SyUM Multi TA

TR7.0_UICC

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Document information

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Abstract	

Revision history

Revision	Date	Description	Author
1.0	2008/06/02	Created from 13808 V1.36	V. Beunardeau
		Modify CRSM and CSIM for Multi-Application feature.	
		Modify *PSSTK for BIP and RUN AT COMMAND.	
		Add CCHO, CCHC, CUAD, CGLA for Multi-Application feature.	
		Add *SMCREGEV, *SMCEVACK, *PSUAGR for Multi-Application feature.	
1.1	2008-06-09	Update +CGEQREQ & +CGEQMIN to support R5 QOS parameters	V. Beunardeau
1.2	2008-11-25	Updates in *PSRDBS Command for MS Type change feature	Bikash Jindal
1.2	2009-04-29	Addition of new parameter <Act> in AT+CREG and AT+CGREG	Bikash Jindal
1.4	2009-10-13	Addition of new cause value in AT+CEER	Durgesh
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		Modify *PSRDBS AT COMMAND	
		Add *PSSIMSTAT, *PSSSDT, *PSIMEISV, GTKI, GTKR, GTKE, COTA, GTKA, GTKD, GTKS, GTKC, *IPRIC, *IPACT, *IPDNS, *IPCONFIG, *EVCD, *EVCA, *EVCH	
1.6	2009-11-10	Modify +CLCK and +CCFC AT COMMAND	Durgesh
		Added *PSCNAP and Internal AT command list	
1.7	2009-12-04	Modify *PSNTRG AT COMMAND	Ravikant
		Added *PSFDC Internal AT command list	
1.8	2010-02-01	AT+CMEC updated AT+EREG, AT+CKPD, AT+GTKREADY added	Bikash Jindal

		AT commands added for following
		    1.MBN
		    2.ISIM	

		3.IPRELAY 4.AGPS 5.AT&T Testing	
1.9	2010-02-22	Added ^ORIG, ^CONF, ^CONN, ^CEND & ^CDUR CMCC Commands	Hemant KAKDE
1.10	2010-03-19	Added ^MBIMSI , *EHSDPA, ^RESET and *TRACE CMCC commands	Hemant KAKDE
		Added <rac> parameter in +CGREG and modified the PSFSNT read command	Durgesh
		Added ^SCPBW, ^SCPBR and ^MBAU AT commands for CMCC.	Prashanth Kumar
		Added new options for <fun> parameter of AT_CFUN	Lavanya Natarajan
		Added new options for <line id> field of PSVMWN Added AT+CKPD command	Manasi Padhy
1.11	2010-05-07	Added correct comments for CFUN, CGDCONT, CLCK, CMUT,CLAN, ATS2/S3/S4/S6/S11 ATP/B/L/M/N/T. Modified AT*SCPIN command description. Updated Description for <rst> parameters of AT+CFUN	Manasi Padhy
		Updated description for <rst> parameter of AT+CFUN	Ravikant
		Added AT*CTMCFG and AT*CTMNOTIFY	Lavanya Natarajan
1.12	2010-07-06	Modified AT*PSNTRG URC parameters description. Updated Descriptions for added parameters.	Manasi Padhy

Contents

1.   Document purpose

This document describes the AT commands supported by the mobile equipment on all platforms having multi-TA.

Those commands can be used by any terminal equipment connected to the mobile equipment on any medium supported by the platform (Serial link, USB, Bluetooth…)

The use of a compilation switch for a specific AT commands means that this AT command is potentially not available on all platforms because dependent of a feature supported by a platforms and not he other.

Example 1: AT commands related to 2nd PDP context are only available on 7210 platforms.

Example 2: AT commands supported only on Dual OS platform (where MMI of the mobile is managed on the TE side, not on RTK)

2.   AT channels management

Multiple terminal adapters (Multi-TA or MuTA) manage communication links between the terminal equipment (TE) and the terminal adapter (TA).

Multi-TA can support single channel mode (only one medium is connected to the TA without 07.10 protocol used) or multiple channel mode (07.10 protocol used over serial link (UART) or with several mediums connected to the TA – without 07.10 protocol).

Note: 07.10 protocol is supported only over UART (DSL)

TE not supporting 07.10 protocol

| ME |
| TA |

Communication link

| TE |

TE supporting 07.10 protocol

| ME |
| TA$_1$ |
| ... |
| TA$_n$ |
| MUX (07.10) |

Communication link

| TE |
| MUX (07.10 protocol) |

Serial link
Serial link
...
Serial link

TE not supporting 07.10 protocol

Communication link 1

| TE$_1$ |

| ME |
| TA$_1$ |
| TA$_2$ |

TE not supporting 07.10 protocol

Communication link 2

| TE$_2$ |
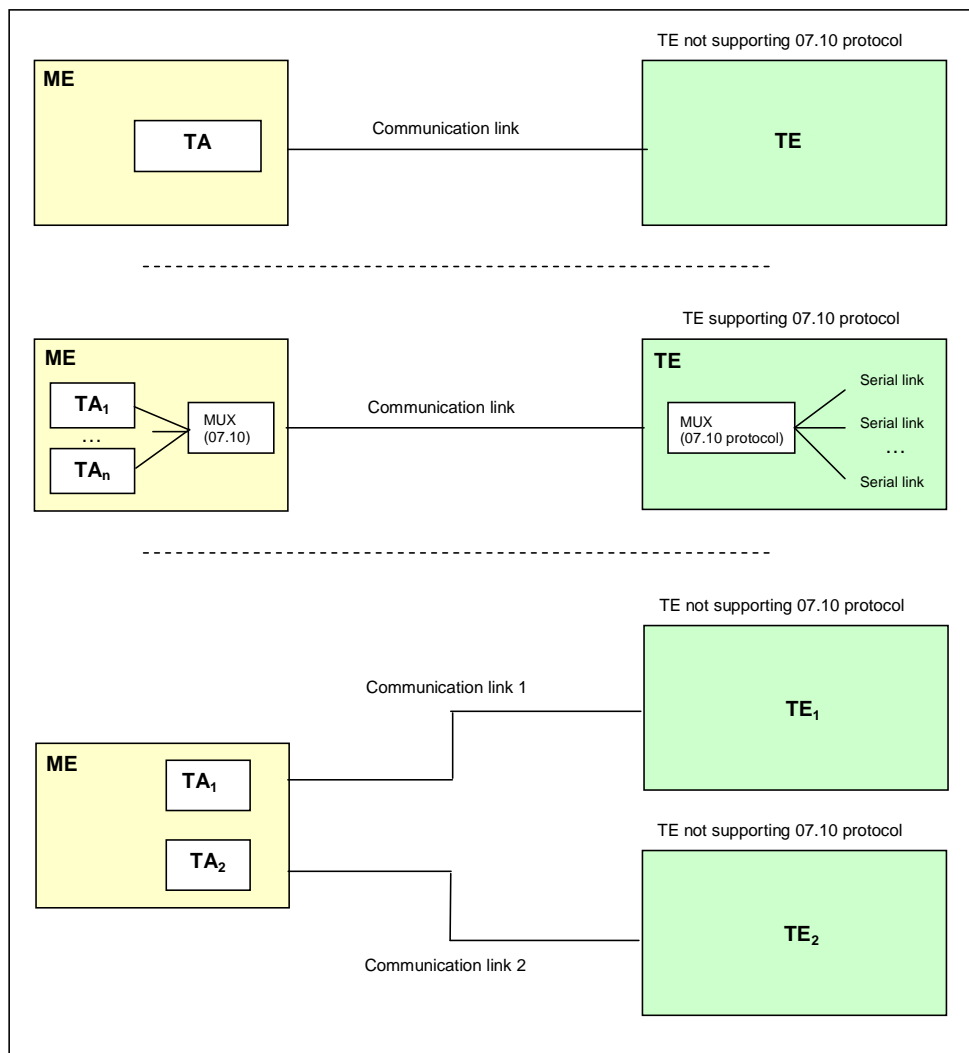
2.1 Single Channel mode

In single channel mode, AT commands are sent and executed sequentially over the communication link.

Only one medium is connected to the TA, no parallel execution of AT commands is possible.
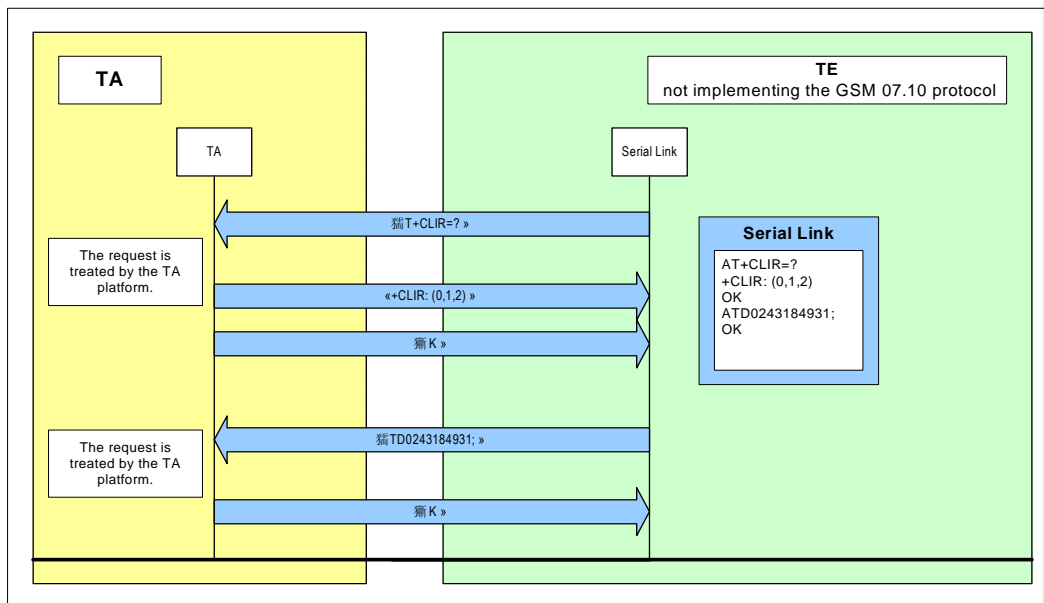
UART, Bluetooth and USB single channel connections are supported.

2.2 Multi Channel mode

In multiple channel mode, several connections can be established at the same time either with 07.10 protocol activated on top of the serial link (multiplexed mode) or with several mediums connected. Each connection can be seen as an instance of the AT interface; hence commands can be executed in parallel on each connection.

2.2.1 Multiplexed mode (07.10 protocol)

This mode runs on top of the serial link and according to 07.10 protocol (MUX mode), several connections (virtual channels) can be established in parallel over a SINGLE serial link.

07.10 protocol is supported only over UART (DSL).
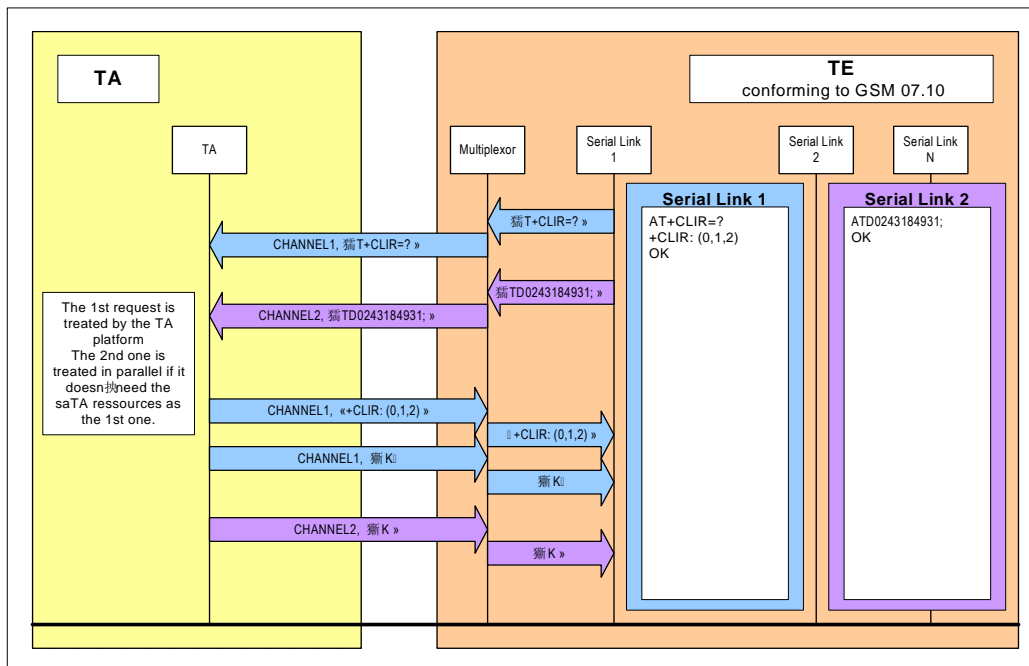
An application (on the TE side) implementing and using 07.10 protocol can in fact request execution of AT command in parallel (one request per connected virtual channel).

One of the benefits of multiplexed channel is also the possibility to display URCs without interfering on executing command (if almost one channel is available). For example, it allows to display the "RING" URC during SMS edition, and to answer the call without exiting edition mode.

If there is only one virtual channel connected in MUX mode, the behaviour is the same as if the mode was in mono channel mode.

Creation of a new (virtual) channel is done according to [07.10] i.e. upon creation of the channel, default registers configuration is used. Any changes on this configuration only apply to the channel where modification is made. If this change is saved in default configuration, those changes will apply only to future channel creation (refer to §5 for channel profile management).

Note: 07.10 protocol can be used only with one physical serial link even if several physical serial links are available on the platform (not possible to instanciate MUX).

2.2.2   Multiple medium connections

Following cases can be considered as a multi-channel framework:

- One Bluetooth connection and one DSL connection·
- One USB connection and one DSL connection
- One Bluetooth connection and one USB connection
- One Bluetooth connection and 07.10 connections over one serial link
- Other configuration…

In these kind of configurations, the same rules as for multiplexed mode (MUX mode) applies:

- URC broadcast on all connected channels/mediums
- Default channel settings at connection time (refer to §5 for channel profile management)

2.3   Multiplexed mode (07.10 protocol)

The [07.10] protocol specifies how to manage multiplexed serial channels on a serial link. Several primitives are provided to request connection/disconnection of a channel:

- OPEN(chanel Id): open a channel Id
- DISC(channel Id): disconnect chanel Id
- CLD: Close down
- ACKNOWLEDGE: response to a request.

The terminal equipment is the master (client), the Mobile Equipment (server) doesn't control the connection/disconnection of channels. First of all a virtual channel numbered 0 is created. It may be seen as a control channel. Then almost one channel must be opened to be able to send commands to the ME.

The following chapters describe the switch to multiplexed mode, the connection and disconnection of a channel and the exit of multiplexed mode.

2.3.1   Entering to multiplexed mode

The +CMUX command is used to switch from mono channel mode to MUX mode. The first step disconnects the existing channel (if a call was ongoing, it is released). The

second step creates the virtual channel 0. This channel is used to connect and disconnect the other channels.

The example below illustrates the switch from mono channel mode to MUX mode with an active speech call. Then virtual channel 1 is created to allow sending of AT commands.
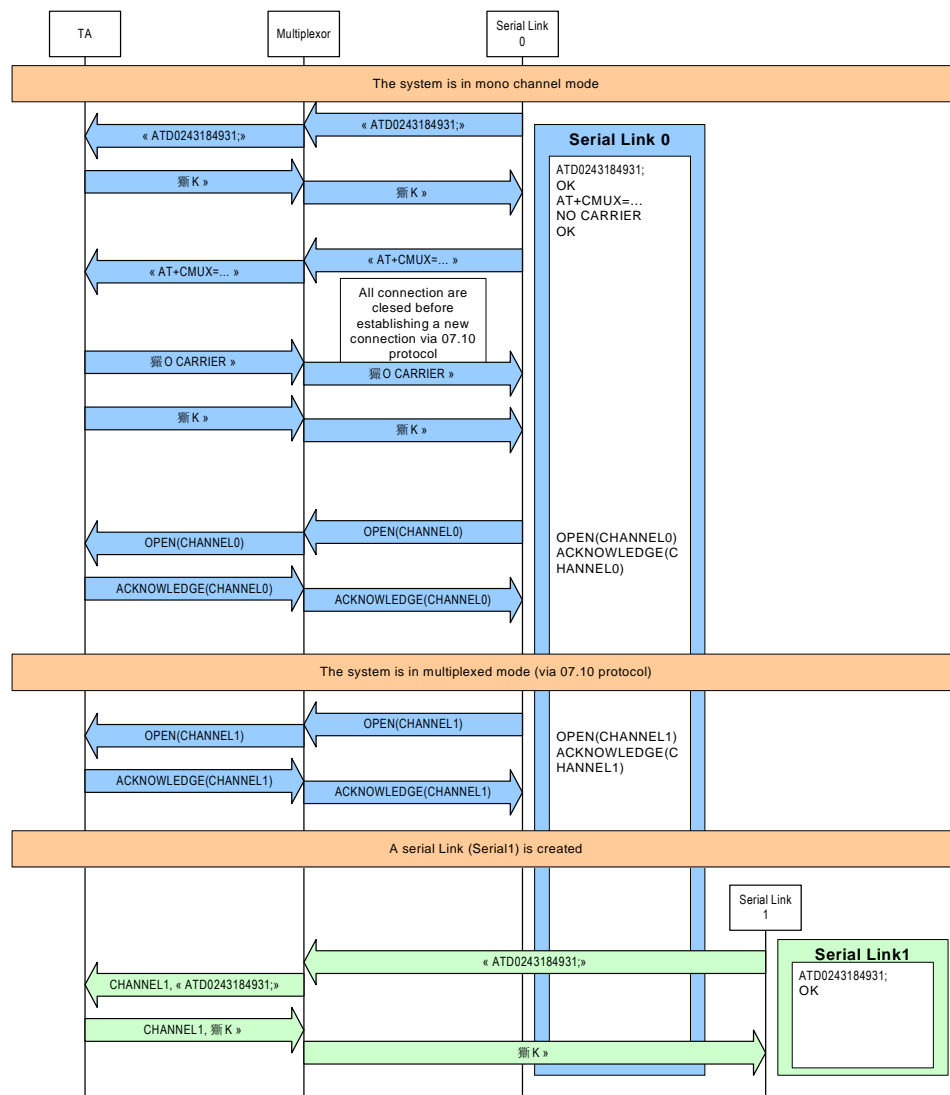
Note:

- Call disconnection is not automatic on MUX activation but depends on +CVHU configuration.
- Same as previous point: call disconnection is not automatic on channel disconnection but depends on +CVHU configuration.

2.3.2 Disconnecting a channel

A call is ongoing on channel 1. The Terminal Equipment disconnect this channel (DISC(1)). All is stopped on this channel.(ongoing call is hung up).
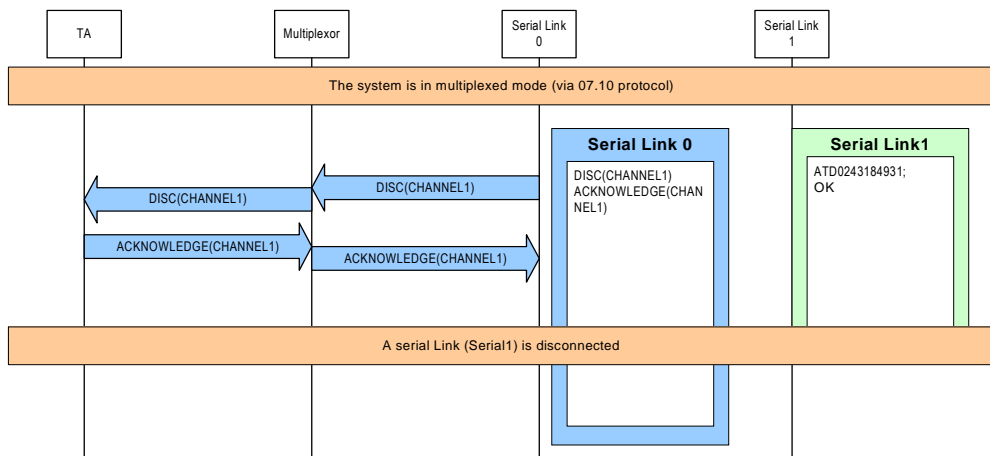
2.3.3 Exiting multiplexed mode

The terminal equipment request the disconnection of the control channel (DISC(0)). On this request every existing channel will be disconnected.
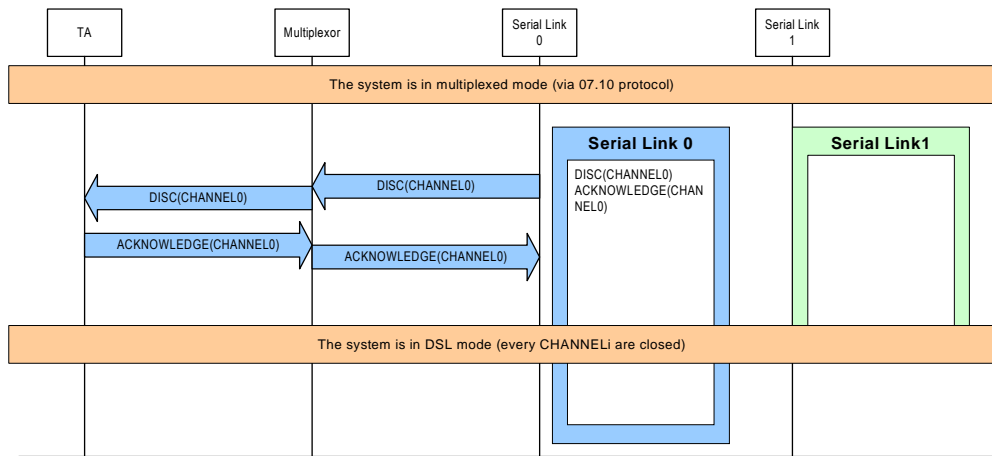
2.4 Interactions with ME's MMI

On RTK platforms, MMI is notified of the connection or disconnection of a medium.

(User can be requested to accept or reject the connection in case of Bluetooth for example)

Information on medium connected is available in connectivity menu.

Multi-TA notifies MMI of PS and CS data calls initiated by TE by sending notifications. (MMI can display Rx & Tx bytes for PS calls for example)

For all other services, multi-TA and MMI are independent

On duals OS platforms, RTK MMI has no role (MMI located on TE side)

Refer to SwISD ATMAPI (in SwUM MMI SPV).

3. AT commands

Expect where indicated, the command behaves as defined in the recommendation. This document only provides values and parameters supported by the platform. For more details on a command please refer to the recommendation.

Only supported commands are listed.

For clarity purpose, standard responses (such as OK or ERROR) are not indicated in possible responses since they are considered always possible.

AT command line is limited to 556 bytes per channel. For all of the AT command the AT+XYZ= and AT+XYZ are both treated as SET commands.

3.1 3GPP TS 27.005 commands description

3.1.1 General configuration commands

3.1.1.1 +CSMS Select Messages Service

Description	Command	Possible Response(s)
Select messages service	+CSMS=<service>	+CSMS: <mt>,<mo>,<bm> +CMS ERROR: <err>
Get current service and settings	+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm>
Get supported services	+CSMS=?	+CSMS: (list of supported <service>s)

Parameters

<service>	Description
0 (Default value)	3GPP TS 23.040 and 3GPP TS 23.041
1	3GPP TS 23.040 and 3GPP TS 23.041 the requirement of <service> setting 1 is mentioned under corresponding command descriptions)

<mt>, <mo>, <bm>	Description
0	Type not supported
1 (Default value)	Type supported

Clarification

Value <service> = 1 is supported only if option SMS_ACK_AND_STORED_BY_TE_FTR is enabled.

 <service> = 1 shall be used only on dual OS platforms i.e when TE is the only SMS client (SMS are only routed to TA in this case)

<service> = 0 shall be used by default on standard RTK platform where MMI and TA are 2 SMS clients.

3.1.1.2   +CPMS Preferred Messages Storage

Description	Command	Possible Response(s)
Select memory storage	+CPMS=<mem1>[, <mem2>[,<mem3>]]	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> +CMS ERROR: <err>
Get current storage status	+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>, <mem3>,<used3>,<total3> +CMS ERROR: <err>
Get supported storages	+CPMS=?	+CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)

Parameters

<mem x>	Description
"SM"	Only "SM" storage is supported "BM", "ME", "MT", "TA", "SR" memory locations are NOT supported

<used x>, <total x>	Description
Integer type	Computed value

3.1.1.3   +CMGF Messages Format

Description	Command	Possible Response(s)
Select message format	+CMGF=[<mode>]	
Get current format	+CMGF?	+CMGF: <mode>
Get supported formats	+CMGF=?	+CMGF: (list of supported <mode>s)

<mode>	Description

<mode>	Description
0	PDU mode
1	Text mode

3.1.2 Message configuration commands

3.1.2.1 +CSCA Service Center Address

Description	Command	Possible Response(s)
Update SMSC address	+CSCA=<sca>[,<tosca>]	
Get current format	+CSCA?	+CSCA: <sca>,<tosca>
Get supported formats	+CSCA=?	

Parameters

<sca>	Description
String type	SC address Address-Value

<tosca>	Description
Integer type	SC address Type-of-Address

Clarification

This command read and writes the service center address in EF-SMSP (U)SIM file.

If the SCA is not readable or empty, read command returns an empty string.

At switch on, the SCA is read on (U)SIM to have a default SCA for send and write command in text mode. (In PDU mode, SCA can be provided in PDU).

3.1.2.2 +CSCB Select Cell Broadcast Messages Types

Description	Command	Possible Response(s)
Select CBM types	+CSCB=[<mode>[,<mids>[,<dcss>]]]	
Get current values	+CSCB?	+CSCB: <mode>,<mids>,<dcss>
Get supported modes	+CSCB=?	+CSCB: (list of supported <mode>s)

Parameters

<mode>	Description
0	Message types specified in <mids> and <dcss> are accepted
1	Message types specified in <mids> and <dcss> are not accepted

<mids>	Description
String type	all different possible combinations of CBM message identifiers (refer <mid> in 27.005)

<dcss>	Description
String type	all different possible combinations of CBM data coding schemes (refer <dcs> in 27.005) Default value: no DCS accepted

Clarification

All the <dcss> values can be accepted or up to 5 different <dcss> values can be accepted.

Ranges are not supported for <mids> and <dcss>, i.e notation "0,1,5,320-478,922" is not allowed for <mids> and notation "0-3,5" is not allowed for <dcss> .

Up to SPB_MSG_ID_LIST_SIZE (15) different <mids> values can be accepted. (See User Manual MMI - SPV Interface)

AT+CSCB=1 means all <dcss> are accepted but this command has no effect on the list of the <mids> accepted. To modify those lists: use before the AT+CSCB=0 command to select no mid and no dcs, and after this operation, add some dcs or mid to the current lists.

AT+CSCB=0,<mids> : add the <mids> values in the <mids> current list handle by the mobile.

AT+CSCB=0,,<dcss> : add the <dcss> values in the < dcss > current list handle by the mobile

If AT+CSCB=0,"<value>" is received while the list of <mids> is full, OK is returned and new value is not added.

3.1.2.3   +CSMP Set Text Mode Parameters

Description	Command	Possible Response(s)
Select SM parameters	+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]	
Get current values	+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs>
Test if command is	+CSMP=?	

Description	Command	Possible Response(s)
supported		

Parameters

<fo>, <vp>, <pid>, <dcs>	Description
Integer type	Refer to 27.005 for description

Clarification

The enhanced validity period format ($(EVPF)$, see [23.040]) is not supported.

<fo> is only for SMS-DELIVER, SMS-SUBMIT or SMS-STATUS-REPORT.

3.1.2.4 +CSDH Show Text Mode Parameters

Description	Command	Possible Response(s)
Select header presentation	+CSDH=[<show>]	
Get current status	+CSDH?	+CSDH: <show>
Get supported values	+CSDH=?	+CSDH: (list of supported <show>s)

Parameters

<show>	Description
0 (Default value)	Do not show header values
1	Show the values in result codes

3.1.2.5 +CSAS Save Settings

Description	Command	Possible Response(s)
Save SM service settings	+CSAS=[<profile>]	+CMS ERROR: <err>
Get the list of available profiles	+CSAS=?	+CSAS: (list of supported <profile>s)

Parameters

<profile>	Description
0	Save SM service settings in profile 0

<profile>	Description
(Default value)	
1	Save SM service settings in profile 1

Clarification

Parameter stored by +CSAS

Command	Parameter name	Length	Default value	Non volatile memory filed
+CSCA	<sca>	12 bytes	0xFF..0xFF	a_atp_ScAddress
+CSCA	<tosca>	12 bytes	0xFF..0xFF	a_atp_ScAddress
+CSMP	<fo>	1 byte	0x11	v_hee_Smsfo
+CSMP	<vp>	1 byte	0x00	v_hee_SmsVp.s_RelTime. v_NbMinutes
+CSMP	<vp>	1 byte	0x18	v_hee_SmsVp.s_RelTime. v_NbHours
+CSMP	<vp>	1 byte	0x00	v_hee_SmsVp.s_RelTime. v_NbDays
+CSMP	<vp>	1 byte	0x00	v_hee_SmsVp.s_RelTime. v_NbWeeks
+CSMP	<vp>	20 bytes	0x00..0x00	v_hee_SmsVp.s_RelTime. v_Gap_RelativeTime
+CSMP	<pid>	1 byte	0x00	v_hee_SmsPid
+CSMP	<dcs>	1 byte	0x00	v_hee_SmsDcs

3.1.2.6 +CRES Restore Settings

Description	Command	Possible Response(s)
Restore SM service settings	+CRES=[<profile>]	+CMS ERROR: <err>
Get the list of available profiles	+CRES=?	+CRES: (list of supported <profile>s)

Parameters

<profile>	Description
0 (Default value)	Restore SM service settings from profile 0
1	Restore SM service settings from profile 1

3.1.3 Message receiving and reading commands

3.1.3.1 +CNMI New Messages Indication to TE

Description	Command	Possible Response(s)
Select procedure for received messages	+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	+CMS ERROR: <err>
Get current values	+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>
Get supported values	+CNMI=?	+CNMI: (list of supported <mode>s),(list of supported <mt>s),(list of supported <bm>s),(list of supported <ds>s),(list of supported <bfr>s)

Parameters

<mode>	Description
0	Buffer unsolicited result codes in the TA. When TA result code buffer is full: - The oldest indication is discarded and replaced with the new one when +CSMS=0 - All indications are buffered when +CSMS=1
1	Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE
2	Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE

<mt>	Description
0	No SMS-DELIVER indications are routed to the TE
1	If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI
2	SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code: +CMT
3	Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1

<bm>	Description

<bm>	Description
0	No CBM indications are routed to the TE
2	New CBMs are routed directly to the TE using unsolicited result code: +CBM

<ds>	Description
0	No SMS-STATUS-REPORTs are routed to the TE
1	SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS

<bfr>	Description
0	TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes).
1	TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered

Clarification

TA result code buffer is in volatile memory. Messages may get lost if the power of ME/TA is switched off before codes are sent to TE. Thus, it is not recommended to use direct message routing (<mt>=2 or 3, <bm>=2 or 3, or <ds>=1) with <mode> value 0 or 2

When +CSMS <service> is set to 0, all received SMS are automatically stored in SIM before +CMT or +CMTI URC is sent to TE whatever <mt> value.

When +CSMS <service> is set to 1, depending of it class, SMS has to be acknowledged to network thanks to +CNMA commands. Depending of <mode>, <mt> and channel status (available or reserved) URC can not or should not be sent to TE. In these cases SMS can be automatically acknowledged or rejected without waiting +CNMA command.

"BM" storage is not supported hence +CBMI is not supported.

"SR" storage is not supported by platform hence +CDSI is not supported.

+CNMI non volatile memory storage:

Parameter name	Default value	Non volatile memory field
<bfr>	0x00	v_CNMI_bfr
<ds>	0x00	v_CNMI_ds
<bm>	0x00	v_CNMI_Bm
<mt>	0x00	v_CNMI_Mt
<mode>	0x00	v_CNMI_Mode

3.1.3.2 +CNMA New Message Acknowledgement to ME/TA

Description	Command	Possible Response(s)
Acknowledge indication	**if text mode (+CMGF=1):** +CNMA **if PDU mode (+CMGF=0):** +CNMA[=<n>[,<length>[< CR>PDU is given<ctrl- Z/ESC>]]]	+CMS ERROR: <err>
Get supported values	+CNMA=?	**if PDU mode (+CMGF=0):** +CNMA: (list of supported <n>s)

Parameters

<n>	Description
0	Command operates similarly as defined for the text mode
1	Send RP-ACK (or buffered result code received correctly)
2	Send RP-ERROR Acknowledgement TPDU not supported

Clarification

Command available only if option SMS_ACK_AND_STORED_BY_TE_FTR is enabled.

This command is allowed only if +CSMS <service> is set to 1 and is used to acknowledge SMS received from network.

Routing of SMS-DELIVER and SMS-STATUS-REPORT to ME/TA depends on both +CSMS configuration as well as <mt> and <ds> values of +CNMI.

In PDU, acknowledgement TPDU is not supported

The following table summarizes the SMS-DELIVER notification modes according to these parameters:

+CNMI <mt>	+CSMS <service>=0	+CSMS <service>=1
0	SMS DELIVER mode = 0	SMS DELIVER mode = 0
1	SMS DELIVER mode = 0	SMS DELIVER mode = 0
2	SMS DELIVER	SMS DELIVER

+CNMI <mt>	+CSMS <service>=0	+CSMS <service>=1
	mode = 0	mode = 1
3	SMS DELIVER mode = 0	SMS DELIVER mode = 2

When **SMS Mode = 0:** SMS acknowledgement and storage are managed internally by MS whatever their class (if needed they will be stored in SIM)

When **SMS-DELIVER Mode = 1**: SMS with no message class, class 0, class 1, class 3 are sent to ME/TA for acknowledgement (+CNMA expected), they will not be stored in ME, it's up to TE to store them. SMS class 2 & message waiting indication group (Store or Discard) are managed internally by MS (if needed they will be stored in SIM, no +CNMA expected).

When **SMS-DELIVER Mode = 2**: SMS class 3 are sent to ME/TA for acknowledgement (+CNMA expected), they will not be stored in ME, it's up to TE to store them. SMS with no message class, class 0, class 1, class 2 & message in waiting group are managed internally by MS (if needed they will be stored in SIM, no +CNMA expected).

Following table summarizes the STATUS-REPORT (SR) notification modes according to +CSMS and <ds> parameters:

+CNMI <ds>	+CSMS <service>=0	+CSMS <service>=1
0	STATUS REPORT mode = 0	STATUS REPORT mode = 0
1	STATUS REPORT mode = 0	STATUS REPORT mode = 1

When **STATUS-REPORT Mode = 0**: MS manages SRs internally

When **STATUS-REPORT Mode = 1**: SRs are sent to ME/TA for acknowledgement and storage.

