	display_icon_only	1	Whether to display the icon only:
					• 0x00 – Icon is not self-explanatory,
					display icon with description
					• 0x01 – Icon is self-explanatory, display
					only the icon
		uint8	num_of_items	1	Number of sets of the following
					elements:
					• qualifier
					• height
					• width
					• ics
					• rec_num
					• data_size
					• data
- 1				<u> </u>	uuu

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
					Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
					Represents the number of raster image
					points.
		enum8	ics	1	Image coding scheme:
					• $0x00 - Unknown$
				900	• 0x01 – Basic
					• $0x02 - Color$
		uint8	rec_num	1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
		dilitio	data_512e	2	elements:
				<u> </u>	• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x2C	Opaque	data	5. 1.	Presentation
	1			2	1 rescritation
Length Value	$\rightarrow$	enum8	presentation	1	Presentation type:
value	$\rightarrow$	Ciluino	presentation	1	• 0x00 – Not specified
			05, 40		
			16. 1kg.		• 0x01 – Data value presentation
	0.00		20,00	1	• 0x02 – Navigation presentation
Туре	0x2D		200	1	Packing Required
Length	1			2	
Value	$\rightarrow$	boolean	packing_required	1	Indicates whether packing is required:
					• 0x00 – Packing is not required
					• 0x01 – Packing is required
Туре	0x2E			1	SMS TPDU
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• sms_tpdu
		opaque	sms_tpdu	Var	SMS TPDU data, as specified in 3GPP
					TS 24.008.
Туре	0x2F			1	Is CDMA SMS
Length	1			2	
Value	$\rightarrow$	boolean	is_cdma_sms	1	CDMA SMS format indication:
					• 0x00 – FALSE (3GPP format)
					• 0x01 – TRUE (3GPP2 format)
					This defaults to FALSE if the TLV is not
					present.
Туре	0x30			1	Address
Length	Var			2	11000
Longin	7 AI				

Field	Field	Field	Parameter	Size	Description
Value	value	type	ton	(byte)	TON of the address:
Value	$\rightarrow$	enum8	ton	1	• 0x00 – Unknown
					• 0x01 – International number
					• 0x02 – National number
		0		1	• 0x03 – Network-specific number
		enum8	npi	1	NPI of the address:
					• 0x00 – Unknown
					• 0x01 – ISDN telephony
					• 0x02 – Data NPI
					• 0x03 – Telex NPI
					• 0x04 – Private NPI
				-	• 0x0F – Extension is reserved
		uint8	length	1	Number of sets of the following
					elements:
					address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
					maximum length of the address is 200
				,	bytes (see ETSI TS 102 223,
				~Ô	Section 8.1).
Туре	0x31			A1 ×	Call Setup Requirement
Length	1			2	1 1
Value	$\rightarrow$	enum8	call_setup_requirement	AI.	Call setup requirements:
				E	• $0x00$ – No other calls
			, , , , , , , , , , , , , , , , , , ,		• 0x01 – Hold active calls
		1	0, 340		• 0x02 – Disconnect active calls
Туре	0x32		10. Tu	1	Redial
Length	3		2000	2	redia
Value	$\xrightarrow{\mathcal{I}}$	boolean	redial_necessary	1	Indicates whether redial is necessary:
Value	,	boolean	rediar_necessary	1	• 0x00 – Redial is not necessary
					• 0x01 – Redial is necessary
		enum8	units	1	Time units:
		Cituilio	units	1	• $0x00 - Minutes$
					• 0x00 – Williams • 0x01 – Seconds
		uint8	:4	1	• 0x02 – Tenths of seconds
		uiiito	interval	1	Time interval. This value must be greater
					than zero if redial_necessary is set to
					0x01 (see ETSI TS 102 223,
_	0.22			1	Section 8.8).
Туре	0x33			1	Subaddress
Length	Var	•	1 4	2	N. I. C. C. C. I. C. II.
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• subaddress
		opaque	subaddress	Var	Subaddress in BCD format (two digits
					encoded in one byte). Maximum size of
					the subaddress is 20 bytes (see ETSI TS
					102 223, Section 8.3).

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x34			1	Capability Configuration
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see ETSI
					TS 102 223, Section 8.4).
Туре	0x35			1	DTMF
Length	Var			2	•
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					dtmf_data
		opaque	dtmf_data	Var	DTMF data in BCD format (two digits
					encoded in one byte) (see ETSI TS
					102 223, Section 8.44).
Туре	0x36			1	Specific Language Notification
Length	1			2	
Value	$\rightarrow$	boolean	spec_lang_notify	1 <	Whether there is a specific language
				00	notification:
				3	• 0x00 – No
				9. 01	• 0x01 – Yes
Туре	0x37		06.	e 1	Language
Length	2		1 ng	2	
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a
			S. Mall		pair of alphanumeric characters (defined
			07.77		in ISO 639-2). Each alphanumeric
			150		character is coded on one byte using the
			~		SMS default 7-bit coded alphabet, as
					defined in ETSI TS 102 223,
					Section 8.45, with bit 8 set to 0.
Туре	0x38			1	Launch Mode
Length	1			2	
Value	$\rightarrow$	enum8	launch_mode	1	Launch mode:
			_		• 0x00 – Launch if not already launched
					• 0x01 – Use the existing browser
					• 0x02 – Close the existing browser
Туре	0x39			1	URL
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• url_data
		opaque	url_data	Var	URL (see ETSI TS 102 223,
		· r · · · · · · ·	—····		Section 8.48).
Туре	0x3A			1	Browser ID
Length	1			2	
Value	$\rightarrow$	uint8	browser_id	1	Browser ID (see ETSI TS 102 223,
·aide	,	GIIICO	01011001_14		Section 8.47).
					500000 0.77).

Field	Field	Parameter	Size	Description
value	type		(byte)	
0x3B			1	Bearer List
Var			2	
$\rightarrow$	uint16	length	2	Number of sets of the following
				elements:
				• bearer_list
	enum8	bearer_list	Var	Bearer list:
				• 0x00 – SMS
				• 0x01 – CSD
				• 0x02 – USSD bearer code
				• 0x03 – GPRS
				• 0x04 – Bearer default
0x3C			1 _	Provisioning Files
Var			2	
$\rightarrow$	uint32	num_of_prov_files	4	Number of sets of the following
		, _		elements:
		40	3-	• length
				• path
	uint8	length	1 .	Number of sets of the following
			00	elements:
			3	• path
	opaque	path	Var	Path to the provisioning file (see ETSI
	1 1	26.	21.0	TS 102 223, Section 8.50).
0x3D		1 2	1	USSD String
$\rightarrow$	enum8	orig des from sim		Original data coding scheme from the
		2-17-17-17-1		SIM:
		V. 601.		• 0x00 – 7-bit GSM
		0		• 0x01 – 8-bit GSM
				• 0x02 – UCS2
	enum8	dcs	1	Data coding scheme:
				• 0x00 – 7-bit GSM
				• 0x01 – 8-bit GSM
				• 0x02 – UCS2
	uint8	length	1	Number of sets of the following
				elements:
				• text
	opaque	text	Var	Text of USSD string (see 3GPP TS
				31.111, Section 8.17).
0x3E			1	Default Text
Var			2	
	enum8	des	1	Data coding scheme:
$\rightarrow$	CHUIIIO		_	_
$\rightarrow$	Citatilo			$\bullet 0x00 - 7$ -bit GSM
$\rightarrow$	Chumo			• 0x00 – 7-bit GSM • 0x01 – 8-bit GSM
$\rightarrow$	Chumo			• 0x01 – 8-bit GSM
$\rightarrow$		length of string	1	• 0x01 – 8-bit GSM • 0x02 – UCS2
$\rightarrow$	uint8	length_of_string	1	• 0x01 – 8-bit GSM
	0x3B Var  →  0x3C Var  →  0x3D Var  →	valuetype $0x3B$ Varuint16enum8 $0x3C$ Varuint32uint8opaque $0x3D$ Var $\rightarrow$ enum8enum8	value         type           0x3B         Var           →         uint16         length           enum8         bearer_list           0x3C         Var           →         uint32         num_of_prov_files           uint8         length           opaque         path           0x3D         Var           →         enum8         orig_dcs_from_sim           enum8         dcs           uint8         length           opaque         text	value       type       (byte)         0x3B       1         Var       2 $\rightarrow$ uint16       length         enum8       bearer_list       Var         0x3C       1         Var       2 $\rightarrow$ uint32       num_of_prov_files         uint8       length       1         opaque       path       Var         0x3D       1         Var       2 $\rightarrow$ enum8       orig_des_from_sim       1         enum8       dcs       1         uint8       length       1         uint8       length       1         opaque       text       Var

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x3F			1	Immediate Response Required
Length	1			2	
Value	$\rightarrow$	boolean	immediate_resp	1	Indicates whether an immediate response
			-		is required:
					$\bullet 0x00 - No$
					• 0x01 – Yes
Туре	0x40			1	User Confirmation Alpha
Length	Var			2	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
					• $0x00 - 7$ -bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
			5 = = 5	3.0	elements:
					• text
		opaque	text	Var	Text string data in the specified data
		11		0	coding scheme.
Туре	0x41		A 170	^1 ·	Setup Call Display Alpha
Length	Var			2	Secup cuit 2 ispiny i ispin
Value	$\rightarrow$	enum8	des	17	Data coding scheme:
, and	,	Chamo	des		• 0x00 – 7-bit GSM
			~ ~ @°		• 0x01 – 8-bit GSM
		1	, O, 310,		$\bullet 0x02 - UCS2$
		uint8	length_of_string	1	Number of sets of the following
		01110	TORON	_	elements:
			0.0		• text
		opaque	text	Var	Text string data in the specified data
		opaque	tent	, ча	coding scheme.
Туре	0x42			1	User Confirmation Icon
Length	Var			2	
Value	$\xrightarrow{var}$	enum8	qualifier	1	Icon qualifier:
Value	,	Citatilo	quanner	1	• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
		uiiito	neight	1	Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
		uiiito	wiutii	1	Represents the number of raster image
					points.
		enum8	100	1	•
		enullio	ics	1	Image coding scheme:
					• 0x00 – Unknown • 0x01 – Basic
					• 0x02 – Color

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint8	rec_num	1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
					elements:
					• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x43			1	Setup Call Display Icon
Length	Var			2	
Value	$\rightarrow$	enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
			8	900	Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
		unito	Widii		Represents the number of raster image
				g.	points.
		enum8	ics	1.0	Image coding scheme:
		Citatilo	103	200	• 0x00 – Unknown
				20	• 0x01 – Basic
				10	• $0x01 - Basic$
		uint8	rec_num	- 1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
		dilitio	data_size	_	elements:
			76. The		• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x44	opaque	data	1	Gateway Proxy
Length	Var			2	Gateway 1 Toxy
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
value	7	Cituino	ues	1	• 0x00 – 7-bit GSM
					• $0x00 = 7$ -bit GSM
					$\bullet 0x01 - 8-011 GSW$ $\bullet 0x02 - UCS2$
		uint8	langth of string	1	Number of sets of the following
		uiiito	length_of_string	1	elements:
			44	<b>X</b> 7	• text
		opaque	text	Var	Text string data in the specified data
_	0.45			1	coding scheme.
Туре	0x45			1	Alpha
Length	Var		1	2	D
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x46			1	Notification Required
Length	1			2	
Value	$\rightarrow$	boolean	notification_required	1	Indicates whether the notification for a
					setup event list is required:
					• 0 – Notification is not required
					• 1 – Notification is required
Туре	0x47			1	Play Tone Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_play_tone
		opaque	pc_play_tone	Var	Play Tone proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.5.
Туре	0x48			1	Setup Call Event
Length	Var			2 🗸	
Value	$\rightarrow$	uint32	uim_ref_id	40	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
				5. 600	elements:
			06.	5.4.	• pc_setup_call
		opaque	pc_setup_call	Var	Setup Call proactive command, encoded
			5,00		as in ETSI TS 102 223, Section 6.6.12.
Туре	0x49		6, 10	1	Send DTMF Event
Length	Var		20, 0	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_send_dtmf
		opaque	pc_send_dtmf	Var	Send DTMF proactive command,
					encoded as in ETSI TS 102 223,
					Section 6.6.24.
Туре	0x4A			1	Launch Browser Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_launch_browser
		opaque	pc_launch_browser	Var	Launch Browser proactive command,
					encoded as in ETSI TS 102 223,
					Section 6.6.26.
Туре	0x4B			1	Send SMS Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_send_sms
		opaque	pc_send_sms	Var	Send SMS proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.9.
Туре	0x4C			1	Send SS Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_send_ss
		opaque	pc_send_ss	Var	Send SS proactive command, encoded as
				-	in ETSI TS 102 223, Section 6.6.10.
Туре	0x4D			1	Send USSD Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
				_	elements:
				\$\frac{1}{2}	• pc_send_ussd
		opaque	pc_send_ussd	Var	Send USSD proactive command,
			. 2	5, 60,	encoded as in ETSI TS 102 223,
			00.	E.J.	Section 6.6.11.
Туре	0x4E		27 005	1	Provide Local Information Event
Length	Var		5,00	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
			200		elements:
			.1.1.1.6	X 7	• pc_provide_local_info
		opaque	pc_provide_local_info	Var	Provide Local Information proactive
					command, encoded as in ETSI TS
_	0.45			1	102 223, Section 6.6.15.
Type	0x4F			2	Setup Event List Raw Event
Length	Var	wim+22	nim mof id		Drogotive command reference ID
Value	$\rightarrow$	uint32	uim_ref_id	4 2	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following elements:
		Opegue	pc_setup_event_list	Var	• pc_setup_event_list  Setup Event List proactive command,
		opaque	pc_setup_event_nst	vai	encoded as in ETSI TS 102 223,
					Section 6.6.16.
Type	0x50			1	Slot
Type Length	1			2	SIO
Length	1				

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• 0x02 – Slot 2
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.
Туре	0x51			1	Open Channel Event
Length	Var			2	<b>(b)</b>
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_open_channel
		opaque	pc_open_channel	Var	Open Channel proactive command,
					encoded as in ETSI TS 102 223,
				3"	Section 6.6.27.
Туре	0x52			1	Close Channel Event
Length	Var			2 🗸	
Value	$\rightarrow$	uint32	uim_ref_id	400	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
				5.00	elements:
			26.	34.	• pc_close_channel
		opaque	pc_close_channel	Var	Close Channel proactive command,
			( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )		encoded as in ETSI TS 102 223,
		1	C.O. Value		Section 6.6.28.
Туре	0x53		07,07	1	Send Data Event
Length	Var		200	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd len	2	Number of sets of the following
			_		elements:
					• pc_send_data
		opaque	pc_send_data	Var	Send Data proactive command, encoded
		1 1	1 – –		as in ETSI TS 102 223, Section 6.6.30.
Туре	0x54			1	Receive Data Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
	-	uint16	cmd_len	2	Number of sets of the following
		-	_		elements:
					• pc_receive_data
		opaque	pc_receive_data	Var	Receive Data proactive command,
			• – –		encoded as in ETSI TS 102 223,
					Section 6.6.29.
Туре	0x55			1	On Demand Link Establish
Length	1			2	
Value	$\rightarrow$	boolean	on_demand_link_est	1	Indicates whether the link is required:
	•			-	• 0x00 – Link is not required
					• 0x01 – Link is required
					OAO1 Dilik is required

Field	Field value	Field type	Parameter	Size (byte)	Description
Туре	0x56			1	CSD Bearer Description
Length	3			2	*
Value	$\rightarrow$	uint8	speed	1	Data rate; same as the speed subparameter defined in 3GPP TS 27.007, Section 6.7.
		enum8	name		CSD bearer name:  • 0x00 – Data Circuit Asynchronous; UDI or 3.1 kHz modem  • 0x01 – Data Circuit Synchronous; UDI or 3.1 kHz modem  • 0x02 – PAD Access Asynchronous UDI  • 0x03 – Packet Access Synchronous UDI  • 0x04 – Data Circuit Asynchronous RDI  • 0x05 – Data Circuit Synchronous RDI  • 0x06 – PAD Access Asynchronous RDI  • 0x07 – Packet Access Synchronous RDI
		enum8	connection_element	21	CSD bearer connection element:  • 0x00 – Transparent  • 0x01 – Nontransparent  • 0x02 – Both, transparent preferred  • 0x03 – Both, nontransparent preferred
Type	0x57	-	0, 10,	1	GPRS Bearer Description
Type	6		76, 1/10	2	GFKS Bearer Description
Length		nint0	pragadanas als	1	Dragadanas alassy sama as tha
Value	$\rightarrow$	uint8	precedence_cls	1	Precedence class; same as the precedence subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	delay_cls	1	Delay class; same as the delay subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	reliability_cls	1	Reliability class; same as the reliability subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	peak_throughput	1	Peak throughput class; same as the peak subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	mean_throughput	1	Mean throughput class; same as the mean subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		enum8	pkt_data_protocol	1	Packet Data Protocol:  • 0x02 – IP  All other values are reserved.
Туре	0x58			1	EUTRAN External Parameter Bearer Description
Length	17			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	traffic_class	1	Indicates the type of application for
					which the UMTS bearer service is
					optimized:
					• 0x00 – Conversational
					• 0x01 – Streaming
					• 0x02 – Interactive
					• 0x03 – Background
					• 0x04 – Subscribed value
					All other values are reserved.
		uint16	max_bitrate_ul	2	Maximum bitrate UL; same as the
					maximum bitrate UL subparameter
					defined in 3GPP TS 31.111,
					Section 8.52.3.
		uint16	max_bitrate_dl	2	Maximum bitrate DL; same as the
					maximum bitrate DL subparameter
				"	defined in 3GPP TS 31.111,
					Section 8.52.3.
		uint16	guaranteed_bitrate_ul	2	Guaranteed bitrate UL; same as the
				0	guaranteed bitrate UL subparameter
				3	defined in 3GPP TS 31.111,
				5.00	Section 8.52.3.
		uint16	guaranteed_bitrate_dl	2	Guaranteed bitrate DL; same as the
			1 25		guaranteed bitrate DL subparameter
			5 36		defined in 3GPP TS 31.111,
			S. C. Walls		Section 8.52.3.
		enum8	delivery_order	1	Numeric parameter that indicates if the
			750,		UMTS bearer will provide in-sequence
			<u> </u>		SDU delivery:
					• 0x00 – No
					• 0x01 – Yes
					• 0x02 – Subscribed value
					All other values are reserved.
		uint8	max_sdu_size	1	Maximum SDU size; same as the
					Maximum SDU size subparameter
					defined in 3GPP TS 31.111,
					Section 8.52.3.
		uint8	max_sdu_err_ratio	1	SDU error ratio; same as the SDU error
					ratio subparameter defined in 3GPP TS
					31.111, Section 8.52.3.
		uint8	residual_bit_err_ratio	1	Residual bit error ratio; same as the
					residual bit error ratio subparameter
					defined in 3GPP TS 31.111,
					Section 8.52.3.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	•
		enum8	delivery_of_err_sdu	1	Numeric parameter that indicates if
					SDUs detected as erroneous will be
					delivered:
					$\bullet 0x00 - No$
					• 0x01 – Yes
					• 0x02 – No detect
					• 0x03 – Subscribed value
					All other values are reserved.
		uint8	transfer_delay	1	Transfer delay; same as the transfer
			_ ,		delay subparameter defined in 3GPP TS
					31.111, Section 8.52.3.
		uint8	traffic_handling_pri	1	Traffic handling priority; same as the
					traffic handling priority subparameter
				900	defined in 3GPP TS 31.111,
					Section 8.52.3.
		enum8	pdp_type	1	PDP type:
		01101110	Pub_0/Pu		$\bullet 0x02 - IP$
				8	All other values are reserved.
Туре	0x59			1,0	EUTRAN External Mapped UTRAN PS
1,00	ONS			200	Bearer Description
Length	10			2	Bearer Bescription
Value	$\rightarrow$	uint8	qci	31	QCI (see 3GPP TS 31.111,
Value	,	unito	qer a co	279	Section 8.52.5).
		uint8	max_bitrate_ul	1	Maximum bitrate UL (see 3GPP TS
		unito	max_strate_ur	1	31.111, Section 8.52.5).
		uint8	max_bitrate_dl	1	Maximum bitrate DL (see 3GPP TS
		unito	max_strate_cr	1	31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_ul	1	Guaranteed bitrate UL (see 3GPP TS
			guarantos a_stratos_ar		31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_dl	1	Guaranteed bitrate DL (see 3GPP TS
			8		31.111, Section 8.52.5).
		uint8	max_bitrate_ul_ext	1	Maximum bitrate UL Ext (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	max_bitrate_dl_ext	1	Maximum bitrate DL Ext (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_ul_ext	1	Guaranteed bitrate UL Ext (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_dl_ext	1	Guaranteed bitrate DL Ext (see 3GPP TS
					31.111, Section 8.52.5).
		enum8	pdp_type	1	PDP type:
			1 1-71		$\bullet 0x02 - IP$
					All other values are reserved.
Туре	0x5A			1	Buffer Size
Length	2			2	· · · · ·
Value	$\rightarrow$	uint16	buffer_size	2	Buffer size.
Туре	0x5B			1	Network Access Name
Length	Var			2	1.000 OIR 1100000 I tuille
Lengui	v ai				

