



# QMI CAT 2.26 for MPSS.JO.1.0 QMI Card Application Toolkit Spec

80-NV300-11 A

October 13, 2014

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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).
		Tolog Trangested on the

# 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.

Parameter types are indicated by arrows:

- → Designates an input parameter
- ← Designates an output parameter
- → Designates a parameter used for both input and output

# 1.4 References

Reference documents are listed in Table 1-1. Reference documents that are no longer applicable are deleted from this table; therefore, reference numbers may not be sequential.

Table 1-1 Reference documents and standards

Ref.	Document					
Qual	Qualcomm Technologies					
Q1	Application Note: Software Glossary for Customers	CL93-V3077-1				
Q2	Qualcomm MSM Interface (QMI) Architecture	80-VB816-1				
Q3	QMI UIM for MPSS.JO.1.0, QMI User Identity Module Spec	80-NV300-12				
Stand	dards					
S1	Smart Cards: Card Application Toolkit (CAT) – Release 4	ETSI TS 102 223				
S2	Digital Cellular Telecommunications System (Phase 2+)	ETSI TS 123 038				
	(GSM); Universal Mobile Telecommunications Systems					
	(UMTS); Alphabets and Language-Specific Information					
S3	Language Codes	ISO 639-2				
S4	Technical Specification Group Core Network and Terminals;	3GPP TS 31.111				
	Universal Subscriber Identity Module (USIM); Application					
	Toolkit (USAT)					
S5	AT command set for User Equipment (UE)	3GPP TS 27.007				
S6	Mobile radio interface Layer 3 Specification; Core network	3GPP TS 24.008				
	protocols; Stage 3					
S7	Non-Access-Stratum (NAS) protocol for Evolved Packet System	3GPP TS 24.301				
	(EPS); Stage 3					
S8	3rd Generation Partnership Project; Technical Specification	3GPP TS 11.11				
	Group Terminals Specification of the Subscriber Identity					
	Module - Mobile Equipment (SIM-ME) interface					
S9	Smart Cards; UICC-Terminal interface; Physical and Logical	ETSI TS 102 221				
	characteristics					
S10	Smart Cards; UICC-Contactless Front-end (CLF) Interface;	ETSI TS 102 613				
	Part 1: Physical and data link layer characteristics					

# 1.5 Technical Assistance

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

If you do not have access to the CDMATech Support website, register for access or send email to support.cdmatech@qti.qualcomm.com.

# 1.6 Acronyms

For definitions of terms and abbreviations, refer to [Q1]. Table 1-2 lists terms that are specific to this document.

**Table 1-2 Acronyms** 

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

# Table 1-2 Acronyms (cont.)

Acronym	Definition			
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			
TP	terminal profile or Transfer layer Protocol			
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			

# 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 [Q2]. 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 [S1].

# 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
- 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 [S1], 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:

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- 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

Each of these envelope commands is sent encoded in the raw or decoded format as defined in [S1]. 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 [S1], Section 7.

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#### 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). In other QMI\_CAT configuration modes, the command with refresh mode/stage information is provided to clients by the QMI\_UIM service ([Q3]), 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 (e.g., 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

Due to limitations in the modem, to handle proactive commands in both decoded and raw formats, the current implementation supports only one method 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 values:

- 0 QMI\_CAT is disabled
- 1 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 values are reserved for future use.

#### **Customized Terminal Profile** 2.5.2

A customizable terminal profile encoded as in [S1], 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.

#### VS Service ID 2.5.3

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 TS 102 223 ([S1]), 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

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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

#### **Blocking SMS-PP Download Envelope Functionality** 2.5.7

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
	- 60	conditions for the requesting control
		point.
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
	N X	command as implemented by the
	7.3 20.	currently running software.
QMI_CAT_GET_SERVICE_STATE	0x0020	Queries the QMI_CAT service state.
. 3	S. C.	
QMI_CAT_SEND_TR	0x0021	Sends the terminal response to the
, o' ans		proactive commands coming from the
710 111		card.
QMI_CAT_SEND_ENVELOPE_CMD	0x0022	Sends an envelope command to the
<b>\\</b>		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
		network-related commands.
QMI_CAT_SCWS_OPEN_CHANNEL	0x0027	Sends the Open Channel indication to
		the Smart Card Web Server (SCWS)
		agent.
QMI_CAT_SCWS_CLOSE_CHANNEL	0x0028	Sends the Close Channel indication to
		the SCWS agent.
QMI_CAT_SCWS_SEND_DATA	0x0029	Sends data to the SCWS agent.
QMI_CAT_SCWS_DATA_AVAILABLE	0x002A	Indicates that data is available.
QMI_CAT_SCWS_CHANNEL_STATUS	0x002B	Informs the modem about a change in
		the channel state.
	1	

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

Command	ID	Description
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.

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# 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	2.23
Decoded Event Reporting Request	2.0	2.23
Slot	2.6	2.20
Full Function Event Reporting Request	2.18	2.19

Field	Field value	Field type	Parameter	Size (byte)	Description
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
					Bit 10 – Language Notification
					• Bit 11 – Refresh/Refresh Alpha
				3-	(Refresh when QMI_CAT is configured
					in Gobi mode, Refresh Alpha in other
					cases)
				00	• Bit 12 – End Proactive Session
				200 1	• Bit 13 – Play Tone
			S S	1.00	• Bit 14 – Setup Call
			0.0	04.	• Bit 15 – Send DTMF
			2016-05-18-00-54		• Bit 16 – Launch Browser
			25 10		• Bit 17 – Send SS
		1	6 diani		• Bit 18 – Send USSD
			20,20		• Bit 19 – Provide Local Information –
			750		Language
					• 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
					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.
Туре	0x11			1	Decoded Event Reporting Request
	4			2	Becoded Event Reporting Request
Length	4				

Field	Field value	Field	Parameter	Size (byte)	Description
Value	value	type uint32	no dae aut renert ree	(byte) 4	Decoded event report request bitmask:
value	$\rightarrow$	umtsz	pc_dec_evt_report_req_ mask	-	• Bit 0 – Display Text
			mask		• 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
				9	• Bit 9 – Setup Idle Mode Text
				0.0	• Bit 10 – Language Notification
				- 1	• Bit 11 – Refresh Alpha (not supported
					when QMI CAT is configured in Gobi
					mode)
			, 0	5	• Bit 12 – End Proactive Session
				6	• Bit 13 – Play Tone
				N 8 Y	• Bit 14 – Setup Call
				3	• Bit 15 – Send DTMF
			0.5	, 'Co,	• Bit 16 – Launch Browser
			000	0,3	• Bit 17 – Send SS
			N		• Bit 18 – Send USSD
			2016-05-18-00-54		• Bit 19 – Provide Local Information –
			16, 11,0		Language
			20,000		• Bit 20 – Bearer Independent Protocol
			96		• 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
					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.
Туре	0x12			1	Slot
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
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
					slots.
Type	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		bitmask:
					• Bit 0 – Send SMS
				7	• Bit 1 – Setup Call
					• Bit 2 – Send DTMF
				_	• Bit 3 – Send SS
				0	• Bit 4 – Send USSD
				3	Each bit set indicates a request made to
			o.	1.00	QMI_CAT to enable/disable full
			00.	E.J.	function capability of the control point
			15 AS	and the second	for the corresponding proactive
			5 10		command. All unlisted bits are reserved
		1	2016.05,1200.05 deon.zhand@ask		for future use and must be set to zero.
			20,00		The control point must register the
			750,		corresponding proactive command with
			· ·		a raw or decoded event report bitmask
					for receiving events.

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

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ΙVΙ	ess	aue	LVI	oe.

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	2.23
Status		
Proactive Command Decoded Event Report	2.0	2.23
Registration Status		
Full Function Event Report Registration Status	2.18	2.19

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Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1 ¶	Proactive Command Event Report
				900	Registration Status
Length	4			2	
Value	$\rightarrow$	uint32	pc_evt_report_req_err_	4	Proactive command event report
			mask		registration error bitmask:
				8	• Bit 0 – Display Text
				~	• Bit 1 – Get Inkey
				N. X	• Bit 2 – Get Input
				3 10	• Bit 3 – Setup Menu
			0.0	7.00	• Bit 4 – Select Item
			000	27	• Bit 5 – Send SMS
			77.07		• Bit 6 – Setup Event – User Activity
			0, 310		• Bit 7 – Setup Event – Idle Screen
			70. Tu		Notify
			2016.05.12 00.5 deon. Zhand@ask		• Bit 8 – Setup Event – Language Select
			85		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	Field	Parameter	Size	Description
	value	type		(byte)	. D'4 22 . Cli
			pc_evt_report_req_err_		<ul> <li>Bit 23 – Clients are to ignore this bit</li> <li>Bit 24 – Activate</li> </ul>
			mask (cont.)		
					• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Clients are to ignore this bit
					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.
_	0-11			1	
Type	0x11			1	Proactive Command Decoded Event
	4			2	Report Registration Status
Length	4	:		2	Described and the state of the second
Value	$\rightarrow$	uint32	pc_dec_evt_report_req_	4	Proactive command decoded event report
			err_mask		registration error bitmask:
			, 0		• Bit 0 – Display Text
					• Bit 1 – Get Inkey
				160	• Bit 2 – Get Input
				30	Bit 3 – Setup Menu
			0.	1.00	• Bit 4 – Select Item
			00.	Ey.	• Bit 5 – Send SMS
			150 mg		• Bit 6 – Setup Event – User Activity
			5 19		• Bit 7 – Setup Event – Idle Screen
			6. Chair		Notify
			20,200		• Bit 8 – Setup Event – Language Select
			2016-05-18 00:00 2016-05-18 00:00		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 are to ignore this bit
					• Bit 23 – Smart Card Web Server

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
			pc_dec_evt_report_req_		• Bit 24 – Activate
			err_mask (cont.)		• Bit 25 – Setup Event – HCI
					connectivity
					• Bit 26 – Bearer Independent Protocol
					Status
					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.
Type	0x12			1	Full Function Event Report Registration
				-	Status
Length	4		2.44 0	2	
Value	$\rightarrow$	mask32	pc_full_func_evt_report_	4	Full function event report request
			err_mask		bitmask:
				1	• Bit 0 – Send SMS
				~	• Bit 1 – Setup Call • Bit 2 – Send DTMF
					• Bit 2 – Send DTMF • Bit 3 – Send SS
				13 10	• Bit 4 – Send USSD
			0:0	74.C	
		4	30 35		A set bit indicates that QMI_CAT failed
			~ ~ ~ @ m		to enable/disable full function capability
		1	C.O. Value		handling for the corresponding proactive
			10 11		command. If a bit that was not set by the
			2016-05-12:00 asi		control point is included, the control
			0		point is to ignore the bit.

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

Indication	
Sender	
Service	
Scope	
Unicast (per control point)	

Mandatory TLVs

None

Message type

### **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	2.23
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

Name	Version introduced	Version last modified
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 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
Alpha	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
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		
Chamel Data	2.4	2.4
Channel ID	2.4	2.4

Name	Version introduced	Version last modified
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

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
					elements:
					• pc_display_text
		opaque	pc_display_text	Var	Display Text proactive command,
				3"	encoded as in [S1], Section 6.6.1.
Туре	0x11			1	Get Inkey 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
				1. Oll	elements:
			0.5	24.	• pc_get_inkey
		opaque	pc_get_inkey	Var	Get Inkey proactive command, encoded
					as in [S1], Section 6.6.2.
Туре	0x12	,	6.0 Malli	1	Get Input Event
Length	Var		07.07	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 [S1], 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
		opaque	pc_setup_menu	Var	Setup Menu proactive command,
					encoded as in [S1], 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 [S1], Section 6.6.8.

Field	Field value	Field type	Parameter	Size (byte)	Description
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	1	Proactive command type that includes
					the alpha identifier:
					• 0x01 – Sends an SMS proactive
					command
					All other values are reserved.
		uint16	alpha_id_len	2	Number of sets of the following
					elements:
					<ul><li>alpha_identifier</li></ul>
		opaque	alpha_identifier	Var	Alpha identifier, as in [S1], Section 8.2.
Туре	0x16			1	Setup Event List Event
					(used only when QMI_CAT is
				3"	configured in Gobi mode)
Length	4			2	
Value	$\rightarrow$	uint32	pc_setup_evt_list	4 /	Setup event list bitmask:
				00	• Bit 0 – User Activity Notify
				2 × ×	• Bit 1 – Idle Screen Available
				1.00	• Bit 2 – Language Selection Notify
			20:0	a. J.	Each set bit indicates the availability of
			19 15		the corresponding event in the Setup
			67,76		Event list proactive command. All
		1	S.O. Walley		unlisted bits are reserved for future use
			07.77		and are ignored.
Туре	0x17		120	1	Setup Idle Mode Text Event
Length	Var		<u> </u>	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
					command, encoded as in [S1],
					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 [S1],
					Section 6.6.25.
Туре	0x19			1	Refresh Event
					(used only when QMI_CAT is
I					

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Length	4			2	
Value	$\rightarrow$	uint16	refresh_mode	2	As indicated in [S1], Section 8.6.
		enum16	refresh_stage	2	Stage of the refresh procedure:
	ı				• 0x01 – Refresh start
					• 0x02 – Refresh success
					• 0x03 – Refresh failed
Туре	0x1A			1	End Proactive Session
Length	1			2	
Value	$\rightarrow$	enum8	proactive_session_end_	1	Proactive session end type:
	ı		type		• 0x01 – End proactive session command
	ı				received from the card
	ı			- 0	• 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:
	ı			3	• 0x01 – Display Text
	ı			_	• 0x02 – Get Inkey
	ı			60	• 0x03 – Get Input
	ı		2015-05-18-00:05 1015-05-18-00:05	3	• 0x04 – Launch Browser
	ı		0.	1,00,	• 0x05 – Play Tone
	ı		00.	57.	• 0x06 – Select Item
	ı		75 W. W.		• 0x07 – Send SMS
	ı		05 10		• 0x08 – Send SS
	ı		16, Tha		• 0x09 – Send USSD
	ı		30,00.		• 0x0A – Setup Call – User Confirmation
	ı		200		• 0x0B – Setup Call – Alpha Display
	ı				• 0x0C – Setup Menu
	ı				<ul> <li>0x0D – Setup Idle Text</li> <li>0x0E – Provide Local Information –</li> </ul>
	ı				_
	ı				• 0x0F – Send DTMF
	ı				
	ı				• 0x10 – Language Notification
	ı				<ul> <li>0x11 – Setup Event – User Activity</li> <li>0x12 – Setup Event – Idle Screen</li> </ul>
	ı				Notify
	ı				• 0x13 – Setup Event – Language
	ı				Selection Notify
	ı				• 0x14 – Open Channel
					• 0x14 – Open Channel
					• 0x16 – Receive Data
					• 0x10 – Receive Bata
					• 0x17 – Send Bata • 0x18 – Activate
					• 0x19 – Setup Event – HCI Connectivity
					• 0x1A – Refresh Alpha
					• 0X20 – Setup Event – Browser
					Termination
					All other values are reserved.
l				l	7 Mi Other values are reserved.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		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			1	Text String
Length	Var			2	
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
					• $0x00 - 7$ -bit GSM
					• 0x01 – 8-bit GSM
				-	$\bullet 0x02 - UCS2$
		uint8	length_of_string	1	Number of sets of the following
		unito	lengui_oi_sumg	0	elements:
			4 :4	17	• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x1D			1 _	High Priority
Length	1			200	
Value	$\rightarrow$	enum8	high_priority	31 3	High priority value:
				1.00	• 0x00 – Do not clear the screen
			0.5	34.	• 0x01 – Clear anything that is on the
			19 15		screen
Туре	0x1E		7/7/©°	1	User Control
Length	1		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	2	
Value	$\rightarrow$	enum8	user_control	1	User control:
		• maine	user_compo		• $0x00$ – Do not allow the user to clear
			0		the screen
					• $0x01 - $ Allow the user to clear the
T	Ov.1E			1	screen
Туре	0x1F			1	Icon
Length	Var	0	11.0	2	T 110
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:
		Cituillo	103	1	• 0x00 – Unknown
					$\bullet$ 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	0x20			1	Duration
Length	2			2	
Value	$\rightarrow$	enum8	units	1	Time units:
					• 0x00 – Minutes
					• 0x01 – Seconds
					• 0x02 – Tenths of seconds
		uint8	interval	1	Time interval; this number must be
					greater than zero (see [S1], 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
				00	• 0x02 – Numerical only
				2 × ×	• 0x03 – UCS2
				1.04	• 0x04 – Immediate digit response
			0:0	a. J.	• 0x05 – Yes/No and immediate digit
			4 5		response
Туре	0x22		55' NE	1	Help Available
Length	1		6. hall	2	
Value	$\rightarrow$	boolean	help_available	1	Whether help is available:
			180		• 0x00 – No help is available
			<u> </u>		• 0x01 – Help is available
Туре	0x23			1	Response Packing Format
Length	1			2	
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	
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	
-					I.