Refer also to +CMT URC description for waiting message indication treatment.

3.1.3.3   +CMGL List Messages

Description	Command	Possible Response(s)
List messages with status	+CMGL[=<stat>]	**if text mode (+CMGF=1),** command successful: +CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>][*, <tooa/toda>, <length>]*<CR><LF><data>[<CR><LF>

Description	Command	Possible Response(s)
		+CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>][, *<tooa/toda>, <length>]*<CR><LF><data>[...]] **if PDU mode (+CMGF=0)** and command successful: +CMGL:<index>,<stat>,[<alpha>],<length> <CR><LF><pdu>[<CR><LF>+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu>[...]] **otherwise**: +CMS ERROR: <err>
Get supported values	+CMGL=?	+CMGL: (list of supported <stat>s)

Parameters

<stat>	Description
0 "REC UNREAD"	Received unread message (i.e. new message)
1 "REC READ"	Received read message
2 "STO UNSENT"	Stored unsent message
3 "STO SENT"	Stored sent message
4 "ALL"	All messages

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

Clarification

Only SMS-SUBMIT and/or SMS-DELIVER can be read.

SMS-COMMAND are not supported.

CBM are not stored in ME/TA memory.

Note: When switch SPVMSG_SR_HANDLE_IN_EFSMS_FTR is activated, SMS Status Reports are saved in SMS file instead of SMSR file. If such a message is present it will not be returned by +CMGL.

3.1.3.4 +CMGR Read Message

Description	Command	Possible Response(s)
Read a message	+CMGR=<index>	**if text mode (+CMGF=1),** command

Description	Command	Possible Response(s)
		successful and SMS-DELIVER: +CMGR: <stat>,<oa>,[<alpha>],<scts>*[,<tooa>,<fo>, <pid>,<dcs>, <sca>,<tosca>,<length>]*<CR><LF><data> **if text mode (+CMGF=1),** command successful and SMS-SUBMIT: +CMGR: <stat>,<da>,[<alpha>]*[,<toda>,<fo>,<pid>,< dcs>,[<vp>],* *<sca>,<tosca>,<length>]*<CR><LF><data> **if PDU mode (+CMGF=0)** and command successful: +CMGR: <stat>,[<alpha>],<length><CR><LF><pdu> **otherwise**: *+CMS ERROR: <err>*
Test if command is supported	+CMGR=?	

Parameters

<index>	Description
1..255	Message location in "SM" memory.

<stat>	Description
0 "REC UNREAD"	Received unread message (i.e. new message)
1 "REC READ"	Received read message
2 "STO UNSENT"	Stored unsent message
3 "STO SENT"	Stored sent message
4 "ALL"	All messages

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

Clarification

Only SMS-SUBMIT and/or SMS-DELIVER can be read.

SMS-COMMAND are not supported.

CBM are not stored in ME/TA memory

Note: When switch SPVMSG_SR_HANDLE_IN_EFSMS_FTR is activated, SMS Status Reports are saved in SMS file instead of SMSR file. If such a message is present it will not be returned by +CMGR.

3.1.4 Message sending and writing commands

3.1.4.1 +CMGS Send Message

Description	Command	Possible Response(s)
Send a message	**if text mode (+CMGF=1):** +CMGS=<da>[,<toda>]<CR> *text is entered*<ctrl-Z/ESC> **if PDU mode (+CMGF=0)** +CMGS=<length><CR>PDU is given<ctrl-Z/ESC>	**if text mode (+CMGF=1)** and sending successful: +CMGS: <mr> **if PDU mode (+CMGF=0)** and sending successful: +CMGS: <mr> **if sending fails:** *+CMS ERROR: <err>*
Test if command is supported	+CMGS=?	

Parameters

For all other parameters, refer to +CMT URC description.

In text mode <scts> is not supported, in PDU mode <ackpdu> is not supported.

Clarification

In text mode: entered text is sent to address <da> and all current settings (refer to +CSMP and +CSCA) are used to construct the actual PDU in ME/TA.

In PDU mode: <length> must indicate the number of octets coded in the TP layer data unit to be given (i.e. SMSC address octets are excluded).

The TA sends a four character sequence <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) after command line is terminated with <CR>; after that text can be entered or PDU can be given from TE to ME/TA.

The DCD signal shall be in ON state while text or PDU is entered.

The echoing of entered characters back from the TA is controlled by V.25ter echo command E.

In text mode, the entered text should be formatted as follows:

- if <dcs> (set with +CSMP) indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set: ME/TA converts the entered text into the GSM 7 bit default alphabet according to rules of Annex A; backspace can be used to delete last character and carriage returns can be used (previously mentioned four character sequence shall be sent to the TE after every carriage return entered by the user);

- if <dcs> indicates that 8-bit or UCS2 data coding scheme is used or <fo> indicates that TP-User-Data-Header-Indication is set: the entered text should consist of two IRA

character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. two characters 2A (IRA 50 and 65) will be converted to an octet with integer value 42).

In PDU mode:

- The PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; ME/TA converts this coding into the actual octets of PDU. When the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command Service Centre Address +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU, i.e. TPDU starts right after SMSC length octet.

Sending can be cancelled by giving <ESC> character (IRA 27).

<ctrl-Z> (IRA 26) must be used to indicate the ending of the message body or PDU.

Text length is limited to PDU max length (164).

3.1.4.2   +CMSS Send Message from Storage

Description	Command	Possible Response(s)
Send a message from storage	+CMSS=<index>[,<da>[,<toda>]]	**if text mode (+CMGF=1)** and sending successful: +CMSS: <mr>[,<scst>] **if PDU mode (+CMGF=0)** and sending successful: +CMSS: <mr>[,<ackpdu>] **if sending fails:** *+CMS ERROR: <err>*
Test if command is supported	+CMGS=?	

Parameters

<index>	Description
1..255	Message location in "SM" memory.

In text mode <scts> is not supported, in PDU mode <ackpdu> is not supported.

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

Clarification

Since SMS-STATUS-REPORTs, SMS-COMMANDs and CBM are not stored in ME/TA memory, only <index>s of SMS-SUBMITs and/or SMS-DELIVERs can be used in +CMSS.

3.1.4.3   +CMGW Write Message to Memory

Description	Command	Possible Response(s)
Write a message	**if text mode (+CMGF=1):** +CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR> *text is entered*<ctrl-Z/ESC> **if PDU mode (+CMGF=0):** +CMGW=<length>[,<stat]<CR>PDU is given<ctrl-Z/ESC>	+CMGW: <index> *+CMS ERROR: <err>*
Test if command is supported	+CMGW=?	

Parameters

<index>	Description
1..255	Message location in "SM" memory.

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

Clarification

Text length is limited to PDU max length (164).

3.1.4.4   +CMGD Delete Message

Description	Command	Possible Response(s)
Delete a message	+CMGD=<index>[,<delflag>]	*+CMS ERROR: <err>*
Get supported values	+CMGD=?	+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]

Parameters

<delflag>	Description
0 (Default value)	Delete the message specified in <index>
1	Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched
2	Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched

<delflag>	Description
3	Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched
4	Delete all messages from preferred message storage including unread messages

<index>	Description
1..255	Message location in "SM" memory.

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

3.1.4.5 +CMMS More Messages to Send

Description	Command	Possible Response(s)
Set mode	+CMMS=[<n>]	
Get current mode	+CMMS?	+CMMS: <n>
Get supported values	+CMMS=?	+CMMS: (list of supported <n>s)

Parameters

<n>	Description
0 (Default value)	Disable
1	Keep enabled until the time between the response of the latest message send command (+CMGS, +CMSS, etc.) and the next send command exceeds 1-5 seconds (the exact value is up to ME implementation), then ME shall close the link and TA switches <n> automatically back to 0
2	Enable (if the time between the response of the latest message send command and the next send command exceeds 1-5 seconds (the exact value is up to ME implementation), ME shall close the link but TA shall not switch automatically back to <n>=0)

3.1.5 SMS and CBM unsolicited result codes

3.1.5.1 +CMTI Received SMS indication

Description	Result code
Receive a SM already stored	+CMTI: <mem>,<index>

Parameters

<index>	Description
1..255	Message location in "SM" memory.

<mem>	Description
"SMS"	Only "SM" storage possible for SMS

3.1.5.2 +CMT Received SMS indication

Description	Result code
Receive a SM	**if text mode (+CMGF=1):** +CMT:<oa>,[<alpha>],<scts>*[,<tooa>,<fo>,<pi d>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF>< data> if PDU mode (+CMGF=0): +CMT: [<alpha>],<length><CR><LF><pdu>

Parameters

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

Clarification

When +CSMS <service> is set to 0, all received SMS are automatically stored in SIM before +CMT is sent to TE.

When +CSMS <service> is set to 1, depending of it class, SMS has to be acknowledged to network thanks to +CNMA commands. Depending of <mode>, <mt> of CNMI or channel status (available or reserved) URC cannot or should not be sent to TE. In these cases SMS can be automatically acknowledged or rejected without waiting +CNMA command.

When a +CMT URC is sent to TE for a SMS that has NOT been acknowledged by TA, a timer is started. If timer expires (15sec) before +CNMA command is received, SMS is rejected.

When a +CMT URC is sent to TE for a SMS that has already been acknowledged by TA a timer is started. If timer expires (15sec) before +CNMA command is received, SMS is automatically saved in SIM (this is to not to lost an already acknowledged SMS for which +CNMA has not been received in case of switch off). If CNMA is received before timer expiration OK is returned, else ERROR is returned (TE knows that SMS has been stored in SIM).

Message waiting indication:

- There are 3 possible cases to receive voice mail notification:

- TP-DCS method (STORE/DISCARD message coding groups in DCS)
- TP-UDH (Special SMS indication IEI in UDH of the SM)
- CPHS method (originating address decoding)

In all cases, the ME manages messages notifications internally (update of EF VMWI CPHS file, acknowledgement…)

In case of TP-DCS method, for message waiting indication group (store message), +CMTI is sent. For message waiting indication group (discard message) +CMT URC is sent but no +CNMA command is expected.

Voice mail waiting indication status are managed by *PSVMWN command.

3.1.5.3   +CBM Received CBM indication

Description	Result code
Receive a CBM	**if text mode (+CMGF=1):** +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> if PDU mode (+CMGF=0): +CBM: <length><CR><LF><pdu>

Parameters

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

3.1.5.4   +CDS Received SR indication

Description	Result code
Receive a CDS	**if text mode (+CMGF=1):** +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> if PDU mode (+CMGF=0): +CDS: <length><CR><LF><pdu>

Parameters

For all other parameters, refer to 27.005 §3.1 Parameter Definitions

Clarification

When +CSMS <service> is set to 0, all received SR are automatically acknowledged before +CDS is sent to TE.

When +CSMS <service> is set to 1, SR has to be acknowledged to network thanks to +CNMA commands. Depending of <mode>, <mt> and channel status (available or

reserved) URC can not or should not be sent to TE. In these cases SR can be automatically acknowledged or rejected without waiting +CNMA command.

3.1.6 +CMS ERROR Message Service Failure Result code

Value	Description
0...127	3GPP TS 24.011 [6] clause E.2 values
128...255	3GPP TS 23.040 [3] clause 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode parameter
305	Invalid text mode parameter
310	(U)SIM not inserted
311	(U)SIM PIN required
312	PH-(U)SIM PIN required
313	(U)SIM failure
314	(U)SIM busy
315	(U)SIM wrong
316	(U)SIM PUK required
317	(U)SIM PIN2 required
318	(U)SIM PUK2 required
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	No network service
332	Network timeout
340	No +CNMA acknowledgement expected
500	Unknown error

3.2 3GPP TS 27.007 commands description

3.2.1 General commands

3.2.1.1 +CGMI Request Manufacturer identification

Description	Command	Possible Response(s)
Read manufacturer Id	+CGMI	<manufacturer>
Test if command is supported	+CGMI=?	

Parameters

<manufacturer>	Description
String type	Read from version.c.file (MANUFACTURER_ID)

3.2.1.2 +CGMM Request Model Identification

Description	Command	Possible Response(s)
Read model	+CGMM	<model>
Test if command is supported	+CGMM=?	

Parameters

<model>	Description
String type	Read from version.c file (MODEL_ID)

3.2.1.3 +CGMR Request Revision Identification

Description	Command	Possible Response(s)
Read revision	+CGMR	<revision>
Test if command is supported	+CGMR=?	

Parameters

<revision>	Description
String type	Read from version.c file (REVISION_ID)

3.2.1.4 +CGSN Request product serial number identification

Description	Command	Possible Response(s)
Read SN	+CGSN	<sn>
Test if command is supported	+CGSN=?	

Parameters

<sn>	Description
String type	IMEI

3.2.1.5 +CSCS Select TE character set

Description	Command	Possible Response(s)
Set charset	+CSCS[=<chset>]	
Read current charset	+CSCS?	+CSCS: <chset>
Get supported values	+CSCS=?	+CSCS: (list of supported <chset>s)

Parameters

<chset>	Description
"GSM"	GSM 7 bit default alphabet (3GPP TS 23.038);
"UCS2"	16-bit universal multiple-octet coded character set (ISO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99
"IRA"	International reference alphabet (ITU-T T.50)

3.2.1.6 +CIMI Request international mobile subscriber identity

Description	Command	Possible Response(s)
Read IMSI	+CIMI	<IMSI>
Test if command is supported	+CIMI=?	

Parameters

<IMSI>	Description
String type	IMSI

3.2.1.7   +CMUX Multiplexing mode

Description	Command	Possible Response(s)
Activate MUX protocol	+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]	
Read current settings	+CMUX?	+CMUX: <mode>,[<subset>],<port_speed>, <N1>,<T1>, <N2>,<T2>,<T3>[,<k>]
Get supported values	+CMUX=?	+CMUX: (list of supported <mode>s),(list of supported <subset>s),(list of supported <port_speed>s),(list of supported <N1>s),(list of supported <T1>s),(list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s),(list of supported <k>s)

Parameters

<mode>	Description
0	Basic option
1	Advanced option

<subset>	Description
0 (default)	UIH frames used only
1	UI frames used only

<port_speed>	Description
1	9 600 bit/s
2	19 200 bit/s
3	38 400 bit/s
4	57 600 bit/s
5	115 200 bit/s
6	230 400 bits/s
7	460 800 bits/s Proprietary values, available if MUX_NEW_PORT_SPEED_FTR is activated
8	921 600 bits/s Proprietary values, available if

<port_speed>	Description
	MUX_NEW_PORT_SPEED_FTR is activated

<N1>	Description
1- 32768	Maximum frame size Default: 31 (64 if Advanced option is used)

<T1>	Description
1-255	Acknowledgement timer in units of ten milliseconds Default: 10

<N2>	Description
0-100	Maximum number of re-transmissions Default: 3

<T2>	Description
2-255	Response timer for the multiplexer control channel in units of ten milliseconds Default: 30

<T3>	Description
1-255	Wake up response timer in seconds Default: 10

<k>	Description
1-7	window size, for Advanced operation with Error Recovery options Default: 2

Clarification

Command available only if MUX_07_10_FTR is activated.

Refer also to 27.010 for more information on parameters values.

+CMUX parameters are stored in non volatile memory:

Parameter name	Default value	Non volatile memory field
<mode>	0x00	v_Mode
<subset>	0x00	v_Subset
<port_speed>	0x05	v_PortSpeed
<N1>	0x1F	v_N1
<T1>	0x0A	v_T1

Parameter name	Default value	Non volatile memory field
<N2>	0x03	v_N2
<T2>	0x1E	v_T2
<T3>	0x0A	v_T3
<k>	0x02	v_K

3.2.2 Call control commands

3.2.2.1   +CSTA Select type of address

Description	Command	Possible Response(s)
Select type of address	+CSTA=[<type>]	
Get current type	+CSTA?	+CSTA: <type>
Get supported types	+CSTA=?	+CSTA: (list of supported <type>s)

Parameters

<type>	Description
129	International type of address
145	National type of address

3.2.2.2   +CMOD Call mode

Description	Command	Possible Response(s)
Select call mode	+CMOD=[<mode>]	
Get current type	+CMOD?	+CMOD: <mode>
Get supported types	+CMOD=?	+CMOD: (list of supported <mode>s)

Parameters

<mode>	Description
0	Single mode
129	Proprietary value Multimedia call only, without fallback or service change
130	Proprietary value Multimedia call with fallback to speech
131	Proprietary value

<mode>	Description
	Multimedia call with fallback and service change (allowed for UDI/RDI call only).

Clarification

When option AT_CMD_VIDEO_TEL_FTR is enabled, +CMOD command is used to select multimedia call mode for further D (Dial) command. Proprietary values are defined to select multimedia call mode.

+CMOD is reset to 0 when call is successfully connected, if a set-up error occurs or when the call is disconnected to avoid request of video telephony call accidentally.

Refer to §6 for more details on the proprietary implementation of video telephony by AT commands

3.2.2.3 +CHUP Hang-up call

Description	Command	Possible Response(s)
Hang up calls	+CHUP	
Test if command is supported	+CHUP=?	

Clarification

When option AT_CMD_VIDEO_TEL_FTR is enabled, H command can be used to request in call modification. In this can H command does not disconnect the call.

+CHUP command gives an assured procedure to disconnect the call.

Refer to H command description.

3.2.2.4 +CBST Select bearer service type

Description	Command	Possible Response(s)
Select bearer	+CBST=[<speed>[,<name>[,<ce>]]]	
Get current bearer	+CBST?	+CBST: <speed>,<name>,<ce>
Get supported types	+CBST=?	+CBST: (list of supported <speed>s),(list of supported <name>s),(list of supported <ce>s)

Parameters

<speed>	Description

<speed>	Description
0	Autobauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service)
4	2400 bps (V.22bis)
7	9600 bps (V.32)
12	9600 bps (V.34)
14	14400 bps (V.34) Supported if UMTS_FTR is activated
15	19200 bps (V.34) Supported if UMTS_FTR is activated
16	28800 bps (V.34) Supported if UMTS_FTR is activated
17	33600 bps (V.34) Supported if UMTS_FTR is activated
68	2400 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
71	9600 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
75	14400 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
79	19200 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
80	28800 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
81	38400 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
82	48000 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
83	56000 bps (V.110 or X.31 flag stuffing) Supported if UMTS_FTR is activated
131	32000 bps (multimedia) Supported if UMTS_FTR and AT_CMD_VIDEO_TEL_FTR are activated
134	64000 bps (multimedia) Supported if UMTS_FTR and AT_CMD_VIDEO_TEL_FTR are activated

<name>	Description
0	Data circuit asynchronous (UDI or 3.1 kHz modem)
1	Data circuit synchronous (UDI or 3.1 kHz modem) Supported for multimedia calls only Supported if UMTS_FTR is activated

<ce>	Description
0	Transparent Supported for multimedia calls only Supported if UMTS_FTR is activated
1	Non-transparent

Clarification

Some bearer capabilities computed from +CBST parameters are stored in non volatile memory. This parameter are used to build the bearer capabilities of the CS data call (cf 24.008 §10.5.4.5)

Parameter name	Default value	Non volatile memory field
Information transfer capabilities	0x02 (3.1kHz)	v_InfoTrans
Connection element	0x03 (non transparent)	v_ConnElm
Transfer mode	0x00 (circuit)	v_TransferMode
Synchronous/Asynchronous	0x01 (async)	v_SyncAsync
User Rate	0x05 (9.6K)	v_UserBearerRate
Fixed network user rate	0x00 (FNUR n/a)	v_Fnur

3.2.2.5 +CRLP Radio link protocol

Description	Command	Possible Response(s)
Select protocol	+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]]	
Get current RLP	+CRLP?	+CRLP: <iws>,<mws>,<T1>,<N2>[,<ver1>[,<T4>]] [<CR><LF>+CRLP: <iws>,<mws>,<T1>,<N2>[,<ver2>[,<T4>]] [...]]
Get supported types	+CRLP=?	+CRLP: (list of supported <iws>s),(list of supported <mws>s), (list of supported <T1>s),(list of supported <N2>s)[,<ver1> [,(list of supported <T4>s)]] [<CR><LF>+CRLP: (list of supported <iws>s),(list of supported <mws>s),(list of supported <T1>s),(list of supported <N2>s) [,<ver1>[,(list of supported <T4>s)]] [...]]

Parameters

<iws>	Description
0..61	IWF to MS window size

<mws>	Description
0..61	MS to IWF window size

<T1>	Description
44..255	Acknowledgement timer T1,

<N2>	Description
1..255	Retransmission attempts N2

<ver1>	Description
0	RLP version

<T4>	Description
7	Re-sequencing period T4 in integer format

3.2.2.6   +CR Service reporting

Description	Command	Possible Response(s)
Select service reporting mode	+CR=[<mode>]	
Get current mode	+CR?	+CR: <mode>
Get supported modes	+CR=?	+CR: (list of supported <mode>s)

Parameters

<mode>	Description
0	Disables reporting
1	Enables reporting

3.2.2.7   +CEER Extended error report

Description	Command	Possible Response(s)

Description	Command	Possible Response(s)
Get last error report	+CEER	+CEER: <report>
Test if command is supported	+CEER=?	

Parameters

<report>	Description
String type	String "CauseSelect: <cs> Cause:<c>" is returned <cs> and <c> are numbers representing the CauseSelect and Cause

CauseSelect <cs>	Cause <c>
0 (No cause)	0 (No cause)
16 (Service provider)	0 (Unknown)
	1 (Not Allowed)
	2 (No cause)
	6 (Wrong parameter)
	9 (Network access not allowed)
	20 (all call instances are used)
	21 (ACM over ACM Max)
	22 (invalid AOC element)
	23 (SIM increase not allowed)
	24 (switch off)
	25 (Unknown call id)
	28 (barred)
	84 (the requested Phone number is FDN restricted)
65 (Local cause)	1 (state error)
	2 (no call entity)
	3 (wrong TI)
	6 (DTMF buffer overflow)
	7: call disconnected
	17 (No cell available)
	32 (Local rejection)
	33 (PLMN not allowed(
	34 (emergency call not possible)

CauseSelect <cs>	Cause <c>
	35 (authentication rejected)
	36 (network rejection)
	37 (LA not allowed)
	38 (Local timeout)
	39 (server congestion)
	40 (local data rejection)
	48 (failed replace PDP context)
66 (MM network cause)	See [24.008]
67 (CC network cause)	See [24.008]
69 (RP cause)	See [24.008]
71 (SIM cause)	0 (Unknown problem)
	1 (Memory problem)
	2 (File Id not found)
	6 (Increase problem)
	7 (Technical problem)
	11 (Command not allowed)
	15 (SIM card out)
73 (SM cause)	See [24.008]

Refer also to SwUM SPV MMI User Manual for all Cause and CauseSelect values.

3.2.2.8   +CRC Cellular result codes

Description	Command	Possible Response(s)
Select service CR mode	+CRC=[<mode>]	
Get current mode	+CRC?	+CRC: <mode>
Get supported modes	+CRC=?	+CRC: (list of supported <mode>s)

Parameters

<mode>	Description
0	Disables extended format
1	Enables extended format

3.2.2.9 +CVHU Voice Hang-up Control

Description	Command	Possible Response(s)
Select service voice hang up mode	+CVHU=[<mode>]	
Get current mode	+CVHU?	+CVHU: <mode>
Get supported modes	+CVHU =?	+CVHU: (list of supported <mode>s)

Parameters

<mode>	Description
0	"Drop DTR" ignored but OK response given. ATH disconnects.
1	"Drop DTR" and ATH ignored but OK response given
2	"Drop DTR" behaviour according to &D setting. ATH disconnects

3.2.3 Call control result code

3.2.3.1 +CR Service reporting

Description	Result code
Send +CR notification during data call connection	+CR: <serv>

Parameters

<serv>	Description
ASYNC	Asynchronous transparent
SYNC	Synchronous transparent
REL ASYNC	Asynchronous non-transparent
REL SYNC	Synchronous non-transparent
GPRS	GPRS

3.2.3.2 +CRING Ring indication

Description	Result code
Extended format for incoming call notification	+CR: <type>

Parameters

<type>	Description
ASYNC	Asynchronous transparent
SYNC	Synchronous transparent
REL ASYNC	Asynchronous non-transparent
REL SYNC	Synchronous non-transparent
FAX	Fax
VOICE	Voice call
VOICE AUX	Proprietary value for ALS (CPHS Alternate line service) Used in case of incoming on line 2 Refer to *PSALS
MULTIMEDIA	Proprietary value Multimedia call only
MULTIMEDIA/F ALLBACK	Proprietary value Analog multimedia calls with possible fallback to speech
MULTIMEDIA/V OICE	Proprietary value UDI/RDI multimedia calls with possible fallback and service change, multimedia mode preferred
VOICE/MULTIM EDIA	Proprietary value UDI/RDI multimedia calls with possible fallback and service change, voice mode preferred.

Clarification

Optional parameters [,<priority>[,<subaddr>,<satype>]] are not supported in +CRING.

When option AT_CMD_VIDEO_TEL_FTR is enabled, proprietary values are defined to notify about an incoming multimedia call.

3.2.4　Network service related commands

3.2.4.1　+CNUM Subscriber number

Description	Command	Possible Response(s)
Get MSISDNs	+CNUM	+CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]] [<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service> [,<itc>]]

Description	Command	Possible Response(s)
		[...]]
Test if command is supported	+CNUM =?	

Parameters

<alphax>	Description
String type	Alphanumeric string associated with <numberx>; used character set should be the one selected with +CSCS

<numberx>	Description
String type	Phone number

<typex>	Description
Integer type	Type of address

<speed>	Description
Integer type	Same as +CBST

<service>	Description
0	Asynchronous modem
1	Synchronous modem
2	PAD Access (asynchronous)
3	Packet Access (synchronous)
4	Voice
5	Fax

<itc>	Description
0	3,1 kHz
1	UDI

3.2.4.2   +CREG Network registration

Description	Command	Possible Response(s)
Control +CREG notification	+CREG=[<n>]	
Get current registration status	+CREG ?	+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]]
Get supported values	+CREG =?	+CREG: (list of supported <n>s)

Parameters

<n>	Description
0	Disable network registration unsolicited result code
1	Enable network registration and location information unsolicited result code +CREG: <stat>
2	Enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]

<stat>	Description
0	not registered, MT is not currently searching a new operator to register to
1	Registered, home network
2	Not registered, but MT is currently searching a new operator to register to
3	Registration denied
4	Unknown
5	Registered, roaming

<lac>	Description
String type	Two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>	Description
String type	Four byte UTRAN/GERAN cell ID in hexadecimal format

<Act>	Description
0	Registered on GSM RAT
1	Registered on GSM Compact
2	Registered on UTRAN
3	Registered on GSM w/EGPRS
4	Registered on UTRAN w/HSDPA
5	Registered on UTRAN w/HSUPA
6	Registered on UTRAN w/HSDPA and HSUPA
7	Registered on E-UTRAN

3.2.4.3   +COPS Operator Selection

Description	Command	Possible Response(s)
Select operator	+COPS=[<mode>[,<format>[,<oper>[,< AcT>]]]]	
Get current mode and operator	+COPS?	+COPS: <mode>[,<format>, <oper> [,< AcT>]]
Get supported values	+COPS=?	+COPS: [list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>[,< AcT>])s][,,(list of supported <mode>s),(list of supported <format>s)]

Parameters

<mode>	Description
0	Automatic (<oper> field is ignored)
1	Manual (<oper> field shall be present, and <AcT> optionally)
3	set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> and < AcT> fields are ignored); this value is not applicable in read command response
4	Manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered

<format>	Description
0	Long format alphanumeric <oper>
1	Short format alphanumeric <oper>
2	Numeric <oper>

<oper>	Description
String type	Refer to [27.007]

<Act>	Description
0	Registered on GSM RAT
1	Registered on GSM Compact
2	Registered on UTRAN
3	Registered on GSM w/EGPRS
4	Registered on UTRAN w/HSDPA
5	Registered on UTRAN w/HSUPA

<Act>	Description
6	Registered on UTRAN w/HSDPA and HSUPA
7	Registered on E-UTRAN

Clarification

If UMTS_FTR is activated, < AcT> is supported. (Note: < AcT> appears in 27.007 Release 5)

If AT_COPS_REVERSED_DIGITS_FTR is activated, result of AT+COPS command returns Mcc/Mnc country code in reversed order (i.e natural order).

When Manual/automatic operator selection is requested (<mode>=4), +COPS will return <mode>=0 or <mode>=1 depending which registration mode was successful (<mode>=4 will not be returned)

If set command is aborted, an abort of the registration on going is requested.

If test command is aborted, get available PLMN procedure is aborted, a partial list of PLMN is returned.

Examples:

After the execution of "AT+COPS=1,2,"20820"" with a two digit Mnc, "AT+COPS=?" returns

+COPS: 3,"F-BYTEL","","20820" : if AT_COPS_REVERSED_DIGITS_FTR is set. This is the natural way

+COPS: 3,"F-BYTEL","","80202" : if AT_COPS_REVERSED_DIGITS_FTR is not set. This is the 27.007 recommendation way

After the execution of "AT+COPS=1,2,"208103"" with a three digit Mnc, "AT+COPS=?" returns

+COPS: 3,"<operator name>","","208103" : if AT_COPS_REVERSED_DIGITS_FTR is set. This is the natural way

+COPS: 3,"<operator name>","","802301" : if AT_COPS_REVERSED_DIGITS_FTR is not set. This is the 27.007 recommendation way.

3.2.4.4 +CLCK Facility lock

Description	Command	Possible Response(s)
Execute facility operation	+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	**when <mode>=2 and command successful**: +CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[…]]
Get supported values	+CLCK=?	+CLCK: (list of supported <fac>s)

Parameters

<fac>	Description
SC	SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code
AO	BAOC (Barr All Outgoing Calls)
OI	BOIC (Barr Outgoing International Calls)
OX	BOIC-exHC (Barr Outgoing International Calls except to Home Country)
AI	BAIC (Barr All Incoming Calls)
IR	BIC-Roam (Barr Incoming Calls when Roaming outside the home country)
AB	All Barring services
FD	SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)
PN	Network Personalization Correspond to NCK code but this is not supported as platform throws an error if they are supported.
PU	Network sUbset Personalization Correspond to NSCK code but this is not supported as platform throws an error if they are supported.
PP	Service Provider Personalization Correspond to SPCK code but this is not supported as platform throws an error if they are supported.
AC	All inComing barring services
AG	All outGoing barring services

<mode>	Description
0	Unlock
1	Lock
2	Query status

<passwd>	Description
String type	Shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD

<class>	Description
1	Voice (telephony)
2	data (refers to all bearer services; with <mode>=2 this may

<class>	Description
	refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
4	Fax (facsimile services)
5	1+4 (All teleservices except SMS)
7 (Default)	1+2+4
8	short message service
12	4+8 (allDataTeleservices)
13	1+4+8 (allTeleservices)
15	1+2+4+8 (All services)
16	data circuit sync
32	data circuit async
64	dedicated packet access
80	16+64 (all SynchronousServices)
128	dedicated PAD access
160	32+128 (allAsynchronousServices)
240	128+64+32+16(allBearerServices)
241	128+64+32+16+2(allBearerServices)
255	All services

<status>	Description
0	Not active
1	Active

3.2.4.5 +CPWD Change password

Description	Command	Possible Response(s)
Set new password	+CPWD=<fac>,<oldpwd>, <newpwd>	
Get supported values	+CLCK=?	+CPWD: list of supported (<fac>,<pwdlength>)s

Parameters

<fac>	Description
P2	SIM PIN2

<fac>	Description
	Refer Facility Lock +CLCK for other values

<oldpwd> <newpd>	Description
String type	<oldpwd> shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD and <newpwd> is the new password; maximum length of password can be determined with <pwdlength>

<pwdlength>	Description
Integer type	Maximum length of the password for the facility

3.2.4.6 +CLIP Calling line identification presentation

Description	Command	Possible Response(s)
Control +CLIP notification	+CLIP=[<n>]	
Get status of CLI	+CLIP?	+CLIP: <n>, <m>
Get supported values	+CLIP=?	+CLIP: (list of supported <n>s)

Parameters

<n>	Description
0	Disable +CLIP notification
1	Enable +CLIP notification

<m>	Description
0	CLIP not provisioned
1	CLIP provisioned
2	Unknown (e.g. no network, etc.)

3.2.4.7 +CLIR Calling line identification restriction

Description	Command	Possible Response(s)
Control +CLIR	+CLIR=[<n>]	
Get status of CLIR	+CLIR?	+CLIR: <n>, <m>
Get supported values	+CLIR=?	+CLIR: (list of supported <n>s)

Parameters

<n>	Description
0	Presentation indicator is used according to the subscription of the CLIR service
1	CLIR invocation
2	CLIR suppression

<m>	Description
0	CLIR not provisioned
1	CLIR provisioned in permanent mode
2	Unknown (e.g. no network, etc.)
3	CLIR temporary mode presentation restricted
4	CLIR temporary mode presentation allowed

3.2.4.8   +COLP Connected line identification presentation

Description	Command	Possible Response(s)
Control +COLP notification	+COLP=[<n>]	
Get status of COLP	+COLP?	+COLP: <n>, <m>
Get supported values	+COLP=?	+COLP: (list of supported <n>s)

Parameters

<n>	Description
0	Disable +COLP notification
1	Enable +COLP notification

<m>	Description
0	COLP not provisioned
1	COLP provisioned
2	Unknown (e.g. no network, etc.)