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	value →	uint8	length_of_string	1	Number of sets of the following
value	7	unito	length_or_sumg	1	elements:
					• text
		opoguo	text	Var	Network access name encoded in ASCII
		opaque	lext	Vai	character (see 3GPP TS 31.111,
					Section 8.61).
T	0x5C			1	Other Address
Туре				2	Other Address
Length	Var	0	. 11		A 11
Value	$\rightarrow$	enum8	address_type	1	Address type:
					• 0x01 – No address given
					• 0x02 – Dynamic
				- 0	• 0x03 – IPv4
					• 0x04 – IPv6
					All other values are reserved.
		uint8	length	1	Number of sets of the following
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	elements:
					• address_data
		opaque	address_data	Var	Address (see ETSI TS 102 223,
				00	Section 8.58).
Туре	0x5D			A1 .	User Login
Length	Var		· ·	25	
Value	$\rightarrow$	enum8	dcs	e 1	Data coding scheme:
			17 25		• $0x00 - 7$ -bit GSM
			6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		• 0x01 – 8-bit GSM
		1	C.O. Value		• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
			T TO		elements:
			0"		• text
		opaque	text	Var	Text string data in the specified data
		1 1			coding scheme.
Туре	0x5E			1	User Password
Length	Var			2	- C341 1 465 W C14
Value		enum8	des	1	Data coding scheme:
Talue	′	CHUIIIO	400	1	• $0x00 - 7$ -bit GSM
					• $0x00 - 8$ -bit GSM
					$\bullet 0x01 - 0-011 \text{ GSW}$ $\bullet 0x02 - \text{UCS2}$
		uint8	length_of_string	1	Number of sets of the following
		umo	length_or_string	1	elements:
					• text
		opoguo	text	Var	Text string data in the specified data
		opaque	lext	Vai	
Type	0x5F			1	coding scheme.  Transport Level
Type	3			2	Transport Level
Length		om0	tuonomontt1		Tuon on out muoto ==1.
Value	$\rightarrow$	enum8	transport_protocol	1	Transport protocol:
					• $0x00 - \text{Not present}$
					• 0x01 – UDP
					• 0x02 – TCP
					All other values are reserved.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint16	port_number	2	Port number.
Туре	0x60			1	Data Destination Address
Length	Var			2	
Value	$\rightarrow$	enum8	address_type	1	Address type:
					• 0x01 – No address given
					• 0x02 – Dynamic
					• 0x03 – IPv4
					• 0x04 – IPv6
					All other values are reserved.
		uint8	length	1	Number of sets of the following
					elements:
					address_data
		opaque	address_data	Var	Address (see ETSI TS 102 223,
		• •			Section 8.58).
Туре	0x61			1	Channel Data Length
Length	1			2	
Value	$\rightarrow$	uint8	ch_data_length	1	Number of bytes that are available in the
				_	channel buffer, or the number of bytes
				00	that are requested in a Received Data
				3	command (see ETSI TS 102 223,
				5.00	Section 8.54).
Туре	0x62		6.	31 1	Send Data Immediately
Length	1		1 25	2	•
Value	$\rightarrow$	boolean	send_data_immediately	1	Indicates whether to send the data
		1	6.0 nam		immediately:
			07.77		• $0x00 - No$ , store the data in the Tx
			send_data_mmediatery		buffer
			Ů.		• 0x01 – Yes, send the data immediately
Туре	0x63			1	Channel Data
Length	Var			2	
Value	$\rightarrow$	uint16	data_len	2	Number of sets of the following
			_		elements:
					• channel_data_string
		opaque	channel_data_string	Var	Channel data string is considered by the
		• •			terminal as binary coded on 8 bits (see
					ETSI TS 102 223, Section 8.53).
Туре	0x64			1	Channel ID
Length	1			2	
Value	$\rightarrow$	uint8	ch_id	1	Channel ID (see ETSI TS 102 223,
			_		Section 8.7).
Туре	0x65			1	Items with DCS
Length	Var			2	· · · · · · · · · · · · · · · · · · ·
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Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	-
Value	$\rightarrow$	uint8	number_of_items	1	Number of sets of the following
					elements:
					• item_id
					• dcs
					• item_text_length
					• item_text
		uint8	item_id	1	ID of the item. Each item has a unique
					identifier from 0x01 to 0xFF.
		enum8	des	1	Data coding scheme:
					• $0x00 - 7$ -bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	item_text_length	1	Number of sets of the following
					elements:
					• item_text
		opaque	item_text	Var	Item text (see 3GPP TS 24.008,
					clause 4.4.2.3).
Туре	0x66			1 ,	Activate Event
Length	Var			2,0	
Value	$\rightarrow$	uint32	uim_ref_id	4_×	Proactive command reference ID.
		uint16	pc_activate_len	2	Number of sets of the following
			6.	A.	elements:
			1 25		• pc_activate
		opaque	pc_activate	Var	Activate proactive command encoded as
		1	C'O L'allis		in ETSI TS 102 223, Section 6.6.40.
Туре	0x67		07.73	1	Activate Descriptor Target
Length	1		120	2	
Value	$\rightarrow$	enum8	target	1	Activate descriptor target (see ETSI TS
					102 223, Section 8.89):
					• 0x01 – UICC-CLF interface according
					to ETSI TS 102 613
					All other values are reserved for future
					use.
Туре	0x68			1	Response Type
Length	4			2	
Value	$\rightarrow$	enum	rsp_type	4	Response type:
					• 0x00 – Terminal response
					• 0x01 – Event confirmation
					All other values are reserved.
					Indicates the action that the control point
					is expected to perform after receiving
					and processing the indication. If it is
					missing, the behavior described in
					Appendix C applies.
Туре	0x69			1	Bearer Independent Protocol Status
Length	5			2	Î
Value	$\rightarrow$	uint8	ch_id	1	Channel ID (see ETSI TS 102 223,
I			<del>-</del>	I	Section 8.7).

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum	status	4	Bearer Independent Protocol Status:
					• CAT_BIP_STATUS_IN_PROGRESS
					(0x00) – In progress
					• CAT_BIP_STATUS_END (0x01) -
					End All other values are reserved for
					future use and are to be ignored by the
					control point.
Туре	0x6A			1	Refresh Alpha
Length	Var			2	<b>(a)</b>
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	pc_refresh_alpha_len	2	Number of sets of the following
					elements:
					• pc_refresh_alpha
		opaque	pc_refresh_alpha	Var	Refresh proactive command encoded as
			1 = 1		in ETSI TS 102 223, Section 6.6.13.
			4	30	This is sent only if the refresh command
					contains alpha to be displayed.
Туре	0x6B			1 2	Contactless State Changed Event
Length	Var			200	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	pc_contactless_state_	25	Number of sets of the following
			changed_len	34.	elements:
			1 3		• pc_contactless_state_ changed
		opaque	pc_contactless_state_	Var	Contactless State Changed proactive
			changed		command encoded as in ETSI TS
			0100 11		102 223, Section 6.6.41.
Туре	0x6C		V 260	1	Contactless Functionality State
Length	4		0.	2	
Value	$\rightarrow$	enum	contactless_functionality_	4	Contactless functionality state:
			state		• CAT_CONTACTLESS_
					FUNCTIONALITY_DISABLED (0x00)
					- Contactless functionality in the UICC
					is disabled
					• CAT CONTACTLESS
					FUNCTIONALITY_ENABLED (0x01)
					- Contactless functionality in the UICC
					is enabled
					All other values are reserved.

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_EVT_REGISTRATION_	Registration for one or more events failed, as it was
FAILED	registered by some other control point before
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long
QMI_ERR_MISSING_ARG	One or more required TLVs are missing
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

## 3.2.4 Description of QMI\_CAT\_SET\_EVENT\_REPORT

The control point's event reporting state variables are modified according to the settings specified in the TLVs included in the request message. The service maintains a set of state variables for each control point.

Events of interest are communicated to the registered CAT control point via the QMI\_CAT\_EVENT\_REPORT\_IND message. A registration failure implies that none of the requested proactive commands in the QMI\_CAT\_SET\_EVENT\_REPORT\_REQ are registered. The control point must register for these event report indications later, as required.

When the CAT control point is registered with the Refresh/Refresh Alpha bitmask (bit 11), different event TLV data are communicated to the control point based on the QMI\_CAT configuration mode. If QMI\_CAT is configured in Gobi mode, Refresh events with the refresh mode and refresh stage information are communicated to the registered control point. For all other QMI\_CAT configuration modes, Refresh Alpha events with the alpha and icon (if any) are communicated to the registered control point.

When more than one card is available, applicable events are applied to all available cards, unless specified differently in the request.

The unsolicited indication message QMI\_CAT\_SET\_EVENT\_REPORT\_IND is sent to interested control points when the device state corresponding to any TLV listed in Section 3.2 changes. Interested control points are those that previously registered successfully for the corresponding event to be reported using the QMI\_CAT\_SET\_EVENT\_REPORT\_REQ message.

This indication message is generated when one or more corresponding proactive commands are received from the device. For certain proactive commands listed in Section 2.4.3, QMI\_CAT includes a unique reference identifier. The control point uses the reference identifier while sending the terminal response for this indication. If no reference identifier is sent in the event report indication, the terminal response is not expected to be sent from the control point.

When the command is buffered, such as Setup Menu Event (as described in Section 2.4.3), the module sets uim\_ref\_id to 0xFFFF in the corresponding indication sent to the control point upon its registration. In this particular case, too, the control point is not expected to send a terminal response to this indication.

When QMI\_CAT sends the decoded event indication to the control points, the TLV (0x1B) is mandatory in the message indication. See Appendix B for detailed information on mandatory or optional TLVs for each command.

Slot (0x50) is an optional TLV to indicate the slot ID for which the proactive command/event is being reported. If this TLV is missing, the control point assumes that the proactive command is coming from the card on slot 1.

The unsolicited indication message QMI\_CAT\_SET\_EVENT\_REPORT\_IND is sent to interested control points when the device state corresponding to any TLV listed in Section 3.2 changes. Interested control points are those that previously registered successfully for the corresponding event to be reported using the QMI\_CAT\_SET\_EVENT\_REPORT\_REQ message.

This indication message is generated when one or more corresponding proactive commands are received from the device. For certain proactive commands listed in Section 2.4.3, QMI\_CAT includes a unique reference identifier. The control point uses the reference identifier while sending the terminal response for this command. If no reference identifier is sent in the event report indication, the terminal response is not expected to be sent from the control point.

When the command is buffered, such as Setup Menu Event (as described in Section 2.4.3), the module sets uim\_ref\_id to 0xFFFF in the corresponding indication sent to the control point upon its registration. In this particular case, too, the control point is not expected to send a terminal response to this indication.

When QMI\_CAT sends the decoded event indication to the control points, the TLV (0x1B) is mandatory in the message indication. See Appendix B for detailed information on mandatory or optional TLVs for each command.

Slot (0x50) is an optional TLV to indicate the slot ID for which the proactive command/event is being reported. If this TLV is missing, the control point assumes that the proactive command is coming from the card on slot 1.

# 3.3 QMI\_CAT\_GET\_SUPPORTED\_MSGS

Queries the set of messages implemented by the currently running software.

**CAT message ID** 

0x001E

**Version introduced** 

Major - 1, Minor - 17

# 3.3.1 Request - QMI\_CAT\_GET\_SUPPORTED\_MSGS\_REQ

Message type

Request

Sender

Control point

**Mandatory TLVs** 

None

**Optional TLVs** 

None

# 3.3.2 Response - QMI\_CAT\_GET\_SUPPORTED\_MSGS\_RESP

Message type

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Common version introduced	Common version last modified
Result Code	1.6	1.7

### **Optional TLVs**

Name	Common version introduced	Common version last modified	
List of Supported Messages	1.6	1.6	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	List of Supported Messages
Length	Var			2	<b>(a)</b>
Value	$\rightarrow$	uint16	supported_msgs_len	2	Number of sets of the following
					elements:
				- 0	• supported_msgs
		uint8	supported_msgs	Var	This array of uint8 is a bitmask where
					each bit represents a message ID, i.e.,
					starting with the LSB, bit 0 represents
				7	message ID 0, bit 1 represents message
					ID 1, etc.
				_	The bit is set to 1 if the message is
				260	supported; otherwise, it is set to zero.
				N. V.	For example, if a service supports
			2	5,00	exactly four messages with IDs 0, 1, 30,
			00,	54	and 31 (decimal), the array (in
			7, 622		hexadecimal) is 4 bytes [03 00 00 c0].

### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INFO_UNAVAILABLE	Information is not available

# 3.3.3 Description of QMI\_CAT\_GET\_SUPPORTED\_MSGS REQ/RESP

This command queries the set of messages implemented by the currently running software. This may be a subset of the messages defined in this revision of the service.

#### QMI CAT GET SUPPORTED FIELDS 3.4

Queries the fields supported for a single command as implemented by the currently running software.

**CAT message ID** 

0x001F

**Version introduced** 

Major - 1, Minor - 17

# Request - QMI\_CAT\_GET\_SUPPORTED\_FIELDS\_REQ

Message type

### **Mandatory TLVs**

Request			
Sender		0.	
Control point			
Mandatory TLVs		23. 23 C. 11h	
	Name	Common version	Common version
	× 63	introduced	last modified
Service Message ID	55, 70	1.6	1.6

Field	Field	Field	Parameter	Size	Description
	value	type	0	(byte)	
Туре	0x01			1	Service Message ID
Length	2			2	
Value	$\rightarrow$	uint16	msg_id	2	ID of the command for which the
					supported fields are requested.

### **Optional TLVs**

None

#### Response - QMI\_CAT\_GET\_SUPPORTED\_FIELDS\_RESP 3.4.2

Message type

Response

Sender

Service

## **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Common version introduced	Common version last modified
Result Code	1.6	1.7

## **Optional TLVs**

Name	Common version	Common version
	introduced	last modified
List of Supported Request Fields	1.6	1.6
List of Supported Response Fields	1.6	1.6
List of Supported Indication Fields	1.6	1.6

Field	Field	Field	Parameter	Size	Description
	value	type	, (	(byte)	
Туре	0x10			1.5	List of Supported Request Fields
Length	Var			2	SA.
Value	$\rightarrow$	uint8	request_fields_len	110	Number of sets of the following
				, 10,	elements:
			100	27	• request_fields
		uint8	request_fields	Var	This field describes which optional field
			0,3110		IDs are supported in the QMI request.
			76. The		The array of uint8 is a bitmask where
			20,000		each bit represents a field (TLV) ID.
			The same of the sa		Because fields 0 to 15 (decimal) are
					mandatory by definition, the first bit
					represents field ID 16. Starting with the
					LSB, bit 0 represents field ID 16, bit 1
					represents field ID 17, etc.
					The bit is set to 1 if the field ID is
					supported; otherwise, it is set to zero.
					For example, if a service supports
					exactly four fields with IDs 16, 17, 30,
					and 31 (decimal), the array (in
					hexadecimal) is 2 bytes [03 c0].
Туре	0x11			1	List of Supported Response Fields
Length	Var			2	
Value	$\rightarrow$	uint8	response_fields_len	1	Number of sets of the following
					elements:
					• response_fields
		uint8	response_fields	Var	This field describes which optional field
					IDs are supported in the QMI response.
					Its format is the same as request_fields.
Туре	0x12			1	List of Supported Indication Fields
Length	Var			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint8	indication_fields_len	1	Number of sets of the following
					elements:
					• indication_fields
		uint8	indication_fields	Var	This field describes which optional field
					IDs are supported in the QMI indication.
					Its format is the same as request_fields.

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_REQUESTED_NUM_	Requested message ID is not supported by the currently
UNSUPPORTED	running software
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_INFO_UNAVAILABLE	Information is not available

# 3.4.3 Description of QMI\_CAT\_GET\_SUPPORTED\_FIELDS REQ/RESP

This command queries the fields supported for a single command as implemented by the currently running software.

If the request, response, or indication is supported for the given message ID, the corresponding optional array is included in QMI\_CAT\_GET\_SUPPORTED\_FIELDS\_RESP, even if the message does not contain any optional fields. This enables the client to distinguish this case from one where the service does not support the request, response, or indication.

### Examples are:

- If the specified message ID is not supported by the service, the response has qmi\_result = QMI\_RESULT\_FAILURE and qmi\_error = QMI\_ERR\_REQUESTED\_NUM\_UNSUPPORTED.
- If the specified message ID is an empty message, the response has qmi\_result =
   QMI\_RESULT\_SUCCESS and qmi\_error = QMI\_ERR\_NONE. None of the optional arrays are
   included.
- If the specified message ID supports the request with 0 optional fields, the response with 3 optional fields (16, 17, and 18 decimal), and does not support an indication, the response has the following:
  - qmi\_result = QMI\_RESULT\_SUCCESS
  - qmi error = QMI ERR NONE
  - request\_fields array is included with length zero
  - response\_fields array is included with length 1 value [07]
  - indication\_fields array is not included

Trailing zero bytes are omitted from the response. For example, if the message defines 20 different fields but the response only contains 16 bits, the client is to assume the last four fields are not supported.

# 3.5 QMI\_CAT\_GET\_SERVICE\_STATE

Queries the QMI\_CAT service state.

**CAT message ID** 

0x0020

Version introduced

Major - 1, Minor - 0

# 3.5.1 Request - QMI\_CAT\_GET\_SERVICE\_STATE\_REQ

Message type

Request

Sender

Control point

**Mandatory TLVs** 

None

**Optional TLVs** 

None

# 3.5.2 Response - QMI\_CAT\_GET\_SERVICE\_STATE\_RESP

Message type

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response. The following mandatory TLVs are present if the result code is QMI\_RESULT\_SUCCESS.

Name	Version introduced	Version last modified
CAT Service State	1.0	2.27

Field	Field	Field	Parameter	Size	Description
_	value	type		(byte)	GATE G
Туре	0x01			1	CAT Service State
Length	8			2	
Value	$\rightarrow$	uint32	cat_common_evt_reg_	4	Bitmask of events registered by all
			state_mask		control points:
					• Bit 0 – Display Text
					• Bit 1 – Get Inkey
					• Bit 2 – Get Input
					• Bit 3 – Setup Menu
					• Bit 4 – Select Item
					• Bit 5 – Send SMS
					• Bit 6 – Setup Event – User Activity
					• Bit 7 – Setup Event – Idle Screen
					Notify
					• Bit 8 – Setup Event – Language Select
				-11	Notify
					• Bit 9 – Setup Idle Mode Text
					• Bit 10 – Language Notification
					• Bit 11 – Refresh/Refresh Alpha
				60	(Refresh when QMI_CAT is configured
				20	in Gobi mode, Refresh Alpha in other
			1	5. 00	cases)
			00.	E.g.	• Bit 12 – End Proactive Session
			2 025		• Bit 13 – Play Tone
			2016-05-17 06.5 2016-05-17 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18		• Bit 14 – Setup Call
			6. hai		• Bit 15 – Send DTMF
			20, 20,		• Bit 16 – Launch Browser
			900		• Bit 17 – Send SS
					• Bit 18 – Send USSD
					• Bit 19 – Provide Local Information –
					Language
					• Bit 20 – Bearer Independent Protocol
					• Bit 21 – Setup Event – Browser
					Termination
					• Bit 22 – Provide Local Information –
					Time
					• Bit 23 – Clients are to ignore this bit
					• Bit 24 – Activate
					• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Clients are to ignore this bit
					• Bit 27 – Contactless Support: including
					handling the Contactless State Changed
					proactive command and the setup event
					Contactless State Request
					All unused bits are reserved for future
					use and are be ignored by the control
					point.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint32	pc_evt_report_mask	4	Bitmask of events registered by this
					control point:
					• Bit 0 – Display Text
					• Bit 1 – Get Inkey
					• Bit 2 – Get Input
					• Bit 3 – Setup Menu
					• Bit 4 – Select Item
					• Bit 5 – Send SMS
					• Bit 6 – Setup Event – User Activity
					• Bit 7 – Setup Event – Idle Screen
					Notify
				- 0	• Bit 8 – Setup Event – Language Select
					Notify
					• Bit 9 – Setup Idle Mode Text
					• Bit 10 – Language Notification
					• Bit 11 – Refresh/Refresh Alpha
					(Refresh when QMI_CAT is configured
				_	in Gobi mode, Refresh Alpha in other
				\ \langle \langle \cdot	cases)
				2	Bit 12 – End Proactive Session
			2	5, 60,	• Bit 13 – Play Tone
			00.	64.	<ul><li>Bit 14 – Setup Call</li><li>Bit 15 – Send DTMF</li></ul>
			N 625		• Bit 16 – Launch Browser
			05 110		• Bit 17 – Send SS
			16, 1110		• Bit 18 – Send USSD
			2015.05.17.00°25		• Bit 19 – Provide Local Information –
			96		Language
					• Bit 20 – Bearer Independent Protocol
					• Bit 21 – Setup Event – Browser
					Termination
					• Bit 22 – Provide Local Information –
					Time
					• Bit 23 – Clients are to ignore this bit
					• Bit 24 – Activate
					• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Clients are to ignore this bit
					• Bit 27 – Contactless Support: including
					handling the Contactless State Changed
					proactive command and the setup event
					Contactless State Request
					All unused bits are reserved for future
					use and are ignored by the control point.

### **Optional TLVs**

The following TLVs are present if the result code is QMI\_RESULT\_SUCCESS in decoded format.

Name	Version introduced	Version last modified
Decoded CAT Service State	2.0	2.27
Full Function Event Service State	2.18	2.19

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	A
Type	0x10			1	Decoded CAT Service State
Length	8			2	
			2016-05-17 062 2016-05-17 062	2.2. and	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint32	cat_common_evt_reg_	4	Bitmask of decoded events registered by
			state_mask		all control points:
					• Bit 0 – Display Text
					• Bit 1 – Get Inkey
					• Bit 2 – Get Input
					• Bit 3 – Setup Menu
					• Bit 4 – Select Item
					• Bit 5 – Send SMS
					• Bit 6 – Setup Event – User Activity
					• Bit 7 – Setup Event – Idle Screen
					Notify
				- 0	• Bit 8 – Setup Event – Language Select
					Notify
				_	• Bit 9 – Setup Idle Mode Text
				78	• Bit 10 – Language Notification
					• Bit 11 – Refresh Alpha (not supported
					when QMI CAT is configured in Gobi
				_	mode)
				\ \langle \langle \rangle \rangle	• Bit 12 – End Proactive Session
				22	Bit 13 – Play Tone
			. 2	5, 0,	<ul><li>Bit 14 – Setup Call</li><li>Bit 15 – Send DTMF</li></ul>
			2016-05-17 06-14 2016-05-17 death	64.	• Bit 15 – Selid DTMF • Bit 16 – Launch Browser
			N 92		• Bit 17 – Send SS
			05, 40		• Bit 18 – Send USSD
			16, 1kg		• Bit 19 – Provide Local Information –
			30,00		
			Se		Language • Bit 20 – Bearer Independent Protocol
					• Bit 21 – Setup Event – Browser
					Termination
					• Bit 22 – Clients are to ignore this bit
					• Bit 23 – Smart Card Web Server
					• Bit 24 – Activate
					• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Bearer Independent Protocol
					Status
					• Bit 27 – Contactless Support: including
					handling the Contactless State Changed
					proactive command and the setup event
					Contactless State Request
					_
					All unused bits are reserved for future
					use and are ignored by the control point.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	•
		uint32	pc_evt_report_mask	4	Bitmask of decoded events registered by
					this control point:
					• Bit 0 – Display Text
					• Bit 1 – Get Inkey
					• Bit 2 – Get Input
					• Bit 3 – Setup Menu
					• Bit 4 – Select Item
					• Bit 5 – Send SMS
					• Bit 6 – Setup Event – User Activity
					• Bit 7 – Setup Event – Idle Screen
					Notify Setup 2 State Tate Settlem
					• Bit 8 – Setup Event – Language Select
				1	Notify Danguage Select
				0	• Bit 9 – Setup Idle Mode Text
					• Bit 10 – Language Notification
					• Bit 11 – Refresh Alpha (not supported
					when QMI CAT is configured in Gobi
				ř	mode)
				6	• Bit 12 – End Proactive Session
				200	• Bit 13 – Play Tone
				N.	• Bit 14 – Setup Call
			63	100.	• Bit 15 – Send DTMF
			1000	2	• Bit 16 – Launch Browser
			N. 62		• Bit 17 – Send SS
		1	0,300		• Bit 18 – Send USSD
			2016-05-117 @ass		• Bit 19 – Provide Local Information –
			20,000		Language
			900		• Bit 20 – Bearer Independent Protocol
					• Bit 21 – Setup Event – Browser
					Termination
					• Bit 22 – Clients are to ignore this bit
					• Bit 23 – Smart Card Web Server
					• Bit 24 – Activate
					• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Bearer Independent Protocol
					status
					• Bit 27 – Contactless Support: including
					handling the Contactless State Changed
					proactive command and the setup event
					Contactless State Request
					_
					All unused bits are reserved for future
	0.11				use and are ignored by the control point.
Туре	0x11			1	Full Function Event Service State
Length	4			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	mask32	pc_full_func_evt_report_	4	Full function event report bitmask
			mask		registered by this control point:
					• Bit 0 – Send SMS
					• Bit 1 – Setup call
				• Bit 2 – Send DTMF	
				• Bit 3 – Send SS	
					• Bit 4 – Send USSD
					All unused bits are reserved for future
					use and are ignored by the control point.