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	$\rightarrow$	enum8	tone	1	Tone to be played:
74	<i>'</i>	•1101110		_	• $0x01 - Dial tone$
					• 0x02 – Called subscriber busy tone
					• 0x03 – Congestion tone
					• 0x04 – Radio path ACK tone
					• 0x05 – Radio path not available, call
					drop tone
					• 0x06 – Error tone
					• 0x07 – Call waiting tone
					• 0x08 – Ringing tone
					• 0x09 – General beep
					• 0x04 – General beep • 0x0A – Positive ACK tone
				0	• 0x0B – Negative ACK tone
					• 0x0C – Ring tone selected by the user
				- 18	• $0x0D - SMS$ alert tone selected by the
					user  • -1 – Not in use
<b>T</b>	027			1	
Туре	0x27			1	Softkey Selection
Length	1	0		2	C - C1 1 1
Value	$\rightarrow$	enum8	softkey_selection	31/3	Softkey selection:
			0.0	1,00	• 0x00 – Softkey is not selected
_	0.20		00.	5.A.	• 0x01 – Softkey is selected
Туре	0x28		70 45	1	Items
Length	Var	: 40	5 6 6	2	N. 1 C 4 C 1 C 11 '
Value	$\rightarrow$	uint8	number_of_items	1	Number of sets of the following
			20, 40,		elements:
			DE.		• item_id
					• item_text_length
					• item_text
		uint8	item_id	1	ID of the item. Each item has a unique
					identifier from 0x01 to 0xFF.
		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
					[S6], 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 [S1], 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:
					• next_action_list

Field	Field value	Field type	Parameter	Size (byte)	Description
	74.45	enum8	next_action_list	Var	Item in the action list:
		Chamo	mext_uetron_mst	''	• 0x00 – Setup Call
					• 0x01 – Send SS
					• 0x02 – Send USSD
					• 0x03 – Send Short Message
					• 0x04 – Launch Browser
					• 0x05 – Play Tone
					• 0x06 – Display Text
					• 0x07 – Get Inkey
					• $0x08$ – Get Input
					• 0x09 – Select Item
					• 0x0A – Setup Menu
					• 0x0B – Setup Idle Mode Text
				900	• 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:
value	,	ooolean	display_leon_omy		• 0x00 – Icon is not self-explanatory,
				8	display icon with description
				3	• 0x01 – Icon is self-explanatory, display
			0.0	, 'CO.	
				1	only the icon
		uint8	num_of_items	1	Number of sets of the following
		1	5 10		elements:
		,	6. 1121		• qualifier
			20,00		• height
			180		• width
			<u> </u>		• ics
					• rec_num
					• data_size
					• data
		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).
			6		Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
		WIIILO	,,,,dil	1	Represents the number of raster image
					points.
		0n11m0	ics	1	-
		enum8	ICS	1	Image coding scheme:
					$\bullet$ 0x00 – Unknown
					• 0x01 – Basic
					• 0x02 – Color
		uint8	rec_num	1	Record number in the EF-IMG file.

Field	Field	Field	Parameter	Size	Description
	value	type	1	(byte)	N. I. C. A. C.I. C.II.
		uint16	data_size	2	Number of sets of the following
					elements:
			1-4-	<b>X</b> 7	• data
_	0.20	opaque	data	Var	Image instance data in binary format.
Туре	0x2C			1	Presentation
Length	1		•	2	<b>D</b>
Value	$\rightarrow$	enum8	presentation	1	Presentation type:
					• 0x00 – Not specified
					• 0x01 – Data value presentation
					• 0x02 – Navigation presentation
Туре	0x2D			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
				00	elements:
				2 1	• sms_tpdu
		opaque	sms_tpdu	Var	SMS TPDU data, as specified in [S6].
Туре	0x2F	· r···q···	20.	341	Is CDMA SMS
Length	1	4	8 8	2	15 CDIVIT SIVIS
Value	$\rightarrow$	hoolean	is_cdma_sms	1	CDMA SMS format indication:
value	/	boolean	13_cuma_5m5	1	• 0x00 – FALSE (3GPP format)
			10 111		• 0x01 – TRUE (3GPP2 format)
			2000		This defaults to FALSE if the TLV is not
			80		present.
Time	0x30			1	Address
Туре	Var			2	Address
Length		0	4		TON . Cd 11
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:
					$\bullet 0x00 - Unknown$
					• 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

Field	Field value	Field type	Parameter	Size (byte)	Description
		opaque	address_data	Var	Address in byte-based BCD format. The
					maximum length of the address is 200
					bytes (see [S1], Section 8.1).
Туре	0x31			1	Call Setup Requirement
Length	1			2	
Value	$\rightarrow$	enum8	call_setup_requirement	1	Call setup requirements:
					• $0x00$ – No other calls
					• 0x01 – Hold active calls
					• 0x02 – Disconnect active calls
Туре	0x32			1	Redial
Length	3			2	
Value	$\rightarrow$	boolean	redial_necessary	1 _	Indicates whether redial is necessary:
			;		• 0x00 – Redial is not necessary
					• 0x01 – Redial is necessary
		enum8	units	1	Time units:
			4	30	• 0x00 – Minutes
					• $0x01$ – Seconds
				,	• 0x02 – Tenths of seconds
		uint8	interval	1/0	Time interval. This value must be greater
				A .	than zero if redial_necessary is set to
				13 10.	0x01 (see [S1], Section 8.8).
Туре	0x33		-0.0	~4·1	Subaddress
Length	Var		9	2	Subudiess
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
Value	,	unito	length O' aires	1	elements:
			16 1/11		• subaddress
		opaque	subaddress	Var	Subaddress in BCD format (two digits
		opuque	sacadaress	, van	encoded in one byte). Maximum size of
					the subaddress is 20 bytes (see [S1],
					Section 8.3).
Туре	0x34			1	Capability Configuration
Length	Var			2	Capability Comiguration
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
value	$\rightarrow$	umo	iongui	1	elements:
					capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see [S1],
		opaque	capability_comig_data	Vai	Section 8.4).
Turns	0x35			1	DTMF
Type	Var			2	DIML
Length		nint0	longth	1	Number of sets of the fellowing
Value	$\rightarrow$	uint8	length	1	Number of sets of the following elements:
		0000000	dtmf data	17am	• dtmf_data  DTME_data in BCD format (true digits
		opaque	dtmf_data	Var	DTMF data in BCD format (two digits
					encoded in one byte) (see [S1],
_	0-26			1	Section 8.44).
Туре	0x36			1	Specific Language Notification
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	$\rightarrow$	boolean	spec_lang_notify	1	Whether there is a specific language
					notification:
					• 0x00 – No
					• 0x01 – Yes
Туре	0x37			1	Language
Length	2		•	2	
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a pair of alphanumeric characters (defined in [S3]). Each alphanumeric character is coded on one byte using the SMS default 7-bit coded alphabet, as defined in [S1], 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:
			, C		<ul> <li>0x00 – Launch if not already launched</li> <li>0x01 – Use the existing browser</li> <li>0x02 – Close the existing browser</li> </ul>
Туре	0x39			100	URL
Length	Var			2	
Value	$\rightarrow$	uint8	length	1. 10,	Number of sets of the following
			00.	E.J.	elements:
		1	19 ans		• url_data
		opaque	url_data	Var	URL (see [S1], Section 8.48).
Туре	0x3A		16' N3'	1	Browser ID
Length	1		20,00	2	
Value	$\rightarrow$	uint8	browser_id	1	Browser ID (see [S1], Section 8.47).
Туре	0x3B			1	Bearer List
Length	Var			2	
Value	$\rightarrow$	uint16	length	2	Number of sets of the following
					elements:
		0	haanan list	Von	• bearer_list  Bearer list:
		enum8	bearer_list	Var	• 0x00 – SMS
					• 0x00 – SMS • 0x01 – CSD
					• 0x01 – CSD • 0x02 – USSD bearer code
					• 0x03 – GPRS
					• 0x04 – Bearer default
				1	Provisioning Files
Type	0x3C				
Type Lenath	0x3C Var				<i>B</i>
Length	$\begin{array}{c} 0x3C \\ \hline Var \\ \rightarrow \end{array}$	uint32	num of prov files	2 4	
	Var	uint32	num_of_prov_files	2	Number of sets of the following elements:
Length	Var	uint32	num_of_prov_files	2	Number of sets of the following elements:
Length	Var	uint32	num_of_prov_files	2	Number of sets of the following elements: • length
Length	Var	uint32	num_of_prov_files	2	Number of sets of the following elements:
Length	Var		·	4	Number of sets of the following elements: • length • path

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	Deth to the married wine Clarker [C1]
		opaque	path	Var	Path to the provisioning file (see [S1],
_	0.20			1	Section 8.50).
Туре	0x3D			1	USSD String
Length	Var			2	
Value	$\rightarrow$	enum8	orig_dcs_from_sim	1	Original data coding scheme from the
					SIM:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
		am.,ma 0	dae	1	• 0x02 – UCS2
		enum8	dcs	1	Data coding scheme:  • 0x00 – 7-bit GSM
					$\bullet 0x00 = 7 - \text{old GSM}$ $\bullet 0x01 = 8 - \text{bit GSM}$
				9	$\bullet 0x01 - 8 - 011 GSM$ $\bullet 0x02 - UCS2$
		uint8	lanath	1	Number of sets of the following
		uiiito	length	1	elements:
					• text
		Opagua	text	Var	Text of USSD string (see [S4],
		opaque	text	Vai	Section 8.17).
Туре	0x3E			1,0	Default Text
Length	Var			2	Default Text
Value	$\xrightarrow{var}$	enum8	des	3 30	Data coding scheme:
value	7	Ciluino	des	1. Pur	• 0x00 – 7-bit GSM
			000	0,	• $0x00 - 7$ -bit GSM
			7.02		$\bullet 0x01 - 0-011 \text{ GSW}$ $\bullet 0x02 - \text{UCS2}$
		uint8	length_of_string	1	Number of sets of the following
		unito	lengm_or_sumg	1	elements:
			2000		• text
		opaque	text	Var	Text string data in the specified data
		opaque	text	, van	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
					elements:
					• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x41			1	Setup Call Display Alpha

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
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	0x42			1	User Confirmation Icon
Length	Var			2	
Value	$\rightarrow$	enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
				3"	• 0x01 – Icon is not self-explanatory; it
					displays along with the text
		uint8	height	1 ,	Icon height (from the EF-IMG file).
				00	Represents the number of raster image
				200 1	points.
		uint8	width	1. 194	Icon width (from the EF-IMG file).
			20:0	34.	Represents the number of raster image
			4 3		points.
		enum8	ics	1	Image coding scheme:
		1	C.O. valus		• $0x00 - Unknown$
			030 11		• 0x01 – Basic
			2, 50,		• 0x02 – Color
		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).
			<b>6</b> ·		Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
				_	Represents the number of raster image
					points.
					points.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		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:
					• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x44			1	Gateway Proxy
Length	Var			2	
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
					$\bullet 0$ x $00 - 7$ -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
				2 × ×	coding scheme.
Туре	0x45		á	136	Alpha
Length	Var		.O:	2	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
			~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		• $0x00 - 7$ -bit GSM
		1	, O, 250,		• 0x01 – 8-bit GSM
			dcs		• 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	0x46			1	Notification Required
Length	1			2	1
Value	$\rightarrow$	boolean	notification_required	1	Indicates whether the notification for a
			= 11.		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
			·· <b>—</b> , ·	_	elements:
					• pc_play_tone
		opaque	pc_play_tone	Var	Play Tone proactive command, encoded
		Spaque	F	''	as in [S1], Section 6.6.5.
Туре	0x48			1	Setup Call Event
Length	Var			2	Scrap Can Dvent

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_setup_call
		opaque	pc_setup_call	Var	Setup Call proactive command, encoded
					as in [S1], Section 6.6.12.
Туре	0x49			1	Send DTMF 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_dtmf
		opaque	pc_send_dtmf	Var	Send DTMF proactive command,
					encoded as in [S1], 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
				. 00	elements:
				300	• pc_launch_browser
		opaque	pc_launch_browser	Var	Launch Browser proactive command,
			60.	E. J.	encoded as in [S1], Section 6.6.26.
Туре	0x4B		20 00	1	Send SMS Event
Length	Var		60	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
			Seo.		elements:
			)		• pc_send_sms
		opaque	pc_send_sms	Var	Send SMS proactive command, encoded
					as in [S1], 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 [S1], 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:
					• pc_send_ussd
		opaque	pc_send_ussd	Var	Send USSD proactive command,
		_			encoded as in [S1], Section 6.6.11.
Туре	0x4E			1	Provide Local Information Event