3.2.4.9   +CCFC Call forwarding number and conditions

Description	Command	Possible Response(s)

Description	Command	Possible Response(s)
Control Call forwarding	+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]	when <mode>=2 and command successful: +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][…]
Get supported values	+CCFC=?	+CCFC: (list of supported <reason>s)

Parameters

<reason>	Description
0	Unconditional
1	Mobile busy
2	No reply
3	Not reachable
4	All call forwarding
5	All conditional call forwarding

<mode>	Description
0	Disable
1	Enable
2	Query status
3	Registration
4	Erasure

<number>	Description
String type	Phone number of forwarding address in format specified by <type>

<type>	Description
Integer type	Type of address

<subaddr>	Description
String type	subaddress of format specified by <satype>

<satype>	Description
Integer type	Type of subaddress

<class>	Description

<class>	Description
1	Voice (telephony)
2	data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
4	Fax (facsimile services)
5	1+4 (All teleservices except SMS)
7 (Default)	1+2+4
8	short message service
12	4+8 (allDataTeleservices)
13	1+4+8 (allTeleservices)
15	1+2+4+8 (All services)
16	data circuit sync
32	data circuit async
64	dedicated packet access
80	16+64 (all SynchronousServices)
128	dedicated PAD access
160	32+128 (allAsynchronousServices)
240	128+64+32+16(allBearerServices)
241	128+64+32+16+2(allBearerServices)
255	All services

<time>	Description
1..30	When "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded Default value 20

<status>	Description
0	Not active
1	Active

3.2.4.10 +CCWA Call waiting

Description	Command	Possible Response(s)
Control call waiting	+CCWA=[<n>[,<mode>[,<class>]]]	**when <mode>=2 and command successful** +CCWA: <status>,<class1>[<CR><LF>+CCWA:

Description	Command	Possible Response(s)
		<status>,<class2> [...]]
Get current mode	+CCWA?	+CCWA: <n>
Get supported values	+CCWA=?	+CCFC: (list of supported <reason>s)

Parameters

<n>	Description
0	Disable presentation of +CCWA
1	Enable presentation of +CCWA

<mode>	Description
0	Disable
1	Enable
2	Query status

<class>	Description
1	Voice (telephony)
2	data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
4	Fax (facsimile services)
7 (Default)	1+2+4

<status>	Description
0	Not active
1	Active

3.2.4.11   +CHLD Call related supplementary services

Description	Command	Possible Response(s)
Control call related services	+CHLD=[<n>]	
Get supported values	+CHLD=?	[+CHLD: (list of supported <n>s)]

Parameters

<n>	Description

<n>	Description
0	Releases all held calls or sets User Determined User Busy (UDUB) for a waiting call.
1	Releases all active calls (if any exist) and accepts the other (held or waiting) call.
1x	Releases a specific active call x
2	Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.
2x	Places all active calls on hold except call X with which communication shall be supported.
3	Adds a held call to the conversation.
4	Connects the two calls and disconnects the subscriber from both calls (ECT)
6	Proprietary value Swap operation (retrieves the held call and holds the active call). Not applicable for calls engaged in a multiparty operation (+CME ERROR returned)
6x	Proprietary value Retrieves the specified held call x. Not applicable for calls engaged in a multiparty operation (+CME ERROR returned)
7x	Proprietary value Holds the specified active call x. Not applicable for calls engaged in a multiparty operation (+CME ERROR returned)
8x	Proprietary value Releases the specified call x (whatever its state).
9x	Proprietary value Aborts MO speech call x setup without releasing other calls. Possible if OK result code is sent before call is connected: allowed if *PSCSSC mode = enabled and +COLP = disabled.

Clarification

Additional proprietary value defined to add more flexibility: <n>: 6, 6x, 7x, 8x, 9x, allowed if option AT_CMD_EXTENDED_CHLD_FTR is enabled.

3.2.4.12 +CTFR Call deflection

Description	Command	Possible Response(s)
Deflect a MT call	+CTFR=<number>[,<type>[,<subaddr>[,<satype>]]]	
Test if command is	+CTFR=?	

Description	Command	Possible Response(s)
supported		

Parameters

<number>	Description
String type	Phone number

<type>	Description
Integer type	Type of address

<subaddr>	Description
String type	subaddress of format specified by <satype>

<satype>	Description
Integer type	Type of subaddress

3.2.4.13   +CUSD Unstructured supplementary service data

Description	Command	Possible Response(s)
Control USSD	+CUSD=[<n>[,<str>[,<dcs>]]]	
Get current mode	+CUSD?	+CUSD: <n>
Get supported values	+CUSD=?	+CUSD: (list of supported <n>s)

Parameters

<n>	Description
0	Disable the result code presentation to the TE
1	Enable the result code presentation to the TE
2	Cancel session (not applicable to read command response)

<str>	Description
String type	USSD-string

<dcs>	Description
Integer type	Cell Broadcast Data Coding Scheme Default value: 0

Clarification

When TE sends an USSD to the network, the OK result code is sent before the response of the network. When network answers, the response will be sent as an URC (as if it was a network initiated operation, in case of error +CUSD: 4 will be sent).

This allows the link not to be blocked for a long time (the network can take a long time to answer a USSD request initiated by the TE).

The USSD session can be aborted using command at+cusd=2.

3.2.4.14   +CAOC Advice of Charge

Description	Command	Possible Response(s)
Control AOC notification	+CAOC[=<mode>]	[+CAOC: <ccm>]
Get current mode	+CAOC?	+CAOC: <mode>
Get supported values	+CAOC=?	[+CAOC: (list of supported <mode>s]

Parameters

<mode>	Description
0	query CCM value
1	Deactivate the unsolicited reporting of CCM value
2	Activate the unsolicited reporting of CCM value

<ccm>	Description
String type	Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM card or in the active application in the UICC (GSM or USIM)

3.2.4.15   +CSSN Supplementary service notifications

Description	Command	Possible Response(s)
SS notification control	+CSSN=[<n>[,<m>]]	
Get current mode	+CSSN?	+CSSN: <n>,<m>
Get supported values	+CSSN=?	+CSSN: (list of supported <n>s),(list of supported <m>s)

Parameters

<n>	Description
0	Disable presentation of +CSSI
1	Enable presentation of +CSSI

<m>	Description
0	Disable presentation of +CSSU
1	Enable presentation of +CSSU

3.2.4.16 +CLCC List current calls

Description	Command	Possible Response(s)
Call notification control	+CLCC	[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]][<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]][...]]]
Test if command is supported	+CLCC=?	

Parameters

<idx>	Description
1..7	Call identification number This number can be used in +CHLD command operations

<dir>	Description
0	Mobile originated (MO) call
1	Mobile terminated (MT) call

<stat>	Description
0	Active
1	Held
2	Dialing (MO call)
3	Alerting (MO call)
4	Incoming (MT call)
5	Waiting (MT call)

<mode>	Description

<mode>	Description
0	Voice
1	Data
2	Fax

<mpty>	Description
0	Call is not one of multiparty (conference) call parties
1	Call is one of multiparty (conference) call parties

<number>	Description
String type	Phone number

<type>	Description
Integer type	Type of address

<Alpha>	Description
String type	Alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS

3.2.4.17   +CPOL Preferred PLMN list

Description	Command	Possible Response(s)
Write an entry in list of preferred PLMNs	+CPOL=[<index>][,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UTRAN_AcT>]]]	
List all entries	+CPOL?	+CPOL: <index1>,<format>,<oper1>[,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>] [<CR><LF>+CPOL: <index2>,<format>,<oper2>[,<GSM_AcT2>,<GSM_Compact_AcT2>,<UTRAN_AcT2>] [...]]
Get supported values	+CPOL=?	+CPOL: (list of supported <index>s),(list of supported <format>s)

Parameters

<index>	Description
Integer type	The order number of operator in the SIM/USIM preferred operator list

<format>	Description
0	Long format alphanumeric <oper>
1	Short format alphanumeric <oper>
2	Numeric <oper>

<opern>	Description
String type	<format> indicates if the format is alphanumeric or numeric (see +COPS)

<GSM_AcTn>	Description
0	Access technology not selected
1	Access technology selected

<GSM_Compact_AcTn>	Description
0	Access technology not selected

<UTRAN_AcTn>	Description
0	Access technology not selected
1	Access technology selected

Clarification

If USIM_FTR or PLMN_ACT_FTR is activated, <GSM_AcT>, <GSM_Compact_AcT> and <UTRAN_AcT> are supported.

Note: <GSM_AcT>, <GSM_Compact_AcT> and <UTRAN_AcT> appears in 27.007 Release 5.

3.2.4.18   +CPLS Selection of preferred PLMN list

Description	Command	Possible Response(s)
Select the list of preferred PLMN for CPOL	+CPLS=<list>	
Get current list	+CPLS?	+CPLS: <list>
Get supported values	+CPLS=?	+CPLS: (list of supported <list>s)

Parameters

\<list\>	Description
0	User controlled PLMN selector with Access Technology EFPLMNwAcT, if not found in the SIM/UICC then PLMN preferred list EFPLMNsel (this file is only available in SIM card or GSM application selected in UICC)
1	Operator controlled PLMN selector with Access Technology EFOPLMNwAcT

Clarification

This command is supported if USIM_FTR or PLMN_ACT_FTR is activated.

Note: This command appears in 27.007 Release 5, but SIM files EFPLMNwAcT, EFOPLMNwAcT exists in Release 99.

3.2.4.19   +COPN Read operator names

Description	Command	Possible Response(s)
Get list of operator name	+COPN	+COPN: \<numeric1\>,\<alpha1\> [\<CR\>\<LF\>+COPN: \<numeric2\>,\<alpha2\>[...]]
Test if command is supported	+COPN=?	

Parameters

\<numeric*n*\>	Description
String type	Operator in numeric format (see +COPS)

\<alpha*n*\>	Description
String type	Operator in long alphanumeric format (see +COPS)

3.2.5   Network service related result codes

3.2.5.1   +CREG Network registration

Description	Result code
Network registration status change event	+CREG: \<stat\>[,\<lac\>,\<ci\>]

Parameters

Refer to +CREG command description.

3.2.5.2   +CLIP Calling Line Identification Presentation

Description	Result code
Calling Line Identification Presentation	+CLIP: <number>,<type> [,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]

Parameters

<number>	Description
String type	Phone number

<type>	Description
Integer type	Type of address

<subaddr>	Description
String type	subaddress of format specified by <satype>

<satype>	Description
Integer type	Type of subaddress

<Alpha>	Description
String type	Alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS

<CLI validation>	Description
0	CLI valid
1	CLI has been withheld by the originator
2	CLI is not available due to interworking problems or limitations of originating network

3.2.5.3   +COLP Connected line identification presentation

Description	Result code
Connected Line Identification Presentation	+COLP: <number>,<type> [,<subaddr>,<satype> [,<alpha>]]

Parameters

<number>	Description
String type	Phone number

<type>	Description
Integer type	Type of address

<subaddr>	Description
String type	subaddress of format specified by <satype>

<satype>	Description
Integer type	Type of subaddress

<Alpha>	Description
String type	Alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS

3.2.5.4 +CCWA Calling Line Identification Presentation

Description	Result code
Call waiting notification	+CCWA: <number>,<type>,<class>, [<alpha>][,<CLI validity>[,<subaddr>,<satype>]]

Parameters

<number>	Description
String type	Phone number

<type>	Description
Integer type	Type of address

<subaddr>	Description
String type	subaddress of format specified by <satype>

<satype>	Description
Integer type	Type of subaddress

<Alpha>	Description

<Alpha>	Description
String type	Alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS

<class>	Description
1	Voice (telephony)
2	data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
4	Fax (facsimile services)
7 (Default)	1+2+4

<CLI validation>	Description
0	CLI valid
1	CLI has been withheld by the originator
2	CLI is not available due to interworking problems or limitations of originating network

3.2.5.5 +CUSD Unstructured supplementary service data

Description	Result code
USSD response from the network, or network initiated operation	+CUSD: <m>[,<str>,<dcs>]

Parameters

<n>	Description
0	No further user action required (network initiated USSD Notify, or no further information needed after mobile initiated operation)
1	Further user action required (network initiated USSD Request, or further information needed after mobile initiated operation)
2	USSD terminated by network
4	Operation not supported
5	Network time out

<str>	Description

<str>	Description
String type	USSD-string

<dcs>	Description
Integer type	Cell Broadcast Data Coding Scheme Default value: 0

3.2.5.6 +CCCM Current Call Meter

Description	Result code
CCM value	+CCCM: <ccm>

Parameters

<ccm>	Description
String type	Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM card or in the active application in the UICC (GSM or USIM)

3.2.5.7 +CSSI Supplementary service notifications

Description	Result code
SS notification for MO call	+CSSI: <code1>

Parameters

<code1>	Description
0	Unconditional call forwarding is active
1	Some of the conditional call forwardings are active
2	Call has been forwarded
3	Call is waiting
5	Outgoing calls are barred
6	Incoming calls are barred
7	CLIR suppression rejected
8	Call has been deflected

3.2.5.8 +CSSU Supplementary service notifications

Description	Result code
SS notification	+CSSU: <code2>

Parameters

<code2>	Description
0	This is a forwarded call (MT call setup)
2	Call has been put on hold (during a voice call)
3	Call has been retrieved (during a voice call)
4	Multiparty call entered (during a voice call)
5	Call on hold has been released (this is not a SS notification) (during a voice call)
7	Call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)
8	Call has been connected with the other remote party in explicit call transfer operation (during a voice call or MT call setup)
9	This is a deflected call (MT call setup)

3.2.6 Control and status commands

3.2.6.1 +CPAS Phone activity status

Description	Command	Possible Response(s)
Get activity status	+CPAS	+CPAS: <pas>
Get supported values	+CPAS=?	+CPAS: (list of supported <pas>s)

Parameters

<pas>	Description
0	Ready (MT allows commands from TA/TE)
2	Unknown (MT is not guaranteed to respond to instructions)
3	Ringing (MT is ready for commands from TA/TE, but the ringer is active)
4	Call in progress (MT is ready for commands from TA/TE, but a call is in progress)

3.2.6.2 +CFUN Set phone functionality

Description	Command	Possible Response(s)
Select the level of functionality	+CFUN=[<fun>[,<rst>]]	
Get current level	+CFUN?	+CFUN: <fun>
Get supported values	+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s)

Parameters

<fun>	Description
0	*Minimum functionality
1	Full functionality
4	Disable phone both transmit and receive RF circuits
5	GSM RAT only
6	WCDMA RAT only
7	Initiate modem silent reboot
8	Restart after successful modem silent reboot

*Note: The <fun> 5 and 6 are supported under the switch AT_MAPPING_AUTOMATION_SFI and SPN_MS_TYPE_CHANGE_FTR
The <fun> 7 and 8 are supported under switch TEL_SILENT_REBOOT_FTR
<fun> 0 is implemented under the compilation switch CFUN_MIN_FUNC_SFI, where it is extended to switch off SIM card also.

<rst>	Description
0 (Default)	Do not reset the MT before setting it to <fun> power level
1	Reset the MT before setting it to <fun> power level

Clarification

AT+CFUN=1,1 generates a blocking defence to reset the mobile. "OK" result code will appear after reset has been completed. (AT+CFUN=1,1 has no effect on radio on/off, it leaves it as the same state it was before reset).

AT+CFUN=1,0 request a radio on and memorize in non-volatile memory <fun> level.

AT+CFUN=4,0 request a radio off and memorize in non-volatile memory <fun> level.

AT+CFUN=4 and AT+CFUN=4,0 are supported but AT+CFUN=4,1 is not

supported.

At next switch on, ME will be started with the <fun> level of the last +CFUN (i.e radio on or off). This allows TE to have control on radio on/off.

AT+CFUN=0 is implemented under CFUN_MIN_FUNC_SFI compilation switch. This command will switch off both radio and SIM.

3.2.6.3 +CPIN Enter PIN

Description	Command	Possible Response(s)
Send password to MT	+CPIN=<pin>[,<newpin>]	
Check if a password is expected	+CPIN?	+CPIN: <code>
Test if command is supported	+CPIN=?	

Parameters

<code>	Description
READY	MT is not pending for any password
SIM PIN	MT is waiting SIM PIN to be given
SIM PUK	MT is waiting SIM PUK to be given
SIM PIN2	MT is waiting SIM PIN2 to be given This <code> is returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17). If PIN2 is not entered right after the failure, MT does not block its operation
SIM PUK2	MT is waiting SIM PUK2 to be given This <code> is returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18). f PUK2 and new PIN2 are not entered right after the failure, MT does not block its operation
PH-NET PIN	MT is waiting network personalization password to be given Correspond to NCK code
PH-NETSUB PIN	MT is waiting network subset personalization password to be given Correspond to NSCK code
PH-SP PIN	MT is waiting service provider personalization password to be given Correspond to SPCK code
PH-CORP PIN	MT is waiting corporate personalization password to be given Correspond to CCK code

Clarification

If option SIMLOCK_MANAGED_BY_MMI_FTR is enabled, PH-xxx PIN are not supported.

When the pin code is required, the error result code is a CMS ERROR for the AT commands that belong to the 27.005 and a CME ERROR for all the other AT commands

3.2.6.4   +CBC Battery charge

Description	Command	Possible Response(s)
Get battery information	+CBC	+CBC: <bcs>,<bcl>
Get supported values	+CBC=?	+CBC: (list of supported <bcs>s),(list of supported <bcl>s)

Parameters

<bcs>	Description
0	MT is powered by the battery
1	MT has a battery connected, but is not powered by it
2	MT does not have a battery connected
3	Recognized power fault, calls inhibited

<bcl>	Description
0	Battery is exhausted, or MT does not have a battery connected
1..100	Battery has 1-100 percent of capacity remaining

3.2.6.5   +CSQ Signal Quality

Description	Command	Possible Response(s)
Get signal information	+CSQ	+CSQ: <rssi>,<ber>
Get supported values	+CSQ=?	+CSQ: (list of supported <rssi>s),(list of supported <ber>s)

Parameters

<rssi>	Description
0..31	From -113 dBm or less to -51 dBm or greater
100..191	From -113 dBm or less to -51 dBm or greater for UMTS RAT

<rssi>	Description
99	Not known or not detectable
199	Not known or not detectable for UMTS RAT

<ber>	Description
99	Not known or not detectable

3.2.6.6   +CMEC Mobile Termination control mode

Description	Command	Possible Response(s)
Select equipment	+CMEC=[<keyp>[,<disp>[,<ind>]]]	
Get current settings	+CMEC?	+CMEC: <keyp>,<disp>,<ind>
Get supported values	+CMEC=?	+CMEC: (list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s)

Parameters

<keyp>	Description
0	MT can be operated only through its keypad (execute command of + cannot be used)
2	MT can be operated from both MT keypad and TE

<disp>	Description
0	Only MT can write to its display (command +CDIS can only be used to read the display)

<ind>	Description
0	Only MT can set the status of its indicators (command +CIND can only be used to read the indicators)

3.2.6.7   +CKPD Keypad Control

Description	Command	Possible Response(s)
Select keypad	+CKPD=<keys>[,<time>[,<pause>]]	
Get current settings	+CKPD?	+CKPD: <keys>,<time>,<pause>

Description	Command	Possible Response(s)

Parameters

<keys>	Description
	string of characters representing keys as listed in the following table (based on PCCA STD-101 Annex table I-3).

Character codes

Char	IRA (dec)	Comment (+ some known key symbols)
#	35	hash (number sign)
%	37	percent sign (P)
*	42	star (*)
0... 9	48... 57	number keys
:	58	escape character for manufacturer specific keys
;	59	escape character for string entering
<	60	left arrow
>	62	right arrow
@	64	alpha key (α/ABC)
A/a	65/97	channel A (A)
B/b	66/98	channel B (B)
C/c	67/99	clear display (C/CLR)
D/d	68/100	volume down
E/e	69/101	connection end (END)
F/f	70/102	function (FCN)
L/l	76/108	phone lock (LOCK)
M/m	77/109	menu (MENU)
P/p	80/112	power (PWR)
Q/q	81/113	quiet/mute (MUTE)
R/r	82/114	recall last number (R/RCL/MR)
S/s	83/115	connection start (SEND)
T/t	84/116	store/ memory (STO/M/M+)
U/u	85/117	volume up
V/v	86/118	down arrow
W/w	87/119	pause character
X/x	88/120	auxiliary (AUX)
Y/y	89/121	delete last character (C)
[	91	soft key 1
]	93	soft key 2
^	94	up arrow

<time>	Description
0...255	0... 25.5 seconds (default values are manufacturer specific, but should be so long that a normal MT can handle keystrokes correctly)

<pause>	Description
0...255	0... 25.5 seconds (default values are manufacturer specific, but should be so long that a normal MT can handle keystrokes correctly)

3.2.6.8 +CIND Indicator control

Description	Command	Possible Response(s)
Set MT indicators	+CIND=[<ind>[,<ind>[,…]]]	
Get MT indicator status	+CIND?	+CIND: <ind>[,<ind>[,...]]
Get supported values	+CIND=?	+CIND: (<descr>,(list of supported <ind>s)) [,(<descr>,(list of supported <ind>s))[,...]]

Parameters

<ind>	Description
Integer type	Range of corresponding <descr>

<descr>	Description
"battchg"	Battery charge level (0 5)
"signal"	Signal quality (0 5)
"service"	Service availability (0 1)
"message"	Message received (0 1)
"call"	Call in progress (0-1)
"roam"	Roaming indicator (0-1)
"smsfull"	A short message memory storage in the MT has become full (1), or memory locations are available (0)

3.2.6.9 +CMER Mobile Termination event reporting

Description	Command	Possible Response(s)
Control URC notifications	+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]]	
Get current settings	+CMER?	+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>

Description	Command	Possible Response(s)
Get supported values	+CMER=?	+CMER: (list of supported <mode>s),(list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)

Parameters

<mode>	Description
0	Buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded
1	Discard unsolicited result codes when TA TE link is reserved (e.g. in on line data mode); otherwise forward them directly to the TE

<keyp>	Description
0	No keypad event reporting

<disp>	Description
0	No display event reporting

<ind>	Description
0	No indicator event reporting
1	Indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator.
2	Indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE

<bfr>	Description
0	TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered

3.2.6.10 +CPBS Select phonebook memory storage

Description	Command	Possible Response(s)
Select phonebook memory storage	+CPBS=<storage>	
Get current memory storage status	+CPBS?	+CPBS: <storage>[,<used>,<total>]

Description	Command	Possible Response(s)
Get supported storages	+CPBS=?	+CPBS: (list of supported <storage>s)

Parameters

<storage>	Description
DC	MT dialled calls list (+CPBW may not be applicable for this storage)
EN	SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage)
FD	SIM/USIM fixed dialling phonebook. If a SIM card is present or if a UICC with an active GSM application is present, the information in EFFDN under DFTelecom is selected. If a UICC with an active USIM application is present, the information in EFFDN under ADFUSIM is selected.
MC	MT missed (unanswered received) calls list (+CPBW may not be applicable for this storage)
ON	SIM (or MT) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also). When storing information in the SIM/UICC, if a SIM card is present or if a UICC with an active GSM application is present, the information in EFMSISDN under DFTelecom is selected. If a UICC with an active USIM application is present, the information in EFMSISDN under ADFUSIM is selected.
RC	MT received calls list (+CPBW may not be applicable for this storage)
SM	SIM/UICC phonebook. If a SIM card is present or if a UICC with an active GSM application is present, the EFADN under DFTelecom is selected. If a UICC with an active USIM application is present, the global phonebook, DFPHONEBOOK under DFTelecom is selected.
AP	Selected application phonebook. If a UICC with an active USIM application is present, the application phonebook, DFPHONEBOOK under ADFUSIM is selected Supported only when USIM_FTR and PHONEBOOK_3G_FTR are enabled

<used>	Description
Integer type	Value indicating the number of used locations in selected memory

<total>	Description
Integer type	Value indicating the total number of locations in selected memory

Clarification

"SM" corresponds to SIM/UICC phonebook (global phonebook) If a SIM card is present or if a UICC with an active GSM application is present, the EFADN under DFTelecom is selected. If a UICC with an active USIM application is present, the global phonebook, DFPHONEBOOK under DFTelecom is selected.

"AP" corresponds to selected application phonebook (local phonebook). If a UICC with an active USIM application is present, the application phonebook, DFPHONEBOOK under ADFUSIM is selected

3.2.6.11   +CPBR Read phonebook entries

Description	Command	Possible Response(s)
Read entries	+CPBR=<index1>[,<index 2>]	[+CPBR: <index1>,<number>,<type>, <text>[,<hidden>][,<group>][,<adnumber>] [,<adtype>][,<secondtext>][,<email>]] [[...] <CR><LF>+CPBR:<index2>,<number>, <type>,<text> [,<hidden>][,<group>] [,<adnumber>][,<adtype>][,<secondtext>] [,<email>]]]
Get location ranges	+CPBR=?	+CPBR: [<nlength>],[<tlength>], [<glength>],[<slength>],[<elength>]

Parameters

<indexn>	Description
Integer type	Values in the range of location numbers of phonebook memory

<number>	Description
String type	Phone number of format <type>

<type>	Description
Integer type	Type of address

<text>	Description
String type	Field of maximum length <tlength>; Character set as specified by +CSCS

<hidden>	Description
0	Phonebook entry not hidden
1	Phonebook entry hidden

<group>	Description

<group>	Description
String type	Field of maximum length <glength>; Character set as specified by +CSCS

<adnumber>	Description
String type	Field of maximum length <slength>; Character set as specified by +CSCS

<adtype>	Description
Integer type	Type of address

<secondtext>	Description
String type	Field of maximum length <slength>; Character set as specified by +CSCS

<email>	Description
String type	Field of maximum length <elength>; Character set as specified by +CSCS

<nlength>	Description
Integer type	Value indicating the maximum length of field <number>

<tlength>	Description
Integer type	Value indicating the maximum length of field <text>

<glength>	Description
Integer type	Value indicating the maximum length of field <group>

<slength>	Description
Integer type	Value indicating the maximum length of field <secondtext>

<elength>	Description
Integer type	Value indicating the maximum length of field <email>

<oper>	Description
String type	Refer to [27.007]

Clarification

If options USIM_FTR and PHONEBOOK_3G_FTR are enabled, 3G phonebook
additional parameters are supported if a 3G card is present in the mobile.

Only first <group>,<adnumber>,<adtype>,<secondtext>,<email> are returned with the command.

Some proprietary commands are implemented to fully manage 3G phonebook.

3.2.6.12   +CPBF Find phonebook entries

Description	Command	Possible Response(s)
Find entries	+CPBF=<findtext>	[+CPBF: <index1>,<number>,<type>, <text>[,<hidden>][,<group>][,<adnumber>] [,<adtype>][,<secondtext>][,<email>]] [[...] <CR><LF>+CPBF:<index2>,<number>, <type>,<text> [,<hidden>][,<group>] [,<adnumber>][,<adtype>][,<secondtext>] [,<email>]]]
Get location ranges	+CPBR=?	+CPBF: [<nlength>],[<tlength>], [<glength>],[<slength>],[<elength>]

Parameters

<findtext>	Description
String type	Field of maximum length <tlength>; Character set as specified by +CSCS

For other parameters: refer to +CPBR command.

Clarification

If options USIM_FTR and PHONEBOOK_3G_FTR are enabled, 3G phonebook additional parameters are supported if a 3G card is present in the mobile.

Only first <group>,<adnumber>,<adtype>,<secondtext>,<email> are returned with the command.

Some proprietary commands are implemented to fully manage 3G phonebook.

3.2.6.13   +CPBW Write phonebook entry

Description	Command	Possible Response(s)
Write entry	+CPBW=[<index>][,<number>[,<type>[,<text>[,<group>[,<adnumber>[,<adtype>[,<secondtext>[,<email>[,<hidden>]]]]]]]]]	
Get location ranges and supported values	+CPBW=?	+CPBW: (list of supported <index>s), [<nlength>],(list of supported <type>s), [<tlength>],[<glength>],[<slength>],[<elengt

Description	Command	Possible Response(s)
		h>]

Parameters

<index>	Description
0.999	Field of maximum length <tlength>; Character set as specified by +CSCS

For other parameters: refer to +CPBR command.

Clarification

If options USIM_FTR and PHONEBOOK_3G_FTR are enabled, 3G phonebook additional parameters are supported if a 3G card is present in the mobile.

Only first <group>,<adnumber>,<adtype>,<secondtext>,<email> are returned with the command.

Some proprietary commands are implemented to fully manage 3G phonebook.

3.2.6.14   +CCLK Clock

Description	Command	Possible Response(s)
Set time	+CCLK=<time>	
Get current time	+CCLK?	+CCLK: <time>
Test if command is supported	+CCLK=?	

Parameters

<time>	Description
String type	Format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range 47...+48). E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"

3.2.6.15   +CSIM Generic SIM access

Description	Command	Possible Response(s)
Send command to SIM	+CSIM=<length>,<comma	+CSIM: <length>,<response>

Description	Command	Possible Response(s)
	nd>	
Test if command is supported	+CSIM=?	

Parameters

<length>	Description
Integer type	Length of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response)

<command>	Description
String type	Command passed on by the MT to the SIM in the format as described in GSM 51.01 Hexadecimal character format

<response>	Description
String type	Response to the command passed on by the SIM to the MT in the format as described in GSM 51.011 Hexadecimal character format

Clarification

If options APPLI_DIRECT_SMC_APDU_FTR or SMARTCARD_MULTI_APPLI_FTR are disabled, the command is not available.

If option USIM_FTR is activated, the command will always return an error (command available only for SIM card not UICC with USIM applications)

SIM commands RUN GSM ALGORITHM, TERMINAL PROFILE, ENVELOPE, FETCH and TERMINAL RESPONSE are not supported.

Whatever +CSCS setting, format of <command> and <response> is always hexadecimal. (AT+CSCS="HEX" is not supported)

3.2.6.16   +CRSM Restricted SIM access

Description	Command	Possible Response(s)
Send command to SIM	+CRSM=<command>[,<file id> [,<P1>,<P2>,<P3>[,<data> [,<pathId>]]]]	+CRSM: <sw1>,<sw2>[,<response>]
Test if command is supported	+CRSM=?	

Parameters

<command>	Description
176 (READ BINARY)	Read a transparent EF Transparent file greater than 256 bytes are not supported: →P1 shall always be 0 (ERROR otherwise). →P2 shall be in the range 0-256
178 (READ RECORD)	Read a record Only P2="04" (absolute mode) is supported
192 (GET RESPONSE)	Get response
214 (UPDATE BINARY)	Read a transparent EF Only P1="00" and P2="00" is supported
220 (UPDATE RECORD)	Update a record Only P2="03" (previous mode) is allowed for updates on cyclic file (refer to [51.011]).
242 (STATUS)	Status If <fileid> is not provided, the command applies to the last selected file

<fileid>	Description
Integer type	Identifier of a elementary datafile on SIM. Mandatory for every command except STATUS

<P1> <P2> <P3>	Description
Integer type	Parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS

<data>	Description
String type	Information which shall be written to the SIM Hexadecimal character format

<pathid>	Description
String type	Contains the path of an elementary file on the SIM/UICC in hexadecimal format. Shall only be used in the mode "select by path from MF".

<sw1> <sw2>	Description

<sw1> <sw2>	Description
Integer type	Information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command

<response>	Description
String type	Response of a successful completion of the command previously issued. STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. After READ BINARY, READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY, UPDATE RECORD or SET DATA command Hexadecimal character format

Clarification

If option AT_CRSM_CMD_FTR disabled, command not available.

If option SMARTCARD_MULTI_APPLI_FTR disabled, <pathid> is not available.

3.2.6.17   +CALM Alert sound mode

Description	Command	Possible Response(s)
Set alert sound mode	+CALM=<mode>	
Get current mode	+CALM?	+CALM: <mode>
Get supported values	+CALM=?	+CALM: (list of supported <mode>s)

Parameters

<mode>	Description
0	Normal mode
1	Silent mode (all sounds from MT are prevented)

Clarification

In the case of <mode> = 1, all sounds from TA are prevented except the sound of an incoming call (sound of incoming call treated by +CRSL command).

There is no synchronization between the AT command parser and the MMI of the ME (example : silent icon on the MMI of mobile is not updated when this command is used).

3.2.6.18   +CRSL Ringer sound level

Description	Command	Possible Response(s)
Set incoming call ringer sound level	+CRSL=<level>	
Get current level	+CRSL?	+CRSL: <level>
Get supported values	+CRSL=?	+CRSL: (list of supported <level>s)

Parameters

<level>	Description
0..3	Level range

3.2.6.19   +CVIB Vibrator mode

Description	Command	Possible Response(s)
Set vibrator mode	+CVIB=<mode>	
Get current mode	+CVIB?	+CVIB: <mode>
Get supported values	+CVIB =?	+CVIB: (list of supported <mode>s)

Parameters

<mode>	Description
0	Disable
1	Enable

3.2.6.20   +CLVL Loudspeaker volume level

Description	Command	Possible Response(s)
Set sound speaker level	+CLVL=<level>	
Get current level	+CLVL?	+CLVL: <level>
Get supported values	+CLVL=?	+CLVL: (list of supported <level>s)

Parameters

<level>	Description
1..10	Level range

3.2.6.21 +CMUT Mute control

Description	Command	Possible Response(s)
Mute/unmute call	+CMUT=<n>	
Get current mode	+CMUT?	+CMUT: <n>
Get supported values	+CMUT=?	+CMUT: (list of supported <n>s)

Parameters

<n>	Description
0	Mute off
1	Mute on

Clarification

Implemented in ATCUST: to be adapted depending of ME capabilities.

The CMUT functionality is no longer handled by RIL. Audio
is under Android control, and execution or result of CMUT will not change the state of
audio module. The CMUT is not supported in Linux Platform.

3.2.6.22 +CACM Accumulated call meter

Description	Command	Possible Response(s)
Reset ACM	+CACM=[<passwd>]	
Get current ACM	+CACM?	+CACM: <acm>
Test if command is supported	+CACM=?	

Parameters

<passwd>	Description
String type	SIM PIN2

<acm>	Description
String type	Accumulated call meter value similarly coded as <ccm> under +CAOC

3.2.6.23   +CAMM Accumulated call meter maximum

Description	Command	Possible Response(s)
Set ACMmax	+CAMM=[<acmmax>[,<passwd>]]	
Get current ACMmax	+CAMM?	+CAMM: <acm>
Test if command is supported	+CAMM=?	

Parameters

<acmmax>	Description
String type	Accumulated call meter maximum value similarly coded as <ccm> under +CAOC; value zero disables ACMmax feature

<passwd>	Description
String type	SIM PIN2

3.2.6.24   +CPUC Price per unit and currency table

Description	Command	Possible Response(s)
Set price per unit and currency	+CPUC=<currency>, <ppu>[,<passwd>]	
Get current currency and price per unit	+CPUC?	+CPUC: <currency>,<ppu>
Test if command is supported	+CPUC=?	

Parameters

<currency>	Description
String type	Three-character currency code (e.g. "GBP", "DEM"); character set as specified by command +CSCS

<ppu>	Description
String type	Price per unit; dot is used as a decimal separator (e.g. "2.66")

<passwd>	Description
String type	SIM PIN2

3.2.6.25 +CCWE Call Meter maximum event

Description	Command	Possible Response(s)
Set call meter mode max event	+CCWE=<mode>	
Get current mode	+CCWE?	+CCWE: <mode>
Get supported modes	+CCWE=?	+CCWE: (list of supported <mode>s)

Parameters

<mode>	Description
0	Disable the call meter warning event +CCWV
1	Enable the call meter warning event +CCWV

3.2.6.26 +CLAN Set Language

Description	Command	Possible Response(s)
Set language	+CLAN=<code>	
Get current mode	+CLAN?	+CLAN: <code>
Get supported modes	+CLAN=?	+CLAN:(list of supported <code>s)

Parameters

<code>	Description
String type	Language coded in ISO 639 format. If language "auto" is set then the platform will report the default SIM language.