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	3 EM
QMI_ERR_DEVICE_IN_USE	Device is currently in use

# 3.5.3 Description of QMI\_CAT\_GET\_SERVICE\_STATE REQ/RESP

This message retrieves the state of the QMI\_CAT service.

The state includes the event report registration status of all control points of the service combined. In addition, the state also includes the event report registration status of this individual control point.

#### 3.6 QMI\_CAT\_SEND\_TR

Sends the terminal response to the proactive commands coming from the card.

### **CAT message ID**

0x0021

### **Version introduced**

Major - 1, Minor - 0

# Request - QMI\_CAT\_SEND\_TR\_REQ

### **Mandatory TLVs**

	Name	Version introduced	Version last modified
Terminal Response	\$ 0	1.0	1.0

0.0				്	201			
Message	type			-1				
Request	Request							
Sender								
Control J	point			, O				
Mandato	ry TLVs	i	A Property	323011	The state of the s			
		Na	ame	Version	n introduced	Version last modified		
Termin	al Resp	onse	V 63	2	1.0	1.0		
			5.05 Hande					
Field	Field	Field	Parameter	Size	D	escription		
	value	type	150	(byte)				
Туре	0x01		~	1	Terminal Respo	nse		
Length	Var			2				
Value	$\rightarrow$	uint32	uim_ref_id	4		and reference ID. This is		
						nce ID as indicated in the		
					•	ication for the relevant		
					proactive comm			
		uint16	tr_length	2		of the following		
					elements:			
			. 1	7.7	• terminal_respo			
		opaque	terminal_response	Var	_	nse for the relevant		
					_	and, encoded as in ETSI		
					TS 102 223, Sec	CHOII O.8.		

## **Optional TLVs**

Name	Version introduced	Version last modified
Slot	2.2	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• $0x02 - Slot 2$
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

# 3.6.2 Response - QMI\_CAT\_SEND\_TR\_RESP

Message type

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## **Optional TLVs**

Name	Version introduced	Version last modified
TR Response	2.10	2.10

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	TR Response
Length	Var			2	
Value	$\rightarrow$	uint8	sw1	1	Value of SW1 of the response, as defined in 3GPP TS 11.11 for ICC and ETSI TS 102 221 for UICC.
		uint8	sw2	1	Value of SW2 of the response as defined in 3GPP TS 11.11 for ICC and ETSI TS 102 221 for UICC.
		uint8	tr_response_len	1	Number of sets of the following elements:  • tr_response
		opaque	tr_response	Var	TR response data.

QMI_ERR_NONE	No error in the request				
QMI_ERR_INTERNAL	An unexpected error occurred during processing				
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point				
	or the message was corrupted during transmission				
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response				
QMI_ERR_INVALID_OPERATION	Invalid terminal response was requested to be sent to the				
	card				
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long				
QMI_ERR_INVALID_ARG	One of the TLVs in the message is invalid				
QMI_ERR_OP_DEVICE_UNSUPPORTE	QMI_ERR_OP_DEVICE_UNSUPPORTEDDevice does not support the operation				

## 3.6.3 Description of QMI CAT SEND TR REQ/RESP

This message sends the terminal response as required by a received proactive command from the card. The terminal response must be encoded in the proper 3GPP format by the application as required for the given proactive command.

The terminal response is expected within a set time limit as defined by the target. After this expiry, the module sends a terminal response with the result code, unable to process command, to the card. Any subsequent terminal response issued by the control point after the expiry results in silent discarding of this response.

If the optional TLV for the slot is missing, the terminal response is sent by default, on slot 1.

#### 3.7 QMI\_CAT\_SEND\_ENVELOPE\_CMD

Sends an envelope command to the card.

**CAT message ID** 

0x0022

**Version introduced** 

Major - 1, Minor - 0

### Request - QMI\_CAT\_SEND\_ENVELOPE\_CMD\_REQ 3.7.1

### **Mandatory TLVs**

Name	Version introduced	Version last modified
Envelope Command	1.0	2.27

Message	type					
Request						
Sender						
Control 1	Control point					
Mandato	ry TLVs	<b>3</b>	1/2	13:13 (011)	11	
		Na	me	Versio	n introduced	Version last modified
Envelo	pe Com	mand	200	3.5	1.0	2.27
			( O5 nange			
Field	Field	Field	Parameter	Size	I	Description
	value	type	150,	(byte)		
Туре	0x01			1	Envelope Com	mand
Length	Var			2		
Value	$\rightarrow$	enum16	env_cmd_type	2	MENU_SELEC Selection • CAT_ENVEL EVENT_DL_U - Event DL Use • CAT_ENVEL EVENT_DL_II (0x03) - Event • CAT_ENVEL EVENT_DL_L (0x04) - Event • CAT_ENVEL UNKNOWN (0) • CAT_ENVEL	OPE_CMD_TYPE_ CTION (0x01) – Menu OPE_CMD_TYPE_ USER_ACTIVITY (0x02) OPE_CMD_TYPE_ OPE_CMD_TYPE_ OLE_SCREEN_ AVAIL DL Idle Screen Available OPE_CMD_TYPE_ ANGUAGE_SELECTION DL Language Selection OPE_CMD_TYPE_ OX05) – Unknown Type OPE_CMD_TYPE_ OPE_CMD_TYPE_TYPE_ OPE_CMD_TYPE_TYPE_ OPE_CMD_TYPE_TYPE_TYPE_TYPE_TYPE_TYPE_TYPE_TYPE

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			env_cmd_type (cont.)		• CAT_ENVELOPE_CMD_TYPE_
					SEND_CALL_CONTROL (0x07) -
					Send Call Control
					• CAT_ENVELOPE_CMD_TYPE_
					HCI_CONNECTIVITY (0x08) – Event
					DL HCI Connectivity
					• CAT_ENVELOPE_CMD_TYPE_
					SMS_PP_DATA_DL (0x09) – SMS-PP
					Data Download
					• CAT_ENVELOPE_CMD_TYPE_
					EVENT_DL_MT_CALL (0x0A) -
					Event DL MT Call
					• CAT_ENVELOPE_CMD_TYPE_
					EVENT_DL_CALL_CONNECTED
					(0x0B) – Event DL Call Connected
				"	• CAT_ENVELOPE_CMD_TYPE_
					EVENT_DL_CALL_DISCONNECTED
					(0x0C) – Event DL Call Disconnected
				00	• CAT_ENVELOPE_CMD_TYPE_
				3	CONTACTLESS_STATE_REQUEST
			1	5.00	(0x0D) – Contactless State Request
			06.	er.	All other values are reserved.
		uint16	env_cmd_len	2	Number of sets of the following
			5 5		elements:
			6' Kal		• envelope_data
		opaque	envelope_data	Var	Encoded envelope response, as defined
			80,		in ETSI TS 102 223, Section 7.

## **Optional TLVs**

Name	Version introduced	Version last modified
Slot	2.2	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• $0x02 - Slot 2$
					$\bullet 0x03 - Slot 3$
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

# 3.7.2 Response - QMI\_CAT\_SEND\_EVENLOPE\_CMD\_RESP

## Message type

Response

#### Sender

Service

#### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## **Optional TLVs**

Name	Version introduced	Version last modified
Raw Envelope Response Data	2.9	2.9

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			21	Raw Envelope Response Data
Length	Var			25	
Value	$\rightarrow$	uint8	sw1	e 1	Value of SW1 of the response, as defined
			N 25		in 3GPP TS 11.11 for ICC and ETSI TS
			5 20		102 221 for UICC.
		uint8	sw2	1	Value of SW2 of the response, as defined
			20,500		in 3GPP TS 11.11 for ICC and ETSI TS
			100		102 221 for UICC.
		uint8	env_resp_data_len	1	Number of sets of the following
					elements:
					• env_resp_data
		opaque	env_resp_data	Var	Envelope response data.

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ARG	One of the parameters specified contains an invalid value
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long
QMI_ERR_CAT_INVALID_ENV_CMD	Invalid envelope command
QMI_ERR_CAT_ENV_CMD_BUSY	Card busy response for envelope command
QMI_ERR_CAT_ENV_CMD_FAIL	Envelope command failure
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

# 3.7.3 Description of QMI\_CAT\_SEND\_ENVELOPE\_CMD REQ/RESP

This message sends an envelope command, such as Menu Selection, to the card. The envelope command is triggered by the control point in response to one of the SIM proactive commands received previously, such as Setup Menu or Setup Event List, as described in Section 2.4.4. When the envelope response indicates that the card is busy, the control point tries to resend the envelope commands for event download, as in ETSI TS 102 223, Section 7.5.

If the optional TLV for the slot is missing, the envelope command is sent by default, on slot 1.



#### QMI\_CAT\_GET\_EVENT\_REPORT 3.8

Retrieves the last proactive command from the modem.

**CAT message ID** 

0x0023

**Version introduced** 

Major - 2, Minor - 0

# Request - QMI\_CAT\_GET\_EVENT\_REPORT\_REQ

Message type

#### **Mandatory TLVs**

Request		
Sender	ζΟ,	
Control Point		
Mandatory TLVs	23.23 com.tm	
Name	Version introduced	Version last modified
Proactive Command Input	2.0	2.0

Field	Field	Field	Parameter	Size	Description
	value	type	180	(byte)	
Туре	0x01			1	Proactive Command Input
Length	5			2	
Value	$\rightarrow$	uint32	cmd_ref_id	4	Command reference ID.
		enum8	format	1	Format in which to get the proactive
					command data:
					• 0x01 – Raw
					• 0x02 – Decoded

### **Optional TLVs**

None

#### Response - QMI CAT GET EVENT REPORT RESP 3.8.2

Message type

Response

#### Sender

Service

## **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## **Optional TLVs**

The following TLVs are optional. Some commands should expect to have certain TLVs present all the time.

Name	Version introduced	Version last modified
Display Text Event	1.0	1.0
Get Inkey Event	1.0	1.0
Get Input Event	1.0	1.0
Setup Menu Event	1.0	1.0
Select Item Event	1.0	1.0
Alpha Identifier Available	1.0	1.0
Setup Event List Event	1.0	1.0
Setup Idle Mode Text Event	1.0	1.0
Language Notification Event	1.0	1.0
Refresh Event	1.0	1.0
End Proactive Session	1.0	1.0
Decoded Header ID	2.0	2.27
Text String	2.0	2.0
High Priority	2.0	2.0
User Control	2.0	2.0
Icon	2.0	2.0
Duration	2.0	2.0
Response Format	2.0	2.0
Help Available	2.0	2.0
Response Packing Format	2.0	2.0
Response Length	2.0	2.0
Show User Input	2.0	2.0
Tone	2.0	2.9
Softkey Selection	2.0	2.0
Items	2.0	2.0
Default Item	2.0	2.0
Next Action Indicator	2.0	2.0
Icon ID List	2.0	2.12
Presentation	2.0	2.0
Packing Required	2.0	2.0
SMS TPDU	2.0	2.0
Is CDMA SMS	2.0	2.0
Address	2.0	2.0

Name	Version introduced	Version last modified
Call Setup Requirement	2.0	2.0
Redial	2.0	2.0
Subaddress	2.0	2.0
Capability Configuration	2.0	2.0
DTMF	2.0	2.0
Specific Language Notification	2.0	2.0
Language	2.0	2.0
Launch Mode	2.0	2.0
URL	2.0	2.0
Browser ID	2.0	2.0
Bearer List	2.0	2.0
Provisioning Files	2.0	2.0
USSD String	2.0	2.0
Default Text	2.0	2.0
Immediate Response Request	2.0	2.0
User Confirmation Alpha	2.0	2.0
Setup Call Display Alpha	2.0	2.0
User Confirmation Icon	2.0	2.0
Setup Call Display Icon	2.0	2.0
4	2.0	2.0
Gateway Proxy	- A 4/2"	
Alpha Netification Province	2.0	2.0
Notification Required	2.0	2.0
Play Tone Event	2.2	2.2
Setup Call Event	2.2	2.2
Send DTMF Event	2.2	2.2
Launch Browser Event	2.2	2.2
Send SMS Event	2.2	2.2
Send SS Event	2.2	2.2
Send USSD Event	2.2	2.2
Provide Local Information Event	2.2	2.2
Setup Event List Raw Event	2.2	2.2
Slot	2.2	2.20
Open Channel Event	2.3	2.3
Close Channel Event	2.3	2.3
Send Data Event	2.3	2.3
Receive Data Event	2.3	2.3
On Demand Link Establish	2.4	2.4
CSD Bearer Description	2.4	2.4
GPRS Bearer Description	2.4	2.4
EUTRAN External Parameter Bearer Description	2.4	2.4
EUTRAN External Mapped UTRAN PS Bearer	2.4	2.4
Description		
Buffer Size	2.4	2.4
Network Access Name	2.4	2.4
Other Address	2.4	2.4
User Login	2.4	2.4
User Password	2.4	2.4
0 501 1 055 W 01 U	۷.4	<u>∠.</u> +

Name	Version introduced	Version last modified
Transport Level	2.4	2.4
Data Destination Address	2.4	2.4
Channel Data Length	2.4	2.4
Send Data Immediately	2.4	2.4
Channel Data	2.4	2.4
Channel ID	2.4	2.4
Items with DCS	2.8	2.8
Activate Event	2.9	2.9
Activate Descriptor Target	2.9	2.9
Response Type	2.18	2.18
Bearer Independent Protocol Status	2.22	2.22
Refresh Alpha	2.23	2.23
Contactless State Changed Event	2.27	2.27
Contactless Functionality State	2.27	2.27

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1 <	Display Text Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	. 4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
			00,	E.g.	elements:
			V 005	•	<ul><li>pc_display_text</li></ul>
		opaque	pc_display_text	Var	Display Text proactive command,
			16 Thai		encoded as in ETSI TS 102 223,
			20, 20,		Section 6.6.1.
Туре	0x11		, 95°2	1	Get Inkey Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					<ul><li>pc_get_inkey</li></ul>
		opaque	pc_get_inkey	Var	Get Inkey proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.2.
Туре	0x12			1	Get Input Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_get_input
		opaque	pc_get_input	Var	Get Input proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.3.
Туре	0x13			1	Setup Menu Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_setup_menu
' '			1		·

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Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x18			1	Language Notification Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_lang_notification
		opaque	pc_lang_notification	Var	Language Notification proactive
					command, encoded as in ETSI TS
					102 223, Section 6.6.25.
Туре	0x19			1	Refresh Event
					(used only when QMI_CAT is
				- 0	configured in Gobi mode)
Length	4			2	
Value	$\rightarrow$	uint16	refresh_mode	2	As indicated in ETSI TS 102 223,
					Section 8.6 (Command Qualifier for
					Refresh).
		enum16	refresh_stage	2	Stage of the refresh procedure:
					• 0x01 – Refresh start
				~ 6/V	• 0x02 – Refresh success
				22	• 0x03 – Refresh failed
Туре	0x1A		.2	? , <b>(</b> 0)	End Proactive Session
Length	1		000	2	
Value	$\rightarrow$	enum8	proactive_session_end_	1	Proactive session end type:
			type		• 0x01 – End proactive session command
			16, The		received from the card
			20,000		• 0x02 – End proactive session internal
			95		to the ME
Туре	0x1B			1	Decoded Header ID
Length	6			2	
Value	$\rightarrow$	enum8	command_id	1	ID of the proactive command:
					• CAT_COMMAND_ID_DISPLAY_
					TEXT (0x01) – Display Text
					• CAT_COMMAND_ID_GET_INKEY
					(0x02) – Get Inkey
					• CAT_COMMAND_ID_GET_INPUT
					(0x03) – Get Input
					• CAT_COMMAND_ID_LAUNCH_
					BROWSER (0x04) – Launch Browser
					• CAT_COMMAND_ID_PLAY_TONE
					(0x05) – Play Tone
					• CAT_COMMAND_ID_SELECT_
					ITEM (0x06) – Select Item
					• CAT_COMMAND_ID_SEND_SMS
					(0x07) – Send SMS
					• CAT_COMMAND_ID_SEND_SS
					(0x08) – Send SS

Field	Field	Field	Parameter	Size	Description
	value	type	command_id (cont.)	(byte)	• CAT_COMMAND_ID_SEND_USSD
			communa_ia (cont.)		(0x09) – Send USSD
					• CAT_COMMAND_ID_SETUP_
					CALL_USER_CONFIRMATION
					(0x0A) – Setup Call – User Confirmation
					• CAT_COMMAND_ID_SETUP_
					CALL_ALPHA_DISPLAY (0x0B) –
					Setup Call – Alpha Display
					• CAT_COMMAND_ID_SETUP_
					MENU (0x0C) – Setup Menu
					• CAT_COMMAND_ID_SETUP_
					IDLE_TEXT (0x0D) – Setup Idle Text
					• CAT_COMMAND_ID_PROVIDE_
					LOCAL_LANG_INFO (0x0E) –
					Provide Local Information – Language
				"	• CAT_COMMAND_ID_SEND_DTMF
					(0x0F) – Send DTMF
				_	• CAT_COMMAND_ID_LANG_
				00	NOTIFICATION (0x10) – Language
				3	Notification
				5.00	• CAT_COMMAND_ID_SETUP_
			00.	E.J.	EVENT_USER_ACTIVITY (0x11) –
			2016-05-17 00 as		Setup Event – User Activity
			5 19		• CAT_COMMAND_ID_SETUP_
			6. hair		EVENT_IDLE_SCREEN_NOTIFY
			20,200		(0x12) – Setup Event – Idle Screen
			900		Notify
					• CAT_COMMAND_ID_SETUP_ EVENT LANGUAGE SEL NOTIFY
					(0x13) – Setup Event – Language
					Selection Notify
					• CAT_COMMAND_ID_OPEN_
					CHANNEL (0x14) – Open Channel
					• CAT COMMAND ID CLOSE
					CHANNEL (0x15) – Close Channel
					• CAT COMMAND ID RECEIVE
					DATA (0x16) – Receive Data
					• CAT COMMAND ID SEND DATA
					(0x17) – Send Data
					• CAT_COMMAND_ID_ACTIVATE
					(0x18) – Activate
					• CAT_COMMAND_ID_SETUP_
					EVENT_HCI_CONNECTIVITY (0x19)
					- Setup Event - HCI Connectivity
					• CAT_COMMAND_ID_REFRESH_
					ALPHA (0x1A) – Refresh Alpha

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	-
			command_id (cont.)		• CAT_COMMAND_ID_SETUP_
					EVENT_BROWSER_TERMINATION
					(0x20) – Setup Event – Browser
					Termination
					• CAT_COMMAND_ID_
					CONTACTLESS_STATE_CHANGED
					(0x21) – Contactless State Changed
					• CAT_COMMAND_ID_SETUP_
					EVENT_CONTACTLESS_STATE_
					REQ (0x22) – Setup Event – Contactless
					State Request
					All other values are reserved.
		uint32	uim_ref_id	4	Proactive command reference ID (used
					internally by the QMI_CAT service).
		uint8	command_number	1	Command number sent to the client in
				J	the proactive command for tracking
			, 0	1	purposes to match with the command
					number in the terminal response.
Туре	0x1C			IQV	Text String
Length	Var			2	
Value	$\rightarrow$	enum8	des	5 TO.	Data coding scheme:
			100	0	• $0x00 - 7$ -bit GSM
			N. 625		• $0x01 - 8$ -bit GSM
		0	0,5 40,	1	• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
			2000		elements:
		0000000	tout	Var	• text  Text string data in the specified data
		opaque	text	Vai	coding scheme.
Tymo	0x1D			1	High Priority
Type Length	1			2	Tright Hority
Value	$\rightarrow$	enum8	high_priority	1	High priority value:
Value	′	CHUIHO		1	• 0x00 – Do not clear the screen
					• 0x01 – Clear anything that is on the
					screen
Туре	0x1E			1	User Control
Length	1			2	
Value	$\rightarrow$	enum8	user_control	1	User control:
			_		• $0x00$ – Do not allow the user to clear
					the screen
					• $0x01 - Allow$ the user to clear the
					screen
Туре	0x1F			1	Icon
Length	Var			2	

Field	Field value	Field	Parameter	Size	Description
Value		type	avalifian	(byte)	Loop qualificati
Value	$\rightarrow$	enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
		:40	1 1 . 1. 4	1	displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
					Represents the number of raster image points.
		uint8	width	1	Icon width (from the EF-IMG file).
					Represents the number of raster image
					points.
		enum8	ics	1	Image coding scheme:
					• 0x00 – Unknown
				200	• 0x01 – Basic
					• 0x02 – Color
		uint8	rec_num	1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
			_ \	ľ	elements:
				~	• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x20	1 1		5.150	Duration
Length	2		6.	2	
Value	$\rightarrow$	enum8	units	1	Time units:
			( ) ( ) ( ) ( ) ( )		• 0x00 – Minutes
		1	units Of the life		• 0x01 – Seconds
			16 11		• 0x02 – Tenths of seconds
		uint8	interval	1	Time interval; this number must be
			00		greater than zero (see ETSI TS 102 223,
					Section 8.8).
Туре	0x21			1	Response Format
Length	1			2	T. T
Value	$\rightarrow$	enum8	response_format	1	Response format:
	•		- r	_	• 0x00 – SMS default alphabet
					• 0x01 – Yes/No
					• 0x02 – Numerical only
					• 0x03 – UCS2
					• 0x04 – Immediate digit response
					• 0x05 – Yes/No and immediate digit
					response
Туре	0x22			1	Help Available
Length	1			2	. r
Value	$\rightarrow$	boolean	help_available	1	Whether help is available:
	•		-r	-	• $0x00 - \text{No help is available}$
					• 0x01 – Help is available
Туре	0x23			1	Response Packing Format
Length	1			2	response i acking i office
Lengin	1				