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
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_provide_local_info
		opaque	pc_provide_local_info	Var	Provide Local Information proactive
					command, encoded as in [S1],
					Section 6.6.15.
Type	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,
				3	encoded as in [S1], Section 6.6.16.
Type	0x50			1	Slot
Length	1			2 <	
Value	$\rightarrow$	enum8	slot	100	Indicates the slot to be used:
				3	• 0x01 – Slot 1
			o.	1.00	• 0x02 – Slot 2
			00.	E. 4.	• 0x03 – Slot 3
			20 000		• 0x04 – Slot 4
			5 36		• 0x05 – Slot 5
		1	6. hall		Other values are reserved for future use.
Туре	0x51		20, 20,	1	Open Channel Event
Length	Var		750.	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 [S1], Section 6.6.27.
Туре	0x52			1	Close 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_close_channel
		opaque	pc_close_channel	Var	Close Channel proactive command,
		-			encoded as in [S1], Section 6.6.28.
Туре	0x53			1	Send 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_send_data
	l l				P*_Sena_data

Field	Field value	Field type	Parameter	Size (byte)	Description
		opaque	pc_send_data	Var	Send Data proactive command, encoded
					as in [S1], 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 [S1], 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
Туре	0x56		4	1	CSD Bearer Description
Length	3			2	F.
Value	$\rightarrow$	uint8	speed	1 /	Data rate; same as the speed
	·	0.2.2.0	ar the	00	subparameter defined in [S5],
				2 × ×	Section 6.7.
		enum8	name	ey br	CSD bearer name:
			name	77.00	• 0x00 – Data Circuit Asynchronous;
			8 3	Z	UDI or 3.1 kHz modem
			C. C.		• 0x01 – Data Circuit Synchronous; UDI
		1	, O. 3103		or 3.1 kHz modem
			16 111		• 0x02 – PAD Access Asynchronous
			2000		UDI
			80		• 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	1	CSD bearer connection element:
				_	• 0x00 – Transparent
					• 0x01 – Nontransparent
					• 0x02 – Both, transparent preferred
					• 0x03 – Both, nontransparent preferred
Туре	0x57			1	GPRS Bearer Description
Length	6			2	- 3 - 11111 - 1111 <b>- Patri</b>
Value	$\rightarrow$	uint8	precedence_cls	1	Precedence class; same as the
	,		F	_	precedence subparameter defined in
					[S4], Section 8.52.2.
		uint8	delay_cls	1	Delay class; same as the delay
		anno	001uj_010	_	subparameter defined in [S4],
					Section 8.52.2.
					500000 0.52.2.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint8	reliability_cls	1	Reliability class; same as the reliability
					subparameter defined in [S4],
					Section 8.52.2.
		uint8	peak_throughput	1	Peak throughput class; same as the peak
					subparameter defined in [S4],
					Section 8.52.2.
		uint8	mean_throughput	1	Mean throughput class; same as the
					mean subparameter defined in [S4],
					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	
Value	$\rightarrow$	enum8	traffic_class	1	Indicates the type of application for
					which the UMTS bearer service is
					optimized:
				0	• 0x00 – Conversational
				200	• 0x01 – Streaming
				1.01	• 0x02 – Interactive
			00:	0.4.	• 0x03 – Background
			19 25	-	• 0x04 – Subscribed value
			5		All other values are reserved.
		uint16	max_bitrate_ul	2	Maximum bitrate UL; same as the
			201 27		maximum bitrate UL subparameter
			7,20		defined in [S4], Section 8.52.3.
		uint16	max_bitrate_dl	2	Maximum bitrate DL; same as the
					maximum bitrate DL subparameter
					defined in [S4], Section 8.52.3.
		uint16	guaranteed_bitrate_ul	2	Guaranteed bitrate UL; same as the
					guaranteed bitrate UL subparameter
					defined in [S4], Section 8.52.3.
		uint16	guaranteed_bitrate_dl	2	Guaranteed bitrate DL; same as the
					guaranteed bitrate DL subparameter
					defined in [S4], Section 8.52.3.
		enum8	delivery_order	1	Numeric parameter that indicates if the
					UMTS bearer will provide in-sequence
					SDU delivery:
					• 0x00 – No
					$\bullet 0x01 - Yes$
					• 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 [S4], Section 8.52.3.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint8	max_sdu_err_ratio	1	SDU error ratio; same as the SDU error
					ratio subparameter defined in [S4],
					Section 8.52.3.
		uint8	residual_bit_err_ratio	1	Residual bit error ratio; same as the
					residual bit error ratio subparameter
					defined in [S4], Section 8.52.3.
		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
				900	All other values are reserved.
		uint8	transfer_delay	1	Transfer delay; same as the transfer
				20	delay subparameter defined in [S4],
					Section 8.52.3.
		uint8	traffic_handling_pri	1	Traffic handling priority; same as the
			trans_nang_pri	5	traffic handling priority subparameter
				N 8 Y	defined in [S4], Section 8.52.3.
		enum8	pdp_type	( ) L( )	PDP type:
		chamo	pup_type	, 'Co,	$\bullet 0x02 - IP$
			200	0,3	All other values are reserved.
Туре	0x59		75.62	1	EUTRAN External Mapped UTRAN PS
.ypc	OASS	1	05 1119	1	Bearer Description
Length	10		VO 1/10	2	Bearer Beseription
Value	$\rightarrow$	uint8	qci	1	QCI (see [S4], Section 8.52.5).
	·	uint8	max_bitrate_ul	1	Maximum bitrate UL (see [S4],
		0.2220			Section 8.52.5).
		uint8	max_bitrate_dl	1	Maximum bitrate DL (see [S4],
					Section 8.52.5).
		uint8	guaranteed_bitrate_ul	1	Guaranteed bitrate UL (see [S4],
		0.2220	8		Section 8.52.5).
		uint8	guaranteed_bitrate_dl	1	Guaranteed bitrate DL (see [S4],
		0.2220	8		Section 8.52.5).
		uint8	max_bitrate_ul_ext	1	Maximum bitrate UL Ext (see [S4],
					Section 8.52.5).
		uint8	max_bitrate_dl_ext	1	Maximum bitrate DL Ext (see [S4],
		GIIICO	man_strate_dr_ext	_	Section 8.52.5).
		uint8	guaranteed_bitrate_ul_ext	1	Guaranteed bitrate UL Ext (see [S4],
		GIIICO	Samminoon_ommino_un_ont		Section 8.52.5).
		uint8	guaranteed_bitrate_dl_ext	1	Guaranteed bitrate DL Ext (see [S4],
		GIIICO	5 garancea_binate_ai_ext	1	Section 8.52.5).
		enum8	pdp_type	1	PDP type:
		Ciluilio	pup_type	1	• 0x02 – IP
					All other values are reserved.
Tyma	0x5A			1	Buffer Size
Туре	UXJA			1	Duilei Size

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Length	2			2	
Value	$\rightarrow$	uint16	buffer_size	2	Buffer size.
Туре	0x5B			1	Network Access Name
Length	Var			2	
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 [S4], Section 8.61).
Туре	0x5C			1	Other Address
Length	Var			2	
Value	$\rightarrow$	enum8	address_type	1	Address type:
Value	,	Citatilo	address_type	1	• 0x01 – No address given
				900	• 0x02 – Dynamic
					$\bullet 0x02 - Dynamic$ $\bullet 0x03 - IPv4$
					$\bullet 0x04 - IPv6$
					All other values are reserved.
		uint8	langth	1	
		uiiito	length	1	Number of sets of the following
				N 8 V	elements:
			. 11 130	3	• address_data
_	0.50	opaque	address_data	Var	Address (see [S1], Section 8.58).
Туре	0x5D		00	21	User Login
Length	Var		70 m/2	2	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
			16. Thu		• 0x00 – 7-bit GSM
			20,00		• $0x01 - 8$ -bit GSM
			800		• 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	0x5E			1	User Password
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
		11			coding scheme.
Туре	0x5F			1	Transport Level
Length	3			2	Transport 20.01
Length	3				

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	T
Value	$\rightarrow$	enum8	transport_protocol	1	Transport protocol:
					• 0x00 – Not present • 0x01 – UDP
					• 0x01 – UDP • 0x02 – TCP
					All other values are reserved.
	ŀ	uint16	nort number	2	Port number.
Tyme	0x60	umito	port_number	1	Data Destination Address
Type	Var			2	Data Destination Address
Length Value	vai →	enum8	addraga tyma	1	Address type:
value	$\rightarrow$	enumo	address_type	1	
					• 0x01 – No address given
					<ul><li>0x02 – Dynamic</li><li>0x03 – IPv4</li></ul>
				9	• 0x03 – IPv4 • 0x04 – IPv6
				0.00	
	ŀ		lan adla	1	All other values are reserved.
		uint8	length		Number of sets of the following
					elements:
			adduses date	Van	• address_data
_	0.61	opaque	address_data	Var	Address (see [S1], Section 8.58).
Туре	0x61			1,0	Channel Data Length
Length	1		di dan badi	2	No. 1 Chata data a see 'lab. 'a da
Value	$\rightarrow$	uint8	ch_data_length	1. Pile	Number of bytes that are available in the
			200	57	channel buffer, or the number of bytes
			Nº 625		that are requested in a Received Data
_	0.62		65,00	1	command (see [S1], Section 8.54).
Туре	0x62		6/ 100	1	Send Data Immediately
Length	1	1 1	70,000	2	
Value	$\rightarrow$	boolean	send_data_immediately	1	Indicates whether to send the data
					immediately:
					• $0x00 - No$ , store the data in the Tx
					buffer
_	0-62			1	• 0x01 – Yes, send the data immediately
Type	0x63			2	Channel Data
Length	Var	:	data lan		Number of sets of the fellowing
Value	$\rightarrow$	uint16	data_len	2	Number of sets of the following elements:
			shannal data atrina	Van	• channel_data_string
		opaque	channel_data_string	Var	Channel data string is considered by the
					terminal as binary coded on 8 bits (see
True -	0x41			1	[S1], Section 8.53).
Type	0x64			1 2	Channel ID
Length	1	i40	.1. :.I		Channel ID (see [C1], Costing 9.7)
Value	→ 065	uint8	ch_id	1	Channel ID (see [S1], 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
			_ <b></b> 5	900	elements:
					• item_text
		opaque	item_text	Var	Item text (see [S6], clause 4.4.2.3).
Туре	0x66	1 1	_	1	Activate Event
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	4.0	Proactive command reference ID.
		uint16	pc_activate_len	2	Number of sets of the following
			1	13 10	elements:
			0.0	7.00	• pc_activate
		opaque	pc_activate	Var	Activate proactive command encoded as
					in [S1], Section 6.6.40.
Туре	0x67		(10, 311)	1	Activate Descriptor Target
Length	1		30 1	2	1 8
Value	$\rightarrow$	enum8	target	1	Activate descriptor target (see [S1],
					Section 8.89):
					• 0x01 – UICC-CLF interface according
					to [S10]
					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
			1-71		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	
Value	$\rightarrow$	uint8	ch_id	1	Channel ID (see [S1], Section 8.7).
· u.uc	′	GIIICO	J11_10	1	Chamier in (see [51], section 6.7).

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.
Type	0x6A			1	Refresh Alpha
Length	Var			2	<b>S</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
					in [S1], Section 6.6.13.
				"	This is sent only if the refresh command
					contains alpha to be displayed.

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.

## 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	

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		
Value	$\rightarrow$	uint16	supported_msgs_len	2	Number of sets of the following	
					elements:	
					• 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	
					message ID 0, bit 1 represents message	
					ID 1, etc.	
				3"	The bit is set to 1 if the message is	
					supported; otherwise, it is set to zero.	
				_<	For example, if a service supports	
				. 00	exactly four messages with IDs 0, 1, 30,	
				3	and 31 (decimal), the array (in	
			o.	COL	hexadecimal) is 4 bytes [03 00 00 c0].	
Error co	Error codes					
OMIT	OMI EDD NONE No arror in the request					

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

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

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**

moodage type			
Request			
Sender		O.	
Control point			
Mandatory TLVs	1/2	CT:34 Pr. in	
	Name	Common version	Common version
	28	introduced	last modified
Service Message ID	6,0	1.6	1.6

Field	Field	Field	Parameter	Size	Description
	value	type	<b>&gt;</b>	(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

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

Name	Common version introduced	Common version 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	, 0	(byte)	
Туре	0x10			1,<	List of Supported Request Fields
Length	Var			2	A
Value	$\rightarrow$	uint8	request_fields_len	31	Number of sets of the following
			0.0	, 'Co,	elements:
			000	5	• request_fields
		uint8	request_fields	Var	This field describes which optional field
			05 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.
			9's		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