3.2.6.27 +CSGT Set Greeting Text

Description	Command	Possible Response(s)
Set greeting text	+CSGT=<mode>[,<text>]	
Get current values	+CSGT?	+CSGT: <text>, <mode>
Get supported values	+CSGT=?	+CSGT:(list of supported <mode>s), <ltext>

Parameters

<mode>	Description
0	Turn off greeting text
1	Turn on greeting text

<text>	Description
String type	A free text that shall be displayed

<ltext>	Description
Integer type	Maximum number of character in <text>

Clarification

This command only updates the greeting text (in SIM card or EEPROM).

The mode is not stored in non-volatile memory, therefore:

- Setting the mode to 0, even with a text as parameter is equivalent to setting the mode to 1 with an empty string (the greeting text is lost)

- The test command returns 1 if and only if the saved text is not empty (in other words +CSGT=1, then +CSGT? returns 0)

3.2.6.28   +CSVM Set Voice Mail Number

Description	Command	Possible Response(s)
Set voice mailbox number	+CSVM=<mode>[,<number>[,<type>]]	
Get current voice mailbox number	+CSVM?	+CSVM:<mode>,<number>,<type>
Get supported values	+CSVM=?	+CSVM: (list of supported mode>s), (list of supported <type>s)

Parameters

<mode>	Description
0	Disable the voice mail number i.e delete the voice mailbox number
1	Enable the voice mail number

<number>	Description
String type	Character string <0..9,+>

<type>	Description
Integer type	Type of address

Clarification

This command is available only if option __MBOXN__ is enabled

3.2.6.29 +CRMP Ring Melody Playback

Description	Command	Possible Response(s)
Play ring melody	+CRMP=<call type>[,<volume>[,<type>,<index>]]	
Get supported values	+CRMP=?	+CRMP: (list of supported <call type>s),(list of supported <volume>s),(<type0>),(list of supported <index>s)[<CR><LF> +CRMP: (list of supported <call type>s),(list of supported <volume>s),(<type1>),(list of supported <index>s)

Parameters

<calltype>	Description
0	Manufacturer specific

<volume>	Description
1..3	volume

<type>	Description
0	Manufacturer defined

<index>	Description
1..10	Index
11	Correspond to vibrator mode

Clarification

Implemented in ATCUST: to be adapted depending of ME melody capabilities.

3.2.6.30 +CLAC List all available AT commands

Description	Command	Possible Response(s)
List all commands	+CLAC	<AT Command1>[<CR><LF><AT Command2>[…]]
Test if command is supported	+CLAC=?	

3.2.6.31   +CPROT Enter protocol mode

Description	Command	Possible Response(s)
Enter protocol mode	+CPROT=<proto> [,<version>[,<lsap1>]]	
Get supported values	+CPROT=?	+CPROT: <proto1>, supported <version>, supported <lsap1>

Parameters

<proto>	Description
0	OBEX

<version>	Description
String type	Version number of <proto>

<lsap1>	Description
Integer type	Level

Clarification

Command available only if AT_CPROT_CMD_FTR is enabled.

3.2.6.32   +CCHO Open Logical Channel

Description	Command	Possible Response(s)
Send command to SIM	+CCHO=<dfname>	+CCHO: <sessionid>
Test if command is supported	+CCHO=?	

Parameters

<dfname>	Description

<dfname>	Description
Coded on 1 to 16 bytes	all selectable applications in the UICC are referenced by a DF name coded on 1 to 16 bytes

<sessionid>	Description
String without double quotes that represents a decimal value	A session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism

Clarification

If option SMARTCARD_MULTI_APPLI_FTR is disabled, +CCHO is not available.

As a supplementary possibility, an empty <dfname> is authorized (empty string). This possibility is not described in Recommandations. With an empty <dfname>, a <sessionid> is returned, without application.

3.2.6.33   +CCHC Close Logical Channel

Description	Command	Possible Response(s)
Send command to SIM	+CCHC=<sessionid>	
Test if command is supported	+CCHC=?	

Parameters

<sessionid>	Description
String without Double quotes that represents a decimal value	Length of the characters that are sent to TE in <command> A session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism

Clarification

If option SMARTCARD_MULTI_APPLI_FTR is disabled, +CCHO is not available.

3.2.6.34   +CUAD UICC Application Discovery

Description	Command	Possible Response(s)
Send command to SIM	+CUAD=<>	+CUAD: <response>
Test if command is supported	+CUAD=?	

Parameters

<response>	Description
String type	Response to the command passed on by the SIM to the MT in the format as described in GSM 51.011 Hexadecimal character format

Clarification

If option SMARTCARD_MULTI_APPLI_FTR is disabled, +CCHO is not available.

3.2.6.35 +CGLA Generic UICC Logical Channel access

Description	Command	Possible Response(s)
Send command to SIM	+CGLA=<sessionid>,<length>,<command>	+CGLA: <length>,<response>
Test if command is supported	+CGLA=?	

Parameters

<sessionid>	Description
String without double quotes that represents a decimal value	A session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism

<length>	Description
Integer type	Length of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response)

<command>	Description
String type	Command passed on by the MT to the SIM in the format as described in GSM 51.01 Hexadecimal character format

<response>	Description
String type	Response to the command passed on by the SIM to the MT in the format as described in GSM 51.011 Hexadecimal character format

Clarification

If option SMARTCARD_MULTI_APPLI_FTR is disabled, +CCHO is not available.

3.2.7 Control and status result codes

3.2.7.1 +CCWV Call Meter warning value

Description	Result code
Call meter warning value	+CCWV

Parameters

<ccm>	Description
String type	Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM card or in the active application in the UICC (GSM or USIM)

3.2.7.2 +CIEV Indicator event report

Description	Result code
Event report	+CIEV: <ind>,<value>

Parameters

<ind>	Description
0	battchg
1	signal

<value>	Description
0..5	Range of value for <ind>

3.2.8 Mobile Termination error control

3.2.8.1 + CMEE Report Mobile Equipment error

Description	Command	Possible Response(s)
Set error mode	+CMEE=[<n>]	
Get current mode	+CMEE?	+CMEE: <n>
Get supported values	+CMEE=?	+CMEE: (list of supported <n>s)

Parameters

<mode>	Description
0	Disable +CME ERROR: <err> result code and use ERROR instead
1	Enable +CME ERROR: <err> result code and use numeric <err>
2	Enable +CME ERROR: <err> result code and use verbose <err> values

3.2.9 Mobile Termination error result code

3.2.9.1 +CME ERROR

Description	Result code
Error type	+CME ERROR: <err>

General error

Numeric mode	Verbose Mode
0	Phone failure
1	No connection to phone
2	Phone-adaptor link reserved
3	Operation not allowed
4	Operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted (Note)
11	SIM PIN required
12	SIM PUK required
13	SIM failure (Note)

Numeric mode	Verbose Mode
14	SIM busy (Note)
15	SIM wrong (Note)
16	Incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	Memory full
21	Invalid index
22	Not found
23	Memory failure
24	Text string too long
25	Invalid characters in text string
26	Dial string too long
27	Invalid characters in dial string
30	No network service
31	Network timeout
32	Network not allowed - emergency calls only
40	Network personalization PIN required
41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
50	Incorrect parameters
100	Unknown

NOTE:This error code is also applicable to UICC.

GPRS-related error

Numeric mode	Verbose Mode
103	Illegal MS

Numeric mode	Verbose Mode
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	Service option not supported
133	Requested service option not subscribed
134	Service option temporarily out of order
149	PDP authentication failure
150	Invalid mobile class
148	Unspecified GPRS error

3.2.10 Commands for Packet domains

3.2.10.1 +CGDCONT Define PDP Context

Description	Command	Possible Response(s)
Define a PDP	+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]]]	
List current defined PDP	+CGDCONT?	+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <data_comp>, <head_comp> [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <data_comp>, <head_comp> [...]]
Get supported values	+CGDCONT=?	+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s) [<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s) [...]]

Parameters

<cid>	Description
1	PDP Context Identifier 1

<cid>	Description
	Definition stored in non-volatile memory
2	PDP Context Identifier 2 Definition stored in non-volatile memory
3	PDP Context Identifier 3 Default <cid> Locked in non-volatile memory and is always defined.
4..11	PDP Context Identifier 4..11 Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

<PDP_type>	Description
IP	Internet Protocol (IETF STD 5)
PPP	Point to Point Protocol (IETF STD 51) Allowed only if ATP_PPP_OVER_GPRS_FTR is enabled

<APN>	Description
String type	Access Point Name If the value is null or omitted, then the subscription value will be requested

<PDP_address>	Description
String type	IP address Format: "<n>.<n>.<n>.<n>" where <n>=0..255 If the value is null or equals 0.0.0.0 a dynamic address will be requested. The allocated address may be read using the +CGPADDR command

<d_comp>	Description
0	PDP data compression off Default if value is omitted

<h_comp>	Description
0	PDP header compression off Default if value is omitted

Clarification

For <cid> 1,2 and 3, PDP context definition is stored in EEPROM i.e parameters provided in +CGDCONT for PDP context definition and PDP context status (defined/undefined) are stored in non-volatile memory (If a PDP has been defined with +CGDCONT, after a switch off / switch on, AT+CGDCONT? will list the PDP has defined).

<cid> 3 is locked. This means that TE is not allowed to modify definition and parameters of <cid>=3 with +CGDCONT set command. This gives a default PDP context with parameters that TE cannot change (Default parameter are located in t_hee_atp_PDPContext section).

<cid> 3 is also the default <cid>: if +CGDCONT with <cid> omitted is received, <cid> 3 will be used.

For <cid> 1,2 and 3 the following parameters are stored in non volatile memory:

Parameter name	Length	Default value	Non volatile memory field
<cid>	2 bits	*cid number*	v_hee_PDPCtxtCid
Locked	1 bit	0xFF..0xFF	v_hee_PDPCtxtLocked
Defined	1 bit	0x00	v_hee_PDPCtxtDefined
<precedence>	2 bits	0x00	v_hee_PDPCtxtQosPrecedence
<delay>	3 bits	0x00	v_hee_PDPCtxtQosDelay
<reliability>	3 bits	0x03	v_hee_PDPCtxtQosReliability
<peak>	4 bits	0x00	v_hee_PDPCtxtQosPeak
<mean	1 byte	0x00	v_hee_PDPCtxtQosMean
<pdp_type>	1 byte	0x01 (IP)	v_hee_PDPType
<APN>	64 bytes	0xFF..0xFF	a_hee_PDPCtxtApn
<PDP_address>	4 bytes	0x00..0x00	a_hee_PDPCtxtAddress
<Guaranteed bitrate DL>	1 byte	0x00	v_hee_PDPCtxtQosGuaranteedDLBitRate
<Guaranteed bitrate UL>	1 byte	0x00	v_hee_PDPCtxtQosGuaranteedULBitRate
<Traffic handling priority>	2 bits	0x00	v_hee_PDPCtxtQosTrafficHandling
<Transfer delay>	6 bits	0x00	v_hee_PDPCtxtQosTransferDelay
<SDU error ratio>	4 bits	0x00	v_hee_PDPCtxtQosSDUErrorRatio
<Residual bit error ratio>	4 bits	0x00	v_hee_PDPCtxtQosResidualBER
<Maximum bitrate DL>	1 byte	0x00	v_hee_PDPCtxtQosMaxDLBitRate
<Maximum bitrate UL>	1 byte	0x00	v_hee_PDPCtxtQosMaxULBitRate
<Maximum SDU size>	1 byte	0x00	v_hee_PDPCtxtQosMaxSDUSize
<Delivery of erroneous SDUs>	3 bits	0x00	v_hee_PDPCtxtQosDeliveryErrSDU
<Delivery order>	2 bits	0x00	v_hee_PDPCtxtQosDeliveryOrder

Parameter name	Length	Default value	Non volatile memory field
<Traffic class>	3 bits	0x00	v_hee_PDPCtxtQosTrafficClass

3.2.10.2 +CGDSCONT Define Secondary PDP Context

Description	Command	Possible Response(s)
Define a secondary PDP	+CGDSCONT=[<cid> ,<p_cid> [,<d_comp> [,<h_comp>]]]	
List current defined PDP	+CGDSCONT?	+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [...]]
Get supported values	+CGDSCONT=?	+CGDSCONT: (range of supported <cid>s), (list of <cid>s for active primary contexts),(list of supported <d_comp>s), (list of supported <h_comp>s)

Parameters

<cid>	Description
1..11	PDP Context Identifier

<p_cid>	Description
1..11	Primary PDP Context Identifier PDP context definition which has been specified by use of the +CGDCONT and is in active state. The list of permitted values is returned by the test form of the command

<d_comp>	Description
0	PDP data compression off Default if value is omitted

<h_comp>	Description
0	PDP header compression off Default if value is omitted

Clarification

Command available only if option SECONDARY_PDP_CONTEXT_FTR is enabled.

+CGDSCONT is allowed only if p_cid PDP is activated (not just defined with +CGDCONT).

Unlike +CGDCONT, not data are stored in non-volatile for a secondary PDP context definition. Secondary PDP context definition implies creation of links between <cid>s on the network side for active (primary) PDPs.

+CGDSCONT test command is aligned on a 3GPP CR raise on Release 5 (and 6) of 27.007 (TP-050012 : "Illogical response in +CGDSCONT test command")

3.2.10.3　+CGTFT Traffic Flow Template

Description	Command	Possible Response(s)
Create a packet filter	+CGTFT=[<cid>, [<packet filter identifier>, <evaluation precedence index> [,<source address and subnet mask> [,<protocol number (ipv4) / next header (ipv6)> [,<destination port range> [,<source port range> [,<ipsec security parameter index (spi)> [,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask> [,<flow label (ipv6)>]]]]]]]]]	
List current packet filters	+CGTFT?	+CGTFT: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)> [<CR><LF>+CGTFT: <cid>, <packet filter identifier>, <evaluation precedence index>, <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>, <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)> […]]
Get supported values	+CGTFT=?	+CGTFT: <PDP_type>, (list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s), (list of supported <protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s),

Description	Command	Possible Response(s)
		(list of supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s), (list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s), (list of supported <flow label (ipv6)>s) [<CR><LF>+CGTFT: <PDP_type>, (list of supported <packet filter identifier>s), (list of supported <evaluation precedence index>s), (list of supported <source address and subnet mask>s), (list of supported <protocol number (ipv4) / next header (ipv6)>s), (list of supported <destination port range>s), (list of supported <source port range>s), (list of supported <ipsec security parameter index (spi)>s), (list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s), (list of supported <flow label (ipv6)>s) [...]]

Parameters

<cid>	Description
1..11	PDP Context Identifier

<source address and subnet mask >	Description
Dot-separated numeric (0-255)	Source address and subnet mask on the form 'a1.a2.a3.a4.m1.m2.m3.m4', for IPv4 'a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6.m7.m8.m9.m10.m11.m12.m13.m14.m15.m16', for IPv6.

<protocol number (ipv4) / next header (ipv6)>	Description
0.255	Protocol number for Ipv4 Next header for Ipv6

<destination port range >	Description
Dot-separated numeric (0-65535)	Destination port range on the form 'f.t'

<source port range >	Description

<source port range >	Description
Dot-separated numeric (0-65535)	Source port range on the form 'f.t'

<ipsec security parameter index (spi)>	Description
Hexadecimal parameter. Value range from 00000000 to FFFFFFFF	IPsec security parameter index (spi)

<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>	Description
Dot-separated numeric (0-255)	Type of service (tos) and mask for Ipv4 on the form 'f.m' Traffic class and mask for Ipv4 on the form 'f.m

<flow label (ipv6)>	Description
Hexadecimal parameter. Value range from 00000 to FFFFF	Flow label for Ipv6

<evaluation precedence index>	Description
0..255	Evaluation precedence index

Clarification

Command available only if option SECONDARY_PDP_CONTEXT_FTR is enabled.

The specification of +CGTFT command in recommendation is not clear enough and seems to have weaknesses regarding traffic flow template management. Especially, 27.007 recommendation only talks about adding a packet filter to the TFT stored in GGSN. 24.008 recommendation specifies more operation possible on a TFT: create new TFT, delete existing TFT, add packet filter to existing TFT, replace packet filter in existing TFT, delete packet filter from existing TFT.

As mentioned in the recommendation, +CGTFT is an extension of +CGDCONT and +CGDSCONT commands. It is used to define some parameters that need to be taken into account during a PDP context activation or modification. When this command is

executed, no action on network is requested. CGTFT read returns the current settings of all packet filters. Depending when the read command is received following information will be returned to TE:

- If CGTFT read command is received after one or several +CGTFT set command but before PDP context activation, response will correspond to packet filter (PF) that will be sent to GGSN during activation procedure (i.e it will be the PF that has just been entered with set command).

- If CGTFT read command is received after one or several +CGTFT related to an active PDP but before PDP context modification (+CGCMOD), response will correspond to PF already know by GGSN (the ones from PDP context activation, if any) and to PF that has just been updated. It will so correspond to what will be stored in GGSN once successful PDP context modification will be done.

- If CGTFT read command is received after one or several +CGTFT related to an activated PDP and after PDP context modification (CGCMOD) if any, response will correspond to PF stored in GGSN. If modification fails, CGTFT read command will not return last PF updated with CGTFT set command but PF stored in GGSN. This way, ME local TFTs and GGSN's TFTs are coherent,

To provide more flexibility on TFT and pack filter (PF) management, the following rules are defined to decide which TFT operation has to be requested at PDP context activation or PDP context modification time by MS:

• Create new TFT: this operation will be requested if, before secondary PDP context activation +CGTFT command has been use to specify PF that needs to be sent to GGSN or if a PDP context modification of a primary PDP context that does not yet have an associated TFT is requested.

• Delete existing TFT: this operation will be requested if +CGTFT=<cid><cr> is entered.

• Add packet filter to existing TFT: this operation will be requested when +CGTFT is entered with a <packet filter identifier> not already used for the <cid> specified.

• Replace packet filter in existing TFT: this operation will be requested when +CGTFT is entered with a <packet filter identifier> already used for the <cid> specified.

• Delete packet filter from existing TFT: this operation will be requested when +CGTFT=<cid>,<packet filter identifier><cr> is entered.

After PDP deactivation, PF are removed (CGTFT read command will no longer list PF that were associated to the PDP)

3.2.10.4   +CGQREQ Quality of Service Profile (Requested)

Description	Command	Possible Response(s)
Set requested QOS (R97)	+CGQREQ=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]	
Get current settings	+CGQREQ?	+CGQREQ: <cid>, <precedence >,

Description	Command	Possible Response(s)
		<delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> […]]
Get supported values	+CGQREQ=?	+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) […]]

Parameters

<cid>	Description
1..3	PDP Context Identifier Definition stored in non-volatile memory (refer to +CGDCONT)
4..11	PDP Context Identifier Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

<precedence>	Description
0 (Default)	QOS precedence class subscribed value
1..3	QOS precedence class

<delay>	Description
0	QOS delay class subscribed value Default value
1..4	QOS delay class subscribed

<reliability>	Description
0	QOS reliability class subscribed value
1..5	QOS reliability class Default value: 3

<peak>	Description
0 (Default)	QOS peak throughput class subscribed value

<peak>	Description
1..9	QOS peak throughput class

<mean>	Description
0 (Default)	QOS mean throughput class subscribed value
1..18	QOS mean throughput class
31	QOS mean throughput class best effort

Clarification

If option SECONDARY_PDP_CONTEXT_FTR and PDP_CTXT_MODIF_BY_MS_FTR are enabled, +CGQREQ command is allowed if PDP context is in quiescent state and activate state (for PDP context QOS modifications) otherwise +CGQREQ is allowed only if PDP context is in quiescent state.

If RELEASE99_CPR is enabled, an R99 Qos profile may have been defined, either by default at start-up, or through the +CGEQREQ command. In that case, using the special form +CGQREQ=<cid> will not be enough to set to undefined the release 97 profile. It will be reset to default values, but will still be listed by +CGQREQ? and used for PDP activation. To set to undefined the Qos profile completely, +CGEQREQ=<cid> must be used, too.

Refer to § 6.1.2 for QoS mapping between R99 and R97/R98 QoS.

3.2.10.5   +CGQMIN Quality of Service Profile (Minimum acceptable)

Description	Command	Possible Response(s)
Set minimum QOS (R97)	+CGQMIN=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]	
Get current settings	+CGQMIN?	+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> [...]]
Get supported values	+CGQMIN =?	+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF>+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s)

Description	Command	Possible Response(s)
		[…]]

Parameters

Refer to +CGQREQ

Clarification

If option SECONDARY_PDP_CONTEXT_FTR and PDP_CTXT_MODIF_BY_MS_FTR are enabled, +CGQMIN command is allowed if PDP context is in quiescent state and activate state (for PDP context QOS modifications) otherwise +CGQMIN is allowed only if PDP context is in quiescent state.

If RELEASE99_CPR is enabled, an R99 Qos profile may have been defined, either by default or at start-up, or through the +CGEQMIN command. In that case, using the special form +CGQMIN =<cid> will not be enough to set to undefined the release 97 profile. It will be reset to default values, but will still be listed by +CGQMIN? and used for PDP activation. To set to undefined the Qos profile completely, +CGEQMIN=<cid> must be used, too.

Refer to § 6.1.2 for QoS mapping between R99 and R97/R98 QoS.

3.2.10.6 +CGEQREQ 3G Quality of Service Profile (Requested)

Description	Command	Possible Response(s)
Set requested QOS (R99)	+CGEQREQ=[<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay> [,<Traffic handling priority> [,<Source statistics descriptor> [,<Signalling indication>]]]]]]]]]]]]]]]	
Get current settings	+CGEQREQ?	+CGEQREQ: <cid>, <Traffic class> ,<Maximum bitrate UL> ,<Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority>,<Source statistics descriptor> ,<Signalling

Description	Command	Possible Response(s)
		indication> [<CR><LF>+CGEQREQ: <cid>, <Traffic class> ,<Maximum bitrate UL> ,<Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority>,<Source statistics descriptor> ,<Signalling indication> […]]
Get supported values	+CGEQREQ=?	+CGEQREQ: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) ,(list of supported <Source statistics descriptor>s) ,(list of supported <Signalling indication>s) [<CR><LF>+CGEQREQ: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) ,(list of supported <Source statistics descriptor>s) ,(list of supported <Signalling indication>s) […]]

Parameters

<cid>	Description
1..3	PDP Context Identifier
4..11	PDP Context Identifier Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

<traffic class>	Description

<traffic class>	Description
0	Conversational
1	Streaming
2	Interactive
3	Background
4	Subscribed value

<Maximum bitrate UL>	Description
0	Maximum bitrate UL= 0kpbs
1..63	Maximum bitrate UL Granularity: 1
64..568	Maximum bitrate UL Granularity: 8
576..8640	Maximum bitrate UL Granularity: 64

<Maximum bitrate DL>	Description
0	Maximum bitrate DL subscribed value
1..63	Maximum bitrate DL Granularity: 1
64..568	Maximum bitrate DL Granularity: 8
576..8640	Maximum bitrate DL Granularity: 64
8700..16000	Guaranteed bitrate DL Granularity: 100 Supported only if Valid only if SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are defined.
9000	If SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are NOT defined. Proprietary value used to request 0kpbs Else 9000 is requested as Guaranteed bitrate DL
9999	If SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are defined. Proprietary value used to request 0kpbs

<Guaranteed bitrate UL>	Description
0	Guaranteed bitrate UL subscribed value
1..63	Guaranteed bitrate UL Granularity: 1

<Guaranteed bitrate UL>	Description
64..568	Guaranteed bitrate UL Granularity: 8
576..8640	Guaranteed bitrate UL Granularity: 64
9000	Proprietary value Guaranteed bitrate UL = 0kpbs

<Guaranteed bitrate DL>	Description
0	Guaranteed bitrate DL subscribed value
1..63	Guaranteed bitrate DL Granularity: 1
64..568	Guaranteed bitrate DL Granularity: 8
576..8640	Guaranteed bitrate DL Granularity: 64
8700..16000	Guaranteed bitrate DL Granularity: 100 Supported only if Valid only if SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are defined.
9000	If SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are NOT defined. Proprietary value used to request 0kpbs Else 9000 is requested as Guaranteed bitrate DL
9999	If SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are defined. Proprietary value used to request 0kpbs

<Delivery order>	Description
0	No
1	Yes
2	Subscribed value

<maximum SDU size>	Description
0	Maximum SDU size subscribed value
1..1500	Maximum SDU size Granularity: 64
1502	Maximum SDU size
1510	Maximum SDU size

<maximum SDU size>	Description
1520	Maximum SDU size

<SDU error ratio>	Description
String type "0E0"	SDU error ratio subscribed value
String type "mEe"	SDU error ratio Possible value: "1E2","7E3","1E3","1E4","1E5","1E6","1E1" If m or e are not in the range defined by 24.008, a mapping to the closest value will be done instead of returning ERROR

<Residual bit error ratio>	Description
String type "0E0"	Residual bit error ratio subscribed value
String type "mEe"	Residual bit error ratio Possible value: "5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8" If m or e are not in the range defined by 24.008, a mapping to the closest value will be done instead of returning ERROR

<Delivery of erroneous SDUs >	Description
0	No
1	Yes
2	No detect
3	Subscribed value

<Transfer delay >	Description
0	Transfer delay subscribed value
1..4000	Transfer delay

<Traffic handling priority>	Description
0	Traffic handling priority subscribed value
1..3	Traffic handling priority

< Source statistics descriptor >	Description
0	Characteristics of SDUs is unknown (default value)
1	Characteristics of SDUs corresponds to a speech source

<Signalling indication >	Description
0	PDP context is not optimized for signalling (default value)
1	PDP context is optimized for signalling`<PDP_type>`: (see +CGDCONT and +CGDSCONT commands)

Clarification

This command is available only if RELEASE99_CPR is enabled.

If option SECONDARY_PDP_CONTEXT_FTR and PDP_CTXT_MODIF_BY_MS_FTR are enabled, +CGEQREQ command is allowed if PDP context is in quiescent state and activate state (for PDP context QOS modifications) otherwise +CGEQREQ is allowed only if PDP context is in quiescent state.

A standard Qos profile may have been defined, either by default at start up, or through the +CGQREQ command. In that case, using the special form +CGEQREQ=<cid> will not be enough to set to undefined the release 99 profile. It will be reset to default values, but will still be listed by +CGEQREQ?, and used for PDP activation. To set to undefined the Qos profile completely, +CGQREQ=<cid> must be used, too.

There is an inconsistency between 27.007 and 24.008 recommendations regarding subscribed and 0kpbs values for Maximum Bitrate DL and the Guaranteed Bitrate UL and DL. 24.008 defines 0 for subscribed value and 255 for 0kbps. In 27.007, bit rates are provided in kbps values 0 is used for subscribed value but there is no mean to request 0kpbs! A proprietary value is defined to request 0kpbs: 9000.

Refer to § 6.1.2 QoS mapping between R99 and R97/R98 QoS.

<Source statistics descriptor> and <Signalling indication> are 24.008 Release 5 QOS parameters. They have only been introduced in Release 7 of 27.007 but it seems necessary to support them since we need to control R5 QOS.

These parameters are supported only if SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are defined.

3.2.10.7   +CGEQMIN 3G Quality of Service Profile (Minimum acceptable)

Description	Command	Possible Response(s)
Set minimum QOS (R99)	+CGEQMIN=[<cid> [,<Traffic class> [,<Maximum bitrate UL>	

Description	Command	Possible Response(s)
	[,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay> [,<Traffic handling priority> [,<Source statistics descriptor> [,<Signalling indication>]]]]]]]]]]]]]	
Get current settings	+CGEQMIN?	+CGEQMIN: <cid>, <Traffic class> ,<Maximum bitrate UL> ,<Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority>,<Source statistics descriptor> ,<Signalling indication> [<CR><LF>+CGEQMIN: <cid>, <Traffic class> <Maximum bitrate UL> ,<Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority>,<Source statistics descriptor> ,<Signalling indication> [...]]
Get supported values	+CGEQMIN =?	+CGEQMIN: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) ,(list of supported <Source statistics descriptor>s) ,(list of supported <Signalling indication>s) [<CR><LF>+CGEQMIN: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s)

Description	Command	Possible Response(s)
		,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) ,(list of supported <Source statistics descriptor>s) ,(list of supported <Signalling indication>s) […]]

Parameters

Refer to +CGEQREQ.

Clarification

This command is available only if RELEASE99_CPR is enabled.

If option SECONDARY_PDP_CONTEXT_FTR and PDP_CTXT_MODIF_BY_MS_FTR are enabled, +CGEQMIN command is allowed if PDP context is in quiescent state and activate state (for PDP context QOS modifications) otherwise +CGEQMIN is allowed only if PDP context is in quiescent state.

A standard Qos profile may have been defined, either by default at start up, or through the +CGQMIN command. In that case, using the special form +CGEQMIN=<cid> will not be enough to set to undefined the release 99 profile. It will be reset to default values, but will still be listed by +CGEQMIN?, and used for PDP activation. To set to undefined the Qos profile completely, +CGQMIN=<cid> must be used, too.

Refer to § 6.1.2 for QoS mapping between R99 and R97/R98 QoS.

<Source statistics descriptor> and <Signalling indication> are 24.008 Release 5 QOS parameters. They have only been introduced in Release 7 of 27.007 but it seems necessary to support them since we need to control R5 QOS.

These parameters are supported only if SPV_QOS_UPGRADE_FTR & RELEASE5_CPR are defined.

3.2.10.8   +CGEQNEG 3G Quality of Service Profile (Negotiated)

Description	Command	Possible Response(s)
Retrieve negotiated QOS	+CGEQNEG =[<cid>[,<cid>[,…]]]	+CGEQNEG: <cid>, <Traffic class> ,<Maximum bitrate UL>, <Maximum bitrate DL> ,<Guaranteed bitrate UL>, <Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority> [<CR><LF>+CGEQNEG: <cid>, <Traffic class> ,<Maximum bitrate UL>, <Maximum bitrate DL> ,<Guaranteed bitrate UL>,

Description	Command	Possible Response(s)
		<Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority> […]]
Get active PDPs	+CGEQNEG=?	+CGEQNEG: (list of <cid>s associated with active contexts)

Parameters

Refer to +CGEQREQ

Subscribed values are not possible for negotiated QoS parameters: network always provides give a value.

Clarification

This command is available only if AT_CMD_CGEQNEG_SFI and DM_2G3G_ARCHI_SFI are activated

3.2.10.9 +CGATT PS attach or detach

Description	Command	Possible Response(s)
Attach or detach	+CGATT= [<state>]	
Get current state	+CGATT?	+CGATT: <state>
Get supported states	+CGATT=?	+CGATT: (list of supported <state>s)

Parameters

<state>	Description
0	Detached
1	Attached

3.2.10.10 +CGACT PDP context activate or deactivate

Description	Command	Possible Response(s)
Activate or deactivate a PDP	+CGACT=[<state> [,<cid>[,<cid>[,…]]]]	
Get current PDPs state	+CGACT?	+CGACT: <cid>, <state> [<CR><LF>+CGACT: <cid>, <state>

Description	Command	Possible Response(s)
		[...]]
Get supported states	+CGACT=?	+CGACT: (list of supported <state>s)

Parameters

<state>	Description
0	Deactivated
1	Activated

<cid>	Description
1..3	PDP Context Identifier
4..11	PDP Context Identifier Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

Clarification

This command is used to tests PDPs with network simulators. Successful activation of PDP on real network is not guaranteed.

Refer to +CGDATA clarification for more information.

3.2.10.11   +CGCMOD PDP Context Modify

Description	Command	Possible Response(s)
Request PDP context modification	+CGCMOD=[<cid>[,<cid>[, …]]]	OK ERROR
Get active PDPs	+CGCMOD=?	+CGCMOD: (list of <cid>s associated with active contexts)

Parameters

<cid>	Description
1..11	PDP Context Identifier

Clarification

Command available only if option SECONDARY_PDP_CONTEXT_FTR and PDP_CTXT_MODIF_BY_MS_FTR are enabled.

Recommendation specifies that after the command has completed, the MT returns to online data state but "OK" result code is expected: this seems inconsistent.

From NXP point of view, +CGCMOD behaviour is more similar to +CGACT command, hence the implementation choice is not to switch link to online data mode after PDP context modification.

TE will have to send +++ escape sequence to switch channel to online command if +CGCMOD cannot be performed from another AT channel. TE will have to use O command, if required, to switch channel to online data mode.

+CGCMOD command can be use to request a QOS modification or an operation on a traffic flow template (TFT). Depending on operation requested thanks to +CGxREQ and/or +CGTFT execution before +CGCMOD command, several PDP modifications will be executed between network and ME if modification cannot be performed in one shot (Especially for TFT operation). This is transparent to TE, which will receive the OK after all modify procedure have been successfully been executed. In case of failure, TE can use +CGEQNEG or +CGTFT read commands to know which operation was successful or failed.

3.2.10.12   +CGDATA Enter data state

Description	Command	Possible Response(s)
Enter data state	+CGDATA=[<L2P> ,[<cid>]]	CONNECT ERROR
Get supported values	+CGDATA=?	+CGDATA: (list of supported <L2P>s)

Parameters

<L2P>	Description
PPP	Point-to-point protocol for a PDP such as IP

<cid>	Description
1..3	PDP Context Identifier
4..11	PDP Context Identifier Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

Clarification

If no parameters are provided (i.e +CGDATA=<CR>), the last <cid> activated with +CGACT or the default <cid> is used.

Only one <cid> in the command is supported (i.e +CGDATA="PPP", <cid><CR>)

This command is used for PDP tests on network emulators. On real network functioning of +CGACT and then +CGDATA for data transfer is not guaranteed.

+CGDATA implementation does not perform PS attach or PDP context activation. The PDP identified by <cid>, when provided, in +CGDATA must have been activated previously thanks to +CGACT command.

+CGDATA only switches channel to online data mode and open PPP server in a proprietary mode called "FTA mode" (In this mode PPP only acts a relay).

For IP over PPP services, ATD*98 or ATD*99 commands must be used: when activating a PDP context, PCO (protocol configuration option) has to be provided to network. PCO can be provided to network only if a PPP negotiation (LCP/NCP negotiation) has been initiated between mobile and TE before PDP activation (refer to TS 27.060 §9.1). This negotiation is possible only if AT channel is switched to online data mode <u>before</u> PDP context activation. Hence, the PDP identified with <cid> in +CGDATA should not have been activated by +CGACT ➔ not possible in the current implementation (+CGDATA does not behaves as ATD*9x when <cid> is not activated)

To go back in online command, the "+++" escape sequence has to be sent on link in data mode

+CGDATA can also be used to switch again channel to online data mode (after "+++") if PDP is still active (same behaviour has ATO command).