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	response_packing_format	1	Response packing format:
					• 0x00 – Unpacked format
					• 0x01 – Packed format
Type	0x24			1	Response Length
Length	2			2	
Value	$\rightarrow$	uint8	maximum_user_input	1	Maximum user input. A value of 0xFF
					indicates no maximum.
		uint8	minimum_user_input	1	Minimum user input. A value of 0x00
					indicates no minimum.
Туре	0x25			1	Show User Input
Length	1			2	
Value	$\rightarrow$	enum8	show_user_input	1 👛	Show user input:
			•		• 0x00 – ME can show * characters
					• 0x01 – ME can show user input
Туре	0x26			1	Tone
Length	1			2	
Value	$\rightarrow$	enum8	tone	1	Tone to be played:
		0 0 0			• 0x01 – Dial tone
				00	• 0x02 – Called subscriber busy tone
				3	• 0x03 – Congestion tone
				5.00	• 0x04 – Radio path ACK tone
			6.	24.	• 0x05 – Radio path not available, call
			1 2	-	drop tone
			~ ~ ~ @ ° ~		• 0x06 – Error tone
		1	( ) , Su,		• 0x07 – Call waiting tone
			700 111		• 0x08 – Ringing tone
			2016.05.17.06.2 2016.05.17.18.11@as		• 0x09 – General beep
			0.0		• 0x0A – Positive ACK tone
					• 0x0B – Negative ACK tone
					• 0x0C – Ring tone selected by the user
					• 0x0D – SMS alert tone selected by the
					user
					• -1 – Not in use
Туре	0x27			1	Softkey Selection
Length	1			2	Goracy Gerection
Value	$\rightarrow$	enum8	softkey_selection	1	Softkey selection:
value	7	Cituillo	SOURCY_SCIECTION	1	• 0x00 – Softkey is not selected
					• 0x00 – Softkey is not selected
Type	0x28			1	Items
Type	Var			2	Items
Length		nin+0	number of items		Number of sets of the fellowing
Value	$\rightarrow$	uint8	number_of_items	1	Number of sets of the following
					elements:
					• item_id
					• item_text_length
		• .0	', '1	4	• item_text
		uint8	item_id	1	ID of the item. Each item has a unique
					identifier from 0x01 to 0xFF.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint8	item_text_length	1	Number of sets of the following
					elements:
					• item_text
		opaque	item_text	Var	Item text. Coded the same way that
					alpha is coded in the EF-ADN file (see
					3GPP TS 24.008, clause 4.4.2.3).
Туре	0x29			1	Default Item
Length	1			2	
Value	$\rightarrow$	uint8	default_item	1	Default item to be selected. All values
					are valid, except 0xFF, which is reserved
					(see ETSI TS 102 223, Section 8.10).
Туре	0x2A			1	Next Action Indicator
Length	Var			2	
Value	$\rightarrow$	uint8	num_of_items	1	Number of sets of the following
					elements:
			A (	30	• next_action_list
		enum8	next_action_list	Var	Item in the action list:
		Circinio	meat_detron_mst	, ,	• 0x00 – Setup Call
				~	• 0x01 – Send SS
				23	• 0x02 – Send USSD
				20	• 0x02 – Send OSSD • 0x03 – Send Short Message
			3	1.00	• 0x04 – Launch Browser
			2016.05.17 06.3 deon. Zhand@ash	0	• 0x05 – Play Tone
			N 62		
		1	05 419		• 0x06 – Display Text
			16. The		• 0x07 – Get Inkey
			30,000		• 0x08 – Get Input
			95		• 0x09 – Select Item
					• 0x0A – Setup Menu
					• 0x0B – Setup Idle Mode Text
					• 0x0C – End of the Proactive Session
					• 0x0D – Provide Local Information
Туре	0x2B			1	Icon ID List
Length	Var			2	
Value	$\rightarrow$	boolean	display_icon_only	1	Whether to display the icon only:
					• 0x00 – Icon is not self-explanatory,
					display icon with description
					• 0x01 – Icon is self-explanatory, display
					only the icon
		uint8	num_of_items	1	Number of sets of the following
					elements:
					• qualifier
					• height
					• width
					• ics
					• rec_num
					• data_size
					• data
- 1				<u> </u>	uuu

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
					Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
					Represents the number of raster image
					points.
		enum8	ics	1	Image coding scheme:
					• 0x00 – Unknown
					• 0x01 – Basic
					• 0x02 – Color
		uint8	rec_num	1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
				_	elements:
				00	• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x2C			1. 194	Presentation
Length	1		6.	2	
Value	$\rightarrow$	enum8	presentation	1	Presentation type:
			55, 76		• 0x00 – Not specified
		1	6. Charles		• 0x01 – Data value presentation
					• 0x02 – Navigation presentation
Туре	0x2D		120	1	Packing Required
Length	1		~	2	
Value	$\rightarrow$	boolean	packing_required	1	Indicates whether packing is required:
					• 0x00 – Packing is not required
					• 0x01 – Packing is required
Туре	0x2E			1	SMS TPDU
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• sms_tpdu
		opaque	sms_tpdu	Var	SMS TPDU data, as specified in 3GPP
					TS 24.008.
Туре	0x2F			1	Is CDMA SMS
Length	1			2	
Value	$\rightarrow$	boolean	is_cdma_sms	1	CDMA SMS format indication:
					• 0x00 – FALSE (3GPP format)
					• 0x01 – TRUE (3GPP2 format)
					This defaults to FALSE if the TLV is not
					present.
Туре	0x30			1	Address
	Var			2	/ 1001C55
Length	val				

Field	Field	Field	Parameter	Size	Description
Value	value	type	ton	(byte)	TON of the address:
Value	$\rightarrow$	enum8	ton	1	• 0x00 – Unknown
					• 0x01 – International number
					• 0x02 – National number
		0		1	• 0x03 – Network-specific number
		enum8	npi	1	NPI of the address:
					• 0x00 – Unknown
					• 0x01 – ISDN telephony
					• 0x02 – Data NPI
					• 0x03 – Telex NPI
					• 0x04 – Private NPI
				-	• 0x0F – Extension is reserved
		uint8	length	1	Number of sets of the following
					elements:
					address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
					maximum length of the address is 200
				,	bytes (see ETSI TS 102 223,
				~Ô	Section 8.1).
Туре	0x31			A1 ×	Call Setup Requirement
Length	1			2	1 1
Value	$\rightarrow$	enum8	call_setup_requirement	AI.	Call setup requirements:
				E	• $0x00$ – No other calls
			, , , , , , , , , , , , , , , , , , ,		• 0x01 – Hold active calls
		1	0, 340		• 0x02 – Disconnect active calls
Туре	0x32		10. Tu	1	Redial
Length	3		2000	2	redia
Value	$\xrightarrow{\mathcal{I}}$	boolean	redial_necessary	1	Indicates whether redial is necessary:
Value	,	boolean	rediar_necessary	1	• 0x00 – Redial is not necessary
					• 0x01 – Redial is necessary
		enum8	units	1	Time units:
		Cituilio	units	1	• $0x00 - Minutes$
					• 0x00 – Williams • 0x01 – Seconds
		uint8	:4	1	• 0x02 – Tenths of seconds
		uiiito	interval	1	Time interval. This value must be greater
					than zero if redial_necessary is set to
					0x01 (see ETSI TS 102 223,
_	0.22			1	Section 8.8).
Туре	0x33			1	Subaddress
Length	Var	•	1 4	2	N. I. C. C. C. I. C. II.
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• subaddress
		opaque	subaddress	Var	Subaddress in BCD format (two digits
					encoded in one byte). Maximum size of
					the subaddress is 20 bytes (see ETSI TS
					102 223, Section 8.3).

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x34			1	Capability Configuration
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					<ul><li>capability_config_data</li></ul>
		opaque	capability_config_data	Var	Capability configuration data (see ETSI
					TS 102 223, Section 8.4).
Туре	0x35			1	DTMF
Length	Var			2	<b>(a)</b>
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• dtmf_data
		opaque	dtmf_data	Var	DTMF data in BCD format (two digits
					encoded in one byte) (see ETSI TS
					102 223, Section 8.44).
Туре	0x36			1	Specific Language Notification
Length	1			2	
Value	$\rightarrow$	boolean	spec_lang_notify	1 <	Whether there is a specific language
				\$Q	notification:
				200	• 0x00 – No
				5. 601.	• $0x01 - Yes$
Туре	0x37		00.	e <sup>3</sup> 1	Language
Length	2		language	2	
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a
			16 1ha.		pair of alphanumeric characters (defined
			30,00		in ISO 639-2). Each alphanumeric
			DE.		character is coded on one byte using the
					SMS default 7-bit coded alphabet, as
					defined in ETSI TS 102 223, Section
					8.45, with bit 8 set to 0.
Туре	0x38			1	Launch Mode
Length	1			2	
Value	$\rightarrow$	enum8	launch_mode	1	Launch mode:
					• 0x00 – Launch if not already launched
					• 0x01 – Use the existing browser
	0.22				• 0x02 – Close the existing browser
Туре	0x39			1	URL
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
			1 1 .		• url_data
		opaque	url_data	Var	URL (see ETSI TS 102 223,
	0.2:				Section 8.48).
Туре	0x3A			1	Browser ID
Length	1			2	D
Value	$\rightarrow$	uint8	browser_id	1	Browser ID (see ETSI TS 102 223,
					Section 8.47).

Field	Field	Parameter	Size	Description
value	type		(byte)	
0x3B			1	Bearer List
Var			2	
$\rightarrow$	uint16	length	2	Number of sets of the following
				elements:
				• bearer_list
	enum8	bearer_list	Var	Bearer list:
				• 0x00 – SMS
				• 0x01 – CSD
				• 0x02 – USSD bearer code
				• 0x03 – GPRS
				• 0x04 – Bearer default
0x3C			1 _	Provisioning Files
Var			2	
$\rightarrow$	uint32	num_of_prov_files	4	Number of sets of the following
		, _		elements:
		40	3.	• length
				• path
	uint8	length	1 .	Number of sets of the following
			00	elements:
			3	• path
	opaque	path	Var	Path to the provisioning file (see ETSI
	1 1	26.	21.0	TS 102 223, Section 8.50).
0x3D		1 2	1	USSD String
$\rightarrow$	enum8	orig des from sim		Original data coding scheme from the
		2-17-17-17-1		SIM:
		V. 601.		• 0x00 – 7-bit GSM
		0		• 0x01 – 8-bit GSM
				• 0x02 – UCS2
	enum8	dcs	1	Data coding scheme:
				• 0x00 – 7-bit GSM
				• 0x01 – 8-bit GSM
				• 0x02 – UCS2
	uint8	length	1	Number of sets of the following
				elements:
				• text
	opaque	text	Var	Text of USSD string (see 3GPP TS
				31.111, Section 8.17).
0x3E			1	Default Text
Var			2	
	enum8	des	1	Data coding scheme:
$\rightarrow$	CHUIIIO		_	_
$\rightarrow$	Citatilo			$\bullet 0x00 - 7$ -bit GSM
$\rightarrow$	Chumo			• 0x00 – 7-bit GSM • 0x01 – 8-bit GSM
$\rightarrow$	Chumo			• 0x01 – 8-bit GSM
$\rightarrow$		length of string	1	• 0x01 – 8-bit GSM • 0x02 – UCS2
$\rightarrow$	uint8	length_of_string	1	• 0x01 – 8-bit GSM
	0x3B Var  →  0x3C Var  →  0x3D Var  →	valuetype $0x3B$ Varuint16enum8 $0x3C$ Varuint32uint8opaque $0x3D$ Var $\rightarrow$ enum8enum8	value         type           0x3B         Var           →         uint16         length           enum8         bearer_list           0x3C         Var           →         uint32         num_of_prov_files           uint8         length           opaque         path           0x3D         Var           →         enum8         orig_dcs_from_sim           enum8         dcs           uint8         length           opaque         text	value       type       (byte)         0x3B       1         Var       2 $\rightarrow$ uint16       length         enum8       bearer_list       Var         0x3C       1         Var       2 $\rightarrow$ uint32       num_of_prov_files         uint8       length       1         opaque       path       Var         0x3D       1         Var       2 $\rightarrow$ enum8       orig_des_from_sim       1         enum8       dcs       1         uint8       length       1         uint8       length       1         opaque       text       Var

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x3F			1	Immediate Response Request
Length	1			2	
Value	$\rightarrow$	boolean	immediate_resp	1	Indicates whether an immediate response
			-		is required:
					$\bullet 0x00 - No$
					• 0x01 – Yes
Туре	0x40			1	User Confirmation Alpha
Length	Var			2	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
					• $0x00 - 7$ -bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
			5 = = 5	3.	elements:
					• text
		opaque	text	Var	Text string data in the specified data
		11		0	coding scheme.
Туре	0x41		A 170	^1 ·	Setup Call Display Alpha
Length	Var			2	Secup cuit 2 ispiny i ispin
Value	$\rightarrow$	enum8	des	17	Data coding scheme:
, and	,	Chamo	des		• 0x00 – 7-bit GSM
			~ ~ © ° °		• $0x01 - 8$ -bit GSM
		1	, O, 250,		$\bullet 0x02 - UCS2$
		uint8	length_of_string	1	Number of sets of the following
		01110	TORON	_	elements:
			0.0		• text
		opaque	text	Var	Text string data in the specified data
		opaque	tent	, ча	coding scheme.
Туре	0x42			1	User Confirmation Icon
Length	Var			2	
Value	$\xrightarrow{var}$	enum8	qualifier	1	Icon qualifier:
Value	,	Citatilo	quanner	1	• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
		uiiito	neight	1	Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
		uiiito	wiuui	1	Represents the number of raster image
					points.
		enum8	100	1	-
		enumo	ics	1	Image coding scheme:
					• $0x00 - Unknown$
					• 0x01 – Basic
					• 0x02 – Color

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint8	rec_num	1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
					elements:
					• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x43			1	Setup Call Display Icon
Length	Var			2	
Value	$\rightarrow$	enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1	Icon height (from the EF-IMG file).
			8	900	Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
		unito	Widii		Represents the number of raster image
				g.	points.
		enum8	ics	1.0	Image coding scheme:
		Citatilo	103	200	• 0x00 – Unknown
				20	• 0x01 – Basic
				10	• $0x01 - Basic$
		uint8	rec_num	- 1	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
		dilitio	data_size	_	elements:
			76. The		• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x44	opaque	data	1	Gateway Proxy
Length	Var			2	Gateway 1 Toxy
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
value	7	Cituino	ues	1	• 0x00 – 7-bit GSM
					• $0x00 = 7$ -bit GSM
					$\bullet 0x01 - 8-011 \text{ GSW}$ $\bullet 0x02 - \text{UCS2}$
		uint8	langth of string	1	Number of sets of the following
		uiiito	length_of_string	1	elements:
			4 4	<b>X</b> 7	• text
		opaque	text	Var	Text string data in the specified data
_	0.45			1	coding scheme.
Туре	0x45			1	Alpha
Length	Var		1	2	D
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x46			1	Notification Required
Length	1			2	
Value	$\rightarrow$	boolean	notification_required	1	Indicates whether the notification for a
			_		setup event list is required:
					• 0 – Notification is not required
					• 1 – Notification is required
Туре	0x47			1	Play Tone Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_play_tone
		opaque	pc_play_tone	Var	Play Tone proactive command, encoded
		· F 1	PPJ	30	as in ETSI TS 102 223, Section 6.6.5.
Туре	0x48			1	Setup Call Event
Length	Var			2	Setup Cun Event
Value	$\rightarrow$	uint32	uim_ref_id	400	Proactive command reference ID.
value	,	uint16	cmd_len	2	Number of sets of the following
		differ	ema_iem	5.0	elements:
			6.1	7.0	• pc_setup_call
		opaque	pc_setup_call	Var	Setup Call proactive command, encoded
		opaque	pe_setup_ean	Vai	as in ETSI TS 102 223, Section 6.6.12.
Туре	0x49	-		1	Send DTMF Event
Length	Var		16 11	2	Send D I WI Event
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
value	$\rightarrow$	uint32 uint16	cmd_len	2	Number of sets of the following
		umito	cma_ien	2	elements:
		0000110	no sand dtmf	Var	• pc_send_dtmf
		opaque	pc_send_dtmf	var	Send DTMF proactive command,
					encoded as in ETSI TS 102 223, Section 6.6.24.
_	0-44			1	
Туре	0x4A			1	Launch Browser Event
Length	Var	:		2	Donation and C ID
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
			1 1 1	***	• pc_launch_browser
		opaque	pc_launch_browser	Var	Launch Browser proactive command,
					encoded as in ETSI TS 102 223,
					Section 6.6.26.
Туре	0x4B			1	Send SMS Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_send_sms
		opaque	pc_send_sms	Var	Send SMS proactive command, encoded
					as in ETSI TS 102 223, Section 6.6.9.
Туре	0x4C			1	Send SS Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_send_ss
		opaque	pc_send_ss	Var	Send SS proactive command, encoded as
					in ETSI TS 102 223, Section 6.6.10.
Туре	0x4D			1	Send USSD Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
				_	elements:
				<0	• pc_send_ussd
		opaque	pc_send_ussd	Var	Send USSD proactive command,
				5. 601	encoded as in ETSI TS 102 223,
			00.	E. J.	Section 6.6.11.
Туре	0x4E		V 25	1	Provide Local Information Event
Length	Var		5/10	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
			825		elements:
					• pc_provide_local_info
		opaque	pc_provide_local_info	Var	Provide Local Information proactive
					command, encoded as in ETSI TS
					102 223, Section 6.6.15.
Туре	0x4F			1	Setup Event List Raw Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_setup_event_list
		opaque	pc_setup_event_list	Var	Setup Event List proactive command,
					encoded as in ETSI TS 102 223,
	0.70				Section 6.6.16.
Туре	0x50			1	Slot
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• 0x02 – Slot 2
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.
Туре	0x51			1	Open Channel Event
Length	Var			2	•
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_open_channel
		opaque	pc_open_channel	Var	Open Channel proactive command,
					encoded as in ETSI TS 102 223,
				3.	Section 6.6.27.
Туре	0x52			1	Close Channel Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	400	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
				5. 00	elements:
			26.	34.	• pc_close_channel
		opaque	pc_close_channel	Var	Close Channel proactive command,
					encoded as in ETSI TS 102 223,
		1	C.O. Walley		Section 6.6.28.
Туре	0x53		01001	1	Send Data Event
Length	Var		200	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
			_		elements:
					• pc_send_data
		opaque	pc_send_data	Var	Send Data proactive command, encoded
		11	1		as in ETSI TS 102 223, Section 6.6.30.
Туре	0x54			1	Receive Data Event
Length	Var			2	
Value		uint32	uim_ref_id	4	Proactive command reference ID.
	•	uint32	cmd_len	2	Number of sets of the following
		<b>631111</b> 0		_	elements:
					• pc_receive_data
		opaque	pc_receive_data	Var	Receive Data proactive command,
		opuque	po_recerve_aaaa	,	encoded as in ETSI TS 102 223,
					Section 6.6.29.
Туре	0x55			1	On Demand Link Establish
Length	1			2	On Deliming Link Establish
Value	$\overset{1}{ ightarrow}$	boolean	on_demand_link_est	1	Indicates whether the link is required:
value	7	Jooican	on_demand_mik_est	1	• 0x00 – Link is not required
					• 0x00 – Link is not required
					- OAOT — LIIIK IS TEQUITED