#### Description of QMI CAT GET SUPPORTED FIELDS REQ/RESP 3.4.3

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	2.23	

value	type			
	., 60		(byte)	
0x01			1	CAT Service State
8			2	
$\rightarrow$	uint32	cat_common_evt_reg_state	_ma <b>\$</b> k	Bitmask of events registered by 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
			- 0	• 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/Refresh Alpha
			60	(Refresh when QMI_CAT is configured
			3	in Gobi mode, Refresh Alpha in other
		0.0	1,00	cases)
		00.1	54.	• Bit 12 – End Proactive Session
		75 845		• Bit 13 – Play Tone
		05,40		• Bit 14 – Setup Call • Bit 15 – Send DTMF
		16, Tho		• Bit 16 – Launch Browser
		30,000		• Bit 17 – Send SS
		Se		• 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
				All unused bits are reserved for future
				use and are be ignored by the control
				point.
	8	8	8  → uint32 cat_common_evt_reg_state_	8 2

value       type       (byte)         uint32       pc_evt_report_mask       4       Bitmask of events registered by 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 Act       • Bit 7 – Setup Event – Languag         Notify       • Bit 8 – Setup Event – Languag         Notify       • Bit 9 – Setup Idle Mode Text         • Bit 10 – Language Notification       • Bit 11 – Refresh/Refresh Alpha (Refresh when QMI_CAT is con in Gobi mode, Refresh Alpha in cases)         • Bit 12 – End Proactive Session       • Bit 13 – Play Tone	
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 Act  Bit 7 – Setup Event – Idle Screen Notify  Bit 8 – Setup Event – Languag Notify  Bit 9 – Setup Idle Mode Text  Bit 10 – Language Notification  Bit 11 – Refresh/Refresh Alpha (Refresh when QMI_CAT is corn in Gobi mode, Refresh Alpha in cases)  Bit 12 – End Proactive Session	
• 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 Acc • Bit 7 – Setup Event – Idle Screen Notify • Bit 8 – Setup Event – Languag Notify • Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alpha (Refresh when QMI_CAT is conin Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	this
• 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 Act • Bit 7 – Setup Event – Idle Screen Notify • Bit 8 – Setup Event – Language Notify • Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alpha (Refresh when QMI_CAT is core in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	
• Bit 2 – Get Input • Bit 3 – Setup Menu • Bit 4 – Select Item • Bit 5 – Send SMS • Bit 6 – Setup Event – User Act • Bit 7 – Setup Event – Idle Screen Notify • Bit 8 – Setup Event – Language Notify • Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alpha (Refresh when QMI_CAT is contin Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	
<ul> <li>Bit 3 – Setup Menu</li> <li>Bit 4 – Select Item</li> <li>Bit 5 – Send SMS</li> <li>Bit 6 – Setup Event – User Act</li> <li>Bit 7 – Setup Event – Idle Screen Notify</li> <li>Bit 8 – Setup Event – Languag Notify</li> <li>Bit 9 – Setup Idle Mode Text</li> <li>Bit 10 – Language Notification</li> <li>Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is contin Gobi mode, Refresh Alpha in cases)</li> <li>Bit 12 – End Proactive Session</li> </ul>	
<ul> <li>Bit 4 – Select Item</li> <li>Bit 5 – Send SMS</li> <li>Bit 6 – Setup Event – User Active Bit 7 – Setup Event – Idle Screen Notify</li> <li>Bit 8 – Setup Event – Language Notify</li> <li>Bit 9 – Setup Idle Mode Text</li> <li>Bit 10 – Language Notification</li> <li>Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is conin Gobi mode, Refresh Alpha in cases)</li> <li>Bit 12 – End Proactive Session</li> </ul>	
• Bit 5 – Send SMS • Bit 6 – Setup Event – User Act • Bit 7 – Setup Event – Idle Screen Notify • Bit 8 – Setup Event – Languag Notify • Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is continuous Good of the Notice of the Noti	
• Bit 6 – Setup Event – User Act • Bit 7 – Setup Event – Idle Screen Notify • Bit 8 – Setup Event – Language Notify • Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is contained in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	
• Bit 7 – Setup Event – Idle Screen Notify • Bit 8 – Setup Event – Language Notify • Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is corn in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	
Notify  • Bit 8 – Setup Event – Languag Notify  • Bit 9 – Setup Idle Mode Text  • Bit 10 – Language Notification  • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is corn in Gobi mode, Refresh Alpha in cases)  • Bit 12 – End Proactive Session	ivity
• Bit 8 – Setup Event – Languag Notify • Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is cor in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	en
Notify  • Bit 9 – Setup Idle Mode Text  • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is cor in Gobi mode, Refresh Alpha in cases)  • Bit 12 – End Proactive Session	
• Bit 9 – Setup Idle Mode Text • Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is cor in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	e Select
• Bit 10 – Language Notification • Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is cor in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	
• Bit 11 – Refresh/Refresh Alph (Refresh when QMI_CAT is cor in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	
(Refresh when QMI_CAT is cornin Gobi mode, Refresh Alpha in cases)  • Bit 12 – End Proactive Session	
in Gobi mode, Refresh Alpha in cases) • Bit 12 – End Proactive Session	
cases) • Bit 12 – End Proactive Session	
• Bit 12 – End Proactive Session	other
Bit I3 – Play Tone	
• Bit 14 – Setup Call	
• Bit 15 – Send DTMF	
• Bit 16 – Launch Browser • Bit 17 – Send SS	
• Bit 17 – Send SS • Bit 18 – Send USSD	
• Bit 18 – Selid USSD • Bit 19 – Provide Local Information	otion
• 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	шоп –
• Bit 20 – Bearer Independent P.	otocol
• Bit 20 – Beater Independent 1	
Termination	1
• Bit 22 – Provide Local Information	ation _
Time	ttion
• Bit 23 – Clients are to ignore to	nis bit
• Bit 24 – Activate	010
• Bit 25 – Setup Event – HCI	
connectivity	
• Bit 26 – Clients are to ignore to	nis bit
All unused bits are reserved for	
use and are ignored by the contr	

## **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	2.23
Full Function Event Service State	2.18	2.19

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Decoded CAT Service State
Length	8			2	
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
					• Bit 8 – Setup Event – Language Select
					Notify
			4	3-	• Bit 9 – Setup Idle Mode Text
					• Bit 10 – Language Notification
					• Bit 11 – Refresh Alpha (not supported
				00	when QMI CAT is configured in Gobi
			4	2 ×	mode)
				1.00	• Bit 12 – End Proactive Session
			0.5	34.	• Bit 13 – Play Tone
			2016.05.18.00.25 January	-	• Bit 14 – Setup Call
			67.70		• Bit 15 – Send DTMF
		1	C'O L'alles		• Bit 16 – Launch Browser
			07077		• Bit 17 – Send SS
			7,00		• Bit 18 – Send USSD
			0		• Bit 19 – Provide Local Information –
					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
					All unused bits are reserved for future
				<u> </u>	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
					• Bit 8 – Setup Event – Language Select
					Notify
					• Bit 9 – Setup Idle Mode Text
					• Bit 10 – Language Notification
				3"	• Bit 11 – Refresh Alpha (not supported
					when QMI CAT is configured in Gobi
				_	mode)
				00	• Bit 12 – End Proactive Session
				200	• Bit 13 – Play Tone
			of the second	1.00	• Bit 14 – Setup Call
			00.	24:	• Bit 15 – Send DTMF
			2016-05-12 00:54		• Bit 16 – Launch Browser
			5 10		• Bit 17 – Send SS
		1	6. Gran		• Bit 18 – Send USSD
			201.07		• Bit 19 – Provide Local Information –
			750,		Language
			Ų.		• 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
					All unused bits are reserved for future
					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	A Est
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 3.6.1

## **Mandatory TLVs**

3.6.1 Request	- QMI_CAT_	SEND_TR_REQ	
Message type			
Request			
Sender		60.	
Control point			
Mandatory TLVs		07:34 En. 194	
	Name	Version introduced	Version last modified
Terminal Response		1.0	1.0
		5	

Field	Field	Field	Parameter	Size	Description
	value	type	N. 50,	(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.
		uint16	tr_length	2	Number of sets of the following
					elements:
					• terminal_response
		opaque	terminal_response	Var	Terminal response for the relevant
					proactive command, encoded as in [S1],
					Section 6.8.

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.

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 [S8] for ICC and [S9] for UICC.
		uint8	sw2	1	Value of SW2 of the response as defined
					in [S8] for ICC and [S9] 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_UNSUPPORTEDDevice does not support the operation				

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

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.

# 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

Message type

## **Mandatory TLVs**

Request			N	
Sender		γO	) •	
Control point			ó	
Mandatory TLVs		013	COLLIN	
	Name	00 100	ersion introduced	Version last modified
Envelope Command		No 25	1.0	2.18

Field	Field	Field	Parameter	Size	Description
	value	type	720	(byte)	
Туре	0x01		<u> </u>	1	Envelope Command
Length	Var			2	
Value	$\rightarrow$	enum16	env_cmd_type	2	Envelope command type:
					• 0x01 – Menu Selection
					• 0x02 – Event DL User Activity
					• 0x03 – Event DL Idle Screen Available
					• 0x04 – Event DL Language Selection
					• 0x05 – Unknown Type
					• 0x06 – Event DL Browser Termination
					• 0x07 – Send Call Control
					• 0x08 – Event DL HCI Connectivity
					• 0x09 – SMS-PP Data Download
					• 0x0A – Event DL MT Call
					• 0x0B – Event DL Call Connected
					• 0x0C – Event DL Call Disconnected
					All other values are reserved.
		uint16	env_cmd_len	2	Number of sets of the following
					elements:
					• envelope_data
		opaque	envelope_data	Var	Encoded envelope response, as defined
					in [S1], 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
					• 0x03 – Slot 3
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

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

Message type

Response

Sender

Service

## **Mandatory TLVs**

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

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

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Raw Envelope Respone Data
Length	Var			2	
Value	$\rightarrow$	uint8	sw1	1	Value of SW1 of the response, as defined
					in [S8] for ICC and [S9] for UICC.
		uint8	sw2	1	Value of SW2 of the response, as defined
					in [S8] for ICC and [S9] 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.

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 [S1], Section 7.5.

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

## 3.8 QMI CAT GET EVENT REPORT

Retrieves the last proactive command from the modem.

**CAT message ID** 

0x0023

Version introduced

Major - 2, Minor - 0

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

Message type

Request

Sender

**Control Point** 

### **Mandatory TLVs**

Name	Version introduced	Version last modified
Proactive Command Input	2.0	2.0

Field	Field	Field	Parameter	Size	Description
	value	type	120	(byte)	
Туре	0x01		<u> </u>	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

## 3.8.2 Response - QMI\_CAT\_GET\_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 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	2.23
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           USSD String         2.0         2.0           USSD String         2.0         2.0           User Confirmation Alpha         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           Alpha         2.0         2.0 <th>Name</th> <th>Version introduced</th> <th>Version last modified</th>	Name	Version introduced	Version last modified
Redial   2.0   2.0   2.0   Subaddress   2.0	Address	2.0	2.0
Subaddress   2.0   2.0   2.0   Capability Configuration   2.0	Call Setup Requirement	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           Gateway Proxy         2.0         2.0           Alpha         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 SS Event         2.2	Redial	2.0	2.0
DTMF         2.0         2.0           Specific Language         2.0         2.0           Lanunch 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           Gateway Proxy         2.0         2.0           Alpha         2.0         2.0           Notification Required         2.0         2.0           Play Tone 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	Subaddress	2.0	2.0
Specific Language Notification   2.0   2	Capability Configuration	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           Gateway Proxy         2.0         2.0           Alpha         2.0         2.0           Notification Required         2.0         2.0           Play Tone Event         2.2         2.2           Send DTMF Event         2.2         2.2           Launch Browser Event         2.2         2.2           Send SS Event         2.2         2.2           Send SS Event         2.2         2.2           Send USSD Event         2.2	DTMF	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           Gateway Proxy         2.0         2.0           Alpha         2.0         2.0           Notification Required         2.0         2.0           Play Tone Event         2.2         2.2           Send DTMF Event         2.2         2.2           Launch Browser Event         2.2         2.2           Send SS Event         2.2         2.2           Send SS Event         2.2         2.2           Send USSD Event         2.2         2.2           Setup Event List Raw Event	Specific Language Notification	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           Gateway Proxy         2.0         2.0           Alpha         2.0         2.0           Notification Required         2.0         2.0           Play Tone Event         2.2         2.2           Send DTMF Event         2.2         2.2           Launch Browser Event         2.2         2.2           Send SS Event         2.2         2.2           Send SS Event         2.2         2.2           Send USSD Event         2.2         2.2           Setup Event List Raw Event	Language	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           Gateway Proxy         2.0         2.0           Alpha         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 SS Event         2.2         2.2           Send USSD Event         2.2         2.2           Send USSD Event         2.2         2.2           Provide Local Information Event         2.2         2.2           Setup	Launch Mode	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           Gateway Proxy         2.0         2.0           Alpha         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 SS Event         2.2         2.2           Send USSD 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	URL	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           Gateway Proxy         2.0         2.0           Alpha         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           Setup Event List Raw Event         2.2         2.2 </td <td>Browser ID</td> <td>2.0</td> <td>2.0</td>	Browser ID	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         Gateway Proxy       2.0       2.0         Alpha       2.0       2.0         Notification Required       2.0       2.0         Play Tone 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       2.2         Slot       2.2       2.2         Setup Event List Raw Event       2.2       2.2         Slot       2.2       2.2         Slot Channel Event       2.3	Bearer List	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         Gateway Proxy       2.0       2.0         Alpha       2.0       2.0         Notification Required       2.0       2.0         Play Tone 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       2.2         Slot       2.2       2.2         Setup Event List Raw Event       2.2       2.2         Slot       2.2       2.2         Slot Channel Event       2.3	Provisioning Files	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           Gateway Proxy         2.0         2.0           Alpha         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 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         2.2           Open Channel Event         2.3         2.3           Close Channel Event         2.3         2.3           Send Data Event         2.3         2.3		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         Gateway Proxy       2.0       2.0         Alpha       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 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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3	<del>-</del>	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         Alpha       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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3	Immediate Response Request		
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         Alpha       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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3	1		
User Confirmation Icon       2.0       2.0         Setup Call Display Icon       2.0       2.0         Gateway Proxy       2.0       2.0         Alpha       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 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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3		2.0	2.0
Setup Call Display Icon       2.0       2.0         Gateway Proxy       2.0       2.0         Alpha       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 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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3		2.0	2.0
Gateway Proxy       2.0       2.0         Alpha       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 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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3	Setup Call Display Icon		2.0
Alpha       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 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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3		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 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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3	· · · · ·	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       2.2         Open Channel Event       2.3       2.3         Close Channel Event       2.3       2.3         Send Data Event       2.3       2.3		2.0	2.0
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	1.34	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		2.2	2.2
Send SMS 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		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	Launch Browser 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	Send SMS 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	Send SS 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	Send USSD 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	Provide Local Information 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			
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Data Destination Address	2.4	2.4
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Send Data Immediately	2.4	2.4
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Bearer Independent Protocol Status	2.22	2.22
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Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x10			1	Display Text 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
			ò.	1.00	elements:
			00.	er.	• pc_display_text
		opaque	pc_display_text	Var	Display Text proactive command,
			5,00		encoded as in [S1], Section 6.6.1.
Туре	0x11	1	6. 412	1	Get Inkey Event
Length	Var		20,00	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 [S1], 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 [S1], 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
		opaque	pc_setup_menu	Var	Setup Menu proactive command,
					encoded as in [S1], Section 6.6.7.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
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 [S1], 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	1	Proactive command type that includes
					the alpha identifier:
					• 0x01 – Sends an SMS proactive
					command
					All other values are reserved.
		uint16	alpha_id_len	2 _	Number of sets of the following
				. 00	elements:
				300	alpha_identifier
		opaque	alpha_identifier	Var	Alpha identifier, as in [S1], Section 8.2.
Туре	0x16		00.	I.F.	Setup Event List Event
			20 mg		(used only when QMI_CAT is
			5,00		configured in Gobi mode)
Length	4		61 19	2	
Value	$\rightarrow$	uint32	pc_setup_evt_list	4	Setup event list bitmask:
			200		• 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.
		uint16	cmd_len	2	Number of sets of the following
					elements:
					• pc_setup_idle_mode_text
		opaque	pc_setup_idle_mode_text	Var	Setup Idle mode text proactive
					command, encoded as in [S1],
					Section 6.6.22.
Туре	0x18			1	Language Notification 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_lang_notification
		opaque	pc_lang_notification	Var	Language Notification proactive
					command, encoded as in [S1],
					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 [S1], Section 8.6
					(Command Qualifier for Refresh).
		enum16	refresh_stage	2	Stage of the refresh procedure:
					• 0x01 – Refresh start
					• 0x02 – Refresh success
				3"	• 0x03 – Refresh failed
Type	0x1A			1	End Proactive Session
Length	1			2 _	
Value	$\rightarrow$	enum8	proactive_session_end_	100	Proactive session end type:
			type	200	• 0x01 – End proactive session command
				. Oll	received from the card
			0.0	0.4.	• 0x02 – End proactive session internal
			15 75		to the ME
Type	0x1B		5,00	1	Decoded Header ID
Length	6		61 11311	2	
Value	$\rightarrow$	enum8	command_id	1	ID of the proactive command:
			750,		• 0x01 – Display Text
			<u> </u>		• 0x02 – Get Inkey
					• 0x03 – Get Input
					• 0x04 – Launch Browser
					• 0x05 – Play Tone
					• 0x06 – Select Item
					• 0x07 – Send SMS
					• 0x08 – Send SS
					• 0x09 – Send USSD
					• 0x0A – Setup Call – User Confirmation
					• 0x0B – Setup Call – Alpha Display
					• 0x0C – Setup Menu
					• 0x0D – Setup Idle Text
					• 0x0E – Provide Local Information –
					Language
					• 0x0F – Send DTMF
					• 0x10 – Language Notification
					• 0x11 – Setup Event – User Activity
					• 0x12 – Setup Event – Idle Screen
					Notify