PDP test use case:

AT commands	Comments
AT+CGACT=1,1 OK	PDP 1 is activated No PCO negotiation
AT+CGDATA CONNECT	PPP server is opened in FTA mode, channel is switched in online data mode No LCP/NCP negotiation
Data transfer	
+++ OK	Channel is back to online command mode
ATH OK	PPP server FTA mode is closed but PDP is NOT deactivated
AT+CGACT=0,1 OK	PDP 1 is deactivated. (If ATH is not sent before deactivation, +CGACT returns ERROR)

3.2.10.13   +CGPADDR Show PDP address

Description	Command	Possible Response(s)
Get PDP addresses	+CGPADDR=[<cid>[,<cid> [,…]]]	+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>,<PDP_addr>[...]]
Get defined <cid>	+CGPADDR=?	+CGPADDR: (list of defined <cid>s)

Parameters

<cid>	Description
1..3	PDP Context Identifier
4..11	PDP Context Identifier Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

<PDP_address >	Description
String type	IP address Format: "<n>.<n>.<n>.<n>" where <n>=0..255

3.2.10.14   +CGCLASS GPRS mobile station class

Description	Command	Possible Response(s)
Set mode of operation	+CGCLASS= [<class>]	
Get current mode	+CGCLASS?	+CGCLASS: <class>
Get supported mode	+CGCLASS=?	+CGCLASS: (list of supported <class>s)

Parameters

<class>	Description
A	Class-A mode of operation (A/Gb mode), or CS/PS mode of operation (Iu mode) (highest mode of operation) MT would operate simultaneous PS and CS service Supported if CLASS_A_FTR and UMTS_FTR are enable
B	Class-B mode of operation (A/Gb mode), (not applicable in Iu mode) MT would operate PS and CS services but not simultaneously
CG	Class-C mode of operation in PS only mode (A/Gb mode), or PS mode of operation (Iu mode) MT would only operate PS services Supported if CLASS_A_FTR and UMTS_FTR are enable
CC	Class-C mode of operation in CS only mode (A/Gb mode), or CS (Iu mode) (lowest mode of operation) MT would only operate CS services

Clarification

If CLASS_A_FTR or UMTS_FTR are NOT activated, it is not possible to change the class. The commands only check the current mode of operation of the mobile

3.2.10.15   +CGEREP Packet Domain event reporting

Description	Command	Possible Response(s)
Set +CGEV: XXX notifications mode	+CGEREP=[<mode>[,<bfr>]]	
Get current settings	+CGEREP?	+CGEREP: <mode>, <bfr>
Get supported values	+CGEREP=?	+CGEREP: (list of supported <mode>s),(list of supported <bfr>s)

Parameters

<mode>	Description
0	Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones is discarded.
1	Discard unsolicited result codes when MT TE link is reserved (e.g. in on line data mode); otherwise forward them directly to the TE
2	Buffer unsolicited result codes in the MT when MT TE link is reserved (e.g. in on line data mode) and flush them to the TE when MT TE link becomes available; otherwise forward them directly to the TE

<bfr>	Description
0	MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered
1	MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered

Clarification

This command is available only if AT_CMD_CGEREP_SFI and DM_2G3G_ARCHI_SFI are activated.

3.2.10.16   +CGREG GPRS network registration status

Description	Command	Possible Response(s)
Set registration notification mode	+CGREG=[<n>]	
Get current registration information	+CGREQ?	+CGREG: <n>,<stat>[,<lac>,<ci>[,<Act>,<rac>]]
Get supported values	+CGREG=?	+CGREG: (list of supported <n>s)

Parameters

<n>	Description
0	Disable network registration unsolicited result code
1	Enable network registration unsolicited result code +CGREG: <stat>
2	Enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>[,<Act>,<rac>]]

<stat>	Description
0	Not registered, MT is not currently searching an operator to register to The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user
1	Registered, home network
2	Not registered, but MT is currently trying to attach or searching an operator to register to The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available.
3	Registration denied The GPRS service is disabled, the UE is not allowed to attach for GPRS if requested by the user.
4	Unknown
5	Registered, roaming

<lac>	Description
String type	Two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>	Description
String type	Four byte UTRAN/GERAN cell ID in hexadecimal format

<Act>	Description
0	Registered on GSM RAT
1	Registered on GSM Compact
2	Registered on UTRAN
3	Registered on GSM w/EGPRS
4	Registered on UTRAN w/HSDPA
5	Registered on UTRAN w/HSUPA
6	Registered on UTRAN w/HSDPA and HSUPA
7	Registered on E-UTRAN

<rac>	Description
String type	one byte routing area code in hexadecimal format

3.2.10.17 +CGSMS Select service for MO SMS messages

Description	Command	Possible Response(s)
Set SMS service	+CGSMS= [<service>]	
Get current service	+CGSMS?	+CGSMS: <service>
Get supported values	+CGSMS=?	+CGSMS: (list of currently available <service>s)

Parameters

<service>	Description
0	Packet Domain Supported only if SMS_OVER_GPRS_FTR enabled
1	Circuit switched
2	Packet Domain preferred (use circuit switched if GPRS not available)
3	Circuit switched preferred (use Packet Domain if circuit switched not available) Supported only if SMS_OVER_GPRS_FTR enabled

Clarification

If option ATP_SUPPRESS_GPRS_SMS enable, command not available.

3.2.10.18 Request Packet Domain service 'D'

Description	Command	Possible Response(s)
Request packet domain service	D*99[*[<called_address>] [*[<L2P>][*[<cid>]]]]#	CONNECT

Parameters

<called_address >	Description
String type	Called party in the address space applicable to the PDP

<called_address>	Description
	Only empty string is allowed:

<L2P>	Description
1	PPP

<cid>	Description
1..3	PDP Context Identifier
4..11	PDP Context Identifier Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

Clarification

If <cid> is not supported or is supported but omitted, ERROR will be returned

If <cid> correspond to an already active PDP context (activated with +CGACT command) ERROR will be returned, the PDP must be in quiescent state before ATD*9x.

If no <cid> parameter had been given in AT command then use the default number defined in EEPROM.

3.2.10.19   Request Packet Domain IP service 'D'

Description	Command	Possible Response(s)
Request packet domain IPservice	D*98[*<cid>]#	CONNECT

Parameters

<cid>	Description
1..3	PDP Context Identifier
4..11	PDP Context Identifier Allowed only when SECONDARY_PDP_CONTEXT_FTR is enable

Clarification

If <cid> is not supported or is supported but omitted, ERROR will be returned

If <cid> correspond to an already active PDP context (activated with +CGACT command) ERROR will be returned, the PDP must be in quiescent state before ATD*9x.

3.2.11   Packet domains result codes

3.2.11.1   +CGEV event reporting

Description	Result code
PS event reporting	**+CGEV**: NW DEACT <PDP_type>, <PDP_addr>, [<cid>] **+CGEV**: ME DEACT <PDP_type>, <PDP_addr>, [<cid>] **+CGEV**: NW DETACH **+CGEV**: ME DETACH

Parameters

<event>	Description
NW DEACT	The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT
ME DEACT	The mobile termination has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT
NW DETACH	The network has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately
ME DETACH	The mobile termination has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately

3.2.11.2   +CGREG registration status

Description	Result code
Registration change	+CGREG: <stat>[,<lac>,<ci>]

Parameters

<stat>	Description
0	Not registered, MT is not currently searching an operator to register to The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user
1	Registered, home network

<stat>	Description
2	Not registered, but MT is currently trying to attach or searching an operator to register to The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available.
3	Registration denied The GPRS service is disabled, the UE is not allowed to attach for GPRS if requested by the user.
4	Unknown
5	Registered, roaming

<lac>	Description
String type	Two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>	Description
String type	Two byte cell ID in hexadecimal format

3.3 ITU-T V25.ter commands description

3.3.1 Call control

3.3.1.1 A Answer

Description	Command	Possible Response(s)
Answer a MT call	A	

Clarification

When option AT_CMD_VIDEO_TEL_FTR is enabled, if a video telephony call is ongoing (connected), A command is used to accept in-call modification initiated by network.

In-call modifications by network are possible when during setup phase, two-bearer capability list have been negotiated (one speech the other multimedia).

In-call modifications by network request is notified to TE with *PSVTCMNW.

If call is modify from speech to multimedia "CONNECT 64000" is sent to TE.

If call is modify from multimedia to speech OK is sent to TE.

Refer to §6 for more details on the proprietary implementation of video telephony by AT commands

3.3.1.2 D Dial

Description	Command	Possible Response(s)
Initiate a MO call	D[<dialstring>[<semicolon>]]	+CME ERROR: <err>
Direct dialling from phonebook name	D><str>[<clir>][<cug>][<semicolon>]	+CME ERROR: <err>
Direct dialling from phonebook memory location	D>mem<n>[<clir>][<cug>][<semicolon>]	+CME ERROR: <err>
Direct dialling from phonebook entry location	D><n>[<clir>][<cug>][<semicolon>]	+CME ERROR: <err>

Parameters

<dialstring>	Description
Dialling digits	Dialling digits: 0 1 2 3 4 5 6 7 8 9 * # + a b c d A B C D , T P t p ! W w @ Note: T, P, D, !, @ are ignored

<semicolon>	Description
Character ";"	Semicolon character shall be added when voice call is originated

<str>	Description
String type	should equal to an alphanumeric field in at least one phonebook entry in the searched memories; used character set should be the one selected with +CSCS

<clir>	Description
I	Override the CLIR supplementary service subscription default value for this call Invocation (restrict CLI presentation)
i	Override the CLIR supplementary service subscription default value for this call Suppression (allow CLI presentation)

<cug>	Description
G	Control the CUG supplementary service information for this call CUG Not supported
g	Control the CUG supplementary service information for this call CUG Not supported

<mem>	Description
"SM"	Only "SM" storage possible for SMS

<n>	Description
Integer type	Memory location, should be in the range of locations available in the memory used

Clarification

The result code "OK" can be sent immediately after call setup or only once call is connected to remote party. Refer to *PSCSSC command for more details.

If SAT call control modifies the call into an SS or USSD and error is return to the TE.

When option AT_CMD_VIDEO_TEL_FTR is enabled, if a video telephony call is ongoing (connected), command is used to request in-call modification initiated by MS.

In-call modifications by MS are possible when during setup phase, two-bearer capability list have been negotiated (one speech the other multimedia).

ATD (without parameter) is used to modify the call from speech to multimedia (upgrade of service). "CONNECT 64000" will be sent is modification succeeds.

For MO call setup, if the semi-colon is present, then speech mode will be requested first (speech preferred), if semi-colon is not present multimedia mode will be requested first (multimedia preferred)

Refer to §6 for more details on the proprietary implementation of video telephony by AT commands

3.3.1.3   H Hang up

Description	Command	Possible Response(s)
Hang up a call	H[<value>]	+CME ERROR: <err>

Parameters

<value	Description
0 (Default value)	Disconnect ALL calls on THE channel the command is requested All active or waiting calls, CS data calls, GPRS call of the channel will be disconnected.
1	Disconnect all calls on ALL connected channels. All active or waiting calls, CSD calls, GPRS call will be disconnected (clean up of all calls of the ME).
2	Disconnect all connected CS data call only on the channel

<value	Description
	the command is requested (speech calls (active or waiting) or GPRS calls are not disconnected).
3	Disconnect all connected GPRS calls only on the channel the command is requested (speech calls (active or waiting) or CS data calls are not disconnected
4	Disconnect all CS calls (either speech or data) but does not disconnect waiting call (either speech or data) on the channel the command is requested.
5	Disconnect waiting call (either speech or data) but does not disconnect other active calls (either CS speech, CS data or GPRS) on the channel the command is requested. (rejection of incoming call)

Clarification

Note: Voice call disconnection is also dependant of +CVHU settings.

When option AT_CMD_VIDEO_TEL_FTR is enabled, if a video telephony call is ongoing (connected), command is used to request in-call modification initiated by MS.

In-call modifications by MS are possible when during setup phase, two-bearer capability list have been negotiated (one speech the other multimedia).

ATH (without parameter) is used to modify the call from multimedia to speech (upgrade of service) OK will be sent is modification succeeds.

ATH will not disconnect the multimedia call; +CHUP command has to be used.

If ATH is received and a video telephony call is currently in speech mode, ERROR is returned.

In case of in-call modification initiated by network, ATH is used to reject the modification.-colon is not present multimedia mode will be requested first (multimedia preferred)

Refer to §6 for more details on the proprietary implementation of video telephony by AT commands

3.3.1.4   L Monitor speaker loudness

Description	Command	Possible Response(s)
Set Loudness	L[<volume>]	

Parameters

<volume>	Description
0..9	volume

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK) else ERROR is returned if command is not implemented/enabled in the platform.

3.3.1.5 M Monitor speaker mode

Description	Command	Possible Response(s)
Set mode	M[<mode>]	

Parameters

<mode>	Description
0..9	mode

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK) else ERROR is returned if command is not implemented/enabled in the platform.

3.3.1.6 O Online

Description	Command	Possible Response(s)
Switch to online mode	O[<type>]	

Parameters

<type>	Description
0 (Default value)	Return to online data state from online command state.

3.3.1.7 P Pulse dialling

Description	Command	Possible Response(s)
Pulse dialling	P	

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK) else ERROR is returned if command is not implemented/enabled in the platform.

3.3.1.8 S0 Automatic Answer

Description	Command	Possible Response(s)
Set automatic answer	S0=<num>	
Read current register value	S0?	<num>

Parameters

<num>	Description
0	No automatic answer
1..255	Number of rings the modem will wait for before answering the phone if a ring is detected

3.3.1.9 S6 Pause before blind dialling

Description	Command	Possible Response(s)
Set pause duration	S6=<time>	

Parameters

<time>	Description
0..999	Time

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK) else ERROR is returned if command is not implemented/enabled in the platform.

3.3.1.10 S7 connection completion timeout

Description	Command	Possible Response(s)
Set timeout	S7=<time>	

Description	Command	Possible Response(s)
Read current register value	S7?	<time>

Parameters

<time>	Description
1..255	Amount of time the modem will wait for the carrier signal from the remote modem. If a carrier is not received in this time, the modem will hang up and send the NO CARRIER result code.

3.3.1.11   S8 Comma dial modifier

Description	Command	Possible Response(s)
Set time	S8=<time>	
Read current register value	S8?	<time>

Parameters

<time>	Description
0..255	The value of this register determines how long the modem should pause when it sees a comma in the dialling string

Clarification

Comma modifier is not supported in dial string; this command has no effect on ME (simple response OK).

3.3.1.12   S10 Automatic disconnect delay

Description	Command	Possible Response(s)
Set time	S10=<time>	
Read current register value	S10?	<time>

Parameters

<time>	Description
0..255	Amount of time from when the modem recognizes a loss of carrier to when it will hang up

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK)

3.3.1.13 T Tone dialling

Description	Command	Possible Response(s)
Set dial tone	T	

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK) else ERROR is returned if command is not implemented/enabled in the platform.

3.3.2 General TA control commands

3.3.2.1 A/ Repeat last command

Description	Command	Possible Response(s)
Repeat the last command line	A/	

3.3.2.2 I Identification information

Description	Command	Possible Response(s)
Request identification information	I[<value>]	<text>

Parameters

<value>	Description
0	Get model identifier
1	Ignored
2	Ignored
3	Get software version
4	Get manufacturer id and TCD number
5	Get manufacturer id

<value>	Description
6..7	Ignored

3.3.2.3   Z Reset default configuration

Description	Command	Possible Response(s)
Reset to default configuration	Z[<value>]	

Parameters

<value>	Description
0 (Default value)	Restore profile 0
1	Restore profile 0

Clarification

Parameter impacted by Z command:

Command	Parameter name	Default value	Non volatile memory field
E	<echo>	0x01	v_Echo
Q	<result>	0x00	v_SuppressResult
V	<format>	0x01	v_Verbose
X	<result>	0x04	v_ExtendedResultCode
&C	<behavior>	0x01	v_DcdControl
&D	<behavior>	0x02	v_DTRBehaviour
&S	<override>	0x01	V_DSRcontrol
&R	<option>	0x01	v_DTScontrol
+IFC	<TA_by_TE>	0x00	v_FlowControlDCEbyDTE
+IFC	<TE_by_TA>	0x01	v_FlowControlDTEbyDCE
&K	<mode>	0x00	v_FlowControl
+FCLASS	<class>	0x00	v_Fclass
S0	<num>	0x00	v_S0
S1	<num>	0x00	v_S1
S3	<char>	0x00	v_S3
S4	<char>	0x0D	v_S4
S5	<char>	0x0A	v_S5

Command	Parameter name	Default value	Non volatile memory field
S7	<time>	0x08	v_S7
S8	<time>	0x32	v_S8
S10	<time>	0x0E	v_S10

3.3.2.4 &F Factory defined configuration

Description	Command	Possible Response(s)
Reset to factory configuration	&F[<value>]	

Parameters

<value>	Description
0 (Default value)	Set to factory configuration

Clarification

Parameter impacted by &F command:

Command	Parameter name	Default value	Non volatile memory field
E	<echo>	0x01	v_Echo
Q	<result>	0x00	v_SuppressResult
V	<format>	0x01	v_Verbose
X	<result>	0x04	v_ExtendedResultCode
&S	<override>	0x00	V_DSRcontrol
+IFC	<TA_by_TE>	0x00	v_FlowControlDCEbyDTE
+IFC	<TE_by_TA>	0x02	v_FlowControlDTEbyDCE
&K	<mode>	0x00	v_FlowControl
S0	<num>	0x00	v_S0
S1	<num>	0x00	v_S1
S3	<char>	0x0D	v_S3
S4	<char>	0x0A	v_S4
S5	<char>	0x08	v_S5
S7	<time>	0x64	v_S7
S8	<time>	0x02	v_S8
S10	<time>	0x0E	v_S10

Command	Parameter name	Default value	Non volatile memory field
+CRLP	<ver>	0x00	v_CrlpVer
+CRLP	<T4>	0x07	v_CrlpT4
+CRLP	<iws>	0x61	v_CrlpIws
+CRLP	<mws>	0x61	v_CrlpMws
+CRLP	<T1>	0x48	v_CrlpT1
+CRLP	<N2>	0x06	v_CrlpN2
+CPBS	<storage>	0x53 0x4D 0x00	a_atp_Storage
+CSMP	<fo>	0x11	v_hee_Smsfo
+CSMP	<vp>	0x00	v_hee_SmsVp.s_RelTime. v_NbMinutes
+CSMP	<vp>	0x18	v_hee_SmsVp.s_RelTime. v_NbHours
+CSMP	<vp>	0x00	v_hee_SmsVp.s_RelTime. v_NbDays
+CSMP	<vp>	0x00	v_hee_SmsVp.s_RelTime. v_NbWeeks
+CSMP	<vp>	0x00..0x00	v_hee_SmsVp.s_RelTime. v_Gap_RelativeTime
+CSMP	<pid>	0x00	v_hee_SmsPid
+CSMP	<dcs>	0x00	v_hee_SmsDcs
+CR	<mode>	0x00	v_CrState
+CSTA	<type>	0x81	v_TypeOfAddress
+CBST	<speed>	0x05 0x02 0x00	v_UserBearerRate v_InfoTrans v_Fnur
+CBST	<name>	0x01 0x00	v_SyncAsync v_TransferMode
+CBST	<ce>	0x01	v_ConnElm
+CRC	<mode>	0x00	v_Crc
+CMOD	<mode>	0x00	v_CallMode
+CMEE	<n>	0x00	v_CMEE
+CREG	<n>	0x00	v_CREGn
+CGREG	<n>	0x00	v_CGREGn
+CSMS	<service>	0x00	v_CSMSService
+CMER	<ind>	0x00	v_CMER_IndicatorReport
+CMER	<mode>	0x00	v_CMER_Mode
+COPS	<mode>	0x00	v_RegisterInAutomaticMode
+CMGF	<mode>	0x00	v_CMGFMode

Command	Parameter name	Default value	Non volatile memory field
+CSDH	<show>	0x00	v_CSDH
+CSCS	<chset>	0x00	v_CharSet
+CVHU	<mode>	0x00	v_CVHUMode
+CLIR	<n>	0x00	v_CLIR_n
+CLIP	<n>	0x00	v_CLIP_n
+COLP	<n>	0x00	v_COLP_n
+CSCN	<n>	0x00	v_CSCN_n
+CSCN	<m>	0x00	v_CSCN_m

3.3.2.5   +GCAP Complete capabilities list

Description	Command	Possible Response(s)
Get list	+GCAP	+GCAP:<list>

Parameters

<list>	Description
String type	List of capabilities +FCLASS +CGSM

3.3.2.6   +GMI Manufacturer identification

Description	Command	Possible Response(s)
Get manufacturer id	+GMI	<manufacturer>
Test if command is supported	+GMI=?	

Parameters

<manufacturer>	Description
String type	Manufacturer id

3.3.2.7   +GMM Model identification

Description	Command	Possible Response(s)

Description	Command	Possible Response(s)
Get model id	+GMM	<model>
Test if command is supported	+GMM=?	

Parameters

<model>	Description
String type	Model id

3.3.2.8   +GMR Revision identification

Description	Command	Possible Response(s)
Get model id	+GMR	<revision>
Test if command is supported	+GMR=?	

Parameters

<revision>	Description
String type	Revision id

3.3.2.9   +GSN Serial number identification

Description	Command	Possible Response(s)
Get model id	+GSN	<sn>
Test if command is supported	+GSN=?	

Parameters

<sn>	Description
String type	IMEI

3.3.3   TA-TE interface commands

3.3.3.1   E Echo

Description	Command	Possible Response(s)
Control echo	E[<echo>]	

Parameters

<echo>	Description
0	Characters echo disabled
1	Characters echo enabled

3.3.3.2 Q Result code suppression

Description	Command	Possible Response(s)
Control result code	Q[<result>]	

Parameters

<result>	Description
0	Result codes are transmitted to TE
1	Result codes suppressed

3.3.3.3 S3 Line termination character

Description	Command	Possible Response(s)
Set line termination character	S3=<char>	
Get current value	S3?	<char>

Parameters

<char>	Description
0..127 (Default value = 13)	Termination character but only value "13" is allowed. Default = <CR>

3.3.3.4 S4 Response formatting character

Description	Command	Possible Response(s)

Description	Command	Possible Response(s)
Set response formatting character	S4=<char>	
Get current value	S4?	<char>

Parameters

<char>	Description
0..127 (Default value = 10)	Termination character but only value "10" is allowed. Default = <LF>

3.3.3.5 S5 Line editing character

Description	Command	Possible Response(s)
Set line editing character	S5=<char>	
Get current value	S5?	<char>

Parameters

<char>	Description
0..127 (Default value = 8)	Termination character Default = <BS>

3.3.3.6 V TA response format

Description	Command	Possible Response(s)
Set response format	V[<format>]	

Parameters

<format>	Description
0	Responses in numeric format
1	Responses in verbose format

3.3.3.7 X Result code selection and call progress monitoring

Description	Command	Possible Response(s)
Set result code selection	X[<result>]	

Parameters

<result>	Description
0	CONNECT result code is given upon entering online data state. Dial tone and busy detection are disabled.
1	CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are disabled.
2	CONNECT <text> result code is given upon entering online data state. Dial tone detection is enabled, and busy detection is disabled.
3	CONNECT <text> result code is given upon entering online data state. Dial tone detection is disabled, and busy detection is enabled.
4	CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are both enabled.

3.3.3.8 &C DCD behaviour

Description	Command	Possible Response(s)
Set DCD behaviour	&C[<behaviour>]	

Parameters

<behaviour>	Description
0	DCE always presents the ON condition on circuit 109.
1	Circuit 109 changes in accordance with the underlying DCE,

3.3.3.9 &D DTR behaviour

Description	Command	Possible Response(s)
Set DTR behaviour	&D[<behaviour>]	

Parameters

<behaviour>	Description
0	DCE ignores circuit 108/2.
1	Upon an on-to-off transition of circuit 108/2, the DCE enters online command state and issues an OK result code; the call remains connected.
2	Upon an on-to-off transition of circuit 108/2, the DCE instructs the underlying DCE to perform an orderly cleardown of the call

Clarification

In case of "Drop DTR", if the signal remains in the off state more than two seconds, it is considered as a PC disconnection and no "OK" is sent to the TE (cable considered unplugged).

The behaviour of the command complies to the recommendation description only with DTR pulses (pulse = DTR signal stay in the off state unless 2 seconds).

3.3.3.10 +IPR Fixed TE rate

Description	Command	Possible Response(s)
Set TE rate	+IPR=<rate>	
Get current rate	+IPR?	+IPR: <rate>
Get supported values	+IPR=?	+IPR: (list of supported auto-detectable<rate>s)[,(list of supported fixed-only<rate>s)]

Parameters

<rate>	Description
0	Automatic rate detection Supported only if ATP_NO_AUTOBAUDING_FTR and GPRS_DATA_CABLE_FTR are not activated
2400	Supported only if ATP_NO_AUTOBAUDING_FTR and GPRS_DATA_CABLE_FTR are not activated
4800	Supported only if ATP_NO_AUTOBAUDING_FTR and GPRS_DATA_CABLE_FTR are not activated
9600	Supported only if ATP_NO_AUTOBAUDING_FTR and GPRS_DATA_CABLE_FTR are not activated
115 000	Supported only if ATP_NO_AUTOBAUDING_FTR or GPRS_DATA_CABLE_FTR is activated

Clarification

This command is supported for compatibility purpose and has no effect on ME.

(It provides information on hardware capabilities)

3.3.3.11 +ICF TE-TA character framing

Description	Command	Possible Response(s)
Set TE-TA character framing	+ICF=[<format>[,<parity>]]	
Get current value	+ICF?	+ICF:<format>,<parity>
Get supported values	+ICF=?	+ICF:(list of supported <format>s), (list of supported<parity>s)

Parameters

<format>	Description
3	8 data 1 stop

<parity>	Description
3	space

Clarification

This command is supported for compatibility purpose and has no effect on ME.

(It provides information on hardware capabilities)

3.3.3.12 +IFC TE-TA local flow control

Description	Command	Possible Response(s)
Set TE-TA local flow	+IFC=[<TA_by_TE>[,<TE_by_TA>]]	
Get current value	+IFC?	+IFC:< TA_by_TE >,< TE_by_TA >
Get supported values	+IFC=?	+IFC:(list of supported <TA_by_TE>s), (list of supported<TE_by_TA >s)

Parameters

<TA_by_TE>	Description
0	No flow control
1	Software flow control Supported only if GPRS_DATA_CABLE_FTR and

<TA_by_TE>	Description
	HARDWARE_FLOW_CONTROL are not activated
2	Hardware flow control Supported if GPRS_DATA_CABLE_FTR or HARDWARE_FLOW_CONTROL is activated

< TA_by_TE>	Description
0	No flow control
1	Software flow control Supported only if GPRS_DATA_CABLE_FTR and HARDWARE_FLOW_CONTROL are not activated
2	Hardware flow control Supported if GPRS_DATA_CABLE_FTR or HARDWARE_FLOW_CONTROL is activated

Clarification

This command configure MIS flow control mode.

3.3.4 Result codes

Verbose result code (command V1 set)	Numeric result code (command V0 set)	Type	Description
BUSY	7	Final	Busy signal detected
CONNECT	1	Intermediate	Connection has been established
CONNECT <text>	Manufacturer specific	Intermediate	As CONNECT but manufacturer specific <text> gives additional information (e.g. connection data rate)
ERROR	4	Final	Command not accepted
NO ANSWER	8	Final	Connection completion timeout
NO CARRIER	3	Final	Connection terminated
NO DIALTONE	6	Final	No dialtone detected
OK	0	Final	Acknowledges execution of a command line
RING	2	Unsolicited	Incoming call signal from network

Parameters

<text>	Numeric value
2400	10
4800	11

<text>	Numeric value
9600	12
14400	13
19200	15
28800	17
38400	19
48000	21
56000	23
64000	25
33600	27

Values beyond 9600 are supported only if UMTS_FTR is activated.

3.4 Hayes commands description

3.4.1 Standard Hayes commands

3.4.1.1 B Communication option

Description	Command	Possible Response(s)
Set communication option	B[<standard>]	

Parameters

<standard>	Description
0..99	standard

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK) else ERROR is returned if command is not implemented/enabled in the platform.

3.4.1.2 N Negotiate Handshake

Description	Command	Possible Response(s)
Set handshake	B[<option>]	

Parameters

<option>	Description
0..9	option

Clarification

This command is supported for compatibility purpose and has no effect on ME (simple response OK) else ERROR is returned if command is not implemented/enabled in the platform.

3.4.1.3 S1 Ring Count

Description	Command	Possible Response(s)
Read ring count for last MT call	S1?	<num>

Parameters

<num>	Description
0..255	Counts the number of rings detected on the line. It is cleared if a ring is not detected over an eight second time period. If the register value equals the value contained in S0, the modem will answer the phone Value stored in non volatile memory by &W command

3.4.1.4 S2 Escape character

Description	Command	Possible Response(s)
Set escape character	S2=<esc>	
Read escape character	S2?	<escp>

Parameters

<esc>	Description
0..255 (default: 43)	Escape character) but only value "43" is allowed. Default = 43 (i.e '+'

3.4.1.5 S11 DTMF Dialling Speed

Description	Command	Possible Response(s)
Set DTMF dialling speed	S11=<time>	

Parameters

<time>	Description
0..999	DTMF dialling speed

Clarification

The ERROR response is returned if command is not implemented/enabled in the platform.

3.4.1.6 W Extended Result code

Description	Command	Possible Response(s)
Set extended result code	W<mode>	

Parameters

<mode>	Description
0	Only result code CONNECT supported

3.4.2 Advanced Hayes commands

3.4.2.1 &K Extended Flow control option

Description	Command	Possible Response(s)
Set flow control	&K<mode>	

Parameters

<mode>	Description
0	Disable all flow control
3	Enable bi-directional hardware flow control.

<mode>	Description
	Only supported over USB
4	Enable XON/XOFF flow control Only supported over USB

Clarification

If option HARDWARE_FLOW_CONTROL is enabled only hardware or no flow control
authorised else software flow control possible

3.4.2.2 &S DSR option

Description	Command	Possible Response(s)
Set DSR option	&S<override>	

Parameters

<override>	Description
0 (Default value)	Causes DSR signal to be active at all times
1	Causes DSR signal to be active after answer tone has been detected and inactive after the carrier has been lost

Clarification

Parameter stored by &W command.

3.4.2.3 &V Configuration profile

Description	Command	Possible Response(s)
Display active profile	&V[<profile>]	

Parameters

<profile>	Description
0 (Default value)	Display the ACTIVE PROFILE, STORED PROFILE 1 and STORED PROFILE 0

3.4.2.4 &W Store Active profile

Description	Command	Possible Response(s)
Store active profile	&W[<profile>]	

Parameters

<profile>	Description
0 (Default value)	Store the current configuration in profile 0
1	Store the current configuration in profile 1

Clarification

Parameter stored by &W

Command	Parameter name	Default value	Displayed by &V	Non volatile memory filed
E	<echo>	0x01	Y	v_Echo
Q	<result>	0x00	Y	v_SuppressResult
V	<format>	0x01	Y	v_Verbose
X	<result>	0x04	Y	v_ExtendedResultCode
&C	<behavior>	0x01	Y	v_DcdControl
&D	<behavior>	0x02	Y	v_DTRBehaviour
&S	<override>	0x01	Y	V_DSRcontrol
&R	<option>	0x01	Y	v_DTScontrol
+IFC	<TA_by_TE>	0x00	Y	v_FlowControlDCEbyDTE
+IFC	<TE_by_TA>	0x01	Y	v_FlowControlDTEbyDCE
&K	<mode>	0x00	Y	v_FlowControl
+FCLASS	<class>	0x00	Y	v_Fclass
S0	<num>	0x00	Y	v_S0
S1	<num>	0x00	N	v_S1
S3	<char>	0x00	Y	v_S3
S4	<char>	0x0D	Y	v_S4
S5	<char>	0x0A	Y	v_S5
S7	<time>	0x08	Y	v_S7
S8	<time>	0x32	Y	v_S8
S10	<time>	0x0E	Y	v_S10

3.5 TIA IS-101 commands

3.5.1.1 +VTS DTMF and tone generation

Description	Command	Possible Response(s)
Generate tone Duration is set by +VTD	+VTS=<DTMF>	
Generate DTMF of frequencies <tone1> and <tone2>, lasting for a time <duration> (in 10 ms multiples).	+VTS=[<tone1>,<tone2, <duration>]	
Generate tone Duration is set by <duration>	+VT={<DTMF>, <duration>}	
Get supported values	+VTS=?	(list of supported <tone1>s),(list of supported <tone2>s) ,(list of supported <duration>s)

Parameters

<DTMF>	Description
Character type	A single ASCII character in the set 0..9, #,*,A..D

<tone1> <tone2>	Description
0	Use of tone 1 et 2 does not operate in GSM Manufacturer specific tone

<duration>	Description
0	Manufacturer specific duration

Clarification

This commands only works for speech calls in active state.

3.5.1.2 +VTD Tone duration

Description	Command	Possible Response(s)
Set tone duration	+VTD=<n>	
Get current duration	+VTD?	<n>

Description	Command	Possible Response(s)
Get supported values	+VTD=?	(list of supported <n>s)

Parameters

<n>	Description
0	Manufacturer specific duration

3.6 TIA578A commands

3.6.1 General commands

3.6.1.1 +FMI Manufacturer identification

Description	Command	Possible Response(s)
Get manufacturer ID	+FMI	<manufacturer>
Test if command is supported	+FMI=?	

Parameters

<manufacturer>	Description
String type	Read from version.c.file (MANUFACTURER_ID)

3.6.1.2 +FMM Model identification

Description	Command	Possible Response(s)
Get model ID	+FMM	<model>
Test if command is supported	+FMM=?	

Parameters

<model>	Description
String type	Read from version.c file (MODEL_ID)

3.6.1.3 +FMR Model identification

Description	Command	Possible Response(s)
Get revision ID	+FMR	<revision>
Test if command is supported	+FMR=?	