Field	Field value	Field type	Parameter	Size (byte)	Description
Туре	0x56			1	CSD Bearer Description
Length	3			2	*
Value	$\rightarrow$	uint8	speed	1	Data rate; same as the speed subparameter defined in 3GPP TS 27.007, Section 6.7.
		enum8	name		CSD bearer name:  • 0x00 – Data Circuit Asynchronous; UDI or 3.1 kHz modem  • 0x01 – Data Circuit Synchronous; UDI or 3.1 kHz modem  • 0x02 – PAD Access Asynchronous UDI  • 0x03 – Packet Access Synchronous UDI  • 0x04 – Data Circuit Asynchronous RDI  • 0x05 – Data Circuit Synchronous RDI  • 0x06 – PAD Access Asynchronous RDI  • 0x07 – Packet Access Synchronous RDI
		enum8	connection_element	21	CSD bearer connection element:  • 0x00 – Transparent  • 0x01 – Nontransparent  • 0x02 – Both, transparent preferred  • 0x03 – Both, nontransparent preferred
Type	0x57	-	0, 10,	1	GPRS Bearer Description
Type	6		76, 1/10	2	OFKS Bearer Description
Length		nint0	procedones als	1	Dragadanas alassy sama as tha
Value	$\rightarrow$	uint8	precedence_cls	1	Precedence class; same as the precedence subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	delay_cls	1	Delay class; same as the delay subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	reliability_cls	1	Reliability class; same as the reliability subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	peak_throughput	1	Peak throughput class; same as the peak subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		uint8	mean_throughput	1	Mean throughput class; same as the mean subparameter defined in 3GPP TS 31.111, Section 8.52.2.
		enum8	pkt_data_protocol	1	Packet Data Protocol:  • 0x02 – IP  All other values are reserved.
Туре	0x58			1	EUTRAN External Parameter Bearer Description
Length	17			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	traffic_class	1	Indicates the type of application for
					which the UMTS bearer service is
					optimized:
					• 0x00 – Conversational
					• 0x01 – Streaming
					• 0x02 – Interactive
					• 0x03 – Background
					• 0x04 – Subscribed value
					All other values are reserved.
		uint16	max_bitrate_ul	2	Maximum bitrate UL; same as the
					maximum bitrate UL subparameter
					defined in 3GPP TS 31.111,
					Section 8.52.3.
		uint16	max_bitrate_dl	2	Maximum bitrate DL; same as the
					maximum bitrate DL subparameter
				3	defined in 3GPP TS 31.111,
					Section 8.52.3.
		uint16	guaranteed_bitrate_ul	2	Guaranteed bitrate UL; same as the
				00	guaranteed bitrate UL subparameter
				3	defined in 3GPP TS 31.111,
				5.00	Section 8.52.3.
		uint16	guaranteed_bitrate_dl	2	Guaranteed bitrate DL; same as the
			13		guaranteed bitrate DL subparameter
			6		defined in 3GPP TS 31.111,
			E.O. Walley		Section 8.52.3.
		enum8	delivery_order	1	Numeric parameter that indicates if the
			200		UMTS bearer will provide in-sequence
			O.		SDU delivery:
					• 0x00 – No
					• 0x01 – Yes
					• 0x02 – Subscribed value
					All other values are reserved.
		uint8	max_sdu_size	1	Maximum SDU size; same as the
					Maximum SDU size subparameter
					defined in 3GPP TS 31.111,
					Section 8.52.3.
		uint8	max_sdu_err_ratio	1	SDU error ratio; same as the SDU error
					ratio subparameter defined in 3GPP TS
					31.111, Section 8.52.3.
		uint8	residual_bit_err_ratio	1	Residual bit error ratio; same as the
					residual bit error ratio subparameter
					defined in 3GPP TS 31.111,
					Section 8.52.3.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum8	delivery_of_err_sdu	1	Numeric parameter that indicates if SDUs detected as erroneous will be
					delivered: • 0x00 – No
					• 0x01 – Yes
					• 0x02 – No detect
					• 0x03 – Subscribed value
					All other values are reserved.
		uint8	transfer_delay	1	Transfer delay; same as the transfer
					delay subparameter defined in 3GPP TS
					31.111, Section 8.52.3.
		uint8	traffic_handling_pri	1	Traffic handling priority; same as the
					traffic handling priority subparameter
					defined in 3GPP TS 31.111,
					Section 8.52.3.
		enum8	pdp_type	1	PDP type:
					• 0x02 – IP
					All other values are reserved.
Туре	0x59			1,0	EUTRAN External Mapped UTRAN PS
				3	Bearer Description
Length	10			2	
Value	$\rightarrow$	uint8	qci	T.F.	QCI (see 3GPP TS 31.111,
			1 2		Section 8.52.5).
		uint8	max_bitrate_ul	1	Maximum bitrate UL (see 3GPP TS
			5.0 Kalls		31.111, Section 8.52.5).
		uint8	max_bitrate_dl	1	Maximum bitrate DL (see 3GPP TS
			720		31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_ul	1	Guaranteed bitrate UL (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_dl	1	Guaranteed bitrate DL (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	max_bitrate_ul_ext	1	Maximum bitrate UL Ext (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	max_bitrate_dl_ext	1	Maximum bitrate DL Ext (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_ul_ext	1	Guaranteed bitrate UL Ext (see 3GPP TS
					31.111, Section 8.52.5).
		uint8	guaranteed_bitrate_dl_ext	1	Guaranteed bitrate DL Ext (see 3GPP TS
			1		31.111, Section 8.52.5).
		enum8	pdp_type	1	PDP type:
					• 0x02 – IP
	0.7.				All other values are reserved.
Туре	0x5A			1	Buffer Size
Length	2		1 22	2	D 00
Value	$\rightarrow$	uint16	buffer_size	2	Buffer size.
Туре	0x5B			1	Network Access Name
Length	Var			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint8	length_of_string	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Network access name encoded in ASCII
					character (see 3GPP TS 31.111,
					Section 8.61).
Туре	0x5C			1	Other Address
Length	Var			2	
Value	$\rightarrow$	enum8	address_type	1	Address type:
					• 0x01 – No address given
					• 0x02 – Dynamic
				- 0	• 0x03 – IPv4
					• 0x04 – IPv6
					All other values are reserved.
		uint8	length	1	Number of sets of the following
					elements:
					address_data
		opaque	address_data	Var	Address (see ETSI TS 102 223,
				0	Section 8.58).
Туре	0x5D			11	User Login
Length	Var		2	2	
Value	$\rightarrow$	enum8	dcs	2×1	Data coding scheme:
			27 005		• 0x00 – 7-bit GSM
			5 19		• 0x01 – 8-bit GSM
			6, 12		• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
			950		elements:
			_		• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x5E			1	User Password
Length	Var			2	
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Text string data in the specified data
	0.75				coding scheme.
Туре	0x5F			1	Transport Level
Length	3			2	m
Value	$\rightarrow$	enum8	transport_protocol	1	Transport protocol:
					• 0x00 – Not present
					• 0x01 – UDP
					• 0x02 – TCP
					All other values are reserved.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint16	port_number	2	Port number.
Туре	0x60			1	Data Destination Address
Length	Var			2	
Value	$\rightarrow$	enum8	address_type	1	Address type:
					• 0x01 – No address given
					• 0x02 – Dynamic
					• 0x03 – IPv4
					• 0x04 – IPv6
					All other values are reserved.
		uint8	length	1	Number of sets of the following
					elements:
					• address_data
		opaque	address_data	Var	Address (see ETSI TS 102 223,
					Section 8.58).
Туре	0x61			1	Channel Data Length
Length	1			2	
Value	$\rightarrow$	uint8	ch_data_length	1	Number of bytes that are available in the
				_<	channel buffer, or the number of bytes
				0	that are requested in a Received Data
				3	command (see ETSI TS 102 223,
				5. 600	Section 8.54).
Туре	0x62		00.	e 1	Send Data Immediately
Length	1		V 245	2	
Value	$\rightarrow$	boolean	send_data_immediately	1	Indicates whether to send the data
			6 hair		immediately:
			20, 20,		• $0x00 - No$ , store the data in the Tx
			send_data_immediately		buffer
					• $0x01 - Yes$ , send the data immediately
Туре	0x63			1	Channel Data
Length	Var			2	
Value	$\rightarrow$	uint16	data_len	2	Number of sets of the following
					elements:
					• channel_data_string
		opaque	channel_data_string	Var	Channel data string is considered by the
					terminal as binary coded on 8 bits (see
					ETSI TS 102 223, Section 8.53).
Туре	0x64			1	Channel ID
Length	1			2	
Value	$\rightarrow$	uint8	ch_id	1	Channel ID (see ETSI TS 102 223,
					Section 8.7).
Туре	0x65			1	Items with DCS
Length	Var			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	-
Value	$\rightarrow$	uint8	number_of_items	1	Number of sets of the following
					elements:
					• item_id
					• dcs
					• item_text_length
					• item_text
		uint8	item_id	1	ID of the item. Each item has a unique
					identifier from 0x01 to 0xFF.
		enum8	dcs	1	Data coding scheme:
					• $0x00 - 7$ -bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	item_text_length	1	Number of sets of the following
					elements:
					• item_text
		opaque	item_text	Var	Item text (see 3GPP TS 24.008,
					clause 4.4.2.3).
Туре	0x66			1 /	Activate Event
Length	Var			2,0	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	pc_activate_len	2	Number of sets of the following
			66.	E. 1.	elements:
			1 25	-	• pc_activate
		opaque	pc_activate	Var	Activate proactive command encoded as
			6, 4, 21		in ETSI TS 102 223, Section 6.6.40.
Туре	0x67		07,07	1	Activate Descriptor Target
Length	1		800	2	
Value	$\rightarrow$	enum8	target	1	Activate descriptor target (see ETSI TS
					102 223, Section 8.89):
					• 0x01 – UICC-CLF interface according
					to ETSI TS 102 613
					All other values are reserved for future
_	0.60			1	use.
Туре	0x68			1	Response Type
Length	4			2	D
Value	$\rightarrow$	enum	rsp_type	4	Response type:
					• 0x00 – Terminal response
					• 0x01 – Event confirmation
					All other values are reserved.
					Indicates the action that the control point
					is expected to perform after receiving
					and processing the indication. If it is
					missing, the behavior described in
					Appendix C applies.
Туре	0x69			1	Bearer Independent Protocol Status
Length	5			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint8	ch_id	1	Channel ID (see ETSI TS 102 223, Section 8.7).
		enum	status	4	Bearer Independent Protocol Status:  • CAT_BIP_STATUS_IN_PROGRESS  (0x00) – In progress  • CAT_BIP_STATUS_END (0x01) – End
					All other values are reserved for future use and are to be ignored by the control point.
Туре	0x6A			1	Refresh Alpha
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	pc_refresh_alpha_len	2	Number of sets of the following
					elements:
					• pc_refresh_alpha
		opaque	pc_refresh_alpha	Var	Refresh proactive command encoded as
					in ETSI TS 102 223, Section 6.6.13.
				200	This is sent only if the refresh command
				N.	contains alpha to be displayed.
Туре	0x6B		.2	5 ' TO'.	Contactless State Changed Event
Length	Var		000	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	pc_contactless_state_ changed_len	2	Number of sets of the following elements:
			2, 201,	X 7	• pc_contactless_state_ changed
		opaque	pc_contactless_state_ changed	Var	Contactless State Changed proactive command encoded as in ETSI TS newline102 223, Section 6.6.41.
Туре	0x6C			1	Contactless Functionality State
Length	4			2	
Value	$\leftarrow$	enum	contactless_functionality_ state	4	Contactless functionality state:  • CAT_CONTACTLESS_ FUNCTIONALITY_DISABLED (0x00)  - Contactless functionality in the UICC is disabled  • CAT_CONTACTLESS_ FUNCTIONALITY_ENABLED (0x01)  - Contactless functionality in the UICC is enabled
					All other values are reserved.

#### subsection\*Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_CAT_INVALID_EVENT	Invalid event was requested to be sent to the card
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	(6)

# 3.8.3 Description of QMI\_CAT\_GET\_EVENT\_REPORT REQ/RESP

This message is called when the applications client knows that a modem event is pending. The client calls this message to tell the QMI\_CAT to get the proactive command from the modem and return that data in the response.

If this command is being used to get indications from the modem, the QMI\_CAT\_EVENT\_REPORT\_IND command cannot be used.

When the QMI\_CAT sends the decoded QMI\_CAT\_GET\_EVENT\_REPORT\_RESP to control points, the TLV (0x1B) is mandatory in this message. See Appendix B for detailed information on mandatory TLVs and optional TLVs for each command in the decoded format.

If the optional TLV for the slot is missing, the control point assumes that the proactive command was received on slot 1.

#### QMI CAT SEND DECODED TR 3.9

Sends the Terminal Response (TR) in decoded format to the proactive commands coming from the card.

#### **CAT message ID**

0x0024

#### **Version introduced**

Major - 2, Minor - 0

# Request - QMI\_CAT\_SEND\_DECODED\_TR\_REQ

Message type

#### **Mandatory TLVs**

Request			
Sender		60.	
Control point		and a	
Mandatory TLVs		23.23 com to	
	Name	Version introduced	Version last modified
Terminal Response		2.0	2.27

Field	Field	Field	Parameter	Size	Description
	value	type	750	(byte)	
Туре	0x01			1	Terminal Response
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID. This is
					the same reference ID as indicated in the
					event report indication for the relevant
					proactive command.
		uint8	command_number	1	Command number for which the
					terminal response is sent.
		enum8	response_cmd	1	Type of proactive command for which
					the terminal response is sent:
					• CAT_RESPONSE_CMD_DISPLAY_
					TEXT (0x01) – Display Text
					<ul><li>CAT_RESPONSE_CMD_GET_</li></ul>
					INKEY (0x02) – Get Inkey
					<ul><li>CAT_RESPONSE_CMD_GET_</li></ul>
					INPUT (0x03) – Get Input
					• CAT_RESPONSE_CMD_LAUNCH_
					BROWSER (0x04) – Launch Browser
					• CAT_RESPONSE_CMD_PLAY_
					TONE $(0x05)$ – Play Tone

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			response_cmd (cont.)		• CAT_RESPONSE_CMD_SELECT_
					ITEM_REQ (0x06) – Select Item
					Request
					• CAT_RESPONSE_CMD_SETUP_
					MENU (0x07) – Setup Menu
					• CAT_RESPONSE_CMD_SETUP_
					IDLE_TEXT (0x08) – Setup Idle Text
					• CAT_RESPONSE_CMD_PROVIDE_
					LOCAL_LANG_INFO (0x09) – Provide
					Local Information – Language
					• CAT_RESPONSE_CMD_SETUP_
					EVENT_USER_ACTIVITY (0x0A) -
					Setup Event – User Activity
				800	• CAT RESPONSE CMD SETUP
					EVENT_IDLE_SCREEN_NOTIFY
			4	30	(0x0B) – Setup Event – Idle Screen
					Notify
				,	• CAT_RESPONSE_CMD_SETUP_
				مُ مُ	EVENT_LANGUAGE_SEL_NOTIFY
				3	(0x0C) – Setup Event – Language Select
				in the	Notify
			6.	7.00	• CAT_RESPONSE_CMD_
		1	2016-05-1700 ask	27	LANGUAGE_NOTIFICATION (0x0D)
			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		<ul><li>Language Notification</li></ul>
		1	0, 340		• CAT_RESPONSE_CMD_ACTIVATE
			10, 110		(0x0E) – Activate
			2000		• CAT RESPONSE CMD SETUP
			85		EVENT_HCI_CONNECTIVITY (0x0F)
					- Setup Event - HCI Connectivity
					• CAT_RESPONSE_CMD_SETUP_
					EVENT_BROWSER_TERMINATION
					(0x10) – Setup Event – Browser
					Termination
					• CAT_RESPONSE_CMD_SEND_
					SMS (0x11) – Send SMS
					• CAT_RESPONSE_CMD_SETUP_
					CALL (0x12) – Setup Call
					• CAT_RESPONSE_CMD_SEND_
					DTMF (0x13) – Send DTMF
					• CAT_RESPONSE_CMD_SEND_SS
					(0x14) – Send SS
					• CAT_RESPONSE_CMD_SEND_
					USSD (0x15) – Send USSD
					• CAT_RESPONSE_CMD_
					CONTACTLESS_STATE_CHANGED
					(0x16) – Contactless State Changed
					(0x10) – Contactiess State Changed

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			response_cmd (cont.)		• CAT_RESPONSE_CMD_SETUP_
					EVENT_CONTACTLESS_STATE_
					REQUEST (0x17) – Setup Event –
					Contactless State Request
					All other values are reserved.
		enum8	general_result	1	Result of the proactive command, as
					defined in ETSI TS 102 223,
					Section 8.12.
		uint8	additional_info_length	1	Number of sets of the following
					elements:
					<ul><li>tr_additional_info</li></ul>
		opaque	tr_additional_info	Var	Additional information is only required
				-	for some commands. ETSI TS 102 223,
					Section 8.12, describes the additional
					information. The maximum size is 10.

## **Optional TLVs**

Name	Version introduced	Version last modified
Text String	2.0	2.0
Item Identifier	2.0	2.0
Get Inkey Extra Info	2.0	2.8
Language Info	2.1	2.1
Slot	2.2	2.20
Get Inkey Yes/No Info	2.8	2.8

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Text String
Length	Var			2	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
					• $0x00 - 7$ -bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x11			1	Item Identifier
Length	1			2	
Value	$\rightarrow$	uint8	identifier	1	Identifier of the item chosen:
					• 0x00 – NULL identifier
					• 0x01 to 0xFF – Value of the item
Туре	0x12			1	Get Inkey Extra Info

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Length	Var			2	
Value	$\rightarrow$	enum8	unit	1	Time units:
					• 0x00 – Minutes
					• 0x01 – Seconds
					• 0x02 – Tenths of seconds
					• -1 – Duration is not present
		uint8	interval	1	Time interval. This number must be
					greater than zero.
		enum8	des	1	Data coding scheme:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
				-77	• text
		opaque	text	Var	Text string data in the specified data
_	0.10				coding scheme.
Туре	0x13			1	Language Info
Length	2	1.6		2	D 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a
			2	S. COLL	pair of alphanumeric characters (defined
			000	57	in ISO 639-2). Each alphanumeric
			7 025		character is coded on one byte using the
			05,410		SMS default 7-bit coded alphabet, as
			76, The		defined in ETSI TS 102 223,
T	0x14		2016.05.17.06.25 2016.05.112.11@25	1	Section 8.45, with bit 8 set to 0.
Type			, SE,	2	5101
Length Value	$\frac{1}{\rightarrow}$	enum8	slot	1	Indicates the slot to be used:
value	$\rightarrow$	Ciluino	Siot	1	• $0x01 - Slot 1$
					$\bullet 0x01 - Slot 1$ $\bullet 0x02 - Slot 2$
					• $0x02 - 310t 2$ • $0x03 - S10t 3$
					$\bullet 0x04 - Slot 4$
					$\bullet 0x05 - Slot 5$
					Other values are reserved for future use.
Туре	0x15			1	Get Inkey Yes/No Info
Length	3			2	Get likey Tes/100 lillo
Value	$\stackrel{\mathcal{J}}{\longrightarrow}$	enum8	unit	1	Time units:
Tuide	,	CHAIH	wiiit	1	• 0x00 – Minutes
					• $0x00 - \text{Nimites}$
					• 0x02 – Tenths of seconds
					• -1 – Duration is not present
		uint8	interval	1	Time interval. This number must be
		WIIICO	11101741	1	greater than zero.
					greater than zero.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum8	get_inkey_yes_no	1	Yes/No input for get inkey:
					$\bullet 0x00 - No$
					• 0x01 – Yes
					If a text input is required from the user,
					the Get Inkey Extra Info TLV must be
					used.

# 3.9.2 Response - QMI\_CAT\_SEND\_DECODED\_TR\_RESP

Message t	ype
-----------	-----

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## **Optional TLVs**

	Name	65 M	Version introduced	Version last modified
TR Response		6 150	2.10	2.10

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	TR Response
Length	Var			2	
Value	$\rightarrow$	uint8	sw1	1	Value of SW1 of the response, as defined
					in 3GPP TS 11.11 for ICC and ETSI TS
					102 221 for UICC.
		uint8	sw2	1	Value of SW2 of the response as defined
					in 3GPP TS 11.11 for ICC and ETSI TS
					102 221 for UICC.
		uint8	tr_response_len	1	Number of sets of the following
					elements:
					• tr_response
		opaque	tr_response	Var	TR response data.

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_OPERATION	Invalid terminal response was requested to be sent to the
	card
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long
QMI_ERR_INVALID_ARG	One of the TLVs in the message is invalid
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

### 3.9.3 Description of QMI CAT SEND DECODED TR REQ/RESP

This message sends the terminal response, as required by a received proactive command from the card.

The terminal response is expected within a set time limit, as defined by the target. After this expiry, the module sends a terminal response with the result code, unable to process command, to the card. Any subsequent terminal response issued by the control point after the expiry results in silent discarding of this response.

If the optional TLV for the slot is missing, the terminal response is sent by default on slot 1.

# 3.10 QMI\_CAT\_SEND\_DECODED\_ENVELOPE\_CMD

Sends an envelope command in decoded format to the card.

**CAT message ID** 

0x0025

**Version introduced** 

Major - 2, Minor - 0

### 3.10.1 Request - QMI\_CAT\_SEND\_DECODED\_ENVELOPE\_CMD\_REQ

Message type

Request

Sender

Control point

### **Mandatory TLVs**

Name	Version introduced	Version last modified
Envelope Command	2.0	2.27

Field	Field	Field	Parameter	Size	Description
	value	type	J. 1501.	(byte)	
Туре	0x01			1	Envelope Command
Length	1			2	
Value	$\rightarrow$	enum8	env_cmd_type	1	Decoded envelope command type. See
					Appendix D for information on
					mandatory and optional TLVs for each
					envelope command.
					<ul> <li>CAT_DECODED_ENVELOPE_</li> </ul>
					CMD_TYPE_MENU_SELECTION
					(0x01) – Menu Selection
					<ul> <li>CAT_DECODED_ENVELOPE_</li> </ul>
					CMD_TYPE_EVENT_DL_
					LANGUAGE_SELECTION (0x02) –
					Event DL Language Selection
					<ul> <li>CAT_DECODED_ENVELOPE_</li> </ul>
					CMD_TYPE_EVENT_DL_USER_
					ACTIVITY (0x03) – Event DL User
					Activity
					<ul><li>CAT_DECODED_ENVELOPE_</li></ul>
					CMD_TYPE_EVENT_DL_IDLE_
					SCREEN_AVAIL (0x04) – Event DL
					Idle Screen Available

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			env_cmd_type (cont.)		<ul><li>CAT_DECODED_ENVELOPE_</li></ul>
					CMD_TYPE_SEND_CALL_CONTROL
					(0x05) – Send Call Control
					<ul> <li>CAT_DECODED_ENVELOPE_</li> </ul>
					CMD_TYPE_HCI_CONNECTIVITY
					(0x06) – Event DL HCI Connectivity
					<ul><li>CAT_DECODED_ENVELOPE_</li></ul>
					CMD_TYPE_BROWSER_
					TERMINATION (0x07) – Event DL
					Browser Termination
					<ul><li>CAT_DECODED_ENVELOPE_</li></ul>
					CMD_TYPE_SMS_PP_DATA_ DL
					(0x08) – SMS-PP Data Download
					• CAT_DECODED_ENVELOPE_
					CMD_TYPE_EVENT_DL_MT_ CALL
				3"	(0x09) – Event DL MT Call
					<ul> <li>CAT_DECODED_ENVELOPE_</li> </ul>
				, 	CMD_TYPE_EVENT_DL_MT_
				00	CALL_CONNECTED (0x0A) – Event
				3	DL MT Call Connected
			2	S. Oll	• CAT_DECODED_ENVELOPE_
			6.	e. 4.	CMD_TYPE_EVENT_DL_MO_
			2016-05-1-17060-85	lane.	CALL_CONNECTED (0x0B) – Event
			5 36		DL MO Call Connected
			6. Charles		• CAT_DECODED_ENVELOPE_
			2017		CMD_TYPE_EVENT_DL_CALL_
			120		DISCONNECTED_NEAR_END
			Ů.		(0x0C) – Event DL Call Disconnected
					near end
					• CAT_DECODED_ENVELOPE_
					CMD_TYPE_EVENT_DL_CALL_
					DISCONNECTED_FAR_END (0x0D) -
					Event DL Call Disconnected far end
					• CAT_DECODED_ENVELOPE_
					CMD_TYPE_CONTACTLESS_
					STATE_REQUEST (0x0E) –
					Contactless State Request
					All other values are reserved.