Field	Field	Field	Parameter	Size	Description
	value	type	1 '1 / / /	(byte)	0.12 G
			command_id (cont.)		• 0x13 – Setup Event – Language
					Selection Notify
					• 0x14 – Open Channel
					• 0x15 – Close Channel
					• 0x16 – Receive Data
					• 0x17 – Send Data
					• 0x18 – Activate
					• 0x19 – Setup Event – HCI Connectivity
					• 0x1A – Refresh Alpha
					• 0X20 – Setup Event – Browser
					Termination
				-	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
				3	the proactive command for tracking
					purposes to match with the command
					number in the terminal response.
Туре	0x1C			1,0	Text String
Length	Var			2	T <sub>1</sub>
Value	$\rightarrow$	enum8	dcs	1. Pur	Data coding scheme:
			00.	04.	• $0x00 - 7$ -bit GSM
			20 00		• 0x01 – 8-bit GSM
			5		• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
			07.07		elements:
			1,750,		• 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	

Field	Field	Field	Parameter	Size	Description
., .	value	type	1'.C	(byte)	L
Value	$\rightarrow$	enum8	qualifier	1	Icon qualifier:
					• 0x00 – Icon is self-explanatory; it
					replaces the item text
					• 0x01 – Icon is not self-explanatory; it
		0	1 * 1.	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
					• 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	0x20			1. 74	Duration
Length	2		0:	2	
Value	$\rightarrow$	enum8	units	1	Time units:
			( S ) ( S )		• 0x00 – Minutes
			C.O. Walley		• 0x01 – Seconds
			070 77		• 0x02 – Tenths of seconds
		uint8	interval	1	Time interval; this number must be
			0		greater than zero (see [S1], 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
					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 value	Field type	Parameter	Size (byte)	Description
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.
Type	0x25			1	Show User Input
Length	1			2	
Value	$\rightarrow$	enum8	show_user_input	1	Show user input:
				- 1	• 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
			2016.05.18.00.00 deon.thangeas	200	• 0x03 – Congestion tone
				1.00	• 0x04 – Radio path ACK tone
			0.5	0.4.	• 0x05 – Radio path not available, call
			18 25	-	drop tone
			5,00		• $0x06$ – Error tone
		1	6.0 hams		• 0x07 – Call waiting tone
			07077		• 0x08 – Ringing tone
			2,001		• 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:
	•		<i>j</i> =		• 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
	,	21110		_	elements:
					• item_id
					• item_text_length
					• item_text
		uint8	item_id	1	ID of the item. Each item has a unique
		GIIICO	10111_10	1	identifier from 0x01 to 0xFF.
l					identifier 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
					[S6], 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 [S1], 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:
				"	• next_action_list
		enum8	next_action_list	Var	Item in the action list:
					• 0x00 – Setup Call
				00	• 0x01 – Send SS
				2 × ×	• 0x02 – Send USSD
			S S	1.00	• 0x03 – Send Short Message
			2016.05.128.00:05 deon.zhandeas	a. His	• 0x04 – Launch Browser
			4 4		• 0x05 – Play Tone
			7 7 °C°		• 0x06 – Display Text
		1	C.O. value		• 0x07 – Get Inkey
			200 11		• 0x08 – Get Input
			2,50		• 0x09 – Select Item
			0.		• 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:
			1 7=		• 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
					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. 14	Presentation
Length	1		70:5	2	
Value	$\rightarrow$	enum8	presentation	1	Presentation type:
			65, 76		• 0x00 – Not specified
			E'O'N'SUL		• 0x01 – Data value presentation
			-07/1		• 0x02 – Navigation presentation
Туре	0x2D		1,00	1	Packing Required
Length	1		<u> </u>	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 [S6].
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	

Field	Field value	Field type	Parameter	Size (byte)	Description
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
		unito	length	0	elements:
					address_data
		opaque	address_data	Var	Address in byte-based BCD format. The
		opaque	address_data	Vai	maximum length of the address is 200
				1	bytes (see [S1], Section 8.1).
<b>T</b>	021			1.4	-
Туре	0x31			1,0	Call Setup Requirement
Length	1	0	11	2	C II
Value	$\rightarrow$	enum8	call_setup_requirement	1. 190	Call setup requirements:
			00.	E. J.	• $0x00$ – No other calls
		1	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		• 0x01 – Hold active calls
			5,00		• 0x02 – Disconnect active calls
Туре	0x32		GI WALL	1	Redial
Length	3		20,00	2	
Value	$\rightarrow$	boolean	redial_necessary	1	Indicates whether redial is necessary:
			~		• 0x00 – Redial is not necessary
					• 0x01 – Redial is necessary
		enum8	units	1	Time units:
					• 0x00 – Minutes
					• 0x01 – Seconds
					• 0x02 – Tenths of seconds
		uint8	interval	1	Time interval. This value must be greater
					than zero if redial_necessary is set to
					0x01 (see [S1], Section 8.8).
Туре	0x33			1	Subaddress
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
			<i>.</i>		elements:
					• subaddress
		opaque	subaddress	Var	Subaddress in BCD format (two digits
		Taque			encoded in one byte). Maximum size of
					the subaddress is 20 bytes (see [S1],
					Section 8.3).
Type	0x34			1	Capability Configuration
				1 1	L Capaulity Culligulatiuli
Type Length	Var			2	1 7 2

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 [S1],
					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 [S1],
					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
					notification:
				_	• 0x00 – No
				80	• 0x01 – Yes
Туре	0x37			31 3	Language
Length	2		o.	2	
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a
			10 mg		pair of alphanumeric characters (defined
		1	05, 10		in [S3]). Each alphanumeric character is
			16 Thai		coded on one byte using the SMS default
			30,00		7-bit coded alphabet, as defined in [S1],
_	0.20		800		Section 8.45, with bit 8 set to 0.
Туре	0x38				Launch Mode
Length	1			2	
Value	$\rightarrow$	enum8	launch_mode	1	Launch mode:
					• 0x00 – Launch if not already launched
					• 0x01 – Use the existing browser
_	0.20			1	• 0x02 – Close the existing browser
Туре	0x39			1	URL
Length	Var	0	1 .1	2	N. 1. C C.1. C.11.
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
		onegue	url_data	Var	• url_data URL (see [S1], Section 8.48).
Type	0x3A	opaque	u11_uata	var 1	Browser ID
Type Length	1			2	DIOMSCI ID
Value	$\rightarrow$	uint8	browser_id	1	Browser ID (see [S1], Section 8.47).
	$\frac{\rightarrow}{0 \text{x3B}}$	uiillo	UI UW SCI_IU	1	Bearer List
Type	Var			2	Dealer List
Length		uint16	langth	2	Number of sets of the following
Value	$\rightarrow$	umito	length		Number of sets of the following elements:
					• bearer_list
					• Dearet_HSt

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum8	bearer_list	Var	Bearer list:
					$\bullet 0x00 - SMS$
					• 0x01 – CSD
					• 0x02 – USSD bearer code
					• 0x03 – GPRS
					• 0x04 – Bearer default
Туре	0x3C			1	Provisioning Files
Length	Var			2	
Value	$\rightarrow$	uint32	num_of_prov_files	4	Number of sets of the following
			_		elements:
					• length
					• path
		uint8	length	1	Number of sets of the following
					elements:
					• path
		opaque	path	Var	Path to the provisioning file (see [S1],
					Section 8.50).
Туре	0x3D			1 ,	USSD String
Length	Var			200	
Value	$\rightarrow$	enum8	orig_dcs_from_sim	. M ×	Original data coding scheme from the
			· ·	S. OW	SIM:
			20:5	A.	• 0x00 – 7-bit GSM
			4 3		• 0x01 – 8-bit GSM
			( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )		• 0x02 – UCS2
		enum8	des	1	Data coding scheme:
			010 711		• 0x00 – 7-bit GSM
			2,50		• 0x01 – 8-bit GSM
			0		• 0x02 – UCS2
		uint8	length	1	Number of sets of the following
					elements:
					• text
		opaque	text	Var	Text of USSD string (see [S4],
					Section 8.17).
Туре	0x3E			1	Default Text
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	0x3F			1	Immediate Response Request
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	$\rightarrow$	boolean	immediate_resp	1	Indicates whether an immediate response
					is required:
					• 0x00 – No
	0.40			1	• 0x01 – Yes
Type	0x40			1	User Confirmation Alpha
Length	Var	0	,	2	D . 1' 1
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
				- 0	elements:
				-	• text
		opaque	text	Var	Text string data in the specified data
					coding scheme.
Туре	0x41			1	Setup Call Display Alpha
Length	Var			2	
Value	$\rightarrow$	enum8	des	1 🗸	Data coding scheme:
				0	• 0x00 – 7-bit GSM
				3 ×	• 0x01 – 8-bit GSM
				1.00	• 0x02 – UCS2
		uint8	length_of_string	I.F.	Number of sets of the following
			18 25	-	elements:
					• text
		opaque	text	Var	Text string data in the specified data
			070 77		coding scheme.
Туре	0x42		J. 750,	1	User Confirmation Icon
Length	Var		0	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).
					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:
					• data
					- Galle

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	data	Var	Image instance data in binary format.
Туре	0x43			1	Setup Call Display Icon
Length	Var			2	2 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).
					Represents the number of raster image
					points.
		uint8	width	1	Icon width (from the EF-IMG file).
		0.2220		- 1	Represents the number of raster image
					points.
		enum8	ics	- 1	Image coding scheme:
		onum o	100	3.0	• 0x00 – Unknown
					• 0x01 – Basic
				r.	$\bullet 0x02 - Color$
		uint8	rec_num	1,0	Record number in the EF-IMG file.
		uint16	data_size	2	Number of sets of the following
		unitio	data_size	3	elements:
			.:0	, 100.	• data
		opaque	data	Var	Image instance data in binary format.
Туре	0x44	opaque	Cuttu No.	1	Gateway Proxy
Length	Var		0, 10,	2	Suite way 110 hy
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
value	,	Chamo	20.00	1	• $0x00 - 7$ -bit GSM
			85		• $0x01 - 8$ -bit GSM
					$\bullet 0x02 - UCS2$
		uint8	length_of_string	1	Number of sets of the following
		Gilito	lengm_or_sumg	_	elements:
					• text
		opaque	text	Var	Text string data in the specified data
		opaque	text	ا ۲۵۰	coding scheme.
Туре	0x45			1	Alpha
Length	Var			2	P
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
value	<b>'</b>	Cilaino	400	1	• 0x00 – 7-bit GSM
					$\bullet 0x00 = 7 - 0it GSM$ $\bullet 0x01 = 8 - 0it GSM$
					$\bullet 0x01 - 3-011 \text{ GSW}$ $\bullet 0x02 - \text{UCS2}$
		uint8	length_of_string	1	Number of sets of the following
		GIIICO	iongui_oi_suing	1	elements:
					• text
		opaque	text	Var	Text string data in the specified data
		opaque	to At	v ai	coding scheme.
Type	0x46			1	Notification Required
Type				2	ryouncauon required
Length	1				

Field	Field value	Field type	Parameter	Size (byte)	Description
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 [S1], Section 6.6.5.
Туре	0x48			1	Setup Call 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_call
		opaque	pc_setup_call	Var	Setup Call proactive command, encoded
				200	as in [S1], Section 6.6.12.
Туре	0x49		ó	15/10	Send DTMF Event
Length	Var		00.	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	cmd_len	2	Number of sets of the following
		1	6.0 halls		elements:
			07.77		• pc_send_dtmf
		opaque	pc_send_dtmf	Var	Send DTMF proactive command,
			Ů.		encoded as in [S1], 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 [S1], Section 6.6.26.
Туре	0x4B			1	Send SMS 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_sms
		opaque	pc_send_sms	Var	Send SMS proactive command, encoded
			) <del>-</del>		as in [S1], Section 6.6.9.
Туре	0x4C			1	Send SS 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_ss
		opaque	pc_send_ss	Var	Send SS proactive command, encoded as
					in [S1], 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:
					• pc_send_ussd
		opaque	pc_send_ussd	Var	Send USSD proactive command,
					encoded as in [S1], Section 6.6.11.
Туре	0x4E			1	Provide Local Information 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_provide_local_info
		opaque	pc_provide_local_info	Var	Provide Local Information proactive
			ò.	COL	command, encoded as in [S1],
			00.	e. J.	Section 6.6.15.
Туре	0x4F		No 15	1	Setup Event List Raw 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
			ye.		elements:
					• pc_setup_event_list
		opaque	pc_setup_event_list	Var	Setup Event List proactive command,
					encoded as in [S1], Section 6.6.16.
Туре	0x50			1	Slot
Length	1			2	
Value	$\rightarrow$	enum8	slot	1	Indicates the slot to be used:
					$\bullet$ 0x01 – Slot 1
					$\bullet$ 0x02 – Slot 2
					• 0x03 – Slot 3
					• $0x04 - Slot 4$
					$\bullet 0x05 - Slot 5$
_	0.51				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 [S1], Section 6.6.27.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x52			1	Close 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_close_channel
		opaque	pc_close_channel	Var	Close Channel proactive command,
					encoded as in [S1], Section 6.6.28.
Туре	0x53			1	Send 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_send_data
		opaque	pc_send_data	Var	Send Data proactive command, encoded
				3	as in [S1], Section 6.6.30.
Туре	0x54			1	Receive Data Event
Length	Var			2 <	
Value	$\rightarrow$	uint32	uim_ref_id	40	Proactive command reference ID.
		uint16	cmd_len	32	Number of sets of the following
			0.0	1,00	elements:
			00.	E.g.	• pc_receive_data
		opaque	pc_receive_data	Var	Receive Data proactive command,
	0.77		65,40		encoded as in [S1], Section 6.6.29.
Туре	0x55		16, No.	1	On Demand Link Establish
Length	1	1 1	30,00	2	
Value	$\rightarrow$	boolean	on_demand_link_est	1	Indicates whether the link is required:
					• 0x00 – Link is not required
_	0.56			1	• 0x01 – Link is required
Туре	0x56			1	CSD Bearer Description
Length	3	• .0	•	2	
Value	$\rightarrow$	uint8	speed	1	Data rate; same as the speed
					subparameter defined in [S5], Section 6.7.
		0		1	
		enum8	name	1	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 Asynchronous RDI
					• 0x06 – PAD Access Asynchronous RDI
					• 0x07 – Packet Access Synchronous
					RDI
					ILDI