Parameters

<revision>	Description
String type	Read from version.c file (REVISION_ID)

3.6.2 Capabilities identification and control

3.6.2.1 +FCLASS Model identification

Description	Command	Possible Response(s)
Set class	+FCLASS	
Get current class	+FCLASS?	+FCLASS: <class>
Get supported value	+FCLASS=?	+FCLASS: (list of supported <class>s)

Parameters

<class>	Description
0	Data mode
1	Fax class 1 (TIA-578-A) mode

3.6.2.2 +FTS Transmit silence

Description	Command	Possible Response(s)
Transmit silence	+FTS=<time>	

Parameters

<time>	Description
Integer type	Refer to TIA-578-A

Clarification

This command is sent to ME only when link is online data mode. Hence, this command is not implemented in AT command parser but in RLP/FAX module.

3.6.2.3 +FRS Receive silence

Description	Command	Possible Response(s)
Receive silence	+FRS=<time>	

Parameters

<time>	Description
Integer type	Refer to TIA-578-A

Clarification

This command is sent to ME only when link is online data mode. Hence, this command is not implemented in AT command parser but in RLP/FAX module.

3.6.2.4 +FTH HDLC transmit

Description	Command	Possible Response(s)
Set mode	+FTH=<mode>	
Get current mode	+FTH?	+FTH: <mode>
Get supported modes	+FTH=?	+FTH: (list of supported <mode>s)

Parameters

<mode>	Description
3	Refer to TIA-578-A

Clarification

Set command is sent to ME only when link is online data mode. Hence, set command is not implemented in AT command parser but in RLP/FAX module.

3.6.2.5 +FRH HDLC receive

Description	Command	Possible Response(s)
Set mode	+FRH=<mode>	
Get current mode	+FRH?	+FRH: <mode>
Get supported modes	+FRH=?	+FRH: (list of supported <mode>s)

Parameters

<mode>	Description
3	Refer to TIA-578-A

Clarification

Set command is sent to ME only when link is online data mode. Hence, set command is not implemented in AT command parser but in RLP/FAX module.

3.6.2.6 +FTM Facsimile transmit

Description	Command	Possible Response(s)
Set mode	+FTM=<mode>	
Get current mode	+FTM?	+FTM: <mode>
Get supported modes	+FTM=?	+FTM: (list of supported <mode>s)

Parameters

<mode>	Description
Integer type	Refer to TIA-578-A Value 9600 is always returned by read command because communication must begin at this speed.

Clarification

Set command is sent to ME only when link is online data mode. Hence, set command is not implemented in AT command parser but in RLP/FAX module.

3.6.2.7 +FRM Facsimile receive

Description	Command	Possible Response(s)
Set mode	+FRM=<mode>	

Description	Command	Possible Response(s)
Get current mode	+FRM?	+FRM: <mode>
Get supported modes	+FRM=?	+FRM: (list of supported <mode>s)

Parameters

<mode>	Description
Integer type	Refer to TIA-578-A Value 9600 is always returned by read command because communication must begin at this speed.

Clarification

Set command is sent to ME only when link is online data mode. Hence, set command is not implemented in AT command parser but in RLP/FAX module.

4. Proprietary AT commands

4.1 NXP Proprietary commands

4.1.1 Capabilities identification and control

4.1.1.1 #CLS Service class

Description	Command	Possible Response(s)
Set class	#CLS=<class>	
Get current class	#CLS?	#CLS: <class>
Get the current mode	#CLS=?	#CLS: (list of currently available <class>s)

Parameters

<class>	Description
0	Data mode
1	Fax class 1 (TIA-578-A) mode

Clarification

This command has the same role and behaviour as +FCLASS command.

It is needed for Microsoft©® agreement.

4.1.2 Flow control command

4.1.2.1 &R RTS/CTS option

Description	Command	Possible Response(s)
Set RTS/CTS option	&R<option>	

Parameters

<option>	Description
1	In sync mode, CTS is always ON (RTS transitions are ignored). In async mode, CTS will only drop if required by the flow control (See Data stored by &W for default value).

Clarification

This command selects how the modem controls CTS. CTS operation is modified if hardware flow control is selected (see &K command). The parameter value, if valid, is written to S21 bit2

4.1.3 Manufacturer tests command

4.1.3.1 *PSLOCUP Location update

Description	Command	Possible Response(s)
Location update	*PSLOCUP	

Description

This command generates a location update of MS.

4.1.3.2 *PSSSURC Supplementary Services notification

Description	Command	Possible Response(s)
Set mode	*PSSSURC=<mode>	
Get current mode	*PSSSURC?	*PSSSURC : <mode>

Description	Command	Possible Response(s)
Get supported modes	*PSSSURC=?	*PSSSURC: (list of supported <mode>s)

Description

This command is to configure the AT interface to give additional information through result code to TE when D command is entered with a SS string as parameter.

When <mode> parameter is enabled one or several intermediate result code are sent to provide additional information on SS operation.

Result code

Description	Result code
Successful SS operation	*PSSSURC: <SsCode>[,<BasicServiceCode>,<SsStatus>, <no_reply_cond_timer>,<ccbs_index>, <phone_number_ton_npi>, <phone_number_config>, <phone_number>,<sub_address_type>, <sub_address_authority_and_format_identifie> ,<sub_address_data>[,<clir_option>]]
SS operation failure	*PSSSERR:<cause_select>,<cause>

One intermediate result code per <service code> is sent

Parameters

<mode>	Description
0	Disable sending of additional result code
1	Enable sending of additional result code

*PSSSURC and *PSSSERR parameters are the ones used in RTK messages.

Refer to SwUM MMI SPV (SPVSS) for description.

Clarification

Command available when ATP_SS_URC_FTR is enable.

Example: CFU interrogation for telephony service
ATD*#21*11#
*PSSSURC: 33,11,0,255,,129,0,,1,2,,1
OK

Ss_code = 33 → SPS_SC_CFU

BasicServicecode = 11 → SPS_BS_TELEPHONY

SsStatus = 0 → SPS_STATUS_DEACTIVATED

4.1.4 SIM toolkit command and result codes

4.1.4.1 *PSSTKI SIM Toolkit interface configuration

Description	Command	Possible Response(s)
Set mode	*PSSTKI=<mode>	
Get current mode	*PSSTKI?	*PSSTKI : <mode>
Get supported modes	*PSSTKI=?	*PSSTKI: (list of supported <mode>s)

Description

This command is to configure SIM toolkit by AT command.

Parameters

<mode>	Description
0	STK by AT command is deactivated, only ME's MMI will receive SIM toolkit notifications
1	STK by AT command is activated: SIM toolkit notification will first be sent to AT parser. If an AT channel is connected, *PSSTK URC will be sent, *PSSTK AT command has to be used to respond. If no AT channel is connected: ME's MMI will receive the notification

Clarification

Command available when STK_AT_CMD_FTR is enable.

4.1.4.2 *PSSTK SIM Toolkit control

*PSSTK command is defined to support SIM toolkit by AT commands. Only part of SIM toolkit commands that interact with user or MMI can be controlled.

All other SIM toolkit mechanism such as terminal profile, SMS or CBM data download, call control or MO SMS control by SIM, event download and all command that does not require interaction with the user (or screen) are internally managed by the ME.

This command is implemented in ATCUST module and can be updated/modified.

It uses APPI_STK_xxx messages (refer to SwUM MMI SPV) to send notifications received from SIM to TE and to send response from to TE to SIM. The parameter are "copy" of RTK messages.

● **Notification from SIM to user: PSSTK unsolicited result code**

Description	Result code
Notification from SIM to User	*PSSTK: <notification type>, <parameter1>,…,<parameterN>

Parameters

<notification type>	Description
A string that represents the type of notification (proactive command name) received from the SIM. Some command requires the use of *PSSTK set command to send a response to the SIM.	
LANGUAGE NOTIFICATION	Sent on reception of APPI_STK_LANGUAGE_NOTIFICATION_IND
CONTROL BY SIM	Sent on reception of APPI_STK_CONTROL_BY_SIM_IND
REFRESH	Sent on reception of APPI_STK_REFRESH_IND
END CALL	Sent on reception of APPI_STK_END_CALL_IND
DISCONNECT	Sent on reception of APPI_CALL_ASYNC_DISCONNECT_IND
PROCESSING	Sent on reception of APPI_STK_PROCESSING_IND
END SESSION	Sent on reception of APPI_STK_END_SESSION_IND
ABORT SESSION	Sent on reception of APPI_STK_ABORT_SESSION_IND
NOTIFICATION	Sent on reception of APPI_STK_NOTIFICATION_IND Require use of *PSSTK set command to respond to SIM
SETUP CALL	Sent on reception of APPI_STK_SETUP_CALL_IND Require use of *PSSTK set command to respond to SIM
DISPLAY TEXT	Sent on reception of APPI_STK_DISPLAY_TEXT_IND Require use of *PSSTK set command to respond to SIM
GET INKEY	Sent on reception of APPI_STK_GET_INKEY_IND Require use of *PSSTK set command to respond to SIM
GET INPUT	Sent on reception of APPI_STK_GET_INPUT_IND Require use of *PSSTK set command to respond to SIM
PLAY TONE	Sent on reception of APPI_STK_PLAY_TONE_IND Require use of *PSSTK set command to respond to SIM
SELECT ITEM	Sent on reception of APPI_STK_SELECT_ITEM_IND

<notification type>	Description
	Require use of *PSSTK set command to respond to SIM
REMOVE MENU	Sent on reception of APPI_STK_REMOVE_MENU_IND Require use of *PSSTK set command to respond to SIM
SETUP IDLE MODE TEXT	Sent on reception of APPI_STK_SET_UP_IDLE_MODE_TEXT_IND Require use of *PSSTK set command to respond to SIM
OPEN CHANNEL	Sent on reception of APPI_STK_OPEN_CHANNEL_IND Require use of *PSSTK set command to respond to SIM
RUN AT COMMAND	Sent on reception of APPI_STK_RUN_AT_CMD_IND Require use of *PSSTK set command to respond to SIM

<parameter i>	Description
Integer or string type	Number of parameters in URC depends of message. Refer to STK SwISD and source code.

● **Response from user to SIM: *PSSTK command**

Description	Command	Possible Response(s)
Respond to SIM	*PSSTK=<reponse type>, <parameter1>,…,<parameterN>	
Get supported response type	*PSSTK=?	*PSSTKI: (list of supported <response type>s)

Parameters

<response type>	Description
A string that represents the type of response to be sent to SIM (terminal response or envelope). Some response correspond to answer to *PSSTK URC.	
MENU SELECTION	Send a APPI_STK_MENU_SELECTION_REQ (On reception of APPI_STK_MENU_SELECTION_CNF, OK is sent)
GET ITEM LIST	Call macro MC_STK_FIRST_ITEM and MC_STK_NEXT_ITEM to get the information of the last received SET UP MENU or SELECT ITEM command.
ALL CALLS DISCONNECTED	Send a APPI_STK_ALL_DISCONNECTED_REQ
USER	Send a APPI_STK_USER_ACTIVITY_IND

<response type>	Description
ACTIVITY	
IDLE SCREEN AVAILABLE	Send a APPI_STK_IDLE_SCREEN_AVAILABLE_IND
SETUP CALL TERMINATED	Send a APPI_STK_SETUP_CALL_TERMINATED_REQ
COMMAND REJECTED	Send a APPI_STK_COMMAND_RJT. Used to reject any URC that requires a response.
NOTIFICATION	Send a APPI_STK_NOTIFICATION_RSP
SETUP CALL	Send a APPI_STK_SETUP_CALL_RSP
DISPLAY TEXT	Send a APPI_STK_DISPLAY_TEXT_RSP
GET INKEY	Send a APPI_STK_GET_INKEY_RSP
GET INPUT	Send a APPI_STK_GET_INPUT_RSP
PLAY TONE	Send a APPI_STK_PLAY_TONE_RSP
SELECT ITEM	Send a APPI_STK_SELECT_ITEM_RSP
SETUP MENU	Send a APPI_STK_SETUP_MENU_RSP
REMOVE MENU	Send a APPI_STK_REMOVE_MENU_RSP
SETUP IDLE MODE TEXT	Send a APPI_STK_SET_UP_IDLE_MODE_TEXT_RSP
OPEN CHANNEL	Send a APPI_STK_OPEN_CHANNEL_RSP
RUN AT COMMAND	Send a APPI_STK_RUN_AT_CMD_RSP

<parameter i>	Description
Integer or string type	Number of parameters in URC depends of message. Refer to STK SwISD and source code.

Clarification

Command OPEN CHANNEL allowed only if option STK_LETTER_CLASS_E_FTR enable.
Command RUN AT COMMAND allowed only if option STK_LETTER_CLASS_E_FTR enable.

4.1.4.3 GTKI : Proactive Command Indication

Description	Command	Possible Response(s)
Indicate proactive command initiated by SIM card. Mapped on RIL_UNSOL_STK_PROACT	URC	+GTKI: <proactCmd>

Description	Command	Possible Response(s)
IVE_COMMAND		

Description

This URC indicates that a proactive command has been initiated by the SIM. The Proactive command will have to be followed by a response from the MMI in the Terminal response (GTKR) except in case of SIM refresh or call setup. In case of SIM refresh, no response is required from MMI.In case of call setup, GTKD will have to be sent has a reply of GTKA sent along with GTKI.

Parameters

<proactCmd>	Description
Hex String	Hexadecimal sting giving the details of the proactive command received from SIM

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.4.4 GTKR : Terminal Response

Description	Command	Possible Response(s)
Send a Terminal Response to SIM. Mapped on RIL_REQUEST_STK_SEND_TERMINAL_RESPONSE	GTKR=<TermRsp>	OK Error
Is GTKR supported	GTKR=?	OK

Description

The terminal response is sent to the SIM. It must be sent as a reply to a Proactive Command. If unexpected by the MS or if the SIM is not able to handle the Terminal Response, an error will be returned.

Parameters

<TermRsp>	Description
Hex String	Hexadecimal sting giving the details of the terminal response to sent to SIM

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.4.5   GTKE : Envelope Command

Description	Command	Possible Response(s)
Send a Envelope to SIM. Mapped on RIL_REQUEST_STK_SEND_TERMINAL_RESPONSE	GTKE=<Envelope>	GTKE: [<EnvelopeRsp>]
Is GTKE supported	GTKE=?	OK

Description

The envelope is sent to SIM. If a Proactive Command is pending and that the SIM is expecting a Terminal Response, an error will be returned.

Parameters

< Envelope >	Description
Hex String	Hexadecimal sting giving the details of the envelope to sent to SIM

[<EnvelopeRsp>	Description
Hex String	Response from the SIM to the envelope van be empty.

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.4.6   COTA: SIM file updated

Description	Command	Possible Response(s)
SIM File Change Indication Mapped on RIL_UNSOL_SIM_REFRESH	URC	+COTA: <EfFileId>

Description

This URC indicates that some SIM file has changed following a refresh, init or reset of the SIM. The COTA URC will be sent once for each file that have been changed, except in case of SIM init or SIM refresh where only one COTA will be sent.The COTA URC will be followed by a GTKI that indicates the SIM refresh..

Parameters

<EfFileId>	Description

<EfFileId>	Description
Hex String	4 digits hex string that indicates the SIM file which has changed. FFFF in case of SIM init FFFE in case of SIM reset

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.4.7   GTKA: Unsolicited call initiated by SIM

Description	Command	Possible Response(s)
Unsolicited call initiated by SIM Mapped on RIL_UNSOL_STK_CALL_SETUP	URC	+GTKA: [<redialTimeout>]

Description

This URC indicates that an unsolicited call is initiated by SIM with the redial time out of the call. The GTKA URC will be followed by a GTKI URC containing the parameters of the call setup. The GTKD will have to be answered by a GTKD indicating if the user wants to perform the call or not.

Parameters

<redialTimeout>	Description
Integer	Indicates the redial timeout timer in ms. This parameter is optional

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.4.8   GTKD : User response for call initiated by SIM.

Description	Command	Possible Response(s)
Reply to a unsolicited call initialed by SIM Mapped on RIL_REQUEST_STK_HANDLE_CALL_SETUP_REQUESTED_FROM_SIM	GTKD=<usrRsp>	OK Error

Description

The GTKD is sent by terminal to tell the STK application if the user accepted the call. It must be sent as a reply to a GKTA. If a GTKA was not sent previously, an

error is returned.

Parameters

<usrRsp>	Description
0	The user reject the call
1	The user accept the call

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.4.9 GTKS: End Session.

Description	Command	Possible Response(s)
SIM indicated that the STK session is terminated Mapped on RIL_UNSOL_STK_SESSION_END	URC	+GTKS:

Description

Indicate when STK session is terminated by SIM.

Parameters

None

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.4.10 GTKC : STK Terminal Profile.

Description	Command	Possible Response(s)
Set STK terminal profile Mapped on RIL_REQUEST_STK_SET_PROFILE	GTKC= <TermProfile >	OK Error
Get STK terminal profile Mapped on RIL_REQUEST_STK_GET_PROFILE	GTKC?	GTKC: < TermProfile >
Is GTKC supported	GTKC=?	OK

Description

RIL_REQUEST_STK_SET_PROFILE is **not** supported as the modem is taking
responsibility to configure the STK profile. The terminal profile in the modem has
to be configured corresponding to Android capabilities.
RIL_REQUEST_STK_GET_PROFILE is supported & returns the current profile in the
modem.

Parameters

< TermProfile >	Description
Hex String	Binary data of the terminal profile

Clarification

Command available when STK_ANDROID_FTR is enable.

4.1.5   CPHS proprietary commands

4.1.5.1   *PSVMWN Voice Message Waiting Notification

Description	Command	Possible Response(s)
Set mode	*PSVMWN=<mode>	
Get current mode	*PSVMWN?	*PSVMWN: <mode > +CME ERROR: <err>
Get supported modes	*PSVMWN =?	*PSVMWN: (list of supported mode)

Description

Set command enables/disables the presentation of notification result code from ME to TE

When <mode> = 1, a Voice Message Waiting Indication (*PSVMWI) is sent to TE when
notification is received (special SMS) from network or at switch on.

Description	Result code
Voice Message Waiting Indication	*PSVMWI: <line Id > , <status> [,<index>[,<NbMsgWaiting>]] (

Parameters

<mode>	Description
0	Disable presentation of notification
1	Enable presentation of notification

<line Id>	Description
1	Line 1
2	Line 2 (Auxiliary line)
3	Data
4	Fax
5	Email
6	Other
7	Video Mail

Note: <line Id> 6 and 7 is supported only if REL7_CR_IMPLEMENTATION_FTR is enabled

<status>	Description
0	No message waiting
1	At least one message is waiting

<index>	Description
0..255	Record index in EF SMS if the received MWI message has been stored in SIM (if DCS indicates STORE MWI SMS)

<NbMsgWaiting >	Description
0..255	Number of message waiting on <line id>

Clarification

Command allowed only if option __ALS__ enable.

4.1.5.2   *PSALS Alternate Line Service

Description	Command	Possible Response(s)
Select line for MO speech call	*PSALS=<LineId>	
Get current line	*PSALS?	*PSALS: <lineId > +CME ERROR: <err>
Get supported lines	*PSALS =?	*PSALS: (list of supported <lineid>)

Description

Set command is used to select the line to be used for MO speech calls.

For MT (speech) calls, +CRING URC (refer +CRC command) indicates on which line the call is receive (+*CRING: VOICE* → default case = line 1, +*CRING: VOICE_AUX* → line 2.)

<line Id>	Description
1 (Default)	Line 1
2	Line 2 (Auxiliary line)

Clarification

Command allowed only if option __ALS__ enable.

4.1.5.3 *PSDCIN Diverted Call Indicator Notification

Description	Command	Possible Response(s)
Set mode	*PSDCIN=<mode> [, <Line Id>]	[*PSDCIN: <Line Id>, <status> [[...] <CR><LF>* PSDCIN: <Line Id>, <status>]] +*CME ERROR: <err>*
Get current mode	*PSDCIN?	*PSCDIN: <mode > +*CME ERROR: <err>*
Get supported values	*PSDCIN =?	*PSDCIN: (list of supported <modes>), (list of supported <line>s)

Description

Set command enables/disables the presentation of a Diverted Call Indication (also know as CFU) result code from ME to TE.

When <mode> = 2, status of <lind Id> is requested. If <Line Id> is not provided query is requested for all lines.

When <mode> = 1, Diverted Call Indication *PSDCI is sent to TE on reception of network notification. (Several result code can been sent at the same time on reception of the notification)

Description	Result code
Diverted Call Indication	*PSDCI: <Line Id>, <status>

Parameters

<mode>	Description
0	Disabled CFU notification presentation
1	Enabled CFU notification presentation
2	Query CFU status

<line Id>	Description
1	Line 1
2	Line 2 (Auxiliary line)
3	Data
4	Fax

<status>	Description
0	Not active
1	Active

4.1.5.4 *PSMBNB Mailbox Number

Description	Command	Possible Response(s)
Set mailbox number in SIM	*PSMBNB=<Line Id>[, <number>, <type> [,<text>]]	*+CME ERROR: <err>*
Read mailbox numbers	*PSMBNB?	[*PSMBNB: <Line Id>, <number>,<type>,<text> [[...] <CR><LF>*PSMBNB: <Line Id>, <number>,<type>,<text>]] *+CME ERROR: <err>*
Get supported values	*PSMBNB =?	*PSMBNB: (list of supported <Line Id>), (List of supported <type>) ,[<nlength>],[<tlength>]

Description

The purpose of this command is not to replace +CSVM command but to offer more possibilities for Mailbox numbers settings (+CSVM command allow only voice mailbox settings, CPHS define one record per line).

Set command writes the mailbox number for <line id> in SIM.

If only <Line Id> is present in command corresponding record is deleted in SIM.

Parameters

<line Id>	Description
1	Line 1
2	Line 2 (Auxiliary line)
3	Data
4	Fax

<number>	Description
String type	Phone number of format <type>

<type>	Description
Integer type	Type of address

<text>	Description
String type	Field of maximum length <tlength> Character set as specified by +CSCS

<nlength>	Description
Integer type	Value indicating the maximum length of field <number>

<tlength>	Description
Integer type	Value indicating the maximum length of field <text>

Clarification

Command allowed only if option __MBOXN__ enable.

4.1.5.5   *PSCSP Customer Service Profile

Description	Command	Possible Response(s)
Set command	*PSCSP	
Read CSP	*PSCSP?	[*PSCSP: <Service Groupe code x>, <status> [[...]<CR><LF>*PSCSP: < Service Groupe code y>, <status>]] *+CME ERROR: <err>*
Get supported values	*PSCSP=?	* PSCSP: (list of supported <Service Groupe code>)

Description

Command used to read the CSP file in SIM

Set command has no effect (OK returned)

Parameters

<service group code>	Description

<service group code>	Description
String type	Hexadecimal representation of a coding group as defined in CPHS recommendation ("01".."09", "C0" "D5")

<status>	Description
String type	Bitfield representation of each element of a service group (ex: "11000000")

4.1.5.6   *PSINFN Information number

Description	Command	Possible Response(s)
Get information number entries	*PSINFN=<index1>[,<index 2]	[*PSINFN: <index1>,<number>,<type>,<text>,<Net Id>,< Prem Id>,< Level> [[...]<CR><LF>*PSINFN: <index2>,<number>,<type>,<text>,<Net Id>,< Prem Id>,< Level>[[...]<]] +CME ERROR: <err>
Read command	*PSINFN	
Get supported values	*PSINFN=?	*PSINFN: (list of supported <index>s),[<nlength>],[<tlength>]

Description

Set command returns phonebook entries in location number range <index1>... <index2> from Information Number SIM file. If <index2> is left empty, only location <index1> is returned. If all queried locations are empty (but available), no information text lines may be returned (only an OK is returned). If listing fails in a ME error, +CME ERROR: <err> is returned.

Read command has no effect (returns OK)

Parameters

<index> <index1> <index2>	Description
0..255	Index of information number phonebook entry

<number>	Description
String type	Phone number of format <type>

<type>	Description
Integer type	Type of address

<text>	Description
String type	Field of maximum length <tlength> Character set as specified by +CSCS

<NetId>	Description
Integer type	Representation of the Network specific indicator

<PremId>	Description
Integer type	Representation of Premium service indicator

<Level>	Description
Integer type	Representation of the level of the record (in the tree)

<nlength>	Description
Integer type	Value indicating the maximum length of field <number>

<tlength>	Description
Integer type	Value indicating the maximum length of field <text>

Clarification

Command allowed only if option __ CPHS_INFO_NUMBERS_FTR __ enable.

4.1.5.7   *PSOPNM Operator name

Description	Command	Possible Response(s)
Set command	*PSOPNM	
Get supported operator name	*PSOPNM?	*PSOPNM: < Operator Name string>

Description

Read command returns operator name string which can be:
- The operator name in long format if EFONS SIM file is present and readable in SIM
- The operator name short format if EFONS SIM file not present or not readable in SIM
- An empty string if neither EFONS nor EFONSF SIM files are present or readable.

Note: ONSF file (Operator Name Short Format) is used for mobile that cannot accommodate to the long name format.

Set command has no effect (OK returned)

Parameters

<operator name string>	Description
String type	Operator name Character set as specified by command +CSCS.

Clarification

Command available only if AT_CMD_NETWORK_FTR is enabled.

4.1.6   General purpose proprietary commands

4.1.6.1   *PSPRAS Pin Remaining Attempt Status

Description	Command	Possible Response(s)
Set command	*PSPRAS	OK
Get remaining PIN attempts	*PSPRAS?	*PSPRAS: < pin1>, <puk1>,<pin2>, <puk2>,<upin>,<upuk> +CME ERROR: <err>
Get supported codes	*PSPRAS=?	*PSPRAS: (list of supported <code>)

Description

This command is used to get the number of remaining PIN and PUK attempts.

Set command has no effect (returns OK). Implementation of getting the remaining

attempts for UPIN and UPUK is done under the switch CR_LMSQC11139_SFI.

Parameters

<pin1>	Description
0..3	Number of remaining attempts for PIN 1

<pin2>	Description
0..3	Number of remaining attempts for PIN 2

<puk1>	Description
0..10	Number of remaining attempts for PUK 1

<puk2>	Description
0..10	Number of remaining attempts for PUK 2

<upin>	Description
0..3	Number of remaining attempts for UPIN

<upuk>	Description
0..10	Number of remaining attempts for UPUK

<code>	Description
SIM PIN1	PIN 1 identifier
SIM PIN2	PIN 2 identifier
SIM PUK1	PUK 1 identifier
SIM PUK2	PUK 2 identifier
SIM UPIN	UPIN identifier
SIM UPUK	UPUK identifier

4.1.6.2   *PSSEAV Service Availability

Description	Command	Possible Response(s)
Set mode	*PSSEAV=<mode>	
Get current mode	*PSSEAV?	*PSSEAV: <mode> [<CR><LF>*PSREADY: <service> […]<CR><LF>*PSREADY: <service>]
Get supported modes	*PSSEAV=?	*PSSEAV: (list of supported modes), (list of supported services)

Description

Set command enables/disables the presentation of notification result code from ME to TE. When <mode> = 1, *PSREADY result code is sent to TE when <service> is available.
Read command is used to get current mode and to check which service are already available (*PSREADY is returned only for available services).

Description	Result code
Service ready	*PSREADY: <service>

Parameters

<mode>	Description
0	Disable notification presentation
1	Enable notification presentation

<service>	Description
0	Phone book service availability
1	SMS service availability
2	CBM service availability

Clarification

If a service becomes available before any AT channel is connected, *PSREADY notification will be buffered and sent as soon as the first AT channel connects.

4.1.6.3   *PSCHRU Channel registration URC

Description	Command	Possible Response(s)
Set URC filter	*PSCHRU=<mask>	
Get current channel filter	*PSCHRU?	*PSCHRU: <mask>
Get supported masks	*PSCHRU=?	*PSCHRU: (list of supported <mask>s)

Description

Set command is used to filter one or several type of URC on a channel. By default all URC types are enabled on a newly opened channel.

This command only applies on the channel it is submitted, other channels are not impacted. Depending of <mask> value, URC will or will not be broadcasted on the channel.

Parameters

<mode>	Description
0	No URC sent on the channel
1	Call related URC to be sent on the channel: RING, +CRING, +CCCM, +CCWV, +CCWA, +CLIP, +COLP, +CSSI, +CSSU, *PSCALL, *PSDCI, *PSCSC,

<mode>	Description
	*PSCN, *PSVTCS
2	SMS related URC to be sent on the channel: +CDS, +CMT, +CMTI, *PSMWI
4	CBM related URC to be sent on the channel: +CBM
8	ME status related URC to be sent on the channel: +CIEV, +CIEV, *PSCP, *PSNWID, *PSUTTZ,
16	Network registration related URC to be sent on the channel: +CREG, +CGREG, *PSNTRG
32	SS related URC to be sent on the channel: +CUSD
64	Initialisation related URC to be sent on the channel: *PSREADY
128	Debug related URC to be sent on the channel: *PSDBG
256	SIM toolkit related URC to be sent on the channel: *PSSTK
512	UICC asynchronous events related URC to be sent on the channel: *SMCEV

Clarification

The value 512 is available only if SMARTCARD_MULTI_APPLI_FTR is enable.

Example:

To enable the display of URC SMS (2) and CALL(1) and to forbid the display of the others on a channel, choose 2 and 1 parameter, i.e send:

AT*PSCHRU=3

OK

4.1.6.4   *PSSMPH SIM phase

Description	Command	Possible Response(s)
Set command	*PSSMPH	
Get supported SIM phase	*PSSMPH?	*PSSMPH: <phase>
Get supported values	*PSSMPH=?	*PSSMPH: (list of supported < phase >s)

Description

This commands is used to get current (U)SIM phase.

Set command is not used (returns always OK).

Parameters

<phase>	Description
0	Unknown
1	Phase 1
2	Phase 2
3	Phase 2+
4	Phase 3G

4.1.6.5   *PSMEMCAP SMS Memory capacity

Description	Command	Possible Response(s)
Set memory TE status	*PSMEMCAP=<TE memory status> [,<mode>]	*PSMEMCAP: < SIM memory status >, <Network status>
Get current status	*PSMEMCAP?	*PSMEMCAP: = <mode>, <TE memory status> , < SIM memory free records >
Get supported values	*PSMEMCAP=?	*PSMEMCAP: (list of supported < TE memory status >), (list of supported < mode >)

Description

This command allows SMS memory status synchronization between ME (SIM) and TE. It allows to suspend/resume SMS reception depending of SIM and TE memory status availability for SMS storage.

Set command is used to inform ME about SMS memory status on TE side.

Set command is also used to control presentation memory notification when SIM memory status changes (full/available) or when network has been informed of "memory capacity exceeded" or "memory available'.

Description	Result code
Memory notification	*PSMEMCAP: < SIM memory status >, <Network status >

Parameters

<mode>	Description
0	Disable notification presentation
1	Enable notification presentation

<TE memory status>	Description
0	TE memory available for SMS storage
1	TE memory capacity exceeded

<SIM memory status>	Description
0	SIM memory available for SMS storage
1	SIM memory capacity exceeded

<Network status>	Description
0	No notification sent to network
1	"Memory available" has been sent to network after last SMS operation
2	"Memory capacity exceeded" has been sent to network after last SMS operation

<SIM memory free record>	Description
0	SIM is full
1..255	Number of free SMS records

Clarification

Command available only if SMS_ACK_AND_STORED_BY_TE_FTR is enabled.

4.1.6.6   *PSACL ACL restriction

Description	Command	Possible Response(s)
Set mode	*PSACL=<mode>	
Get current mode	*PSACL?	*PSACL: <mode>
Get supported modes	*PSACL=?	*PSACL: (list of supported modes)

Description

Set command enables/disables checking ACL restriction, check is operated before activating a PDP .

Parameters

<mode>	Description
0	Disable ACL restriction check
1	Enable ACL restriction check

Clarification

Command available only if SPV_BYPASS_ACL_CHECK_FTR is enabled

4.1.6.7　*PSSIMSTAT: Sim Status

Description	Command	Possible Response(s)
Control URC notifications	* PSSIMSTAT=<mode>	
Get current SIM status	* PSSIMSTAT?	* PSSIMSTAT: <card_status>,<ue_lock_status>
Get supported values	* PSSIMSTAT =?	*PSSIMSTAT: (list of supported <card_status>), (list of supported <ue_lock_status>)

Description

This command provides information about physical card status (in or out) and UE lock status

Parameters

<mode>	Description
0	Sending of PSSIMSTAT URC is disabled
1	Sending of PSSIMSTAT URC is enabled

<card_status>	Description
0	Card is IN
1	Card is OUT or Card Error

<ue_lock_status>	Description
0	UE is not locked from an end-user point of view:

<ue_lock_status>	Description
	PIN1 is not blocked and no SIM Lock code is expected.
1	PIN1 is blocked (PUK1 expected)
2	The end user is asked to enter a simlock code.
255	Not applicable (card_status = 1)

4.1.6.8 *PSSSDT: Start Stop DTMF

Description	Command	Possible Response(s)
Send a DTMF tone	*PSSSDT=<play> <char_tone>	
Get supported values	* PSSSDT =?	*PSSSDT: (list of supported <play >), (list of supported <char_tone>)

Description

This command starts a DTMF tone from a given character (from keyboard) and stops the DTMF tone.

Parameters

<play>	Description
0	The DTMF tone generation should stop
1	The DTMF tone generation should start

<char_tone>	Description
String type	The specific tone to be played coming from one of the following input keys: 0-9,*,#

4.1.6.9 *PSIMEISV: Get IMEISV

Description	Command	Possible Response(s)
Get current IMEISV	* PSIMEISV?	*PSIMEISV: <imeisv>

Description

This command provides the IMEISV. The IMEISV is the concatenation of the IMEI (14 digits) + the SVN. The SVN is the 2 digits software version number identifying the revision of the software installed on the phone (99 is reserved).

4.1.7   Debug proprietary commands

4.1.7.1   *PSDBG Debug string

Description	Command	Possible Response(s)
Execute GSM string	*PSDBG=<string>	*PSDBG=<result>
Read command	*PSDBG?	
Test command	*PSDBG=?	

Description

This command allows execution of debug GSM string.
Depending on the GSM string given, 2 behaviours are possible:
- Normal mode: if the GSM string is valid, "OK" result is sent immediately, result of execution will be received in a subsequent *PSDG notification
- Refresh mode: if the GSM string is valid, "OK" result is sent immediately, *PSDG notification will be sent periodically. To stop the refresh mode, AT*PSDBG="STOP" must be sent.

Parameters

<string>	Description
String type	GSM string to be executed

<result>	Description
String type	Text to display as result of execution

4.1.7.2   *PSENGI Engineering information

Description	Command	Possible Response(s)
Select an information to retrieve	*PSENGI=<mode>	**If <mode>=0** *PSSCI **If <mode>=1** *PSNCI **If <mode>=2** *PSGDMI **If <mode>=3** *PSQI
Read command	*PSENGI?	
Get supported values	*PSENGI=?	*PSENGI : (list of supported <mode>) (list of supported < result code>)

Description

Depending on <mode>, set command returns information related to serving cell , neighbouring cells, GSM dedicated mode and quality of service.
Read command has no effect.