Name	Version introduced	Version last modified
Item Identifier	2.0	2.0
Help Request	2.0	2.0
Language	2.0	2.0
Slot	2.2	2.20

Name	Version introduced	Version last modified
Address	2.5	2.5
Subaddress	2.5	2.5
Capability Configuration Parameter 1	2.5	2.5
Capability Configuration Parameter 2	2.5	2.5
USSD String	2.5	2.5
PDP Context Activation	2.5	2.5
EPS PDN Connect Activation	2.5	2.5
Browser Termination Cause	2.12	2.12
SMS TPDU	2.15	2.15
Is CDMA SMS	2.16	2.16
Radio Access Technology	2.18	2.25
Call Type	2.18	2.25
Transaction ID	2.18	2.18
RP Address	2.18	2.18
TP Address	2.18	2.18
Cause	2.18	2.18
IMS Request - URI	2.24	2.24
Contactless State Request	2.27	2.27

Field	Field	Field	Parameter	Size	Description
	value	type	.2	(byte)	
Туре	0x10		00,	₹ <sup>1</sup> 1	Item Identifier
Length	1		2 000	2	
Value	$\rightarrow$	uint8	identifier	1	Identifier of the item chosen.
Туре	0x11		16, 11,0	1	Help Request
Length	1		30, 40.	2	
Value	$\rightarrow$	boolean	help_request	1	Whether help is requested:
					• 0x00 – No help is requested
					• 0x01 – Help is requested
Туре	0x12			1	Language
Length	2			2	
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a
					pair of alphanumeric characters (defined
					in ISO 639-2). Each alphanumeric
					character is coded on one byte using the
					SMS default 7-bit coded alphabet, as
					defined in ETSI TS 102 223,
					Section 8.45, with bit 8 set to 0.
Туре	0x13			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• $0x02 - Slot 2$
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• $0x05 - Slot 5$
					Other values are reserved for future use.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	-
Туре	0x14			1	Address
Length	Var			2	
Value	$\rightarrow$	enum8	ton	1	TON of the address:
					• 0x00 – Unknown
					• 0x01 – International number
					• 0x02 – National number
					• 0x03 – Network-specific number
		enum8	npi	1	NPI of the address:
					• 0x00 – Unknown
					• 0x01 – ISDN telephony
					• 0x02 – Data NPI
					• 0x03 – Telex NPI
					• 0x04 – Private NPI
					• 0x0F – Extension is reserved
		uint8	length	1	Number of sets of the following
					elements:
					• address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
				0	maximum length of the address is 200
				3	bytes (see ETSI TS 102 223,
			a a	9. '01.	Section 8.1).
Туре	0x15		00.	I.F.	Subaddress
Length	Var		V 200	2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
			16. Wai		elements:
			20,00		• subaddress
		opaque	subaddress	Var	Subaddress in BCD format (two digits
					encoded in one byte). Maximum size of
					the subaddress is 20 bytes (see ETSI TS
_	0.16			1	102 223, Section 8.3).
Туре	0x16			1	Capability Configuration Parameter 1
Length	Var		1	2	Number of cate of the fellowing
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements: • capability_config_data
		onegue	agnobility config data	Vor	capability_config_data     Capability configuration data (see ETSI
		opaque	capability_config_data	Var	TS 102 223, Section 8.4).
Type	0x17			1	Capability Configuration Parameter 2
Type	Var			2	Capability Configuration Farameter 2
Length Value	$\rightarrow$	uint8	length	1	Number of sets of the following
value	$\rightarrow$	uiiito	longui	1	elements:
					capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see ETSI
		opaque	capaointy_comig_uata	v ai	TS 102 223, Section 8.4).
Туре	0x18			1	USSD String
Length	Var			2	Coop atting
Length	val				

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
					• $0x00 - 7$ -bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x19			1	PDP Context Activation
Length	Var			2	
Value	$\rightarrow$	uint8	pdp_context_act_data_len	1	Number of sets of the following
					elements:
					• pdp_context_act_data
		opaque	pdp_context_act_data	Var	PDP context activation data. Coded as
					the Activate PDP Context Request
					message, specified in 3GPP TS 24.008.
Туре	0x1A			1 <	EPS PDN Connect Activation
Length	Var			200	A
Value	$\rightarrow$	uint8	eps_pdn_connect_act_	21 1	Number of sets of the following
			data_len	5.00	elements:
			06.	E. 4.	<ul><li>eps_pdn_connect_act_data</li></ul>
		opaque	eps_pdn_connect_act_data	Var	EPS PDN connect activation data; coded
			5 10		as the PDN Connectivity Request
			6 hall		message, specified in 3GPP TS 24.301.
Туре	0x1B		20,201	1	Browser Termination Cause
Length	4		800	2	
Value	$\rightarrow$	enum	browser_term_cause	4	Browser termination cause:
					• 0x00000000 – CAT_BROWSER_
					TERM_CAUSE_TYPE_USER_
					TERMINATED – User terminated the
					browser
					• 0x00000001 – CAT_BROWSER_
					TERM_CAUSE_TYPE_ERROR -
					Browser terminated due to error
Туре	0x1C			1	SMS TPDU
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• sms_tpdu
		opaque	sms_tpdu	Var	SMS TPDU data, as specified in 3GPP
					TS 24.008.
Туре	0x1D			1	Is CDMA SMS
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	boolean	is_cdma_sms	1	CDMA SMS format indication:
					• 0x00 – FALSE (3GPP format)
					• 0x01 – TRUE (3GPP2 format)
					This defaults to FALSE if the TLV is not
					present.
Туре	0x1E			1	Radio Access Technology
Length	4			2	
Value	$\rightarrow$	enum	rat	4	Access technology type:
					• 0x00000000 - CAT_ACCESS_TECH_
					NONE – RAT is unknown
					• 0x00000001 – CAT_ACCESS_TECH_
				- 0	GSM – GSM is used
					• 0x00000002 – CAT_ACCESS_TECH_
					UTRAN – UTRAN is used
					• 0x00000003 – CAT_ACCESS_TECH_
				3	CDMA – CDMA is used
					• 0x00000004 – CAT_ACCESS_TECH_
					LTE – LTE is used
				0	• 0x00000005 – CAT_ACCESS_TECH_
			1	3	WLAN – WLAN is used
Туре	0x1F		2	) [b()	Call Type
Length	4		00.	2	
Value	$\rightarrow$	enum	call_type	4	Call Type:
			05 rd		• 0x00000000 - CAT_VOICE - Voice
			16 Mai		• 0x00000001 – CAT_SS – SS
			2016-05 Hantille a		• 0x00000002 – CAT_USSD – USSD
			750		• 0x00000003 – CAT_SMS – SMS
					• 0x00000004 – CAT_IMS – IMS
Туре	0x20			1	Transaction ID
Length	Var			2	
Value	$\rightarrow$	uint8	transaction_id_len	1	Number of sets of the following
					elements:
					• transaction_id
		opaque	transaction_id	Var	Call transaction ID (see ETSI TS
					102 223, Section 8.28).
Туре	0x21			1	RP Address
Length	Var			2	
Value	$\rightarrow$	enum8	ton	1	TON of the address:
					• 0x00 – Unknown
					• 0x01 – International number
					• 0x02 – National number
					• 0x03 – Network-specific number

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum8	npi	1	NPI of the address:
					• 0x00 – Unknown
					• 0x01 – ISDN telephony
					• 0x02 – Data NPI
					• 0x03 – Telex NPI
					• 0x04 – Private NPI
					• 0x0F – Extension is reserved
		uint8	length	1	Number of sets of the following
					elements:
					• address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
					maximum length of the address is 200
					bytes (see ETSI TS 102 223,
					Section 8.1).
Туре	0x22			1	TP Address
Length	Var		4	2	
Value	$\rightarrow$	enum8	ton	1	TON of the address:
				/	• 0x00 – Unknown
				00	• 0x01 – International number
				3	• 0x02 – National number
				5.00	• 0x03 – Network-specific number
		enum8	npi	J.L	NPI of the address:
			1 3	~	• 0x00 – Unknown
			(°°°)		• 0x01 – ISDN telephony
			CO, Salus		• 0x02 – Data NPI
			200 111		• 0x03 – Telex NPI
			2, 6011		• 0x04 – Private NPI
			npi		• 0x0F – Extension is reserved
		uint8	length	1	Number of sets of the following
					elements:
					address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
		• •			maximum length of the address is 200
					bytes (see ETSI TS 102 223,
					Section 8.1).
Туре	0x23			1	Cause
Length	Var			2	
Value	$\rightarrow$	uint8	cause_len	1	Number of sets of the following
					elements:
					• cause
		opaque	cause	Var	Cause (see ETSI TS 102 223,
		• •			Section 8.26).
Туре	0x24			1	IMS Request - URI
Length	Var			2	
Value	$\rightarrow$	uint8	ims_request_uri_len	1	Number of sets of the following
					elements:
					• ims_request_uri
	l		<u> </u>		

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		char	ims_request_uri	Var	IMS request – URI.
Туре	0x25			1	Contactless State Request
Length	4			2	
Value	$\rightarrow$	enum	contactless_state_request	4	Contactless state request (see ETSI TS 102 223, Section 8.91):  • CAT_CONTACTLESS_DISABLE (0x00000000) – Disable contactless  • CAT_CONTACTLESS_ENABLE (0x000000001) – Enable contactless  • CAT_CONTACTLESS_GET_STATE (0x000000002) – Get contactless state  All other values are reserved.

# 3.10.2 Response - QMI\_CAT\_SEND\_DECODED\_ENVELOPE\_CMD\_RESP

### Message type

Response

### Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Call Control Result	2.5	2.5
Address	2.5	2.5
Subaddress	2.5	2.5
Capability Configuration Parameter 1	2.5	2.5
Capability Configuration Parameter 2	2.5	2.5
USSD String	2.5	2.5
PDP Context Activation	2.5	2.5
EPS PDN Connect Activation	2.5	2.5
Alpha	2.5	2.5
BC Repeat Indicator	2.5	2.5
SMS-PP Data Download UICC Acknowledgment	2.15	2.15
RP Address	2.18	2.18
TP Address	2.18	2.18
IMS Request - URI	2.24	2.24

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Call Control Result
Length	1			2	
Value	$\rightarrow$	enum8	cc_result	1	Call control result:
					• 0x00 – Call control result is allowed
					with no modification
					• 0x01 – Call control result is not allowed
					• 0x02 – Call control result is allowed
					with modification
Туре	0x11			1	Address
Length	Var			2	
Value	$\rightarrow$	enum8	ton	1	TON of the address:
					• 0x00 – Unknown
					• 0x01 – International number
					• 0x02 – National number
					• 0x03 – Network-specific number
		enum8	npi	1	NPI of the address:
				;	• $0x00 - Unknown$
				_<	• 0x01 – ISDN telephony
				60	• 0x02 – Data NPI
				2	• 0x03 – Telex NPI
			. 2	5. (0),	• 0x04 – Private NPI
			00.	E.A.	• 0x0F – Extension is reserved
		uint8	length	1	Number of sets of the following
		1	05,10		elements:
			6, 10	X 7	• address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
			200		maximum length of the address is 200
					bytes (see ETSI TS 102 223,
	012			1	Section 8.1). Subaddress
Type	0x12			1	Subaddress
Length	Var		lan eth	1	Number of sets of the fellowing
Value	$\rightarrow$	uint8	length	1	Number of sets of the following elements:
					• subaddress
		opaque	subaddress	Var	Subaddress in BCD format (two digits
		opaque	subaddress	Vai	encoded in one byte). Maximum size of
					the subaddress is 20 bytes (see ETSI TS
					102 223, Section 8.3).
Туре	0x13			1	Capability Configuration Parameter 1
Length	Var			2	capacing configuration ratameter 1
Value	$\phantom{aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa$	uint8	length	1	Number of sets of the following
	′	61110	10118111		elements:
					• capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see ETSI
		Fuque	- spacing_data		TS 102 223, Section 8.4).
Туре	0x14			1	Capability Configuration Parameter 2
Length	Var			2	2 0

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see ETSI
					TS 102 223, Section 8.4).
Туре	0x15			1	USSD String
Length	Var			2	
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x16			1	PDP Context Activation
Length	Var			2 <	
Value	$\rightarrow$	uint8	pdp_context_act_data_len	100	Number of sets of the following
				3	elements:
			2	5. OU.	• pdp_context_act_data
		opaque	pdp_context_act_data	Var	PDP context activation data. Coded as
			N 25		the Activate PDP Context Request
			5 0		message, specified in 3GPP TS 24.008.
Туре	0x17		6, 113	1	EPS PDN Connect Activation
Length	Var		20, 20,	2	
Value	$\rightarrow$	uint8	eps_pdn_connect_act_	1	Number of sets of the following
			data_len		elements:
					• eps_pdn_connect_act_data
		opaque	eps_pdn_connect_act_data	Var	EPS PDN connect activation data; coded
					as the PDN Connectivity Request
					message, specified in 3GPP TS 24.301.
Туре	0x18			1	Alpha
Length	Var			2	
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x19			1	BC Repeat Indicator
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	bc_repeat_ind	1	Bearer capability repeat indicator:
					• 0x00 – Alternate mode
					• 0x01 – Sequential mode
Туре	0x1A			1	SMS-PP Data Download UICC
					Acknowledgment
Length	Var			2	
Value	$\rightarrow$	uint8	sms_pp_uicc_	1	Number of sets of the following
			acknowledge_len		elements:
					• sms_pp_uicc_acknowledge
		opaque	sms_pp_uicc_acknowledge	Var	SMS-PP data download envelope
					response, as defined in 3GPP TS 31.111,
					Section 7.1.
Туре	0x1B			1	RP Address
Length	Var			2	
Value	$\rightarrow$	enum8	ton	1	TON of the address:
					• 0x00 – Unknown
				ï	• 0x01 – International number
				_	• 0x02 – National number
				< O	• 0x03 – Network-specific number
		enum8	npi	$\sqrt{1}$	NPI of the address:
			.2	5. 50%	• 0x00 – Unknown
			00,	54.	• 0x01 – ISDN telephony
			27 925		• 0x02 – Data NPI
		1	05 10 m		• 0x03 – Telex NPI
			16. Tha		• 0x04 – Private NPI
		• .0	length	1	• 0x0F – Extension is reserved
		uint8	length	1	Number of sets of the following
					elements:
			adduses data	V <sub>a</sub>	• address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
					maximum length of the address is 200
					bytes (see ETSI TS 102 223,
Time	0x1C			1	Section 8.1). TP Address
Type Length	Var			2	11 Addiess
Value	$\rightarrow$	enum8	ton	1	TON of the address:
value		Cituillo	wii	1	• 0x00 – Unknown
					• 0x00 – Ulkilowii • 0x01 – International number
					• 0x01 – International number
					• 0x03 – Network-specific number
		enum8	npi	1	NPI of the address:
		Chamo	r-	1	• 0x00 – Unknown
					• 0x01 – ISDN telephony
					• 0x02 – Data NPI
					• 0x03 – Telex NPI
					• 0x04 – Private NPI
					• 0x0F – Extension is reserved
					2.1.2.1.2.1.2.1.2.1.2.1.2.1.2.2.1.2

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint8	length	1	Number of sets of the following
					elements:
					• address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
					maximum length of the address is 200
					bytes (see ETSI TS 102 223,
					Section 8.1).
Туре	0x1D			1	IMS Request - URI
Length	Var			2	<b>S</b>
Value	$\rightarrow$	uint8	ims_request_uri_len	1	Number of sets of the following
					elements:
					• ims_request_uri
		char	ims_request_uri	Var	IMS request – URI.

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ARG	One of the parameters specified contains an invalid value
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long
QMI_ERR_CAT_INVALID_ENV_CMD	Invalid envelope command
QMI_ERR_CAT_ENV_CMD_BUSY	Card busy response for envelope command
QMI_ERR_CAT_ENV_CMD_FAIL	Envelope command failure
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	
QMI_ERR_INVALID_OPERATION	Operation performed by the client was not carried out; see
	the Note below

# 3.10.3 Description of QMI\_CAT\_SEND\_DECODED\_ENVELOPE\_CMD REQ/RESP

This message sends an envelope command, such as Menu Selection, to the card. When the envelope response indicates the card is busy, the control point retries sending the envelope commands for event download as in ETSI TS 102 223, Section 7.5.

If the optional TLV for the slot is missing, the envelope command is sent by default on slot 1.

See Appendix D for information about mandatory and optional TLVs for envelope commands that apply to QMI\_CAT\_SEND\_DECODED\_ENVELOPE\_CMD\_REQ.

### 3.11 QMI\_CAT\_EVENT\_CONFIRMATION

Sends user and icon confirmation for network-related commands.

**CAT message ID** 

0x0026

**Version introduced** 

Major - 2, Minor - 0

# 3.11.1 Request - QMI\_CAT\_EVENT\_CONFIRMATION\_REQ

Message type

Request

Sender

Control point

**Mandatory TLVs** 

None

Name	Version introduced	Version last modified
User Confirmed	2.0	2.0
Icon is Displayed	2.0	2.0
Slot	2.2	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	User Confirmed
Length	1			2	
Value	$\rightarrow$	boolean	confirm	1	User confirmed:
					• 0x00 – No
					• 0x01 – Yes
Туре	0x11			1	Icon is Displayed
Length	1			2	
Value	$\rightarrow$	boolean	display	1	Icon is displayed:
					• 0x00 – No
					• 0x01 – Yes
Туре	0x12			1	Slot
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• $0x02 - Slot 2$
					• $0x03 - Slot 3$
					• 0x04 – Slot 4
					• $0x05 - Slot 5$
					Other values are reserved for future use.

### 3.11.2 Response - QMI\_CAT\_EVENT\_CONFIRMATION\_RESP

Message type

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

### **Optional TLVs**

None

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message too long
QMI_ERR_INVALID_OPERATION	Invalid terminal response was requested to be sent to the
	card
QMI_ERR_INVALID_ARG	One of the TLVs in the message is invalid
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

### 3.11.3 Description of QMI\_CAT\_EVENT\_CONFIRMATION REQ/RESP

This message sends user and/or icon confirmation as required by a received network-related proactive command (Setup Call, Send SMS, Send SS, Send DTMF, Send USSD) from the card.

The User Confirmed TLV is used only for the SETUP CALL and OPEN CHANNEL commands from the card for the user confirmation phase.

The Icon is Displayed TLV is used only when the proactive command contains an icon.

The application invokes this command after any network-related proactive command from the card, even if user confirmation and icon confirmation are not required, in that case passing an empty payload.

If the optional TLV for the slot is missing, the confirmation is sent by default on slot 1.



### 3.12 QMI\_CAT\_SCWS\_OPEN\_CHANNEL

Sends the Open Channel indication to the Smart Card Web Server (SCWS) agent and indicates a QMI\_CAT event.

### **CAT message ID**

0x0027

#### **Version introduced**

Major - 2, Minor - 6

### 3.12.1 Request - QMI\_CAT\_SCWS\_OPEN\_CHANNEL\_REQ

### Message type

Request

### Sender

Control point

### **Mandatory TLVs**

	Name	2 635	Version introduced	Version last modified
Channel Status		5 0	2.6	2.6

Field	Field	Field	Parameter	Size	Description
	value	type	<u> </u>	(byte)	
Туре	0x01			1	Channel Status
Length	5			2	
Value	$\rightarrow$	uint32	ch_id	4	Channel ID.
		enum8	state	1	Channel state:
					• 0x00 – Closed state
					• 0x01 – Listen state
					• 0x02 – Established state
					Other values are reserved for future use.

Name	Version introduced	Version last modified	
Slot	2.6	2.20	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Slot
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• $0x02 - Slot 2$
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

	Other values are reserved
3.12.2 Response - QMI_CAT_SCWS_OP	EN_CHANNEL_RESP
Message type	2
Response	M.
Sender	
Service	Α
Mandatory TLVs	10 15 15 15 15 15 15 15 15 15 15 15 15 15
The Result Code TLV (defined in Section 2.3.1) is always p	present in the response.
Optional TLVs	
None	
3.12.3 Indication - QMI_CAT_SCWS_OP	EN_CHANNEL_IND
Message type	
Indication	
Sender	
Service	
Scope	
Unicast (per control point)	
Mandatory TLVs	
None	

### **Optional TLVs**

Name	Version introduced	Version last modified
Open Channel Information	2.6	2.6
Slot	2.6	2.20
Alpha	2.13	2.13

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Open Channel Information
Length	8			2	
Value	$\rightarrow$	uint32	ch_id	4	Channel ID to be used for the SCWS connection.
		uint16	port	2	Port for the local TCP socket.
		uint16	buffer_size	2	Buffer size to be used.
Туре	0x11			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
				_	• 0x01 – Slot 1
				80	• 0x02 – Slot 2
				N.	• 0x03 – Slot 3
			.2	5. 501	• 0x04 – Slot 4
			00,	E.g.	• $0x05 - Slot 5$
			V 045		Other values are reserved for future use.
Туре	0x12		5 19	1	Alpha
Length	Var		16' Ka	2	
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
			750		• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
					• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.

### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

### 3.12.4 Description of QMI\_CAT\_SCWS\_OPEN\_CHANNEL

The QMI\_CAT\_SCWS\_OPEN\_CHANNEL\_REQ request is sent to the service as a response for the QMI\_CAT\_SCWS\_OPEN\_CHANNEL\_IND after the SCWS agent opens the required TCP socket. The Listen state indicates a success, and the Closed state indicates a failure. Other values are reserved for future use.

The unsolicited indication message QMI\_CAT\_SCWS\_OPEN\_CHANNEL\_IND is sent to the control point when a new OPEN CHANNEL proactive command is received from the SIM card for the Smart Card Web Server functionality. At this point, the SCWS agent must open a TCP socket and then invoke QMI\_CAT\_SCWS\_OPEN\_CHANNEL\_REQ with the state of the socket to indicate the result of the operation to the modem.

The unsolicited indication message QMI\_CAT\_SCWS\_OPEN\_CHANNEL\_IND is sent to the control point when a new OPEN CHANNEL proactive command is received from the SIM card for the Smart Card Web Server functionality. At this point, the SCWS agent must open a TCP socket and then invoke QMI\_CAT\_SCWS\_OPEN\_CHANNEL\_REQ with the state of the socket to indicate the result of the operation to the modem.

# 3.13 QMI\_CAT\_SCWS\_CLOSE\_CHANNEL

Sends the Close Channel indication to the SCWS agent and indicates a QMI\_CAT event.

### **CAT message ID**

0x0028

#### **Version introduced**

Major - 2, Minor - 6

### 3.13.1 Request - QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_REQ

### Message type

Request

### Sender

Control point

### **Mandatory TLVs**

	Name	Ve	rsion introduced	Version last modified
Channel Status		N 603	2.6	2.6

Field	Field	Field	Parameter	Size	Description
	value	type	1,50,	(byte)	
Туре	0x01			1	Channel Status
Length	5			2	
Value	$\rightarrow$	uint32	ch_id	4	Channel ID.
		enum8	state	1	Channel state:
					• 0x00 – Closed state
					• 0x01 – Listen state
					• 0x02 – Established state
					Other values are reserved for future use.

Name	Version introduced	Version last modified	
Slot	2.2	2.20	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Slot
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• 0x02 – Slot 2
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

### 3.13.2 Response - QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_RESP

Message type

Response

Sender

Service

**Mandatory TLVs** 

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs** 

None

### 3.13.3 Indication - QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_IND

Message type

Indication

Sender

Service

Scope

Unicast (per control point)

**Mandatory TLVs** 

None

Name	Version introduced	Version last modified
Close Channel Information	2.6	2.6
Slot	2.6	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Close Channel Information
Length	5			2	
Value	$\rightarrow$	uint32	ch_id	4	Channel ID to be used for the SCWS
					connection.
		enum8	state	1	Channel state:
					• 0x00 – Closed state; indicates that the
					socket must be closed
					• 0x01 – Listen state; indicates that the
					client needs to be disconnected; the
					socket remains open in the Listen state
					• 0x02 – Established state
					Other values are reserved for future use.
Туре	0x11			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
				"	• 0x01 – Slot 1
					• $0x02 - Slot 2$
				_	• 0x03 – Slot 3
				0	• 0x04 – Slot 4
				3	• 0x05 – Slot 5
			a la constant de la c	5. "01	Other values are reserved for future use.

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

### 3.13.4 Description of QMI\_CAT\_SCWS\_CLOSE\_CHANNEL

The QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_REQ request is sent to the service as a response for the QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_IND after the SCWS agent closes the required TCP socket, as per the state indicated in the indication.

The state in the request indicates the new state of the socket; in case of success, it will have the same value as in the corresponding indication.

The unsolicited indication message QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_IND is sent to the control point when a new CLOSE CHANNEL proactive command is received from the SIM card for the SCWS functionality. The SCWS agent then closes or disconnects the corresponding socket, depending on the state indicated in the indication, and invokes QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_REQ to confirm the status of the socket.

The unsolicited indication message QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_IND is sent to the control point when a new CLOSE CHANNEL proactive command is received from the SIM card for the SCWS functionality. The SCWS agent then closes or disconnects the corresponding socket, depending on the state indicated in the indication, and invokes QMI\_CAT\_SCWS\_CLOSE\_CHANNEL\_REQ to confirm the status of the socket.



#### 3.14 QMI CAT SCWS SEND DATA

Sends data to the SCWS agent and indicates a QMI\_CAT event.