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum8	connection_element	1	CSD bearer connection element:
					• 0x00 – Transparent
					• 0x01 – Nontransparent
					• 0x02 – Both, transparent preferred
					• 0x03 – Both, nontransparent preferred
Туре	0x57			1	GPRS Bearer Description
Length	6			2	
Value	$\rightarrow$	uint8	precedence_cls	1	Precedence class; same as the
					precedence subparameter defined in
					[S4], Section 8.52.2.
		uint8	delay_cls	1	Delay class; same as the delay
					subparameter defined in [S4],
					Section 8.52.2.
		uint8	reliability_cls	1	Reliability class; same as the reliability
					subparameter defined in [S4],
				3"	Section 8.52.2.
		uint8	peak_throughput	1	Peak throughput class; same as the peak
					subparameter defined in [S4],
				00	Section 8.52.2.
		uint8	mean_throughput	2 1 ×	Mean throughput class; same as the
			S S	1.04	mean subparameter defined in [S4],
			0:0	34.	Section 8.52.2.
		enum8	pkt_data_protocol	1	Packet Data Protocol:
			(5/ × @ )		• 0x02 – IP
			C.O. Walley		All other values are reserved.
Туре	0x58		07.77	1	EUTRAN External Parameter Bearer
			1,50		Description
Length	17		· ·	2	
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 [S4], Section 8.52.3.
		uint16	max_bitrate_dl	2	Maximum bitrate DL; same as the
					maximum bitrate DL subparameter
					defined in [S4], Section 8.52.3.
		uint16	guaranteed_bitrate_ul	2	Guaranteed bitrate UL; same as the
					guaranteed bitrate UL subparameter
					defined in [S4], Section 8.52.3.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		uint16	guaranteed_bitrate_dl	2	Guaranteed bitrate DL; same as the
					guaranteed bitrate DL subparameter
					defined in [S4], Section 8.52.3.
		enum8	delivery_order	1	Numeric parameter that indicates if the
					UMTS bearer will provide in-sequence
					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 [S4], Section 8.52.3.
		uint8	max_sdu_err_ratio	1	SDU error ratio; same as the SDU error
					ratio subparameter defined in [S4],
					Section 8.52.3.
		uint8	residual_bit_err_ratio	1	Residual bit error ratio; same as the
					residual bit error ratio subparameter
				00	defined in [S4], Section 8.52.3.
		enum8	delivery_of_err_sdu	31	Numeric parameter that indicates if
				1.04	SDUs detected as erroneous will be
			20:0	a. J.	delivered:
			18 15		• 0x00 – No
			(C)		• 0x01 – Yes
		1	C.O. Walley		• $0x02 - No detect$
			010 71		• 0x03 – Subscribed value
			2,60		All other values are reserved.
		uint8	transfer_delay	1	Transfer delay; same as the transfer
					delay subparameter defined in [S4],
					Section 8.52.3.
		uint8	traffic_handling_pri	1	Traffic handling priority; same as the
					traffic handling priority subparameter
					defined in [S4], Section 8.52.3.
		enum8	pdp_type	1	PDP type:
					• 0x02 – IP
					All other values are reserved.
Type	0x59			1	EUTRAN External Mapped UTRAN PS
					Bearer Description
Length	10			2	0.07 (
Value	$\rightarrow$	uint8	qci	1	QCI (see [S4], Section 8.52.5).
		uint8	max_bitrate_ul	1	Maximum bitrate UL (see [S4],
					Section 8.52.5).
		uint8	max_bitrate_dl	1	Maximum bitrate DL (see [S4],
					Section 8.52.5).
		uint8	guaranteed_bitrate_ul	1	Guaranteed bitrate UL (see [S4],
					Section 8.52.5).
		uint8	guaranteed_bitrate_dl	1	Guaranteed bitrate DL (see [S4],
					Section 8.52.5).

uint8 max_bitrate_dl_ext 1 Maximum bitrate_dl_ext Section 8.52.5)  uint8 guaranteed_bitrate_ul_ext 1 Guaranteed bitrate_ul_ext Section 8.52.5)	rate DL Ext (see [S4], rate UL Ext (see [S4], rate DL Ext (see [S4], rate DL Ext (see [S4],
	rate DL Ext (see [S4], rate UL Ext (see [S4], rate DL Ext (see [S4], .
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	rate DL Ext (see [S4], rate UL Ext (see [S4], rate DL Ext (see [S4], .
uint8         max_bitrate_dl_ext         1         Maximum bitrate_section 8.52.5)           uint8         guaranteed_bitrate_ul_ext         1         Guaranteed bitrate bitrate_dl_ext           uint8         guaranteed_bitrate_dl_ext         1         Guaranteed bitrate bitrate_dl_ext           enum8         pdp_type         1         PDP type:	rate DL Ext (see [S4], rate UL Ext (see [S4], rate DL Ext (see [S4], rate DL Ext (see [S4],
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	rate UL Ext (see [S4], rate DL Ext (see [S4],
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$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Type $0x5A$ 1Buffer SizeLength22Value $\rightarrow$ uint 16buffer_size2Buffer size.Type $0x5B$ 1Network Access	
Length22Value $\rightarrow$ uint16buffer_size2Buffer size.Type0x5B1Network Access	s are reserved.
Value $\rightarrow$ uint16buffer_size2Buffer size.Type0x5B1Network Access	
Value $\rightarrow$ uint16buffer_size2Buffer size.Type0x5B1Network Access	
Ar I I	
	ss Name
	of the following
elements:	C
• text	
	s name encoded in ASCII
1.2 .	S4], Section 8.61).
Type 0x5C 1 Other Address	, ,
Length         Var         2           Value         →         enum8         address_type         1         Address type:           • 0x01 − No ad         • 0x02 − Dynar           • 0x03 − IPv4           • 0x04 − IPv6	
• 0x01 – No ad	dress given
• 0x02 – Dynar	•
• 0x03 – IPv4	
• 0x04 – IPv6	
All other value	s are reserved.
uint8 length 1 Number of sets	of the following
elements:	· ·
• address_data	
opaque address_data	S1], Section 8.58).
Type 0x5D 1 User Login	
Length Var 2	
Value   →   enum8   dcs   1   Data coding scl	heme:
• 0x00 – 7-bit 0	GSM
$\bullet$ 0x01 – 8-bit 0	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.	•
Type 0x5E 1 User Password	
Length Var 2	

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	0x5F			1	Transport Level
Length	3			2	
Value	$\rightarrow$	enum8	transport_protocol	1	Transport protocol:
			• •		• $0x00$ – Not present
					• 0x01 – UDP
					• 0x02 – TCP
			A (	30	All other values are reserved.
		uint16	port_number	2	Port number.
Туре	0x60			1 ,	Data Destination Address
Length	Var			2,0	
Value	$\rightarrow$	enum8	address_type	31	Address type:
				13.00	• 0x01 – No address given
			0:0	4.0	• 0x02 – Dynamic
			5 5	200	• 0x03 – IPv4
			( ) ( ) ( ) ( ) ( )		• 0x04 – IPv6
		1	, O', 3m's		All other values are reserved.
		uint8	length	1	Number of sets of the following
			23,001		elements:
			000		• address data
		opaque	address_data	Var	Address (see [S1], Section 8.58).
Туре	0x61	1 1	<del></del>	1	Channel Data Length
Length	1			2	C
Value	$\rightarrow$	uint8	ch_data_length	1	Number of bytes that are available in the
					channel buffer, or the number of bytes
					that are requested in a Received Data
					command (see [S1], Section 8.54).
Туре	0x62			1	Send Data Immediately
Length	1			2	, ,
Value	$\rightarrow$	boolean	send_data_immediately	1	Indicates whether to send the data
	,				immediately:
					• $0x00 - No$ , store the data in the Tx
					buffer
					• 0x01 – Yes, send the data immediately
Туре	0x63			1	Channel Data
Length	Var			2	Chamillo Data
Value	$\xrightarrow{var}$	uint16	data_len	2	Number of sets of the following
value	$\neg$	umitio	auu_ion		elements:
					• channel_data_string
					- chaimer_uata_sumg

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	channel_data_string	Var	Channel data string is considered by the
					terminal as binary coded on 8 bits (see
					[S1], Section 8.53).
Туре	0x64			1	Channel ID
Length	1			2	
Value	$\rightarrow$	uint8	ch_id	1	Channel ID (see [S1], Section 8.7).
Туре	0x65			1	Items with DCS
Length	Var			2	
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
				3"	identifier from 0x01 to 0xFF.
		enum8	dcs	1	Data coding scheme:
				_	• $0x00 - 7$ -bit GSM
				00	• 0x01 – 8-bit GSM
				200 1	• 0x02 – UCS2
		uint8	item_text_length	1. 194	Number of sets of the following
			0:0	a. J.	elements:
			4 5		• item_text
		opaque	item_text	Var	Item text (see [S6], clause 4.4.2.3).
Туре	0x66		C. C. Walley	1	Activate Event
Length	Var		07.07	2	
Value	$\rightarrow$	uint32	uim_ref_id	4	Proactive command reference ID.
		uint16	pc_activate_len	2	Number of sets of the following
			• – –		elements:
					• pc_activate
		opaque	pc_activate	Var	Activate proactive command encoded as
		11	r -=		in [S1], Section 6.6.40.
Туре	0x67			1	Activate Descriptor Target
Length	1			2	
Value	$\rightarrow$	enum8	target	1	Activate descriptor target (see [S1],
	.		<b>3</b>		Section 8.89):
					• 0x01 – UICC-CLF interface according
					to [S10]
					All other values are reserved for future
					use.
Туре	0x68			1	Response Type
	4			2	Response Type
Length	4				

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
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.
Type	0x69			1	Bearer Independent Protocol Status
Length	5			2	
Value	$\rightarrow$	uint8	ch_id	1	Channel ID (see [S1], 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
				00	control point.
Type	0x6A			24 .	Refresh Alpha
Length	Var			2	
Value	$\rightarrow$	uint32	uim_ref_id	34	Proactive command reference ID.
		uint16	pc_refresh_alpha_len	2	Number of sets of the following
			5 20		elements:
		1	67 112		• pc_refresh_alpha
		opaque	pc_refresh_alpha	Var	Refresh proactive command encoded as
			750.		in [S1], Section 6.6.13.
			V		This is sent only if the refresh command
					contains alpha to be displayed.

#### **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_UNSUPPORTEDDevice does not support the operation			

## 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.

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## 3.9 QMI\_CAT\_SEND\_DECODED\_TR

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

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

Message type

Request

Sender

Control point

### **Mandatory TLVs**

Name	Version introduced	Version last modified
Terminal Response	2.0	2.19

Field	Field	Field	Parameter	Size	Description
	value	type	7,00	(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.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		enum8	response_cmd	1	Type of proactive command for which
					the terminal response is sent:
					• 0x01 – Display Text
					• 0x02 – Get Inkey
					• 0x03 – Get Input
					• 0x04 – Launch Browser
					• $0x05$ – Play Tone
					• 0x06 – Select Item Request
					• 0x07 – Setup Menu
					• 0x08 – Setup Idle Text
					• 0x09 – Provide Local Information –
					Language
					• 0x0A – Setup Event – User Activity
				800	• 0x0B – Setup Event – Idle Screen
					Notify
				30	• 0x0C – Setup Event – Language Select
					Notify
				,	• 0x0D – Language Notification
				~Ô	• 0x0E – Activate
				2 × ×	• 0x0F – Setup Event – HCI Connectivity
				1.3.04	• 0x10 – Setup Event – Browser
			0:0	24.0	Termination
			25 25		• 0x11 – Send SMS
			~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		• 0x12 – Setup Call
			(10, 200)		• 0x13 – Send DTMF
			200 111		• 0x14 – Send SS
			2, 601.		• 0x15 – Send USSD
			0		All other values are reserved.
		enum8	general_result	1	Result of the proactive command, as
					defined in [S1], Section 8.12.
		uint8	additional_info_length	1	Number of sets of the following
					elements:
					• tr_additional_info
		opaque	tr_additional_info	Var	Additional information is only required
					for some commands. [S1], 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	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	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
Length	Var			2 <	
Value	$\rightarrow$	enum8	unit	IQV	Time units:
				3	• 0x00 – Minutes
			0.0	1,00	• 0x01 – Seconds
			00.1	E.g.	• 0x02 – Tenths of seconds
		0	7.50 W.S.		• -1 – Duration is not present
		uint8	interval	1	Time interval. This number must be
		0	6, 100	1	greater than zero.
		enum8	dcs	1	Data coding scheme:
			95		• 0x00 – 7-bit GSM • 0x01 – 8-bit GSM
					0x01 - 8-Dit GSM $ 0x02 - UCS2$
		uint8	length_of_string	1	Number of sets of the following
		umto	iciigiii_oi_sti iiig	1	
					elements: • text
		opaque	text	Var	Text string data in the specified data
		opaque	text	, vai	coding scheme.
Туре	0x13			1	Language Info
Length	2			2	
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a
	·		6 ·· ·· · · · · ·	_	pair of alphanumeric characters (defined
					in [S3]). Each alphanumeric character is
					coded on one byte using the SMS default
					7-bit coded alphabet, as defined in [S1],
					Section 8.45, with bit 8 set to 0.
Туре	0x14			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	0x15			1	Get Inkey Yes/No Info
Length	3			2	<b>®</b>
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	get_inkey_yes_no	1	Yes/No input for get inkey:
				_	• 0x00 – No
				00	• 0x01 – Yes
				2 ×	If a text input is required from the user,
			ó	1. Oll	the Get Inkey Extra Info TLV must be
			0.5	34.	used.