Parameters

<mode>	Description
0	Serving cell information <CR><LF>*PSSCI: <Arfcn>,<C1>,<C2>,<C32>,<C31>,<RxLevel>,<Ptmsild>,<Plmn>,<Mcc>, <Mnc>,<Lac>,<CellId>,<Rac>,<T3212Value>,<PagingOccurence>,<LevelServiceSuported>,<NetworkModeOperation>
1	Neighboring cells information <CR><LF>*PSNCI: <Arfcn>,<C1>,<C2>,<C32>,<C31>,<RxLevel> (One line per neighbouring cell)
2	GSM dedicated mode information <CR><LF>*PSGDMI: <RxLevel>,<TxLevel>,<FrequencyHopingInd>,<CipheringInd><RxQualityFull>
3	Quality information <CR><LF>*PSQI: <HOFailOnTotalHO>

All parameters are integer type.

Clarification

Command supported only if option __ ENGINEERING_MODE_FTR __ and __ FIELD_TEST_MODE__ or __L1C_DEBUG_TO_RAM__ are enable.

4.1.7.3 *PSDTC Debug timer command

Description	Command	Possible Response(s)
Launch timer	*PSDTC=<duration>	OK

Description

Set command launches a timer of 10ms * <duration>. "OK" is sent at expiration of timer.
(Useful to test multi-channel)

Parameters

<duration>	Description
0..255	Duration *10ms.

4.1.7.4 *PSSLKP Simulate long key press

Description	Command	Possible Response(s)
Simulate long key press	*PSSLKP	

Description

This command simulate a long key press on the keypad of the ME (to switch off the mobile)

4.1.7.5 *PSSCIR Simulate Card Insertion and withdrawal

Description	Command	Possible Response(s)
Simulate Card Insertion and withdrawal	*PSSCIR=<Presence>	*+CME ERROR: <err>*

Description

This command simulates smartcard insertion and withdrawal.

Parameters

<presence>	Description
0	SmartCard withdrawal
1	SmartCard insertion

Clarification

Command available only if TELECOM_HOST_INTEGRATION_FTR is enabled.
Command used only for host integration.

4.1.7.6 *PSUAGR UICC Auto Get Response

Description

Activate auto get response. Allows not to enter APDU command GET_RESPONSE, when an APDU command is typed.

Description	Command	Possible Response(s)
Auto Get Response	*PSUAGR=<auto get	*+CME ERROR: <err>*

Description	Command	Possible Response(s)
	response>	

Parameters

<call mode>	Description
0	No get response requested
1	A get response is send when the card need

4.1.8 Call and network proprietary commands

4.1.8.1   *PSCCDN Call connection and disconnection notification

Description	Command	Possible Response(s)
Set mode	*PSCCDN=<mode>	
Get current mode	*PSCCDN?	*PSCCDN : <mode>
Get supported values	*PSCCDN =?	*PSCCDN: (list of supported <mode>s), (List of supported <status>s)

Description

This command allows presentation of information about connection or disconnection of a CS call (either MT or MO). This URC allow TE to exactly know which call is being connected or disconnected (NO CARRIER urc is not sufficient to discriminate calls id)

Set command enables/disables the presentation of notification result code from ME to TE.

When <mode> = 1, *PSCALL result code is sent to TE on connection or disconnection of call <Call Id>

Description	Result code
Call notification	*PSCALL: <Call Id>,<Status> [,<Number]

Parameters

<mode>	Description
0	Disable notification

<mode>	Description
1	Enable notification

<call id>	Description
0	Waiting call (alerting, no call id assigned yet)
1..7	Speech call ID
> 8	Data call id

<status>	Description
0	Disconnected
1	Connected

<number>	Description
String type	Phone number (when <status> =1)

Clarification

Special case: to inform that current waiting call has been disconnected: *PSCALL: 0,0 is sent.

The +CLCC command can be used to get more information about a specific call.

4.1.8.2   *PSCSCN Call state change notification

Description	Command	Possible Response(s)
Select notification presentation mode	*PSCSCN=<mode>	+CME ERROR: <err>
Get the current mode	*PSCSCN?	*PSCSCN: <mode>

Description

This command allows presentation of information about CS call states as well as audio or in-call notifications related to current call. This command does note replace +CLCC command. TE is notified whenever the state of a call changes, this avoid TE to use polling mechanism with +CLCC command to know the states of each call.

When <mode>=0, set command disables both the presentation of call state change URC (*PSCSC) and call notification URC (*PSCN)

When <mode> =1, set command enable the presentation of call state change URC (*PSCSC) every time the states of a call change.

When <mode>=2, set command enables <u>both</u> the presentation of call state change URC and call notification URC (*PSCN) every time audio or in-call notification occurs (in-band, SS-notify…).

Description	Result code
Call state change	*PSCSC: <Call Id>, <State>, <Status>, [<Number>], [<type>], [<Line Id>], [<CauseSelect>],[<Cause>], [<Bearer>]

The optional fields of the URC are filled only when information is available (i.e depending of the state of the call), otherwise they are left empty.

Description	Result code
Call notification	*PSCN: <Call Id>, <Notification>

The optional fields of the URC are filled only when information is available otherwise they are left empty.

Parameters

<mode>	Description
0	Disable presentation all notifications
1	Enable presentation of *PSCSC
2	Enable presentation of *PSCSC and *PSCN

<callId>	Description
0	Call Id not yet assigned (alerting MT call)
1..7	Call Id representing a CS speech call
> 8	Call Id representing a CS data call

<state>	Description
0	MO call SETUP (no control by SIM)
1	MO call SETUP WITH CONTROL BY SIM (accepted)
2	MO call SETUP ERROR (control by SIM rejected or other problem)
3	MO call PROCEED
4	MO call ALERT (at distant)
5	MO call CONNECT (with distant)
6..9	RFU
10	MT call SETUP
11	MT call SETUP ACCEPTED (Bearer capabilities accepted by the ME)

<state>	Description
12	MT call SETUP REJECTED (Bearer capabilities rejected by the ME)
13	MT call ALERT
14	MT call CONNECT (ME has successfully accepted the call)
15	MT call CONNECT ERROR (ME was not able to accept the call)
16..19	RFU
20	Call DISCONNECT BY NETWORK
21	Call DISCONNECT BY USER
22	Call REJECT BY USER
23..29	RFU
30	MO call SETUP – Call initiated by SAT (SET UP CALL command received)
31	MO call PROCEED – Call initiated by SAT (SET UP CALL command received)
32	MO call ALERT (at distant) – Call initiated by SAT (SET UP CALL command received)
33	MO call CONNECT (with distant) – Call initiated by SAT (SET UP CALL command received)

<status>	Description
0	Call in ACTIVE state
1	Call in HOLD state (applicable only for speech calls, either MO or MT)
2	Call in MULTIPARTY ACTIVE state (applicable only for speech calls, either MO or MT)
3	Call in MULTIPARTY HOLD state (applicable only for speech calls, either MO or MT)

<number>	Description
String type	Phone number (same as in +CLIP)

<type>	Description
Integer type	Type of address (same as in +CLIP)

<lineid>	Description
1	Line 1
2	Line 2 (auxiliary line)

<causeselect>	Description
Integer type	Refer SwISD UPV

<cause>	Description
Integer type	Refer SwISD UPV

<bearer>	Description
String type	Hexadecimal representation format of bearer capability (for data calls only).

<notification>	Description
SS notification by network (Partly described in Rec. 24.080)	
1	Incoming call is a forwarded call
2	Incoming call has been forwarded
4	Outgoing call has been forwarded
5	Call is waiting at distant
6	Call is held by distant
7	Call is retrieved by distant
8	Call is in multiparty
9	CLIR suppression rejected
129	Incoming call is a deflected call
132	Outgoing call has been deflected call
Audio notification	
16	Audio on
17	Audio off
18	In band information
19	Audio mute
SS status. (Partly described in Rec. 24.080 & Rec. 29.002)	
32	All forwarding SS
33	Call forwarding unconditional
40	All conditional forwarding SS
41	Call forwarding on mobile subscriber busy
42	Call forwarding on no reply
43	Call forwarding on mobile subscriber not reachable
144	All barring SS
145	Barring of outgoing calls

<notification>	Description
146	Barring of all outgoing calls
147	Barring of outgoing international calls
148	Barring of outgoing international calls expect those directed to home PLMN
153	Barring of incoming calls
154	Barring of all incoming calls
155	Barring of incoming calls when roaming outside home PLMN country
Notification pertaining to the call (refer rec. 24.008 - § 10.5.4.20)	
48	User suspended
49	User resumed
50	Bearer change
Alerting patterns (refer rec. 24.008 - § 10.5.4.26)	
80	Alerting pattern level 0
81	Alerting pattern level 1
82	Alerting pattern level 2
84	Alerting pattern category 1
85	Alerting pattern category 2
86	Alerting pattern category 3
87	Alerting pattern category 4
88	Alerting pattern category 5

Clarification

This command uses information available at APPI interface (application i/f). AT parser does not interface directly with protocol stack so it does not have immediate access to L3 messages, this means that <state> does not match L3 messages exactly as they are defined in 24.008 recommendation.

• SIM toolkit- SET UP CALL

Values 30..33 for <state> are used when a SET UP CALL proactive command has been received from the SAT. This call is initiated internally in the ME by STK. *PSCSCS notification will be broadcasted as URC: the MO call has been initiated by STK, no AT channel is associated to the call.

Examples:

MO speech alerting at distant and initiated on line 1

*PSCSCS: 1, 4, 1,,, 1, , ,

MO speech call connected to "11111111" and active on line 1

*PSCSCS: 1, 5, 1, "1111111", 129, 1, , ,

MT data call connected to "123456" and active on line 1, BC list = A28881211563A6

*PSCSCS: 8, 14, 1, "123456", 129, 1, , , "A28881211563A6"

4.1.8.3 *PSFSNT Field strength notification

Description	Command	Possible Response(s)
Select notification mode	*PSFSNT=<mode>	+CME ERROR: <err>
Get the current mode	*PSFSNT?	PSFSNT : <mode>,<Field strength> [,<UMTS Field Strength>]

Description

This command allows presentation of field strength notification.

Set command enable (or disable) the presentation of *PSFS each time field strength increase or decrease of 5 dBm.

Description	Result code
Field strength notification	*PSFS: <Field strength> [,<UMTS Field Strength>]

Parameters

<mode>	Description
0	Disable presentation of notification
1	Enable presentation of notification

<field strength>	Description
0	GSM RX level is less than -110 dBm
1..62	GSM RX level is less than -109..-48 dBm
63	GSM RX level is less than -63 dBm
255	GSM RX level is unavailable

<UMTS field strength>	Description

<UMTS field strength>	Description
0	UMTS RSCP is less than -116 dBm
1..90	UMTS RSCP is less than -115..-25 dBm
91	UMTS RSCP is less than -25 dBm
255	UMTS RSCP is unavailable

Clarification

The values defined are not the same as for +CSQ command.

4.1.8.4   *PSCSSC Call successful control

Description	Command	Possible Response(s)
Set mode	*PSCSSC=<mode>	OK
Get current mode	*PSCSSC?	*PSCSSC : <mode>

Description

This command controls the emission of the result code for MO speech successful set-up.

If "Connected line identification presentation" supplementary service is activated (refer to +COLP), result code for ATD command will be sent to TE when call is connected to the called party (successful call set-up).

If "Connected line identification presentation" supplementary service is NOT activated (refer to +COLP), result code for ATD can be sent as soon as call set-up is started or after call is connected to the called party (after successful call set-up).

Set command allows selection of <mode> for MO speech call result code.

If user set <mode >=1 when +COLP is also activated, ERROR will be returned. Mode will remains to 0.

Parameters

<mode>	Description
0 (Default)	OK is returned only when call is connected to the remote party
1	OK is returned when call setup is started .The user is not informed of call successful connection to remote party. If the call fails, NO_ANSWER or NO_CARRIER will be sent after the OK.

4.1.8.5 *PSNTRG Network registration

Description	Command	Possible Response(s)
Select notificationmode	*PSNTRG=<mode>	+CME ERROR: <err>
Get current network status	*PSNTRG?	*PSNTRG: <Registration state>, <GPRS state>, <MCC>, <MNC>, <LAC>, <CI>, <PLMN Name>, [<Band indication>], [<Rat>], [<EGPRS state>],[<HSDPA state>], [<HSUPA state>]
Get supported values	*PSNTRG=?	* PSNTRG: (list of supported <Registration state>s), (list of supported < GPRS state >s), (list of supported < Band indication >s), (list of supported < Rat >s), (list of supported < EGPRS state >s), (list of supported < HSDPA state >s), (list of supported < HSUPA state >s)

Description

This command allows access to network registration information.

 It provides information for both CS and PS domain and is more flexible than +CREG or +CGREG commands.

When <mode> =1, set command enables the presentation of network registration URC (*PSNTRG) every time one of the parameter is updated by network or MS.

Description	Result code
Registration state change	*PSNTRG: <Registration state>, <GPRS state>, <MCC>, <MNC>, <LAC>, <CI>, <Service Provider Name/PNN Operator Name/NITZ Network Name/ PLMN Name>, [<Band indication>], [<Rat>], [<EGPRS state>] , [<HSDPA state>],[<HSUPA state>],[<Reject Cause CS>],[<Reject Cause Select CS>],[<Reject Cause PS>],[<Reject Cause Select PS>]

The optional fields of the URC are filled only when information is available.

Parameters

<mode>	Description
0	Disable presentation the notification
1	Enable presentation the notification

<registration state>	Description
0	Not registered
1	Registered, home PLMN
2	Not registered but searching (registration ongoing)
3	Registration denied
4	Unknown
5	Registered, roaming
6	Limited service (emergency)
7	Unknown IMSI (in HLR)

<GPRS state>	Description
0	No GPRS available on cell
1	GPRS available on cell and MS attached
2	GPRS available on cell but MS not attached
3	GPRS suspended

<mcc>	Description
String type	Mobile country code in numeric format (e.g "208")

<mnc>	Description
String type	Mobile network code in numeric format (e.g "10")

<lac>	Description
String type	Two byte location area code in hexadecimal format (e.g "3FA2")

<ci>	Description
String type	Two byte cell ID in hexadecimal format (e.g "6CA5") When UE camps on UMTS network <CI> will include RNCId and when UI camps on 2G network <CI> remains current report format

<PLMN name>	Description
String type	Current PLMN Name in long alphanumeric format If Service Provider Name is available, it is to be displayed else if PNN Operator Name is available then it is to be displayed else if NITZ network name is available then it is to be displayed else PLMN name to be displayed in long alphanumeric format.

<Band indication>	Description
0	GSM 900
1	E-GSM 900
2	DCS 1800
3	DCS 1900
4	UMTS band

<Rat>	Description
0	GSM
1	UMTS

<EGPRS state>	Description
0	EGPRS service not available on cell
1	EGPRS service available on cell but MS not GPRS attached
2	EGPRS service available on cell

<HSDPA state>	Description
0	HSDPA service not available on cell
1	HSDPA service available on cell

<HSUPA state>	Description
0	HSUPA service not available on cell
1	HSUPA service available on cell

<Reject Cause CS>	Description
0..255	Reject Cause CS value

<Reject Cause Select CS>	Description
0..255	Reject Cause Select CS value

<Reject Cause PS>	Description
0..255	Reject Cause PS value

<Reject Cause Select PS>	Description

<Reject Cause Select PS>	Description
0..255	Reject Cause Select PS value

Clarification

Command available only if option AT_CMD_NETWORK_FTR is enable.

The fields <HSUPA state> & <HSDPA state> will be available only when

AT_CMD_HSXPA_STATUS_SFI, HSDPA_FTR & HSUPA_FTR switches are enable.

Example:

AT*PSNTRG?

*PSNTRG: 1,1,"208","10","1234","4568","SFR", 0, 0, 0

 OK

If AT_CMD_HSXPA_STATUS_SFI, HSDPA_FTR & HSUPA_FTR switches are enable

Then :

AT*PSNTRG?

*PSNTRG: 1,1,"208","10","1234","4568","SFR", 0, 0, 0 , 0 , 0

 OK

4.1.8.6   *PSGCNT GPRS counters

Description	Command	Possible Response(s)
Reset counter	*PSGCNT=<cid>	*+CME ERROR: <err>*
Get counter values	*PSGCNT?	[*PSGCNT: <CiD>, <Rx bytes> , <Tx bytes> [..] <CR><LF>* PSGCNT: <CiD> <Rx bytes> , <Tx bytes> >]
Get supported values		*PSGCNT: (list of supported <CiD>s)

Description

Set command reset the counter of <cid> given as parameter. (At switch on, all counters are reset). Read command returns the current received and transmitted bytes (Rx & Tx) for all possible CiDs.

Parameters

<cid>	Description
0	Reset all counters
1..11	Only <cid> counter is reset

<Rxbytes>	Description
Integer type	Number of received bytes

<Txbytes>	Description
Integer type	Number of transmitted bytes

Clarification

Command available only if both AT_CMD_NETWORK_FTR and CIPHERING_ICON_FTR are enabled.

4.1.8.7 *PSCIPH Ciphering notification

Description	Command	Possible Response(s)
Set mode	*PSCIPH=<mode>	
Get current state	*PSCPIH?	*PSCIPH: <mode>, <Ciphering status>
Get supported values	*PSCPIH=?	*PSCIPH: (list of supported <mode>s), (list of supported <Ciphering status>s)

Description

Set command is used to enable or disable presentation of ciphering status notification (*PSCP). Notification is sent each time ciphering status changes

Description	Result code
Ciphering status	*PSCP: <Ciphering status>

Parameters

<mode>	Description
0	Disable ciphering notification
1	Enable ciphering notification

<ciphering status>	Description
0	Ciphering is OFF
1	Ciphering is ON

Clarification

Command available only if both AT_CMD_NETWORK_FTR and
CIPHERING_ICON_FTR are enabled

4.1.8.8   *PSRDBS Radio band settings

Description	Command	Possible Response(s)
Set radio bands	*PSRDBS=<mode> [,<GSM band> , [<UMTS band>][,<ms type>]]]	+CME ERROR: <err>
Get current values	*PSRDBS?	*PSRDBS: <GSM band>, [<UMTS band>],<ms type>
Get supported values	*PSRDBS=?	*PSRDBS: (list of supported <mode>s), (list of supported <GSM band>s), (list of supported <UMTS band>s),(list of supported <ms Type>s)

Description

Set command is used to set the radio band(s).

When <mode>=0, band settings are taken into account only at next switch on.

When <mode>=1, a stack restart is performed to select immediately the requested settings.

When <mode>=2, MS Type and band settings are taken into account immediately without performing a stack restart. Dynamic band setting feature is used to support this mode.

Parameters

<mode>	Description
0 (Default)	Set radio bands, will be taken into account at next switch on
1	Set radio bands, a stack restart is performed to take into account the new selected bands.
2	Set MS Type and radio bands and the new settings are immediately taken into account using Dynamic RAT and band settings feature

Note: When the flag SPN_MSTYPE_CHANGE_FTR is disabled: Modes 0 and 1 only are supported. Mode 2 shall not be supported.
When the flag SPN_MSTYPE_CHANGE_FTR is enabled: Modes 0 and 1 are NOT supported. Mode 2 shall be supported

<GSM band>	Description
1	GSM 850

<GSM band>	Description
2	GSM 900
4	E-GSM
8	DCS 1800
16	DCS 1900

Bit field type parameter; to set several bands sum up the values
Note: E-GSM is a flavour of GSM 900 band with more supported frequencies. Hence if any of this is set, then GSM 900 band will be set in APPI_NET_SET_ENABLED_RAT_REQ

<UMTS band>	Description
1	UMTS band 1
2	UMTS band 2
4	UMTS band 3
8	UMTS band 4
16	UMTS band 5
32	UMTS band 6
64	UMTS band 7
128	UMTS band 8
256	UMTS band 9
512	UMTS band 10

Bit field type parameter; to set several bands sum up the values

<MS Type>	Description
1	GSM
2	UMTS
3 (Default)	Dual mode

When <MS Type>=1,only <GSM bands> are taken into account. UMTS settings will remain unchanged.

When <MS Type>=2,only <UMTS bands> are taken into account. GSM settings will remain unchanged.

When <MS Type>=3,both <GSM bands> and <UMTS bands> are taken into account.

If <GSM band> or <UMTS band> is omitted, then the previous settings will be taken.

Clarification

Command available only if AT_CMD_NETWORK_FTR is enabled.

UMTS bands configuration supported only if UMTS_FTR is enabled.

Example:

To set GSM 900 & PCS1800 for GSM and band 1,2,3 for UMTS:

AT*PSRDBS=1,10,7

OK

4.1.8.9   *PSGAAT GPRS automatic attach

Description	Command	Possible Response(s)
Set attach mode	*PSGAAT=<attach mode>	+CME ERROR: <err>
Get current mode	*PSGAAT?	*PSGAAT: < attach mode >
Get supported values	*PSGAAT=?	*PSGAAT: (list of supported <attach mode>s)

Description

Set command is used to select GPRS attach mode at ME switch on.

Parameters

<attach mode>	Description
0	No GPRS automatic attach at switch on
1	GPRS automatic attach at switch on

4.1.8.10   *PSHZNT Home zone notification

Description	Command	Possible Response(s)
Set home zone notification mode	*PSHZNT=<mode>	+CME ERROR: <err>
Get current status	*PSHZNT?	*PSHZNT: <mode>, <Line 1 zonal indicator>,<Line 1 zonal Label>,<Line 2 zonal indicator>, <Line 2 zonal Label>
Get supported values	*PSHZNT=?	*PSHZNT: (list of supported < mode>s)

Description

Set command is used to enable or disable presentation of home zone zonal indicators (*PSHZ).

Read command returns current < mode> and zonal indicators.

Description	Result code
Zonal indicators change	*PSHZ: <Line 1 zonal indicator>,<Line 1 zonal Label>,<Line 2 zonal indicator>, <Line 2 zonal Label>

Parameters

<mode>	Description
0	Disable zonal indication
1	Enable zonal indication

< Line 1 zonal indicator >	Description
0	Line 1 is not in its home zone
1	Line 1 is in its home zone

< Line 1 zonal Label >	Description
String type	Label Character set as specified by command +CSCS.

< Line 2 zonal indicator >	Description
0	Line 2 is not in its home zone
1	Line 2 is in its home zone

< Line 2 zonal Label >	Description
String type	Label Character set as specified by command +CSCS.

Clarification

Command available only if both AT_CMD_NETWORK_FTR and (ORANGE_ZON or VIAG_HZ_FTR) are enabled.

4.1.8.11   *PSUTTZ Universal time and time zone

Description	Command	Possible Response(s)
Set time zone notification	*PSUTTZ=<mode>	+CME ERROR: <err>

Description	Command	Possible Response(s)
mode		
Get current mode	*PSUTTZ?	*PSUTTZ: <mode>
Get supported values	*PSUTTZ=?	*PSUTTZ: (list of supported <mode>)

Description

Set command is used to enable or disable presentation of universal time and time zone change (*PSUTTZ)

Description	Result code
Universal time and time zone change	*PSUTTZ: <year>,<month>,<day>, <hour>, <minute>,<seconds>,<time zone>, <daylight saving>

Parameters

<mode>	Description
0	Disable time zone indication
1	Enable time zone indication

<year>	Description
Integer type	UT year

<month>	Description
1..12	UT month

<day>	Description
1..31	UT month

<hour>	Description
0..23	UT hour

<minute>	Description
0..59	UT minute

<second>	Description
0..59	UT second

<timezone>	Description

<timezone>	Description
String type	String representing time zone: Range: "-128".."0".."+127"

<daylighth saving>	Description
0..2	Daylight saving

Clarification

Command available only if both AT_CMD_NETWORK_FTR and NITZ_FTR are enabled

4.1.8.12   *PSNWID Network identity

Description	Command	Possible Response(s)
Set notification mode	*PSNWID=<mode>	+CME ERROR: <err>
Get current mode	*PSNWID?	*PSNWID: <mode>
Get supported values	*PSNWID=?	*PSNWID: (list of supported <mode>s)

Description

Set command is used to enable or disable presentation of network identity notification (*PSNWID)

Description	Result code
Network identify notification	*PSNWID: <MCC>,<MNC>,<Long name>, <long name CI>, <Short name>, <Short name CI>,

Parameters

<mode>	Description
0	Disable network identity indication
1	Enable network identity indication

<MCC>	Description
String type	Mobile country code in numeric format (e.g "208")

<MNC>	Description
String type	Mobile network code in numeric format (e.g "10")

<long name id>	Description
String type	Network identity long name Character set as specified by command +CSCS.

<long name CI>	Description
0	Do not add country's initial to network name
1	Add country's initial to network name

<short name id>	Description
String type	Network identity short name Character set as specified by command +CSCS.

<short name CI>	Description
0	Do not add country's initial to network name
1	Add country's initial to network name

Clarification

Command available only if both AT_CMD_NETWORK_FTR and NITZ_FTR are enabled

4.1.8.13   *PSHPLMN Home PLMN

Description	Command	Possible Response(s)
Set command	*PSHPLMN	
Get HPLMN information	*PSHPLMN?	*PSHPLMN: <mcc>, <mnc>, <PLMN name>

Description

This command is used to get Home PLMN identification (MCC /MNC are decoded from IMSI).
Set command has no effect (returns OK)

Parameters

<MCC>	Description
String type	Mobile country code in numeric format (e.g "208")

<MNC>	Description
String type	Mobile network code in numeric format (e.g "10")

<PLMN name id>	Description
String type	PLMN name in alphanumeric format.

Clarification

Command available only if AT_CMD_SIM_PHASE_FTR is enabled

4.1.8.14   *PSCNAP Calling Name Presentation

Description	Command	Possible Response(s)
Control *PSCNAP URC	*PSCNAP=<n>	
Get status of PSCNAP	*PSCNAP?	*PSCNAP: <n>, <m>
Get supported values	*PSCNAP=?	*PSCNAP: (list of supported <n>s)

Description

This command allows to control the name identification supplementary service. When the presentation of CNAP at the TE is enabled, the following unsolicited result code is displayed: *PSCNAP: <calling_name> [, <validity>]

Set command enables/disables the presentation of calling name.

Parameters

<n>	Description
0	*PSCNAP notification is disabled
1	Enabled unsolicited result code: *PSCNAP: <name>, <validity>

<m>	Description
0	Network does not provide the CNAP service
1	Network provides the CNAP service
2	Unknown (e.g. no network, etc.)

<validity>	Description
0	Name presentation allowed
1	Presentation restricted
2	Name unavailable
3	Name presentation allowed with restriction

Clarification

If option CNAP_FTR is disabled, PSCNAP command is not available.

CNAP (Calling Name Presentation) is a supplementary service provided by the network. *PSCNAP command enables or disables the presentation of the name provided by the network. If *PSCNAP is enabled an unsolicited notification **PSCNAP: <name>, <validity>** is sent when the module ATSS receive an APPI_CALL_CNAP_NOTIFY_IND from module SPVCOM.

4.1.8.15   *PSFDC Fast dormancy feature

Description	Command	Possible Response(s)
Set *PSFDC	*PSFDC= <v_appliID>,<MoreDataInd>	
Get status of PSFDC	* PSFDC ?	*OK*
Get supported values	* PSFDC=?	* PSFDC : (list of supported <v_appliID>s,<MoreDataInd>s)

Description

*PSFDC command is to control the fast dormancy feature.

Parameters

< v_appliID >	Description
0 - 11	Application ID

< MoreDataInd >	Description
0	No more data is expected for the corresponding <v_appliID>
1	Some more data is expected for the corresponding <v_appliID>

Clarification

*PSFDC command is to control the fast dormancy feature. <MoreDataInd> parameter suggests if some more data is expected for the corresponding <v_appliID>. A MAPI_DCM_FD_CTRL_REQ is then sent to DCM with these two parameters. The implementation of this command is done under the switch FAST_DORMANCY_FTR.

4.1.9   Video telephony proprietary commands

4.1.9.1 *PSVTCS Video telephony call set-up

Description	Command	Possible Response(s)
VT call setup response	*PSVTCS =<ack mode>	
Get supported values	*PSVTCS=?	*PSVTCS: (list of supported <ack mode>s)

Description

When SETUP message is received from network during MT call establishment, TE has to be informed immediately with *PSVTCS to select which call mode it accepts (TA will send the response in the CALL CONFIRM message)

Description	Result code
VT call setup notification	*PSVTCS: <call mode>

Set command is used to choose the accepted mode in response to *PSVTCS URC.

Parameters

<ack mode>	Description
0	Reject call setup
1	Accept analogue or UDI/RDI multimedia call only
2	Accept speech call only
3	Accept UDI/RDI multimedia call with service change, speech preferred or accept analogue multimedia call with fallback to speech
4	Accept UDI/RDI multimedia call with service change, VT preferred or accept analogue multimedia call with fallback to speech

If the network has proposed only one BC list in the bearer (no fallback nor service change), ack mode 3 and 4 are not permitted, ERROR result code is returned to the TE

<call mode>	Description
MULTIMEDIA	Multimedia call only
MULTIMEDIA/FALLBACK	Analog multimedia calls with possible fallback to speech
MULTIMEDIA/VOICE	UDI/RDI multimedia calls with possible fallback and service change, multimedia mode preferred
VOICE/MULTIMEDIA	UDI/RDI multimedia calls with possible fallback and service change, voice mode preferred.

Clarification

Command available only if AT_CMD_VIDEO_TEL_FTR is enabled

4.1.9.2   *PSVTCP Video telephony call proceed

Description

Notification used to inform TE about the VT call mode accepted by network (received in the CALL PROCEED message)

Description	Result code
VT call proceed message	*PSVCTP: <call mode>

Parameters

<call mode>	Description
VOICE	Network accepts speech call only
MULTIMEDIA	Network accepts UDI/RDI multimedia call only
MULTIMEDIA/FALLBACK	Network accepts analogue multimedia call and support fallback to speech. Multimedia mode will be used at connection
MULTIMEDIA/VOICE	Network accepts UDI/RDI multimedia call and support fallback and service change. Multimedia mode will be used at connection
VOICE/MULTIMEDIA	Network accepts UDI/RDI multimedia call and support fallback and service change. Speech mode will be used at connection

Clarification

Notification available only if AT_CMD_VIDEO_TEL_FTR is enabled

4.1.9.3   *PSVTCMNW Video telephony call modification

Description

Notification used to inform TE about in-call modification initiated by network.
TE can accept the modification by using ATA command or reject it by using ATH command.

Description	Result code
VT call modification	*PSVTCMNW: <call mode>

Parameters

<call mode>	Description
VOICE	Network requests service change or fallback to speech
MULTIMEDIA	Network requests service change to multimedia

Clarification

Notification available only if AT_CMD_VIDEO_TEL_FTR is enabled

4.1.10 3G Phonebook proprietary commands

4.1.10.1 *PS3GPBCRR 3G Phonebook Common Resource Read

Description	Command	Possible Response(s)
Read common resources	*PS3GPBCRR= <resourcetype>, <operation> [,<index>]	[*PS3GPBCRR: <resourceid>,<text> [[...]<CR><LF>*PS3GPBCRR: <resourceid>,<text>]] +CME ERROR: <err>
Get supported values	*PS3GPBCRR=?	*PS3GPBCRR: (list of supported <resourceid>s), (list of supported <operation>s), <tlength>

Description

In a 3G phonebook, groups (EF GAS) and additional number type (EF AAS) can be shared by several entries and are so considered as common resources of the phonebook. (Refer to 31.102 for a description of 3G phonebook in UICC/USIM)

Aim of this command is to provide a mean to create new common resources independently of the 3G phonebook read/write entry operation..

This command is allowed if an UICC card with an USIM application running is present. This command is used to access global and local 3G phonebook.

If creation of a new group or ANR type is for a specific phonebook entry, TE has to check resource id allowed for this phonebook entry by using *PS3GPBCRR command to identify a free resource id.

Parameters

<resource type>	Description
0	Group
1	Additional number type

<operation>	Description

<operation>	Description
0	Get resource information available for entry <index>
1	Get the record number range for each <resourceid> (range)

<index>	Description
Integer type	Phonebook entry for which TE wants to get information on resources available. If index is 0, TE wants to get information in the first free record (this is useful to get recourse info when TE wants to save an entry in the first free record; refer to *PS3GPBW command)

<resource id>	Description
Integer type	Value associated to the resource. This value is used in *PS3GPBW command. Refer to [ISD SPVDIR]

<text>	Description
String type	If <operation> = 0 String representing a group or additional number type of maximum length <tlength>; character set as specified by command +CSCS If <operation> = 1 String containing numbers representing record indexes range. Unused resources are identified by an empty string

Clarification

Command available only if AT_CMD_3G_PHB_FTR and are PHONEBOOK_3G_FTR enabled

4.1.10.2   *PS3GPBCRW 3G Phonebook Common Resource Write

Description	Command	Possible Response(s)
Write common resources	*PS3GPBCRW= <resourcetype>, <resourceid>[,<text >]	+CME ERROR: <err>
Get supported values	*PS3GPBCRW =?	*PS3GPBCRW: (list of supported <resourceid>s), (list of supported <operation>s), <tlength>

Description

In a 3G phonebook, groups (EF GAS) and additional number type (EF AAS) can be shared by several entries and are so considered as common resources of the phonebook (local or global, selected with +CPBS). Refer to 31.102 for a description of 3G phonebook in UICC/USIM.

Aim of this command is to provide a mean to read these common resources independently of the 3G-phonebook read/write entry commands.
Set command is used to get 2 types of information:
- Get the resource id and text allowed for a given phonebook identified with <index>
- Get the record number range for each resources of type <resourcetype>

This command is allowed if an UICC card with an USIM application running is present.
This command is used to access global and local 3G phonebooks records.