### **CAT message ID**

0x0029

#### **Version introduced**

Major - 2, Minor - 6

#### Request - QMI\_CAT\_SCWS\_SEND\_DATA\_REQ 3.14.1

### Message type

### Sender

#### **Mandatory TLVs**

	Name	o Ve	rsion introduced	Version last modified
Channel Status		V 232	2.6	2.6

Message	Message type								
Request	Request								
Sender	Sender								
Control j	point								
Mandato	Mandatory TLVs								
		Na	ime	Version	on introduced	Version last modified			
Channe	el Status		V 03	2.6		2.6			
			5.05 hande						
Field	Field	Field	Parameter	Size	D	escription			
	value	type	J. 1601.	(byte)					
Туре	0x01			1	Channel Status				
Length	5			2					
Value	$\rightarrow$	uint32	ch_id	4	Channel ID				
		boolean	result	1	Result of the Send Data command:				
					• 0x00 – Failed				
					• 0x01 – Succes	S			

Name	Version introduced	Version last modified
Slot	2.2	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Slot
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• 0x02 – Slot 2
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

### 3.14.2 Response - QMI\_CAT\_SCWS\_SEND\_DATA\_RESP

Message type

Response

Sender

Service

**Mandatory TLVs** 

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs** 

None

### 3.14.3 Indication - QMI\_CAT\_SCWS\_SEND\_DATA\_IND

Message type

Indication

Sender

Service

Scope

Unicast (per control point)

**Mandatory TLVs** 

None

Name	Version introduced	Version last modified
Send Data Information	2.6	2.6
Slot	2.6	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Send Data Information
Length	Var			2	
Value	$\rightarrow$	uint32	ch_id	4	Channel ID to be used to send the data.
		uint8	total_packets	1	Total number of packets.
		uint8	current_packet	1	Current packet.
		uint16	data_len	2	Number of sets of the following
					elements:
					• data
		opaque	data	Var	Data to be sent.
Туре	0x11			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• 0x02 – Slot 2
					• 0x03 – Slot 3
				3	• 0x04 – Slot 4
					• 0x05 – Slot 5
				_	Other values are reserved for future use.

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
6'	or the message was corrupted during transmission
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

### 3.14.4 Description of QMI\_CAT\_SCWS\_SEND\_DATA

The QMI\_CAT\_SCWS\_SEND\_DATA\_REQ request is sent to the service as a response for the QMI\_CAT\_SCWS\_SEND\_DATA\_IND after the SCWS agent sends the data on the TCP socket, to indicate the result of the operation.

The indication message QMI\_CAT\_SCWS\_SEND\_DATA\_IND is sent to the control point with buffered data from the SIM card. The SCWS agent must send the data using the corresponding TCP socket. The control point executes QMI\_CAT\_SCWS\_SEND\_DATA\_REQ, indicating the result of the operation only after the total number of packets is completed.

Due to the size limitation of the QMI, the data might be fragmented by the modem if it is greater than the amount of data that can be transferred at one time through the QMI.

The indication message QMI\_CAT\_SCWS\_SEND\_DATA\_IND is sent to the control point with buffered data from the SIM card. The SCWS agent must send the data using the corresponding TCP socket. The control point executes QMI\_CAT\_SCWS\_SEND\_DATA\_REQ, indicating the result of the operation only after the total number of packets is completed.

Due to the size limitation of the QMI, the data might be fragmented by the modem if it is greater than the amount of data that can be transferred at one time through the QMI.

#### 3.15 QMI\_CAT\_SCWS\_DATA\_AVAILABLE

Indicates that data is available.

### **CAT message ID**

0x002A

#### **Version introduced**

Major - 2, Minor - 6

#### Request - QMI\_CAT\_SCWS\_DATA\_AVAILABLE\_REQ 3.15.1

### Message type

### Sender

### **Mandatory TLVs**

Request		
Sender	40.	
Control point		
Mandatory TLVs	23.23 Enn. in	
Name	Version introduced	Version last modified
Remaining Data	2.6	2.6
Length of the Remaining Data	2.6	2.6

Field	Field	Field	Parameter	Size	Description
	value	type	· ·	(byte)	
Туре	0x01			1	Remaining Data
Length	Var			2	
Value	$\rightarrow$	uint32	ch_id	4	Channel ID.
		uint16	data_len	2	Number of sets of the following
					elements:
					• data
		opaque	data	Var	Data that is received.
Type	0x02			1	Length of the Remaining Data
Length	2			2	
Value	$\rightarrow$	uint16	remaining_data_len	2	Remaining data length.

Name	Version introduced	Version last modified
Slot	2.2	2.20

Field	Field value	Field	Parameter	Size (byte)	Description
	value	type		(byte)	
Type	0x10			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					$\bullet 0x02 - Slot 2$
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

### 3.15.2 Response - QMI\_CAT\_SCWS\_DATA\_AVAILABLEA\_RESP

Message type

Response

Sender

Service

**Mandatory TLVs** 

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs** 

None

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

### 3.15.3 Description of QMI\_CAT\_SCWS\_DATA\_AVAILABLE REQ/RESP

This message is sent by the Control Point when data is written to the socket. This message informs the modem that the data is available to be sent to the card.

The request allows the SCWS agent to fragment the data in small chunks to be sent over the QMI interface. The data is sent to the card only when the last fragment is received with the remaining data length indicating zero. All fragments are sent in order by the SCWS agent.

#### 3.16 QMI CAT SCWS CHANNEL STATUS

Informs the modem about a change in the channel state.

### **CAT message ID**

0x002B

#### **Version introduced**

Major - 2, Minor - 6

#### Request - QMI\_CAT\_SCWS\_CHANNEL\_STATUS\_REQ 3.16.1

### Message type

#### Sender

### **Mandatory TLVs**

	Name	o Ve	rsion introduced	Version last modified
Channel Status		V 232	2.6	2.6

Message	type						
Request	Request						
Sender	Sender						
Control j	point			, S			
Mandato	ory TLVs	i		3:23 010	and		
		Na	ame	Version	n introduced	Version last modified	
Channe	el Status		N 00	2.6		2.6	
			os and				
Field	Field	Field	Parameter	Size	D	escription	
	value	type	7,001	(byte)			
Туре	0x01			1	Channel Status		
Length	5			2			
Value	$\rightarrow$	uint32	ch_id	4	Channel ID.		
		enum8	state	1	Channel state:		
					• 0x00 – Closed	state	
					• 0x01 – Listen	state	
					• 0x02 – Establi	shed state	
					Other values are	reserved for future use.	

Name	Version introduced	Version last modified
Slot	2.2	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Slot
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• $0x02 - Slot 2$
					• $0x03 - Slot 3$
					• 0x04 – Slot 4
					• $0x05 - Slot 5$
					Other values are reserved for future use.

### 3.16.2 Response - QMI\_CAT\_SCWS\_CHANNEL\_STATUS\_RESP

Message type

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

### **Optional TLVs**

None

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_ARG_TOO_LONG	One of the TLVs in the message is too long
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

### 3.16.3 Description of QMI\_CAT\_SCWS\_CHANNEL\_STATUS REQ/RESP

This message is sent by the SCWS agent when there is a change in the channel status.

### 3.17 QMI\_CAT\_GET\_TERMINAL\_PROFILE

Retrieves the current modem terminal profile.

**CAT message ID** 

0x002C

**Version introduced** 

Major - 2, Minor - 10

### 3.17.1 Request - QMI\_CAT\_GET\_TERMINAL\_PROFILE\_REQ

Message type

Request

Sender

Control point

**Mandatory TLVs** 

None

### **Optional TLVs**

Name	Version introduced	Version last modified
Slot	2.10	2.20

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					• 0x02 – Slot 2
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

# 3.17.2 Response - QMI\_CAT\_GET\_TERMINAL\_PROFILE\_RESP

Message type

Response

#### Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

### **Optional TLVs**

Name	Version introduced	Version last modified
Raw Terminal Profile Data	2.10	2.10

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Raw Terminal Profile Data
Length	Var		4	2	
Value	$\rightarrow$	uint8	terminal_profile_data_len	1	Number of sets of the following
				8	elements:
				~	• terminal_profile_data
		opaque	terminal_profile_data	Var	Terminal profile data.

### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
750	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_DEVICE_NOT_READY	Device is yet not ready to process the request
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

# 3.17.3 Description of QMI\_CAT\_GET\_TERMINAL\_PROFILE REQ/RESP

This message is sent by the Control Point to retrieve the current terminal profile.

If the optional TLV for the slot is missing, the control point assumes that the request is for the card on slot 1.

#### 3.18 QMI\_CAT\_SET\_CONFIGURATION

Changes the configuration of the QMI\_CAT service.

**CAT message ID** 

0x002D

**Version introduced** 

Major - 2, Minor - 11

#### Request - QMI\_CAT\_SET\_CONFIGURATION\_REQ 3.18.1

### **Mandatory TLVs**

Name	Version introduced	Version last modified
Configuration Mode	2.11	2.11

Message	Message type						
Request	Request						
Sender			(	Ó.			
Control 1	ooint			00			
Mandato	ry TLVs	•	1/2	23:23 010	31		
		Na	ame	Version	on introduced	Version last modified	
Configu	aration 1	Mode	N. A.	3	2.11	2.11	
			5.05 hand	D			
Field	Field	Field	Parameter	Size		Description	
	value	type	200	(byte)			
Туре	0x01			1	Configuration N	Mode	
Length	1			2			
Value	$\rightarrow$	enum8	cat_config_mode	1	QMI_CAT configuration mode:		
					• 0x00 – Disabled mode		
					• 0x01 – Gobi n		
					• 0x02 – Android mode		
					• 0x03 – Decoded mode		
						ed Pull-only mode	
						n Raw mode (allows a	
						rminal profile for raw	
					format)		
						n Decoded mode (allows	
						terminal profile for	
					decoded format	<i>'</i>	
					Other values are	e reserved for future use.	

Name	Version introduced	Version last modified
Custom Terminal Profile Data	2.11	2.11

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Custom Terminal Profile Data
Length	Var			2	
Value	$\rightarrow$	uint8	custom_tp_len	1	Number of sets of the following
					elements:
					• custom_tp
		opaque	custom_tp	Var	Custom terminal profile, encoded as in
					ETSI TS 102 223, Section 5.2.
					The first byte of the TP bitmask starts
					from custom_tp[0].
					This TLV is used only for custom modes
					and ignored in all other cases.

### 3.18.2 Response - QMI\_CAT\_SET\_CONFIGURATION\_RESP

Message type

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	Unknown	2.11

### **Optional TLVs**

None

#### **Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_EFFECT	Operation had no effect

### 3.18.3 Description of QMI\_CAT\_SET\_CONFIGURATION REQ/RESP

This message is used to set the configuration mode of the QMI\_CAT service. The new configuration might only take effect after a reboot. The client can verify if the new configuration is in use using the QMI\_CAT\_GET\_CONFIGURATION request.

### 3.19 QMI CAT GET CONFIGURATION

Gets the configuration of the QMI\_CAT service.

**CAT message ID** 

0x002E

**Version introduced** 

Major - 2, Minor - 11

### 3.19.1 Request - QMI\_CAT\_GET\_CONFIGURATION\_REQ

Message type

Request

Sender

Control point

**Mandatory TLVs** 

None

**Optional TLVs** 

None

## 3.19.2 Response - QMI\_CAT\_GET\_CONFIGURATION\_RESP

Message type

Response

Sender

Service

### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	Unknown	2.11

Name	Version introduced	Version last modified
Configuration Mode	2.11	2.11
Custom Terminal Profile Data	2.11	2.11

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Configuration Mode
Length	1			2	
Value	$\rightarrow$	enum8	cat_config_mode	1	Current QMI_CAT configuration mode:  • 0x00 – Disabled mode  • 0x01 – Gobi mode  • 0x02 – Android mode  • 0x03 – Decoded mode  • 0x04 – Decoded Pull-only mode  • 0x05 – Custom Raw mode (allows a customizable terminal profile for raw format)  • 0x06 – Custom Decoded mode (allows a customizable terminal profile for decoded format)
					Other values are reserved for future use.
Туре	0x11			1	Custom Terminal Profile Data
Length	Var			2	
Value	$\rightarrow$	uint8	custom_tp_len	1	Number of sets of the following elements: • custom_tp
		opaque	custom_tp	Var	Custom terminal profile, encoded as in ETSI TS 102 223, Section 5.2. The first byte of the TP bitmask starts from custom_tp[0]. This TLV is used only for custom modes and ignored in all other cases

#### **Error codes**

QMI_ERR_NONE	No error in the request	
QMI_ERR_INTERNAL	An unexpected error occurred during processing	
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point	
	or the message was corrupted during transmission	

# 3.19.3 Description of QMI\_CAT\_GET\_CONFIGURATION REQ/RESP

This message is used to get the configuration mode of the QMI\_CAT service currently in use. If a new configuration mode is being set by QMI\_CAT\_SET\_CONFIGURATION\_REQ, the setting might only take effect after a reboot.

#### QMI\_CAT\_GET\_CACHED\_PROACTIVE\_CMD 3.20

Retrieves a cached proactive command from the modem.

**CAT message ID** 

0x002F

**Version introduced** 

Major - 2, Minor - 26

#### Request - QMI\_CAT\_GET\_CACHED\_PROACTIVE\_CMD\_REQ 3.20.1

#### **Mandatory TLVs**

Name	Version introduced	Version last modified
ID of the Proactive Command	2.26	2.26

Message	type							
Request	Request							
Sender								
Control l	Point			<i>y</i>				
Mandato	ry TLVs	<b>;</b>	IP	3.23.010	and the same of th			
		N	ame	Version	on introduced	Version last modified		
ID of th	ne Proac	tive Com	mand		2.26	2.26		
			5.05 hande					
Field	Field	Field	Parameter	Size	Г	Description		
	value	type	800	(byte)				
Туре	0x01		· ·	1	ID of the Proact	tive Command		
Length	4			2				
Value	$\rightarrow$	enum	command_id	4	ID of the proactive command:			
					_	D_COMMAND_ID_		
						J(0x01) – Setup menu		
						D_COMMAND_ID_		
						$T_LIST (0x02) - Setup$		
					event list			
					_	D_COMMAND_ID_		
						TEXT $(0x03)$ – Setup		
					Idle mode text			
					Other values are	e reserved for future use.		

Name	Version introduced	Version last modified
Slot	2.26	2.26

Field	Field value	Field	Parameter	Size (byte)	Description
	value	type		(byte)	
Type	0x10			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					• 0x01 – Slot 1
					$\bullet 0x02 - Slot 2$
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

# 3.20.2 Response - QMI\_CAT\_GET\_CACHED\_PROACTIVE\_CMD\_RESP

Message type

Response

Sender

Service

#### **Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

	Name	Version introduced	Version last modified
Result Code	20, 01,	2.26	2.26

#### **Optional TLVs**

The following TLVs are optional. The TLV is present if the requested proactive command is available

Name	Version introduced	Version last modified
Setup Menu Event	2.26	2.26
Setup Event List Raw Event	2.26	2.26
Setup Idle Mode Text Event	2.26	2.26

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Setup Menu Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_setup_menu

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	pc_setup_menu	Var	Setup Menu proactive command,
					encoded as in ETSI TS 102 223,
					Section 6.6.7.
Туре	0x11			1	Setup Event List Raw Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_setup_event_list
		opaque	pc_setup_event_list	Var	Setup Event List proactive command,
					encoded as in ETSI TS 102 223,
					Section 6.6.16.
Туре	0x12			1	Setup Idle Mode Text Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					<ul><li>pc_setup_idle_mode_text</li></ul>
		opaque	pc_setup_idle_mode_text	Var	Setup Idle mode text proactive
				3	command, encoded as in ETSI TS
			2	3. 00	102 223, Section 6.6.22.
			00.	it's	
Eurou co	doo		1 2	Jan .	
EITOF CO	Error codes				

#### **Error codes**

QMI_ERR_NONE	No error in the request
	· V
QMI_ERR_INTERNAL	An unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point
	or the message was corrupted during transmission
QMI_ERR_NO_MEMORY	Device could not allocate memory to formulate a response
QMI_ERR_INVALID_ARG	One of the parameters specified contains an invalid value
QMI_ERR_MISSING_ARG	One or more required TLVs are missing
QMI_ERR_INFO_UNAVAILABLE	Information is not available
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

#### Description of QMI\_CAT\_GET\_CACHED\_PROACTIVE\_CMD 3.20.3 **REQ/RESP**

This message retrieves the requested cached proactive command from the modem.

The cached proactive command data is returned to the control point in raw format. If the QMI\_CAT configuration mode in NV 65683 is neither Android mode nor Custom Raw mode, QMI\_ERR\_OP\_DEVICE\_UNSUPPORTED is returned.

A terminal response is not expected for the cached proactive command.

If the optional TLV Slot is missing, the control point assumes that the proactive command was received on slot 1.

**Note:** If QMI\_ERR\_INVALID\_OPERATION is returned for the MT Call, Call Connected, or Call Disconnected ENVELOPES, it means the requested ENVELOPE is not part of the SETUP\_EVENT\_LIST. The operation requested by the client was not carried out and the error is not due to the envelope request packet sent by the control point. See Section 2.4.6 for more details.



# A QMI\_CAT Work Flow

Figures A-1 through A-10 illustrate the QMI\_CAT work flow.