# 3.9.2 Response - QMI\_CAT\_SEND\_DECODED\_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	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Value	$\rightarrow$	uint8	sw1	1	Value of SW1 of the response, as defined
					in [S8] for ICC and [S9] for UICC.
		uint8	sw2	1	Value of SW2 of the response as defined
					in [S8] for ICC and [S9] 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 3 5 C

#### Description of QMI\_CAT\_SEND\_DECODED\_TR REQ/RESP 3.9.3

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	2.19

Field	Field value	Field type	Parameter	Size (byte)	Description
Туре	0x01		<b>→</b>	1	Envelope Command
Length	1			2	

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
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.
					• 0x01 – Menu Selection
					• 0x02 – Event DL Language Selection
					• 0x03 – Event DL User Activity
					• 0x04 – Event DL Idle Screen Available
					• 0x05 – Send Call Control
					• 0x06 – Event DL HCI Connectivity
					• 0x07 – Event DL Browser Termination
					• 0x08 – SMS-PP Data Download
					• 0x09 – Event DL MT Call
					• 0x0A – Event DL MT Call Connected
					• 0x0B – Event DL MO Call Connected
				3	• 0x0C – Event DL Call Disconnected
					near end
					• 0x0D – Event DL Call Disconnected
				00	far end
				2 × ×	All other values are reserved.

## **Optional TLVs**

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
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

Field	Field value	Field type	Parameter	Size (byte)	Description
Туре	0x10	турс		1	Item Identifier
Length	1			2	item identifier
Value	$\rightarrow$	uint8	identifier	1	Identifier of the item chosen.
	0x11	uiiito	identifier	1	
Туре				2	Help Request
Length	1	1 1	1 1	1	Wile of the last of the second of
Value	$\rightarrow$	boolean	help_request	1	Whether help is requested:
					• 0x00 – No help is requested
_	0.10			1	• 0x01 – Help is requested
Туре	0x12			1	Language
Length	2			2	
Value	$\rightarrow$	uint16	language	2	Language value. Each language code is a
				9	pair of alphanumeric characters (defined
				-	in [\$3]). Each alphanumeric character is
					coded on one byte using the SMS default
				- 13	7-bit coded alphabet, as defined in [S1],
					Section 8.45, with bit 8 set to 0.
Туре	0x13			1	Slot
Length	1			2 <	
Value	$\rightarrow$	enum8	slot	1¢V	Indicates the slot to be used:
				3	• 0x01 – Slot 1
			ò.	1.00	$\bullet 0x02 - Slot 2$
			00.	E.J.	• 0x03 – Slot 3
			20 000		• 0x04 – Slot 4
			5,00		• 0x05 – Slot 5
			6 hall		Other values are reserved for future use.
Туре	0x14		20, 20,	1	Address
Length	Var		200	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
					maximum length of the address is 200
					bytes (see [S1], Section 8.1).
Туре	0x15			1	Subaddress
Length	Var			2	Sacutation
Lengui	val				

Field	Field	Field	Parameter	Size	Description
	value	type	141.	(byte)	Name to a Control Called Called Called
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 [S1],
					Section 8.3).
Туре	0x16			1	Capability Configuration Parameter 1
Length	Var			2	8
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see [S1],
		opaque	capability_comig_data	7.01	Section 8.4).
Time	0x17			1	Capability Configuration Parameter 2
Type	Var			2	Capability Configuration Farameter 2
Length		0	1 .1		N. 1 C . C.1 C.11
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
				_	elements:
				80	• capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see [S1],
				1.00	Section 8.4).
Туре	0x18		00.	110	USSD String
Length	Var		, P , S	2	
Value	$\rightarrow$	enum8	dcs	1	Data coding scheme:
		1	des		• $0x00 - 7$ -bit GSM
			70 11		• 0x01 – 8-bit GSM
			25.00		$\bullet 0x02 - UCS2$
		uint8	length_of_string	1	Number of sets of the following
		unito	lengui_or_sumg	1	elements:
			40.04	17au	Text string data in the specified data
		opaque	text	Var	
_	0.10			1	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 [S6].
Туре	0x1A			1	EPS PDN Connect Activation
Length	Var			2	
Value	$\rightarrow$	uint8	eps_pdn_connect_act_	1	Number of sets of the following
Taide	,	GIIICO	data_len	1	elements:
			Gata_1011		
					eps_pdn_connect_act_data

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
		opaque	eps_pdn_connect_act_data	Var	EPS PDN connect activation data; coded
					as the PDN Connectivity Request
					message, specified in [S7].
Туре	0x1B			1	Browser Termination Cause
Length	4			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 [S6].
Туре	0x1D			31 3	Is CDMA SMS
Length	1		o o	2	
Value	$\rightarrow$	boolean	is_cdma_sms	e l'I	CDMA SMS format indication:
			75 675		• 0x00 – FALSE (3GPP format)
			05, 110		• 0x01 – TRUE (3GPP2 format)
			16 Tho		This defaults to FALSE if the TLV is not
_	0-1E		20,000	1	present.
Туре	0x1E		80,7	1	Radio Access Technology
Length	4			2	A
Value	$\rightarrow$	enum	rat	4	Access technology type:
					• 0x00000000 - CAT_ACCESS_TECH_
					NONE – RAT is unknown
					• 0x00000001 – CAT_ACCESS_TECH_ GSM – GSM is used
					• 0x00000002 – CAT_ACCESS_TECH_
					UTRAN – UTRAN is used
					• 0x00000003 – CAT_ACCESS_TECH_
					CDMA – CDMA is used
					• 0x00000004 – CAT_ACCESS_TECH_
					LTE – LTE is used
					• 0x00000005 - CAT_ACCESS_TECH_
					WLAN – WLAN is used
Туре	0x1F			1	Call Type
Length	4			2	cui Type
Lengin	4				

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	$\rightarrow$	enum	call_type	4	Call Type:
	·				• 0x00000000 - CAT_VOICE - Voice
					• 0x00000001 – CAT SS – SS
					• 0x00000002 – CAT_USSD – USSD
					• 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 [S1],
					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
				00	• 0x02 – National number
				200 1	• 0x03 – Network-specific number
		enum8	npi	54. PW.	NPI of the address:
			20:0	3.	• 0x00 – Unknown
			4 5		• 0x01 – ISDN telephony
			600		• 0x02 – Data NPI
		1	C.O. value		• 0x03 – Telex NPI
			010 11		• 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 [S1], Section 8.1).
Туре	0x22			1	TP 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

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 [S1], 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 [S1], Section 8.26).
Type	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
		char	ims_request_uri	Var	

## 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

Name	Version introduced	Version last modified
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
				200	with modification
Туре	0x11			1	Address
Length	Var		4	2	
Value	$\rightarrow$	enum8	ton	1	TON of the address:
					• $0x00 - Unknown$
				~	• 0x01 – International number
				N. X.	• 0x02 – National number
				3 10	• 0x03 – Network-specific number
		enum8	npi	T	NPI of the address:
			202	200	• $0x00 - Unknown$
			N 67		• 0x01 – ISDN telephony
			0, 300		• 0x02 – Data NPI
			10. The		• 0x03 – Telex NPI
			20,000		• 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
		11			maximum length of the address is 200
					bytes (see [S1], Section 8.1).
Туре	0x12			1	Subaddress
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
					elements:
					• subaddress
		opaque	subaddress	Var	Subaddress in BCD format (two digits
		11			encoded in one byte). Maximum size of
					the subaddress is 20 bytes (see [S1],
					Section 8.3).
Туре	0x13			1	Capability Configuration Parameter 1
Length	Var			2	
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
	,	GIIICO	10.5		elements:
					capability_config_data
l			I	I	- apaomy_comg_aaa

Field	Field value	Field type	Parameter	Size (byte)	Description
	value	opaque	capability_config_data	Var	Capability configuration data (see [S1],
		opaque	capacinty_comig_data	, vai	Section 8.4).
Туре	0x14			1	Capability Configuration Parameter 2
Length	Var			2	Capasini Comiguration Larameter 2
Value	$\rightarrow$	uint8	length	1	Number of sets of the following
7	,		10118111	_	elements:
					• capability_config_data
		opaque	capability_config_data	Var	Capability configuration data (see [S1],
			1		Section 8.4).
Туре	0x15			1	USSD String
Length	Var			2	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
					$\bullet 0x00 - 7$ -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
				200	coding scheme.
Туре	0x16		o.	1. 194	PDP Context Activation
Length	Var		00.	2	
Value	$\rightarrow$	uint8	pdp_context_act_data_len	1	Number of sets of the following
			5 10		elements:
			6, 4131		• pdp_context_act_data
		opaque	pdp_context_act_data	Var	PDP context activation data. Coded as
			200		the Activate PDP Context Request
					message, specified in [S6].
Туре	0x17			1	EPS PDN Connect Activation
Length	Var			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
_	0.10				message, specified in [S7].
Туре	0x18			1	Alpha
Length	Var		1	2	D. II
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
					• 0x00 – 7-bit GSM
					• 0x01 – 8-bit GSM
		nic 40	longth of string	1	• 0x02 – UCS2
		uint8	length_of_string	1	Number of sets of the following
					elements:
		onegue	tovt	Var	• text  Toyt string data in the specified data
		opaque	text	var	Text string data in the specified data
					coding scheme.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
Туре	0x19			1	BC Repeat Indicator
Length	1			2	
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 [S4], Section 7.1.
Туре	0x1B			1	RP Address
Length	Var			2	
Value	$\rightarrow$	enum8	ton	1	TON of the address:
					• 0x00 – Unknown
				_	• 0x01 – International number
				0	• 0x02 – National number
				3	• 0x03 – Network-specific number
		enum8	npi	EA. Pul	NPI of the address:
			00.	E. J.	• 0x00 – Unknown
			A		• 0x01 – ISDN telephony
			5 10		• 0x02 – Data NPI
			6 Mall		• 0x03 – Telex NPI
			02.07		• 0x04 – Private NPI
			150		• 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 [S1], Section 8.1).
Туре	0x1C			1	TP 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

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 [S1], Section 8.1).
Туре	0x1D			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
		char	ims_request_uri	Var	

#### **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 [S1], 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.

#### QMI CAT EVENT CONFIRMATION 3.11

Sends user and icon confirmation for network-related commands.

**CAT message ID** 

0x0026

**Version introduced** 

Major - 2, Minor - 0

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

Message type

Request		W.	
Sender		<b>O</b> ,	
Control point			
Mandatory TLVs		or:34 EDIN	
None	00	0, 10,	
Optional TLVs	05-150@?		
	Name	Version introduced	Version last modified
User Confirmed	100	2.0	2.0
Icon is Displayed	<u> </u>	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
					$\bullet 0x02 - Slot 2$
					• $0x03 - Slot 3$
					• 0x04 – Slot 4
					• $0x05 - Slot 5$
					Other values are reserved for future use.

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

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**

None

#### **Error codes**

	T
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	

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

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.



#### QMI CAT SCWS OPEN CHANNEL 3.12

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

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

#### Message type

#### Sender

### **Mandatory TLVs**

Request		-(				
Sender		'C				
Control point	A ROLL					
Mandatory TLVs	00.01.3com.					
	Name	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	Version introduced	Version last modified		
Channel Status		5 0	2.6	2.6		

Field	Field	Field	Parameter	Size	Description
	value	type	0	(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 value	Field type	Parameter	Size (byte)	Description
Туре	0x10	туре		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.

3.12.2 Response - QMI_CAT_SCWS_OPEN_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
3.12.3 Indication - QMI_CAT_SCWS_OPEN_CHANNEL_IND
Message type
Message type Indication
Indication
Indication Sender
Indication  Sender  Service
Indication  Sender  Service  Scope

### **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
				. 00	• 0x02 – Slot 2
				3	• 0x03 – Slot 3
			ò.	COL.	• 0x04 – Slot 4
			00.	E. J.	• 0x05 – Slot 5
			NO 015		Other values are reserved for future use.
Type	0x12		5,00	1	Alpha
Length	Var		6, 4,	2	
Value	$\rightarrow$	enum8	des	1	Data coding scheme:
			Seo.		• 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.

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## 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	Version introduced	Version last modified
Channel Status	2.6	2.6

Field	Field	Field	Parameter	Size	Description
	value	type	7,00	(byte)	
Туре	0x01		0	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:
				3"	• 0x01 – Slot 1
					• $0x02 - Slot 2$
					• $0x03 - Slot 3$
				00	• 0x04 – Slot 4
				2 ×	• 0x05 – Slot 5
				1.00	Other values are reserved for future use.

#### **Error codes**

	. A W
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.

#### QMI\_CAT\_SCWS\_SEND\_DATA 3.14

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

Request

Sender

Control point

#### **Mandatory TLVs**

Name	19,00	/ersion introduced	Version last modified
Channel Status		2.6	2.6

Field	Field	Field	Parameter	Size	Description
	value	type	J. 1501.	(byte)	
Туре	0x01		<u> </u>	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 – Success

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
					• $0x02 - Slot 2$
					$\bullet 0x03 - Slot 3$
					• 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
				"	• 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
7,0	or the message was corrupted during transmission
QMI_ERR_OP_DEVICE_	Device does not support the operation
UNSUPPORTED	

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## 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.

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

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

### **Mandatory TLVs**

Request	and a	
Sender	۷Ο,	
Control point		
Mandatory TLVs	01:36 Pr. 1.m	
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	0	(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.
Туре	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	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.

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

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** 

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

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

Message type

Request

Sender

Control point

#### **Mandatory TLVs**

Name	Version introduced	Version last modified
Channel Status	2.6	2.6

Field	Field	Field	Parameter	Size	Description
	value	type	7,00	(byte)	
Туре	0x01		0	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.

## 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	

## 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.

#### QMI CAT GET TERMINAL PROFILE 3.17

Retrieves the current modem terminal profile.

**CAT message ID** 

0x002C

Version introduced

Major - 2, Minor - 10

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

Message type

#### **Optional TLVs**

Slot	1201	2.10	2.20
	Name	Version introduced	Version last modified
Optional TLVs	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	7	
None	00	2,10	
Mandatory TLVs		oriza Prim	
Control point			
Sender	(	<b>O</b> ,	
Request			

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
					$\bullet 0x02 - Slot 2$
					$\bullet 0x03 - Slot 3$
					• 0x04 – Slot 4
					• 0x05 – Slot 5
					Other values are reserved for future use.

#### Response - QMI CAT GET TERMINAL PROFILE RESP 3.17.2

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**

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		-	2	
Value	$\rightarrow$	uint8	terminal_profile_data_len	1	Number of sets of the following
				1	elements:
				5	• 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
100	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.

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

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

Message type

### **Mandatory TLVs**

Request			
Sender		40,	
Control point			
Mandatory TLVs		OT: 34 P. Inh	
	Name	Version introduced	Version last modified
Configuration Mode		2.11	2.11

Field	Field	Field	Parameter	Size	Description
	value	type	7,00	(byte)	
Туре	0x01		<u> </u>	1	Configuration Mode
Length	1			2	
Value	$\rightarrow$	enum8	cat_config_mode	1	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.

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
					[S1], 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.
Type	0x11			1	Custom Terminal Profile Data
Length	Var			2	
Value	$\rightarrow$	uint8	custom_tp_len	1 <	Number of sets of the following
				0	elements:
				3	• custom_tp
		opaque	custom_tp	Var	Custom terminal profile, encoded as in
			00.	E.J.	[S1], Section 5.2.
			6-05-12-00:50	and the second	The first byte of the TP bitmask starts
			5,00		from custom_tp[0].
		1	6 Hall		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.

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

Retrieves a cached proactive command from the modem.

**CAT message ID** 

0x002F

Version introduced

Major - 2, Minor - 26

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

Message type

Request

Sender

**Control Point** 

### **Mandatory TLVs**

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

Field	Field	Field	Parameter	Size	Description
	value	type	7,00	(byte)	
Туре	0x01		<u> </u>	1	ID of the Proactive Command
Length	4			2	
Value	$\rightarrow$	enum	command_id	4	ID of the proactive command:
					• CAT_CACHED_COMMAND_ID_
					SETUP_MENU (0x01) – Setup menu
					• CAT_CACHED_COMMAND_ID_
					SETUP_EVENT_LIST (0x02) – Setup
					event list
					• CAT_CACHED_COMMAND_ID_
					SETUP_IDLE_TEXT (0x03) – Setup
					Idle mode text
					Other values are reserved for future use.

Name	Version introduced	Version last modified
Slot	2.26	2.26

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.

## 3.20.2 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	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
		opaque	pc_setup_menu	Var	Setup Menu proactive command,
					encoded as in [S1], Section 6.6.7.

Field	Field	Field	Parameter	Size	Description
	value	type		(byte)	
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 [S1], 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:
					• pc_setup_idle_mode_text
		opaque	pc_setup_idle_mode_text	Var	Setup Idle mode text proactive
				7	command, encoded as in [S1],
					Section 6.6.22.

#### **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_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	

# 3.20.3 Description of QMI\_CAT\_GET\_CACHED\_PROACTIVE\_CMD 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.

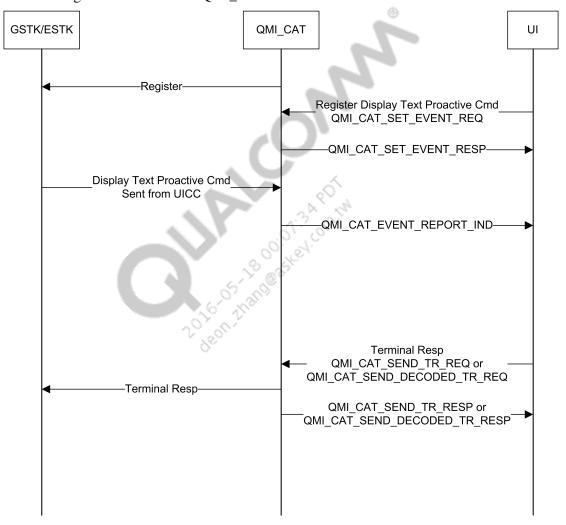


Figure A-1 Display text

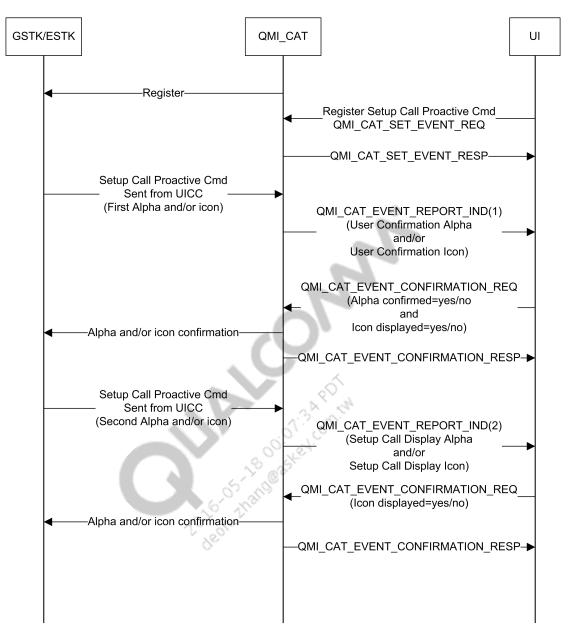


Figure A-2 Set up call with two alpha identifiers

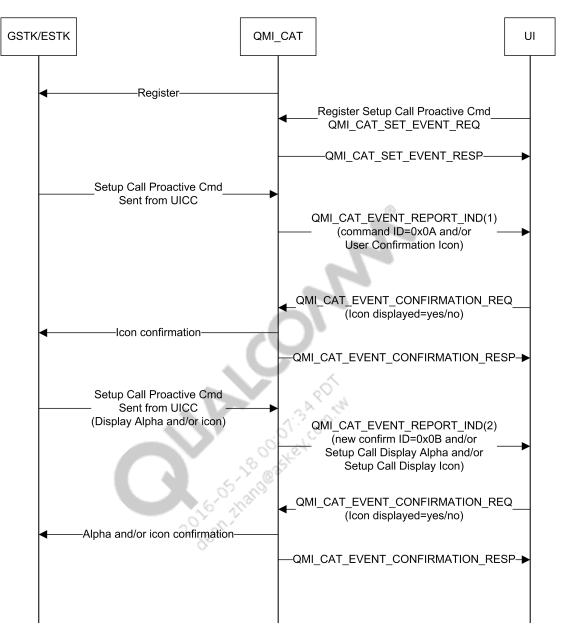


Figure A-3 Set up call with display alpha identifier only

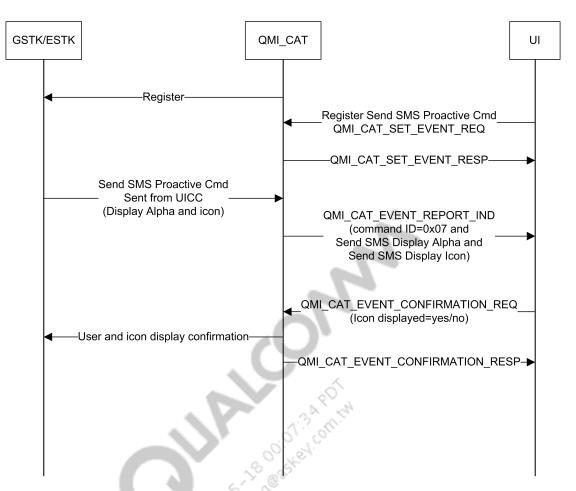


Figure A-4 Send SMS with display alpha identifier and display icon

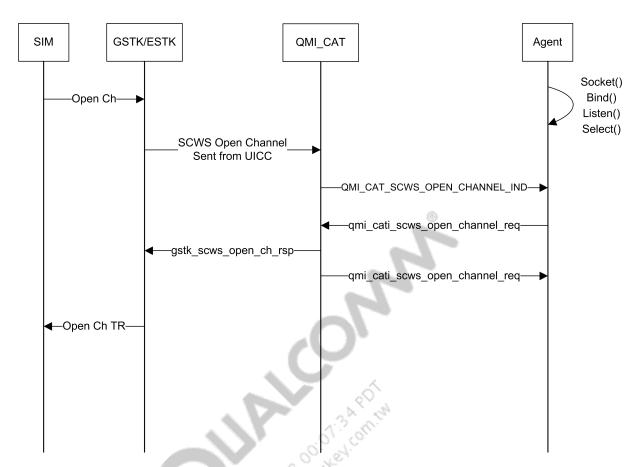


Figure A-5 SCWS open channel

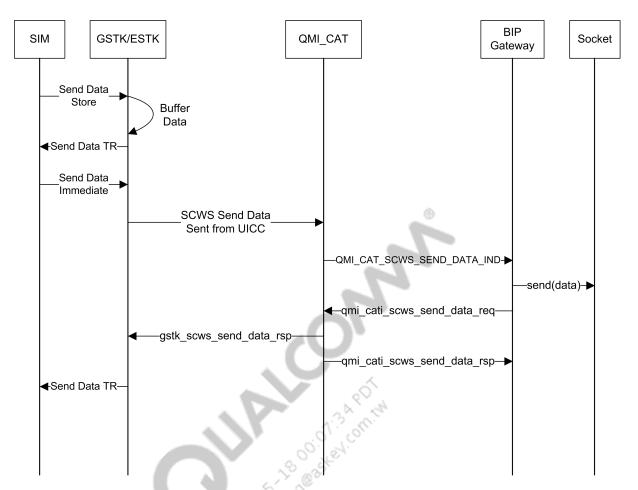


Figure A-6 SCWS send data

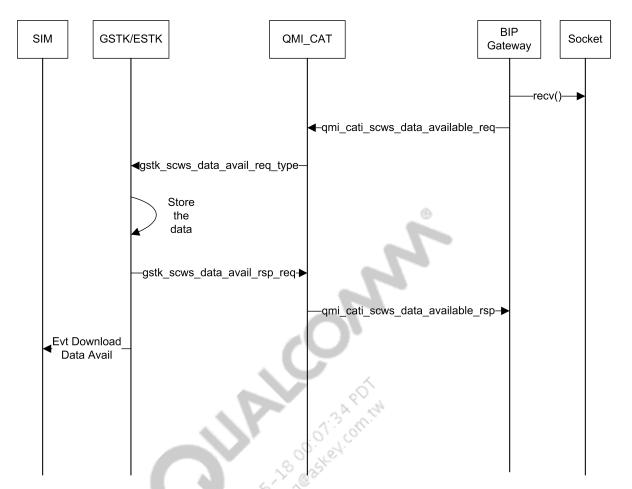


Figure A-7 SCWS data available

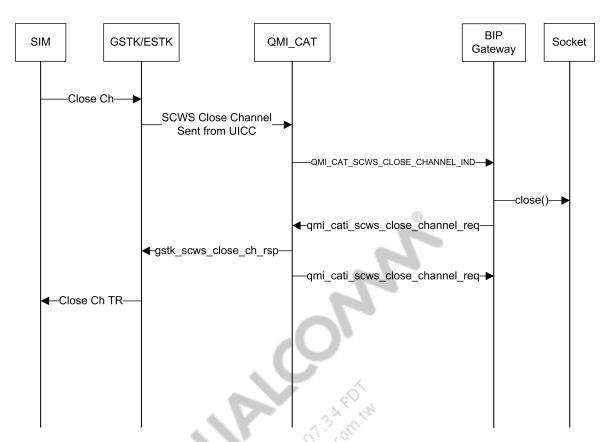


Figure A-8 SCWS close channel

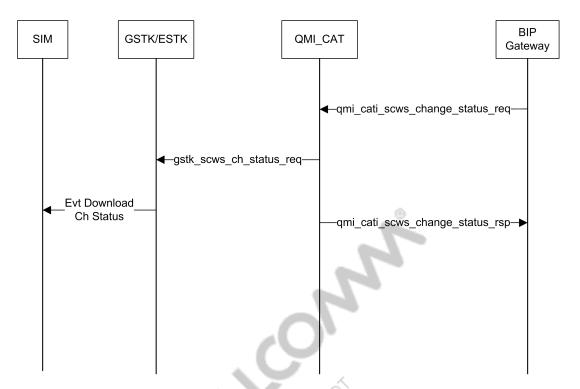


Figure A-9 SCWS channel status

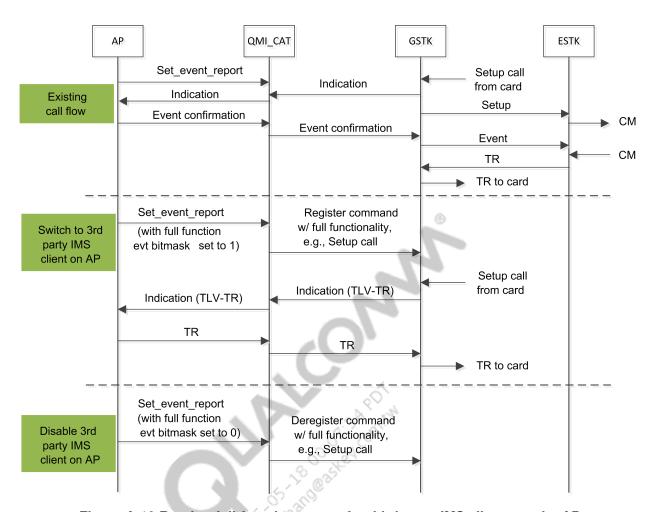


Figure A-10 Routing full-function events for third party IMS clients on the AP

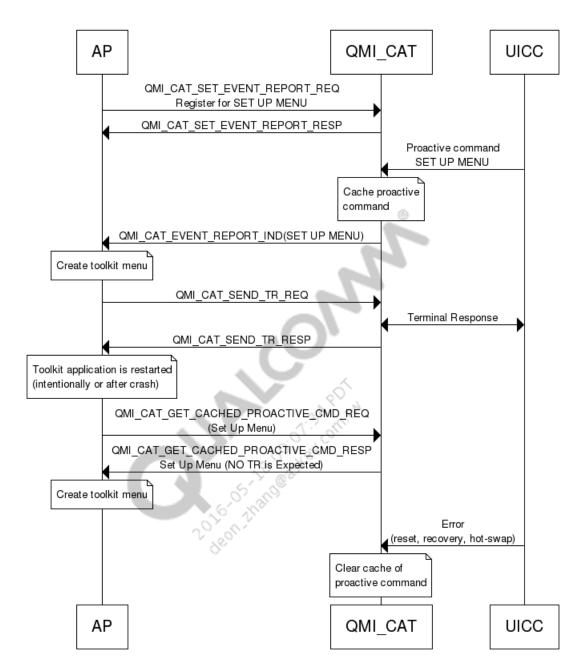


Figure A-11 Flow for Get Cached Proactive Command

#### Supplementary TLVs В

#### **Display Text Decoded B.1**

#### 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

#### **Get Inkey Decoded B.2**

#### 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	2013	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	20,00	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**

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	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.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	76	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	<b>(a)</b>	
Parameter/Mapped UTRAN PS)		lo .
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	70	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

	Name	Version introduced	Version last modified
Alpha		2.5	2.5
Icon	6	2.0	2.0
Slot	207	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
6,7,73	QMI_CAT_SEND_DECODED_TR
Setup Event – Idle Screen Notify	QMI_CAT_SEND_TR or
720	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



# **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	20: 24:	Status
Envelope Command	8 35 E	Mandatory
Slot	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	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	.01.	Status
Envelope Command	00:64	Mandatory
PDP Context Activation	No 025	Mandatory
Radio Access Technology	5 3	Mandatory
Slot	6 113	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	Status
Result Code	15 675	Mandatory
Call Control Result	05,40	Optional
Alpha	16' 1kg	Optional
RP Address	30,00.	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 [S1] Section 7.5.1)
Subaddress	Conditional (refer to [S1] Section 7.5.1)
Slot	Optional

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

Name	Status
Envelope Command	Mandatory
Transaction ID	Mandatory
Slot	Optional

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

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