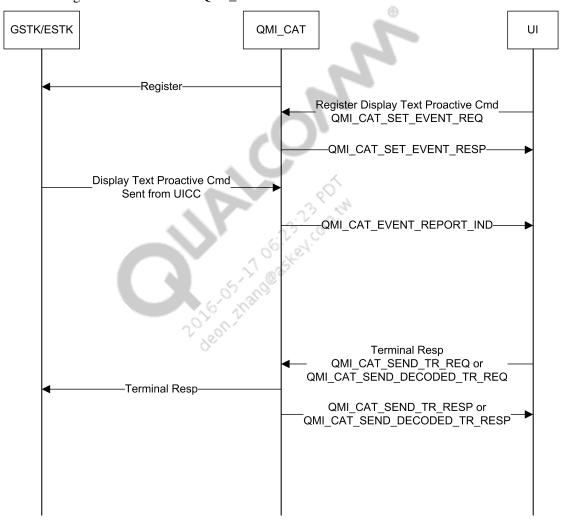


Figure A-1 Display text

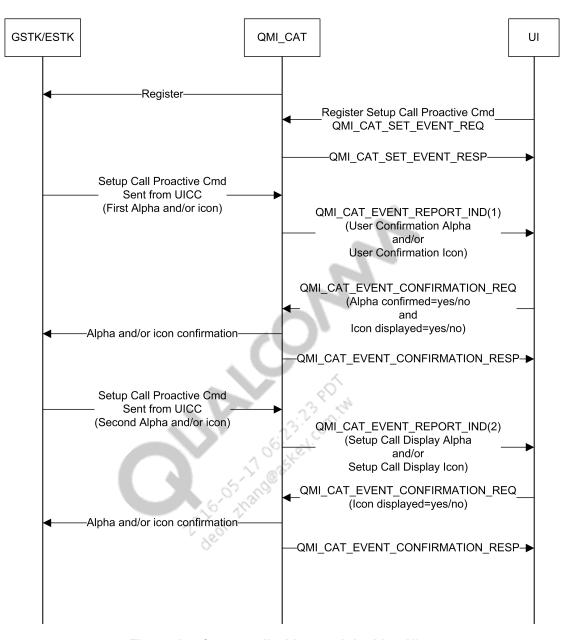


Figure A-2 Set up call with two alpha identifiers

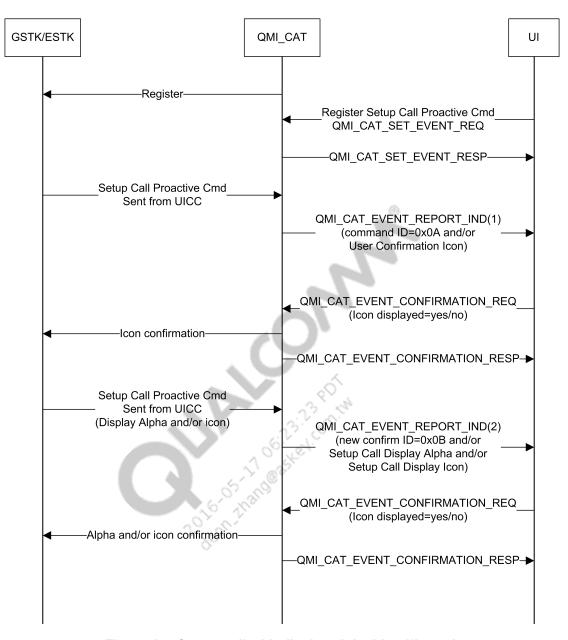


Figure A-3 Set up call with display alpha identifier only

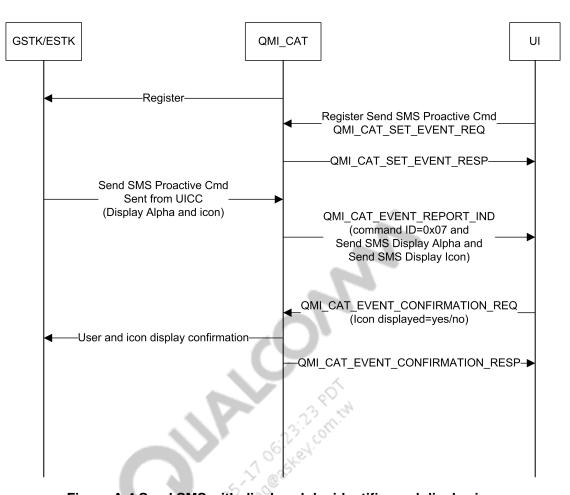


Figure A-4 Send SMS with display alpha identifier and display icon

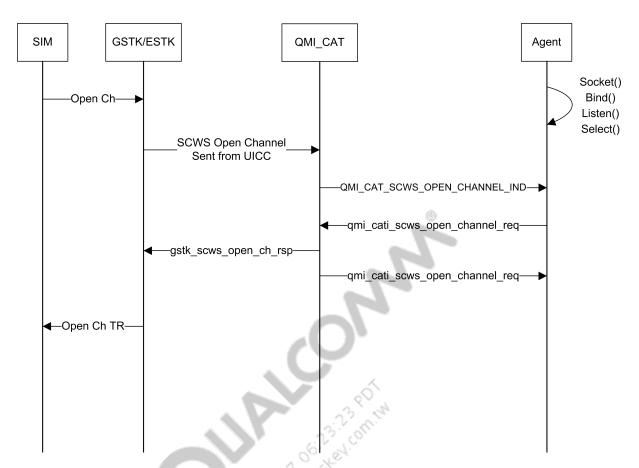


Figure A-5 SCWS open channel

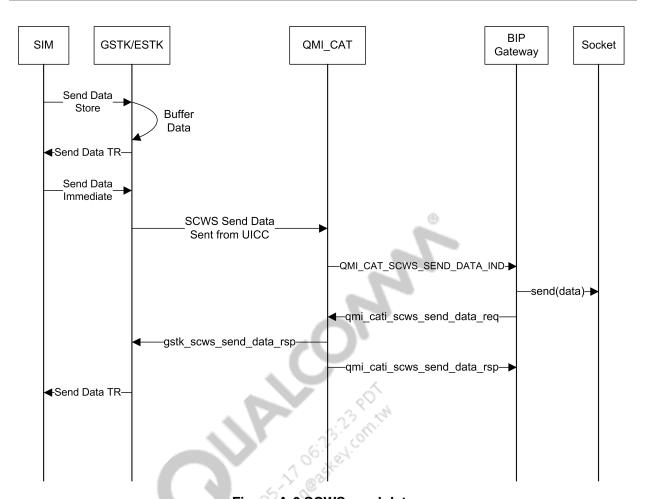


Figure A-6 SCWS send data

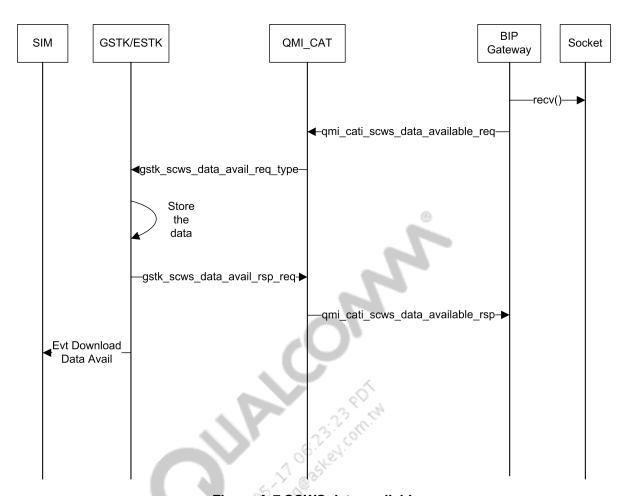


Figure A-7 SCWS data available

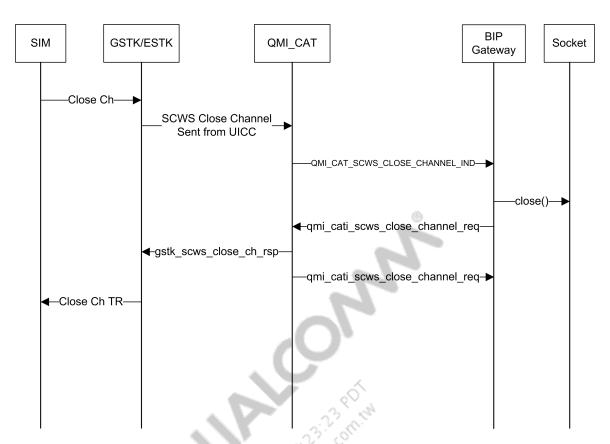


Figure A-8 SCWS close channel

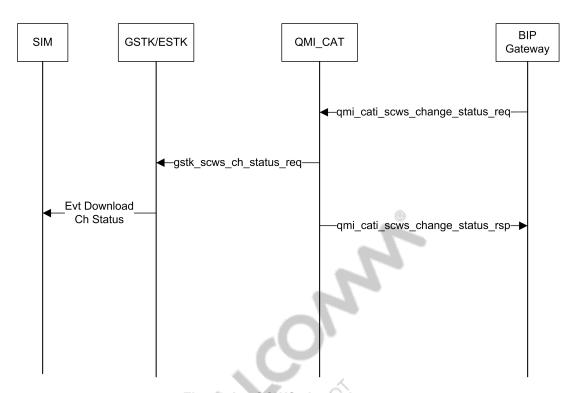


Figure A-9 SCWS channel status

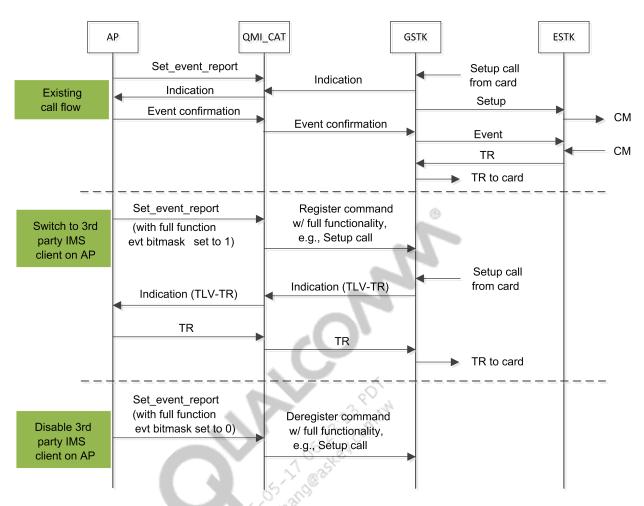


Figure A-10 Routing full-function events for third party IMS clients on the AP

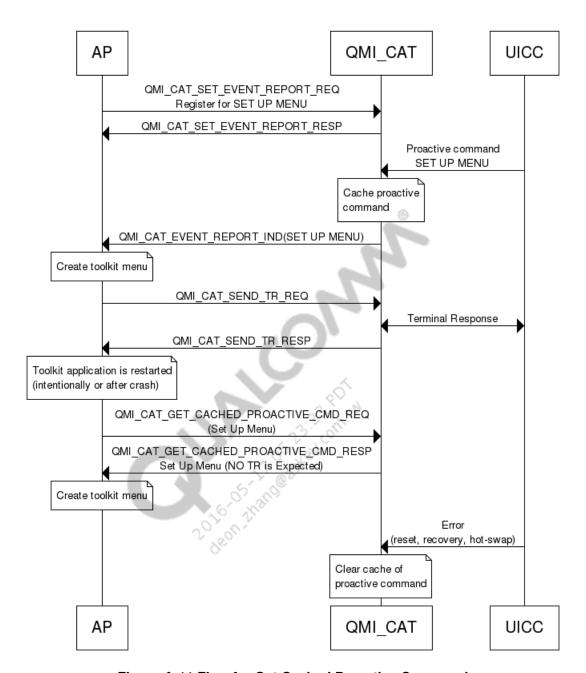


Figure A-11 Flow for Get Cached Proactive Command

# B Supplementary TLVs

# **B.1 Display Text Decoded**

## TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Text String	2.0	2.0
High Priority	2.0	2.0
User Control	2.0	2.0

#### **Optional TLVs**

Name	Version introduced	Version last modified
Icon	2.0	2.0
Immediate Response Required	2.0	2.0
Duration	2.0	2.0
Slot	2.2	2.20

# **B.2** Get Inkey Decoded

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Text String	2.0	2.0
Response Format	2.0	2.0
Help Available	2.0	2.0

Name	Version introduced	Version last modified
Icon	2.0	2.0
Duration	2.0	2.0
Slot	2.2	2.20

# **B.3** Get Input Decoded

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Text String	2.0	2.0
Response Format	2.0	2.0
Response Packing Format	2.0	2.0
Response Length	2.0	2.0
Help Available	2.0	2.0
Show User Input	2.0	2.0

## **Optional TLVs**

Name	Version introduced	Version last modified
Default Text	2.0	2.0
Icon	2.0	2.0
Slot	2.2	2.20

# **B.4** Play Tone Decoded

## TLVs that must always be present

Name	7,6	Version introduced	Version last modified
Decoded Header ID	20.0	2.0	2.23

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Tone	2.0	2.9
Duration	2.0	2.0
Icon	2.0	2.0
Slot	2.2	2.20

# **B.5** Setup Menu Decoded

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Help Available	2.0	2.0
Softkey Selection	2.0	2.0
Items	2.0	2.0

## **Optional TLVs**

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Default Item	2.0	2.0
Next Action Indicator	2.0	2.0
Icon	2.0	2.0
Icon ID List	2.0	2.12
Slot	2.0	2.20
Items with DCS	2.8	2.8

# **B.6** Select Item Decoded

## TLVs that must always be present

Name	20,000	Version introduced	Version last modified
Decoded Header ID	98	2.0	2.23
Help Available		2.0	2.0
Presentation		2.0	2.0
Softkey Selection		2.0	2.0
Items		2.0	2.0

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Default Item	2.0	2.0
Next Action Indicator	2.0	2.0
Icon	2.0	2.0
Icon ID List	2.0	2.12
Slot	2.2	2.20
Items with DCS	2.8	2.8

# **B.7** Send Short Message Decoded

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Packing Required	2.0	2.0
SMS TPDU	2.0	2.0
Is CDMA SMS	2.0	2.0

## **Optional TLVs**

Name	Version introduced	Version last modified
Address	2.5	2.5
Alpha	2.5	2.5
Icon	2.0	2.0
Slot	2.2	2.20
Response Type	2.18	2.18

# B.8 Setup Call Decoded

## TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Call Setup Requirement	2.0	2.0
Address	2.5	2.5
Redial	2.0	2.0

Name	Version introduced	Version last modified
User Confirmation Alpha	2.0	2.0
Setup Call Display Alpha	2.0	2.0
User Confirmation Icon	2.0	2.0
Setup Call Display Icon	2.0	2.0
Subaddress	2.5	2.5
Capability Configuration	2.0	2.0
Slot	2.2	2.20
Response Type	2.18	2.18

# **B.9** Setup Idle Mode Text Decoded

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Text String	2.0	2.0

#### **Optional TLVs**

Name	Version introduced	Version last modified
Icon	2.0	2.0
Slot	2.2	2.20

# **B.10 Send DTMF Decoded**

## TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
DTMF	2.0	2.0

## **Optional TLVs**

Name	300	Version introduced	Version last modified
Alpha	2,00	2.5	2.5
Icon	0	2.0	2.0
Slot		2.2	2.20
Response Type		2.18	2.18

# **B.11 Language Notification Decoded**

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Specific Language Notification	2.0	2.0

Name	Version introduced	Version last modified
Language	2.0	2.0
Slot	2.2	2.20

#### **B.12 Launch Browser Decoded**

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Launch Mode	2.0	2.0
URL	2.0	2.0

## **Optional TLVs**

Name	Version introduced	Version last modified
Browser ID	2.0	2.0
Bearer List	2.0	2.0
Provisioning Files	2.0	2.0
Gateway Proxy	2.0	2.0
User Confirmation Alpha	2.0	2.0
Icon	2.0	2.0
Slot	2.2	2.20

# **B.13 Send SS Decoded**

## TLVs that must always be present

Name	70	Version introduced	Version last modified
Decoded Header ID	20.0	2.0	2.23
Address	98	2.5	2.5

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Icon	2.0	2.0
Slot	2.2	2.20
Response Type	2.18	2.18

## **B.14 Send USSD Decoded**

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
USSD String	2.5	2.5

#### **Optional TLVs**

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Icon	2.0	2.0
Slot	2.2	2.20
Response Type	2.18	2.18

# **B.15 Setup Event List Decoded**

## TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Notification Required	2.0	2.0

Name	Version introduced	Version last modified
Slot	2.2	2.20

# **B.16 Open Channel Decoded**

## **B.16.1** Open Channel Related to Packet Data Service Bearer

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
On Demand Link Establish	2.4	2.4
Bearer Description	2.4	2.4
(CDS/GPRS/EUTRAN External	9	
Parameter/Mapped UTRAN PS)		
Buffer Size	2.4	2.4

## **Optional TLVs**

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Icon	2.0	2.0
Network Access Name	2.4	2.4
Other Address	2.4	2.4
User Login	2.4	2.4
User Password	2.4	2.4
Transport Level	2.4	2.4
Data Destination Address	2.4	2.4
Slot	2.2	2.20

## **B.16.2** Open Channel Related to Default (Network) Bearer

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
On Demand Link Establish	2.4	2.4
Bearer Description	2.4	2.4
(CDS/GPRS/EUTRAN External		
Parameter/Mapped UTRAN PS)		
Buffer Size	2.4	2.4

#### **Optional TLVs**

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Icon	2.0	2.0
Other Address	2.4	2.4
User Login	2.4	2.4
User Password	2.4	2.4
Transport Level	2.4	2.4
Data Destination Address	2.4	2.4
Slot	2.2	2.20

# **B.17 Close Channel Decoded**

## TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Channel ID	2.4	2.4

## **Optional TLVs**

	Name	Version introduced	Version last modified
Alpha		2.5	2.5
Icon		2.0	2.0
Slot	-07	2.2	2.20

## **B.18 Receive Data Decoded**

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Channel ID	2.4	2.4
Channel Data Length	2.4	2.4

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Icon	2.0	2.0
Slot	2.2	2.20

#### **B.19 Send Data Decoded**

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Send Data Immediately	2.4	2.4
Channel ID	2.4	2.4
Channel Data	2.4	2.4

## **Optional TLVs**

Name	Version introduced	Version last modified
Alpha	2.5	2.5
Icon	2.0	2.0
Slot	2.2	2.20

# **B.20** Provide Local Info - Language

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23

## **Optional TLVs**

Name	Version introduced	Version last modified
Slot	2.2	2.20

## **B.21** Activate

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23
Activate Descriptor Target	2.9	2.9

Name	Version introduced	Version last modified
Slot	2.2	2.20

# **B.22** Bearer Independent Protocol Status Decoded

#### TLVs that must always be present

Name	Version introduced	Version last modified
Bearer Independent Protocol	2.22	2.22
Status		

#### **Optional TLVs**

Name	Version introduced	Version last modified
Slot	2.2	2.20

## **B.23** Refresh Decoded

## TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.23

#### **Optional TLVs**

	Name	Version introduced	Version last modified
Alpha		2.5	2.5
Icon	,6'	2.0	2.0
Slot	201	2.2	2.20

# **B.24 Contactless State Request**

#### TLVs that must always be present

Name	Version introduced	Version last modified
Decoded Header ID	2.0	2.27

Name	Version introduced	Version last modified
Contactless Functionality State	2.27	2.27
Slot	2.2	2.20

# C Table of Application Responses

Table C-1 lists the application responses when a proactive command is received from the card.

**Table C-1 Application responses** 

Proactive command	Application response
Display Text	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Get Inkey	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Get Input	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Setup Menu	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Select Item	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Send SMS	QMI_CAT_EVENT_CONFIRMATION
Setup Event – User Activity	QMI_CAT_SEND_TR or
6-0 nati	QMI_CAT_SEND_DECODED_TR
Setup Event – Idle Screen Notify	QMI_CAT_SEND_TR or
120	QMI_CAT_SEND_DECODED_TR
Setup Event – Language Select Notify	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Setup Idle Mode Text	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Setup Event List	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Language Notification	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Play Tone	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Setup Call	QMI_CAT_EVENT_CONFIRMATION
Launch Browser	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Send SS	QMI_CAT_EVENT_CONFIRMATION
Send USSD	QMI_CAT_EVENT_CONFIRMATION
Send DTMF	QMI_CAT_EVENT_CONFIRMATION
Open Channel	QMI_CAT_EVENT_CONFIRMATION
Close Channel	QMI_CAT_EVENT_CONFIRMATION
Receive Data	QMI_CAT_EVENT_CONFIRMATION
Send Data	QMI_CAT_EVENT_CONFIRMATION

Table C-1 Application responses (cont.)

Proactive command	Application response
Provide Local Info – Language	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Activate	QMI_CAT_SEND_TR or
	QMI_CAT_SEND_DECODED_TR
Refresh Alpha	QMI_CAT_EVENT_CONFIRMATION



# D Envelope Command TLVs

The following tables list the mandatory and optional TLVs for envelope commands applicable to QMI\_CAT\_SEND\_DECODED\_ENVELOPE\_CMD\_REQ.

#### **TLVs for Menu Selection**

Name	Status
Envelope Command	Mandatory
Item Identifier	Mandatory
Help Request	Optional
Slot	Optional

#### **TLVs for Event DL User Activity**

Name	6. 4.	Status
Envelope Command	1 35	Mandatory
Slot	5/10	Optional

#### TLVs for Event DL Idle Screen Available

Name	Status
Envelope Command	Mandatory
Slot	Optional

#### **TLVs for Event DL Language Selection**

Name	Status
Envelope Command	Mandatory
Language	Mandatory
Slot	Optional

#### **TLVs for Event DL HCI Connectivity**

Name	Status
Envelope Command	Mandatory
Slot	Optional

#### **TLVs for Call Control - Voice**

Name	Status
Envelope Command	Mandatory
Address	Mandatory
Radio Access Technology	Mandatory
Subaddress	Conditional
Capability Configuration Parameter 1	Conditional
Capability Configuration Parameter 2	Conditional
Call Type	Conditional
Slot	Optional

**Note:** If the Call Type TLV is not present, the Subaddress, Capability Configuration Parameter 1, and Capability Configuration Parameter 2 TLVs become Mandatory. The client can set TLV len = 0 if TLV data is not available for the call control request.

#### **TLVs for Call Control Envelope Response - Voice**

Name	Status
Result Code	Mandatory
Call Control Result	Optional
Address	Optional
Subaddress	Optional
Capability Configuration Parameter 1	Optional
Capability Configuration Parameter 2	Optional
Alpha	Optional
BC Repeat Indicator	Optional

#### TLVs for Call Control - SS

Name	Status
Envelope Command	Mandatory
Address	Mandatory
Radio Access Technology	Mandatory
Call Type	Optional
Slot	Optional

#### TLVs for Call Control Envelope Response – SS

Name	Status
Result Code	Mandatory
Call Control Result	Optional
Address	Optional
Alpha	Optional
BC Repeat Indicator	Optional

#### **TLVs for Call Control – USSD**

Name	Status
Envelope Command	Mandatory
USSD String	Mandatory
Radio Access Technology	Mandatory
Call Type	Optional
Slot	Optional

#### TLVs for Call Control Envelope Response - USSD

Name	Status
Result Code	Mandatory
Call Control Result	Optional
USSD String	Optional
Alpha	Optional
BC Repeat Indicator	Optional

#### **TLVs for Call Control – PDP Context Activation**

Name	.23	Status
Envelope Command	00, 54.	Mandatory
PDP Context Activation	V 945	Mandatory
Radio Access Technology	5 20	Mandatory
Slot	16/ 1/m	Optional

#### **TLVs for Call Control Envelope Response - PDP Context Activation**

Name	Status
Result Code	Mandatory
Call Control Result	Optional
PDP Context Activation	Optional
Alpha	Optional
BC Repeat Indicator	Optional

#### **TLVs for Call Control – EPS PDN Connect Activation**

Name	Status
Envelope Command	Mandatory
EPS PDN Connect Activation	Mandatory
Radio Access Technology	Mandatory
Slot	Optional

#### TLVs for Call Control Envelope Response – EPS PDN Connect Activation

Name	Status
Result Code	Mandatory
Call Control Result	Optional
EPS PDN Connect Activation	Optional
Alpha	Optional
BC Repeat Indicator	Optional

#### **TLVs for Call Control - SMS**

Name	Status
Envelope Command	Mandatory
Call Type	Mandatory
RP Address	Mandatory
TP Address	Mandatory
Radio Access Technology	Mandatory
Slot	Optional

## TLVs for Call Control Envelope Response - SMS

	Name	00,754	Status
Result Code		V 643	Mandatory
Call Control Result		05 210	Optional
Alpha	100	1/10	Optional
RP Address	20	001	Optional
TP Address	98	·	Optional

#### **TLVs for Event DL Browser Termination**

Name	Status
Envelope Command	Mandatory
Browser Termination Cause	Mandatory
Slot	Optional

#### **TLVs for SMS-PP Download**

Name	Status
Envelope Command	Mandatory
Address	Mandatory
SMS TPDU	Mandatory
Is CDMA SMS	Optional
Slot	Optional

#### **TLVs for SMS-PP Download Envelope Response**

Name	Status
Result Code	Mandatory
SMS-PP Data Download UICC	Optional
Acknowledgment	

#### **TLVs for Event DL MT Call**

Name	Status
Envelope Command	Mandatory
Transaction ID	Optional
Address	Conditional (refer to ETSI TS
	102 223, Section 7.5.1)
Subaddress	Conditional (refer to ETSI TS
	102 223, Section 7.5.1)
Slot	Optional

## TLVs for Event DL Call Connected (MT/MO)

N	ame	Status
Envelope Command	00.	Mandatory
Transaction ID	7 025	Mandatory
Slot	05,400	Optional

#### TLVs for Event DL Call Disconnected (Near End/Far End)

Name	Status
Envelope Command	Mandatory
Transaction ID	Mandatory
Cause	Optional
Slot	Optional

#### **TLVs for Contactless State Request**

Name	Status
Envelope Command	Mandatory
Contactless State Request	Mandatory
Slot	Optional

# E References

# **E.1 Related Documents**

Title	Number
Qualcomm Technologies	
QMI Client API Interface Specification	80-N1123-1
QMI Common Service Interface API Interface Specification	80-N1123-2
Qualcomm Messaging Interface (QMI) Architecture	80-VB816-1
QMI UIM, QMI User Identity Module Spec	80-NH952-12
Standards	
Smart Cards: Card Application Toolkit (CAT) – Release 4	ETSI TS 102 223
Digital Cellular Telecommunications System (Phase 2+) (GSM);	ETSI TS 123 038
Universal Mobile Telecommunications Systems (UMTS); Alphabets and	
Language-Specific Information	
Language Codes	ISO 639-2
Technical Specification Group Core Network and Terminals; Universal	3GPP TS 31.111
Subscriber Identity Module (USIM); Application Toolkit (USAT)	
AT command set for User Equipment (UE)	3GPP TS 27.007
Mobile radio interface Layer 3 Specification; Core network protocols;	3GPP TS 24.008
Stage 3	
Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS);	3GPP TS 24.301
Stage 3	
3rd Generation Partnership Project; Technical Specification Group	3GPP TS 11.11
Terminals Specification of the Subscriber Identity Module - Mobile	
Equipment (SIM-ME) interface	
Smart Cards; UICC-Terminal interface; Physical and Logical	ETSI TS 102 221
characteristics	
Smart Cards; UICC-Contactless Front-end (CLF) Interface; Part 1:	ETSI TS 102 613
Physical and data link layer characteristics	

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# **E.2** Acronyms and Terms

Acronym or term	Definition
ACK	acknowledge
ADN	abbreviated dialing number
AP	application processor
AT	access terminal
BC	bearer capability
BCD	binary-coded decimal

Acronym or term	Definition
BIP	Bearer Independent Protocol
CAT	Card Application Toolkit
CDS	call detail store module
CE	connection element
CLF	contactless front-end
CSD	circuit-switch data
DCS	data coding scheme
DL	download
DTMF	dual-tone multifrequency
EF	elementary file
EPS	evolved packet system
ESTK	enhanced SIM toolkit
EUTRAN	Evolved UMTS Terrestrial Radio Access
EXT	external
GPRS	general packet radio services
GSTK	generic SIM application toolkit
HCI	host controller interface
IMG	image
IMS	IP multimedia subsystem
IP	Internet Protocol
IPv4	IP version 4
IPv6	IP version 6
ISDN	Integrated Services Digital Network
LANG	language
ME	mobile equipment
MT	mobile terminated
NPI	numbering plan identifier
PDN	packet data network
PDP	Packet Data Protocol
PS	packet-switched
QCI	QoS class identifier
QMI	Qualcomm messaging interface
QoS	quality of service
RDI	restricted digital information
RP	Relay layer Protocol
SAT	SIM application toolkit
SCWS	smart card web server
SDU	service data unit
SEL	selector
SIM	subscriber identity module
SMS	short message service
SMS-PP	SMS point-to-point
SS	supplementary services
TCP	Transfer Control Protocol; Transmission Control Protocol
TLV	type-length-value
TON	type of number

Acronym or term	Definition
TPDU	Transfer Protocol data unit
TR	terminal response
UCS2	two-byte universal character set
UDI	unrestricted digital information
UDP	User Datagram Protocol
UE	user equipment
UI	user interface
UICC	universal integrated circuit card
UL	upload
UMTS	universal mobile telecommunications system
URI	universal resource identifier
URL	universal resource locator
USAT	USIM application toolkit
USIM	universal subscriber identity module
USSD	unstructured supplementary services data
UTRAN	UMTS Terrestrial Radio Access
2016-05-17-06-22-22-23-RDT.tw	