Parameters

<resource type>	Description
0	Group
1	Additional number type

<operation>	Description
0	Get resource information available for entry <index>
1	Get the record number range for each <resourceid> (range)

<resource id>	Description
Integer type	Representing a resource id to update. Free resources are identified by empty string in *PS3GPCCRR command

<text>	Description
String type	String representing the value to create or update for <resourceid>. If parameter is omitted, <resourceid> will be deleted (empty string)

Clarification

Command available only if AT_CMD_3G_PHB_FTR and are PHONEBOOK_3G_FTR enabled

4.1.10.3 *PS3GPBR 3G Phonebook entries read

Description	Command	Possible Response(s)
Read 3G phonebook entries	*PS3GPBR=<index1> [,<index2>]	[**PS2GPBR**: <index1>, <number>,<type>,<text>, <hidden> <CR><LF> [*PSGRP: <group1><CR><LF> [[…]*PSGRP: <group2>]] [*PSANR: <adnumber1>, <adtype1>,<adtext1><CR><LF> [[…]*PSANR: <adnumber2>, <adtype2>, <adtext2><CR><LF>]]

Description	Command	Possible Response(s)
		[*PSSNE: <secondtext1><CR><LF> [[…]*PSSNE: <secondtext2><CR><LF>]] [*PSEMAIL: <emails><CR><LF> [[…]*PSEMAIL: <emails><CR><LF>]] [[…] [**PS2GPBR**: <index2>, <number>, <type>, <text>, <hidden<CR><LF> [*PSGRP: <group1><CR><LF> [[…]*PSGRP: <group2>]] [*PSANR: <adnumber1>, <adtype1>,<adtext1><CR><LF> [[…]*PSANR:<adnumber2>,<adtype2>, <adtext2><CR><LF>]] [*PSSNE: <secondtext1><CR><LF> [[…]*PSSNE: <secondtext2><CR><LF>]] [*PSEMAIL: <emails><CR><LF> [[…]*PSEMAIL: <emails><CR><LF>]]] +CME ERROR: <err>
Get number of entries		*PS3GPBR: <totalgrp>,<totalanr>,<totalsne>, <totalemail>
Get supported values		*PS3GPBR: (list of supported <index>s),[<nlength>],[<tlength>], [<glength>], [<alength>], [<slength>],[<elength>]

Description

Set command returns 3G phonebook entries in location number range <index1>... <index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned.

Read command is used to get the number of additional fields of the 3g phonebook entries.

This command is allowed if a UICC card with an USIM application running is present. This command is used to access global 3G phonebook and local 3G phonebook.

A 3G phonebook is made of parameters that can be present several times (a 3G phonebook entry can have for instance several secondary names). The total number of possible parameters available is not statically defined but dynamically known at 3G phonebook initialization (structure of phonebook is read in UICC/USIM application): 3G phonebooks have not always the same structure (some can have 3 ANR and 2 SNE and others only one of each for instance).

Using a standard AT command syntax to read 3G phonebook entries (as +CPBR) is not easy.

To read complete 3G phonebook, several intermediate result code are sent, each of them corresponding to additional parameters such as group, additional numbers, secondary names or emails. Depending of phonebook structure this number of parameters can vary and can also be omitted if the parameter is not present in phonebook entry.

- **2G part of the phonebook entry**

Description	Result code
2G part of the phonebook entry	*PS2GPBR: <index>, <number>, <type>, <text>, <hidden>

This intermediate result code always returned if entry <index> is present in phonebook.

Parameters

<number>	Description
String type	Phone number of format <type>

<type>	Description
Integer type	Type of address

<text>	Description
String type	Field of maximum length <tlength>; Character set as specified by +CSCS

<hidden>	Description
0	Phonebook entry not hidden
1	Phonebook entry hidden

- **Group(s) of the phonebook entry**

Description	Result code
Group(s) of the phonebook entry	*PSGRP: <group>

This intermediate result code is returned for each group linked to entry *PS2GPBR: <index> (i.e. several *PSGRP can be returned).

If no group associated to entry or an empty string group is associated, intermediate result code not sent.

To facilitate reading of entry, *PS2GPBR returns the string value of the group and not its resource id value.

Parameters

<group>	Description
String type	Field of maximum length <glength> representing the group Character set as specified by +CSCS

● Additional number(s) of the phonebook entry

Description	Result code
Additional number(s) of the phonebook entry	PSANR: <adnumber>,<adtype>,<adtextid>

This intermediate result code is returned for each additional number defined for entry *PS2GPBR: <index> (i.e. several *PSANR can be returned).

If no ANR associated to entry or an empty string ANR is associated, intermediate result code is not sent.

To facilitate reading of entry, *PS2GPBR returns the string value of the ANR and not its resource id value.

Parameters

<adnumber>	Description
String type	Phone number of type <adtype>

<adtype>	Description
String type	Type of address

<adtext>	Description
String type	Field of maximum length <atlength> representing the ANR Character set as specified by +CSCS

● Secondary name(s) of the phonebook entry

Description	Result code
Secondary name(s) of the phonebook entry	*PSSNE: <secondtext>

This intermediate result code is returned for each second name defined for entry *PS2GPBR: <index> (i.e. several *PSSNE can be returned). None if no secondary name defined.

Parameters

<secondtext>	Description
String type	Field of maximum length <stlength> representing the second name Character set as specified by +CSCS

● **E-mail(s) of the phonebook entry**

Description	Result code
E-mail(s) of the phonebook entry	*PSEMAIL: <emails>

This intermediate result code is returned for each email defined for entry *PS2GPBR: <index> (i.e. several *PSEMAIL can be returned). None if no email defined.

Parameters

<email>	Description
String type	Field of maximum length <etlength> representing the email address Character set as specified by +CSCS

● **Other parameters**

<index>	Description
Integer type	Phone book entry in the range of location numbers of phonebook memory

<totalgrp>	Description
Integer type	Total number of group in the 3G phonebook

<totalanr>	Description
Integer type	Total number of additional numbers in the 3G phonebook

<totalsne>	Description
Integer type	Total number of secondary name in the 3G phonebook

<totalemail>	Description
Integer type	Total number of emails in the 3G phonebook

<nlength>	Description
Integer type	Maximum length of field <number>

<tlength >	Description
Integer type	Maximum length of field <text>

<glength>	Description
Integer type	Maximum length of field <group>

<alength>	Description
Integer type	Maximum length of field <anr>

<slength >	Description
Integer type	Maximum length of field <sne>

<elength >	Description
Integer type	Maximum length of field <email>

Clarification

Command available only if AT_CMD_3G_PHB_FTR and are PHONEBOOK_3G_FTR enabled

4.1.10.4   *PS3GPBF 3G Phonebook entries find

Description	Command	Possible Response(s)
Find 3G phonebook entries	*PS3GPBF=<findtext>	[**PS2GPBF**: <index1>, <number>,<type>,<text>, <hidden> <CR><LF> [*PSGRP: <group1><CR><LF> [[…]*PSGRP: <group2>]] [*PSANR: <adnumber1>, <adtype1>,<adtext1><CR><LF> [[…]*PSANR: <adnumber2>, <adtype2>, <adtext2><CR><LF>]] [*PSSNE: <secondtext1><CR><LF> [[…]*PSSNE: <secondtext2><CR><LF>]] [*PSEMAIL: <emails><CR><LF> [[…]*PSEMAIL: <emails><CR><LF>]] [[…] [**PS2GPBF**: <index2>, <number>, <type>, <text>, <hidden><CR><LF> [*PSGRP: <group1><CR><LF> [[…]*PSGRP: <group2>]] [*PSANR: <adnumber1>, <adtype1>,<adtext1><CR><LF> [[…]*PSANR:<adnumber2>,<adtype2>,

Description	Command	Possible Response(s)
		<adtext2><CR><LF>]] [*PSSNE: <secondtext1><CR><LF> [[…]*PSSNE: <secondtext2><CR><LF>]] [*PSEMAIL: <emails><CR><LF> [[…]*PSEMAIL: <emails><CR><LF>]]] +CME ERROR: <err>
Get supported values		*PS3GPBF: (list of supported <index>s),[<nlength>],[<tlength>], [<glength>], [<alength>], [<slength>],[<elength>]

Description

Set command returns 3G phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>.

This command is allowed if a UICC card with an USIM application running is present. This command is used to access global 3G phonebook and local 3G phonebook.

Parameters

Refer to *PS3GPBR command.

4.1.10.5 *PS3GPBW 3G Phonebook entry write

Description	Command	Possible Response(s)
Wrtie a 3G phonebook entry	*PS3GPBW=<index>, <operation><CR> 3G phonebook entry is edited	*PS3GPBW: <index> +CME ERROR: <err>
Get number of entries	*PS3GPBW?	*PS3GPBW: <totalgrp>,<totalanr>,<totalsne>,<totalemail >
Get supported values	*PS3GPBW=?	*PS3GPBW: (list of supported <index>s),[<nlength>],[<tlength>], [<glength>], [<alength>], [<slength>],[<elength>]

Description

Set command writes a 3G phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS.

Read command is used to get the number of additional fields of the 3g phonebook entries.

This command is allowed if a UICC card with an USIM application running is present.This command is used to access global 3G phonebook and local 3G phonebook.

A 3G phonebook is made of parameters that can be present several times (a 3G phonebook entry can have for instance several secondary names). The total number of possible parameters available is known at 3G phonebook initialization (structure of phonebook is read in UICC/USIM application). 3G phonebooks have not always the same structure (some can have 3 ANR and 2 SNE and others only one of each for instance). Using the standard AT command syntax to write phonebook entry (as +CPBW) seems difficult.

3G phonebook entry editing:

To enter 3G phonebook entries, a proprietary editing mode is used (similar to +CMGS/+CMGW command to enter SMS)

Once +PS3GPBW set command is received, 3G phonebook edition mode is entered.

Depending of <operation>, TE will be prompted to enter each parameters of the 3G phonebook entry one by one. TA will send a special sequence corresponding to the parameter to be entered. <CR> character is used to inform TA that current parameter is entered and that next parameter (if any) can be prompted. After the last parameter entry, <CR> is used to exit edition mode and launch entry update in UICC/USIM.

TA knows the 3G phonebook structure and will prompt several times the entry of a type of parameters if needed (for instance, TA will request the entry of 2 secondary name if structure of phonebook is so).

If <CR> is received immediately after the prompt, the parameter is considered as empty (not filled).

Edition can be aborted by sending <ESC> character (IRA 27), OK is returned without performing any action on the <index>.

Double quotes shall not be used in prompts responses whatever the type of the parameter (as it would be the case in a normal set AT command with a string type parameter)

Once update is done in UICC/USIM phonebook, the intermediate result code *PS3GPBW: <index> is sent to TE.

Note: if CSCS="UCS2", entered text consists of two IRA character long hexadecimal numbers which ME converts into 8-bit octet (ex: two characters 2A (IRA 50 and 65) representing 0x2A hexadecimal value will be converted to an octet with integer value 42 (0x2A))

● **Prompt of 2G part of the phonebook entry**

Description	Result code
2G part prompt	TA will request 2G part by sending successively:

Description	Result code
	<CR><LF>NB> *phone number*<CR> <CR><LF>TP> *type of number*<CR> <CR><LF>NM> *name*<CR> <CR><LF>HD> *hidden key*<CR>

This prompt sequence is sent only one time.

Parameters

<NB>	Description
String type	Phone number

<TP>	Description
Integer type	Type of address octet in integer format; default 145 when dialling string includes international access code character "+", otherwise 129

<NM>	Description
String type	Field of maximum length <tlength>; Character set as specified by +CSCS

<HD>	Description
0	Phonebook entry not hidden
1	Phonebook entry hidden

• Prompt of group(s) of the phonebook entry

Description	Result code
Group prompt	TA will request group part by sending successively: <CR><LF>GRPID> *group resource id*<CR>

This prompt sequence is sent several times since a phonebook entry can belong to several groups.

Parameters

<GRPID>	Description
Integer type	Resource id representing the group to be associated to the entry. Refer to *PS3GPBCRR / *PS3GPBCRW. Value 0 means no groups are associated to the entry.

● **Prompt of additional number(s) of the phonebook entry**

Description	Result code
ANR prompt	TA will request ANR part by sending successively: <CR><LF>ANRNB> *phone number*<CR> <CR><LF>ANRTP> *type of number*<CR> <CR><LF>ANRTID> *anr resource id*<CR>

This prompt sequence is sent several times since a phonebook entry can have several ANR.

Parameters

<ANRNB>	Description
String type	Phone number

<ANRTP>	Description
Integer type	Type of address octet in integer format; default 145 when dialling string includes international access code character "+", otherwise 129

<ANTID>	Description
String type	Resource id representing the ANR to be associated to the entry. Refer to *PS3GPBCRR / *PS3GPBCRW. Value 0 means no ANR are associated to the entry.

● **Prompt of secondary name(s) of the phonebook entry**

Description	Result code
SNE prompt	TA will request SNE part by sending: <CR><LF>SNE> *secondary name*<CR>

This prompt sequence is sent several times since a phonebook entry can have several SNE.

Parameters

<SNE>	Description
String type	Field of maximum length <slength>; Character set as specified by +CSCS

● **Prompt of emails(s) of the phonebook entry**

Description	Result code
email prompt	TA will request email part by sending: <CR><LF>EMAIL> *email*<CR>

This prompt sequence is sent several times since a phonebook entry can have several emails.

Parameters

<EMAIL>	Description
String type	Field of maximum length <elength>; Character set as specified by +CSCS

● Other parameters

<index>	Description
String type	Phone book entry in the range of location numbers of phonebook memory 0 is allowed only if <operation> is "create new entry", entry will be written in the first location available.

<operation>	Description
0	Delete entry
1	Create new entry
2	Update entry's 2G parts (ADN)
3	Update entry's group (GRP)
4	Update entry's additional number (ANR)
5	Update entry's secondary name (SNE)
6	Update entry's secondary name (EMAIL)
7	Update whole 3G phonebook entry (ADN, GRP, ANR, SNE, EMAIL)

<totalgrp>	Description
Integer type	Total number of group in the 3G phonebook

<totalanr>	Description
Integer type	Total number of additional numbers in the 3G phonebook

<totalsne>	Description
Integer type	Total number of secondary name in the 3G phonebook

<totalemail>	Description
Integer type	Total number of emails in the 3G phonebook

<nlength>	Description
Integer type	Maximum length of field <number>

<tlength >	Description
Integer type	Maximum length of field <text>

<glength>	Description
Integer type	Maximum length of field <group>

<alength>	Description
Integer type	Maximum length of field <anr>

<slength >	Description
Integer type	Maximum length of field <sne>

<elength >	Description
Integer type	Maximum length of field <email>

Clarification

Command available only if AT_CMD_3G_PHB_FTR and PHONEBOOK_3G_FTR are enabled

4.1.10.6 *PS3GPBUID Entry modification indication

Description	Command	Possible Response(s)
Enable/disable *PS3GPBUID URC	*PS3GPBUID= <state>	*PS3GPBUID: <state>
Get supported values	*PS3GPBUID=?	*PS3GPBUID: <list of supported values>
Get current status	*PS3GPBUID?	*PS3GPBUID: <state>

Parameter:

<state>	Description
0	Disable URC
1	Enable URC

Description

This command enable the *PS3GPBUID URC. At start up, the URC is sent each time the ME detects a change in the phonebook done by a 2G handset where the USIM was previously inserted.
Note that this status is stored in non volatile memory.

Syntax of the URC

Description	Result code
Phonebook entry changed	*PS3GPBUID:<PBID><index>,<UID><CR><LF>

Parameters:

<UID>	Description
2 bytes	Unique ID of a record

<index>	Description
2 bytes	Index of the phonebook entry

<PBID>	Description
14 bytes	Phonebook identifier.

Clarification

Command available only if AT_CMD_3G_PHB_FTR, PHONEBOOK_3G_FTR and SPV_PHBK_SYNCHRO_FTR are enabled.

4.1.10.7 *PS3GPBID Phonebook ID indication

Description	Command	Possible Response(s)
Enable/disable *PS3GPBID URC	*PS3GPBID= <state>	*PS3GPBID: <state>
Get supported values	*PS3GPBID=?	*PS3GPBID: <list of supported values>
Get current status	*PS3GPBID?	*PS3GPBID: <state>

Parameter:

<state>	Description
0	Disable URC

<state>	Description
1	Enable URC

Description

This command enable the *PS3GPBID URC. At start up, the URC is sent to give the phonebook ID. Then it's sent each time the PBID changed.
Note that this status is stored in non volatile memory.

Syntax of the URC

Description	Result code
Phonebook ID changed	*PS3GPBID:<PBID>,<CC> <CR><LF>

Parameters:

<PBID>	Description
14 bytes	Phonebook identifier

<CC>	Description
2 bytes	Change counter, content of the CC EF

Clarification

Command available only if AT_CMD_3G_PHB_FTR, PHONEBOOK_3G_FTR and SPV_PHBK_SYNCHRO_FTR are enabled.

4.1.11   USIM asynchronous events and result codes

4.1.11.1   *SMCREGEV Smartcard Register Event

Description	Command	Possible Response(s)
Set mode	*SMCREGEV=<sessionId> ,<mode>	+CME ERROR: <err>
Get current mode	*SMCREGEV?	
Get supported modes	*SMCREGEV=?	*SMCREGEV: (list of supported <sessionId>s, list of supported <mode>s)

Description

This command is to subscribe to the reception of the USIM asynchronous events by AT command.

Parameters

<sessionId>	Description
String without double quotes that represents a decimal value	A session Id to be used in order to target a specific application on the smart card (e.g. (U)SIM, WIM, ISIM) using logical channels mechanism

<mode>	Description
0	Do not notify sessions identified by <sessionId> about card events.
1	Notify sessions identified by <sessionId> about card events but do not wait for response.
2	Notify sessions identified by <sessionId> about card events and wait for response (refer to command *SMCEVACK).

Clarification

Command available when SMARTCARD_MULTI_APPLI_FTR is enable.

4.1.11.2 *SMCEVACK Smartcard Events Acknowledge

*SMCEVACK command is defined to support the reception of the UICC asynchronous events by AT commands. This command allows to answer to the URCs received because of asynchronous events.

This command is implemented in ATGEN module.

It uses APPI_ACC_xxx messages (refer to SwUM MMI SPV) to send notifications received from UICC to TE and to send response from to TE to UICC. The parameter are "copy" of RTK messages.

● **Notification from UICC to user: SMCEV unsolicited result code**

Description	Result code
Notification from USIM to User	*SMCEV: <Type Of Event>, <Event>,<KeyRef>,<Numfiles>,<Refreshed Path>,<Nbr Of Sessions>,<SessionId1>,…,<SessionIdN>

Parameters

<Type Of Event>	Description
Integer (0 or 1) to know whether it asks a response.	
0	NOTIFY messages, do not wait for a response.
1	WITH_REPLY messages, wait for a response.

<Event>	Description
Integer type	Number in an enum, corresponding to the events.
0	ACC_EVENT_CARD_OUT
1	ACC_EVENT_CARD_IN
2	ACC_EVENT_MAIN_USIM_PIN_VERIFIED
3	ACC_EVENT_MAIN_USIM_PIN_BLOCKED
4	ACC_EVENT_MAIN_USIM_PIN_USED
5	ACC_EVENT_MAIN_USIM_INIT_OVER
6	ACC_EVENT_MAIN_USIM_CLOSING
7	ACC_EVENT_MAIN_USIM_DEACTIVATED
8	ACC_EVENT_HARD_RESET
9	ACC_EVENT_REFRESH_SESSION_RESET
10	ACC_EVENT_REFRESH_APPLICATION_RESET
11	ACC_EVENT_REFRESH_SIM_INIT_FULL_FILE_CHANGE
12	ACC_EVENT_REFRESH_SIM_INIT_FILE_CHANGE
13	ACC_EVENT_REFRESH_SIM_INIT
14	ACC_EVENT_REFRESH_SIM_FILE_CHANGE
15	ACC_EVENT_CARD_LOCK
16	ACC_EVENT_SWITCH_OFF

<KeyRef>	Description
Integer type	Key Reference in the UICC used by an application. In APPI_ACC_CARD_EVENT_NOTIFY_IND, v_KeyRef specifies which key reference is involved, when the event is a PIN verified, blocked, or used.

<NumFiles>	Description
Integer type	Give the number of files present in the files field of the messages.

<Refreshed Path>	Description
String type	Byte stream containing a list of complete paths, each of them describing a file to refresh. For example, if we have a refresh on ICCID (2FE2) and FDN (6F3B), the contents would be : "3F 00 2F E2 3F 00 7F FF 6F 3B" (hexadecimal) with v_NumFiles = 2 and v_TotalPathsSize = 10

<Nbr Of Sessions>	Description
Integer type	Number of sessions concerned by the reception of the asynchronous events. These sessions are concerned because they subscribed to these events before.

<SessionId i>	Description
Integer type	SessionIds that are concerned by the reception of the asynchronous events. These sessions are concerned because they subscribed to these events before.

● Response from user to UICC: *SMCEVACK command

Description	Command	Possible Response(s)
Respond to UICC	*SMCEVACK=<SessionId >,<response type>,<EvtRspSeqNbr>,<content>	+CME ERROR: <err>

Parameters

<SessionId>	Description
A integer that represents the session that respond to the received URC after an asynchronous event.	

<response type>	Description
Integer type	Number that represents the type of response of the user: acceptation of the event, or rejection of the event.
0	Accepts the event, sends a _RSP.
1	Rejects the event, sends a _RJT.

<EvtRspSeqNbr >	Description

<EvtRspSeqNbr>	Description
Integer type	number that represents the index of this particular event.

<content>	Description
Integer type	Number that represents the number of additional read Ef, or an error type, according to the value of <response type>.
Integer type	If <response type> = 0, the value of additional read Ef can be whatever.
0	If <response type> = 1, corresponds to NoInfo.
1	If <response type> = 1, corresponds to RetryLater.

Clarification

Command available when SMARTCARD_MULTI_APPLI_FTR is enable.

4.1.12 Proprietary AT command related to IP Relay

Note : All below commands are available only if IPRELAY_FTR is enabled

4.1.12.1 *IPRIC IP Relay Interface Configuration

Description	Command	Possible Response(s)
Associate a PDP to an interface identifier	*IPRIC=<cid>, <interface id>	
Get current configuration	*IPRIC?	*IPRIC: <cid>, <interface id> [<CR><LF>*IPRIC: <cid>, <interface id> [...]]
Get all available interfaces	*IPRIC =?	*IPRIC: (list of supported < interface id >s)

Description

This command is used to associate a PDP context (which should have been previously define with +CGDCONT) to an interface identifier.

The <interface Id> is an identifier defined by the driver when connecting to IP RELAY (can be considered as a channel Id). It is up to application engine to select the interface to use with the correct <cid>.

It is up to the driver to be consistent when associating a PDP with an interface Id and connecting the good interface Id to IPRELAY.

Parameters

<cid>	Description
1..X	Specify a PDP context defined thanks to +CGDCONT

<Interface Id>	Description
0..N	Identify an interface channel Id to which a PDP (cid) is to be associated.

Note: There are not link between and AT channel Id (which is a MIS information) and a interface channel id (which is a direct IP driver information).

AT channels for control of IPRELAY are totally independent of direct IP interfaces.

4.1.12.2 *IPAUTH IP Authentication parameters

Description	Command	Possible Response(s)
Set authentication parameter to be used during PDP context activation	*IPAUTH=<cid>, <authentication protocol> [, <login> [, <password>]]	
Get current settings	*IPAUTH?	*IPAUTH=<cid>, <authentication protocol> [, <login> [, <password>]] [<CR><LF>*IPAUTH=<cid>, <authentication protocol> [, <login> [, <password>]] [...]]
Get supported authentication protocols	*IPAUTH=?	*IPAUTH: (list of supported <authentication rotocol>s)

Description

This command is used to configure authentication protocol for PDP context activation.

Authentication frame will be embedded in protocol configuration option (PCO) field of the PDP context activation request.

Parameters

<cid>	Description
1..N	Specify a PDP context defined thanks to +CGDCONT

<Authentication protocol>	Description
0	No authentication protocol
1	PAP (login and password are needed)
2	CHAP (only password is needed, login can be left empty)

<Login>	Description
String type	Login

<Password>	Description
String type	Password

4.1.12.3   *IPDNS IP Domain name server

Description	Command	Possible Response(s)
Request DNS	*IPDNS=<cid>, <mode>	
Get current settings	*IPDNS?	*IPDNS: <cid>, <mode> [<CR><LF>* IPDNS: <cid>, <mode> [...]]
Get supported mode	*IPDNS=?	*IPDNS: (list of supported <mode>s)

Description

This command is used to request primary and secondary DNS in the protocol configuration option (PCO) of the PDP context activation request.

To get DNS address uses *IPCONFIG after PDP has been successfully activated.

Parameters

<cid>	Description
1..N	Specify a PDP context defined thanks to +CGDCONT

<mode>	Description
0	Do not request primary and secondary DNS
1	Request primary and secondary DNS

4.1.12.4   *IPWINS IP Windows Internet Name Service

Description	Command	Possible Response(s)
Request WINS	*IPWINS=<cid>, <mode>	
Get current settings	*IPWINS?	*IPWINS: <cid>, <mode> [<CR><LF>* IPWINS: <cid>, <mode> [...]]
Get supported mode	*IPWINS=?	*IPWINS: (list of supported <mode>s)

Description

This command is used to request primary and secondary DNS in the protocol configuration option (PCO) of the PDP context activation request.

To get WINS address uses +IPCONFIG after PDP has been successfully activated.

Parameters

<cid>	Description
1..N	Specify a PDP context defined thanks to +CGDCONT

<mode>	Description
0	Do not request WINS
1	Request WINS

4.1.12.5 *IPACT IP activation/deactivation

Description	Command	Possible Response(s)
Activate/deactivate a PDP associated to a interface identifier	*IPACT=<state>, <cid>	
Get current state of defined PDPs	*IPACT?	*IPACT: <cid>, <state> [<CR><LF>*IPACT: <cid>, <state> [...]]
Get supported states	*IPACT=?	*IPACT: (list of supported <state >s)

Description

This command is used to activate a PDP context that has been associated to an interface identifier.

Unsolicited result code

Description	Result code
PDP context deactivated by network	*IPACT: <state, <cid>

Parameters

<cid>	Description
1..N	Specify a PDP context defined thanks to +CGDCONT

\<state \>	Description
0	Deactivate PDP context / PDP has been deactivated
1	Activate PDP context

In case of PDP context deactivation, IPRELAY will be informed and will clear its buffers. Any packet received by IPRELAY on interface will be discarded.

4.1.12.6   *IPCONFIG IP configuration

Description	Command	Possible Response(s)
Get IP configuration of an activated PDP	*IPCONFIG=\<cid\>	*IPCONFIG: \<cid\>, \<IP address\>, \<dns1\>, \<dns2\>, \<wins1\>, \<wins2\>
Get IP configuration of ALL activated PDP	*IPCONFIG?	*IPCONFIG: \<cid\>, \<IP address\>, \<dns1\>, \<dns2\>, \<wins1\>, \<wins2\> [\<CR\>\<LF\>*IPCONFIG: \<cid\>, \<IP address\>, \<dns1\>, \<dns2\>, \<wins1\>, \<wins2\> [...]]
Get supported values	*IPCONFIG =?	*IPCONFIG: (list of supported \<cid\>s)

Description

This command is used to get IP parameters requested during PDP context activation (parameters retrieved from PCO)

Parameters

\<cid\>	Description
1..N	Specify a PDP context defined thanks to +CGDCONT

\<IP address\>	Description
String type	IP address of the PDP context (ex: "192.168.2.3")

\<dns1\> \<dns2\>	Description
String type	IP address of the DNS (ex: "192.168.2.3")

\<wins1\> \<wins2\>	Description
String type	IP address of the WINS (ex: "192.168.2.3")

If *IPAUTH, *IPDNS and *IPWINS are not requested before PDP activation, then empty PCO will be used and empty parameter (empty string "") will be returned

4.1.13   Proprietary AT command related to AGPS

Note : All below commands are available only if TD09_GPS_FTR is enabled

4.1.13.1   *AGSVC AGps SerViCe (start or stop)

Description	Command	Possible Response(s)
Start or stop the GPS service	*AGSVC=<Mode>,<Handle>	OK
Read command	*AGSVC?	*AGSVC:(list of current <mode>s),(list of supported <handle>s)
Test command	*AGSVC=?	*AGSVC:(list of supported <mode>s),(list of supported <handle>s)

Description

This command is used to start the GPS service.

Read command gets the current modes of each handle.

Test command gets the supported values

Parameters

<Handle>	Description
1..10	Handle range

<Mode>	Description
0	Stop
1	Start

4.1.13.2   *AGPFR AGps Periodic Fix Registration

Description	Command	Possible Response(s)
Register periodic fix for GPS	*AGPFR=<Handle>,<NmeaMask>,<FixRate>,<OutputType>	OK
Read command	*AGPFR?	OK

Description	Command	Possible Response(s)
Test command	*AGPFR =?	*AGPFR:(list of supported <Handle>s),(list of supported <NmeaMask>s),(list of supported <FixRate>s),(list of supported <OutputType>s)

Description

This command is used to register a periodic fix.

Read command has no effect (just return OK).

Test command gets the supported values.

Parameters

<Handle>	Description
1..10	Handle range

<NmeaMask>	Description
0	*GPGLL_ENABLE* Mask for NMEA $GPGLL (Geographic Position - Latitude, Longitude)
1	*GPGGA_ENABLE* Mask for NMEA $GPGGA (GPS Fix Data)
2	GPGSA_ENABLE Mask for NMEA $GPGSA (GNSS DOPS and Active Satellites)
3	GPGST_ENABLE Mask for NMEA $GPGST (GNSS Pseudorange Error Statistics)
4	GPGSV_ENABLE Mask for NMEA $GPGSV (GNSS Satellites in View)
5	GPRMC_ENABLE Mask for NMEA $GPRMC (Recommended Minimum GNSS Sentence)
6	GPVTG_ENABLE Mask for NMEA $GPVTG (Course Over Ground and Ground Speed)
7	GPZCD_ENABLE Mask for NMEA $GPZCD (output rate - OS Timestamp for the Fix [seconds])
8	GPZDA_ENABLE Mask for NMEA $GPZDA (Time & Date)
9	PGNVD_ENABLE Mask for NMEA $PGNVD (proprietary Diagnostics data)

<FixRate>	Description
$1..2^{32}$	GPS Fix interval in milliseconds

<OutputType>	Description
0	NMEA
1	GAD (alias 'C struct' of CGPS)

4.1.13.3   *AGSFR AGps Single Fix Registration

Description	Command	Possible Response(s)
Register periodic fix for GPS	*AGSFR=<Handle>,<Nme aMask>,>Timeout>,<Horiz Accuracy>,<VertAccuracy> ,<AgeLimit>,<OutputType>	OK
Read command	*AGSFR?	OK
Test command	*AGSFR =?	*AGSFR:(list of supported <Handle>s),(list of supported <NmeaMask>s),(list of supported <Timeout>s),(list of supported <HorizAccuracy>s),(list of supported <VertAccuracy>s),(list of supported <AgeLimit>s),(list of supported <OutputType>s)

Description

This command is used to register a single shot fix.

Read command has no effect (just return OK).

Test command gets the supported values.

Parameters

<Handle>	Description
1..10	Handle range

<NmeaMask>	Description
0	*GPGLL_ENABLE* Mask for NMEA $GPGLL (Geographic Position - Latitude, Longitude)
1	*GPGGA_ENABLE* Mask for NMEA $GPGGA (GPS Fix Data)
2	GPGSA_ENABLE Mask for NMEA $GPGSA (GNSS DOPS and Active Satellites)
3	GPGST_ENABLE Mask for NMEA $GPGST (GNSS Pseudorange Error Statistics)
4	GPGSV_ENABLE Mask for NMEA $GPGSV (GNSS Satellites in View)

<NmeaMask>	Description
5	GPRMC_ENABLE Mask for NMEA $GPRMC (Recommended Minimum GNSS Sentence)
6	GPVTG_ENABLE Mask for NMEA $GPVTG (Course Over Ground and Ground Speed)
7	GPZCD_ENABLE Mask for NMEA $GPZCD (output rate - OS Timestamp for the Fix [seconds])
8	GPZDA_ENABLE Mask for NMEA $GPZDA (Time & Date)
9	PGNVD_ENABLE Mask for NMEA $PGNVD (proprietary Diagnostics data)

<Timeout>	Description
$1..2^{32}$	Max time in milliseconds to deliver the navigation data, even if the accuracy requested isn't reached

<HorizAccuracy>	Description
$1..2^{16}$	Horizontal measure accuracy in meter

<VertAccuracy>	Description
$1..2^{16}$	Vertical measure accuracy in meter

<AgeLimit>	Description
$1..2^{32}$	Age limit in milliseconds of the navigation data. Too old data can't be delivered

<OutputType>	Description
0	NMEA
1	GAD (alias 'C struct' of CGPS)

4.1.13.4   *AGCONF AGps CONFiguration

Description	Command	Possible Response(s)
Register periodic fix for GPS	*AGCONF=<ConfigMaskValid>,<ConfigMask>,<Config2Valid>,<SensMode>,<SensTtff>,<PowerPref>,<ColdStart>,<SlpAddr>	OK
Read command	*AGCONF?	OK

Description	Command	Possible Response(s)
Test command	*AGCONF =?	*AGCONF:(list of supported <ConfigMaskValid>s),(list of supported <ConfigMask>s),(list of supported <Config2Valid>s),(list of supported <SensMode>s),(list of supported <SensTtff>s),(list of supported <PowerPref>s),(list of supported <ColdStart>s),(list of supported <SlpAddr>s)

Description

This command is used to register a periodic fix.

Read command has no effect (just return OK).

Test command gets the supported values.

Parameters

<ConfigMaskValid>	Description
$1..2^9$	Bit mask for configuration validity (bit set to 0 means disabled, bit set to 1 means enabled): Bit 1: Mask for POS TECHNOLOGY-MS ASSISTED Bit 2: Mask for POS TECHNOLOGY-MS BASED Bit 3: Mask for POS TECHNOLOGY-AUTONOMOUS Bit 4: Mask for POS TECHNOLOGY-Enhanced Cell Id Bit 5: Mask for User Plane Support Bit 6: Mask for Control Plane Support Bit 7: Mask for Preference to User Plane over Control Plane Bit 8: Mask for Mobile Originated Location Session Bit 9: Mask for Mobile Terminated Location Session

<ConfigMask>	Description
$1..2^9$	Bit mask for configuration: Bit 1: Mask for POS TECHNOLOGY-MS ASSISTED Bit 2: Mask for POS TECHNOLOGY-MS BASED Bit 3: Mask for POS TECHNOLOGY-AUTONOMOUS Bit 4: Mask for POS TECHNOLOGY-Enhanced Cell Id Bit 5: Mask for User Plane Support Bit 6: Mask for Control Plane Support Bit 7: Mask for Preference to User Plane over Control Plane Bit 8: Mask for Mobile Originated Location Session Bit 9: Mask for Mobile Terminated Location Session

<Config2Valid>	Description
$1..2^5$	Bit mask for configuration 2: Bit 1: Mask for SUPL Server configuration Bit 2: Mask for TTFF sensitivity Bit 3: Mask for Power Preference

<Config2Valid>	Description
	Bit 4: Mask for Sensitivity Mode Bit 5: Mask for Cold Start Mode

<SensMode>	Description
0	High Sensitivity Mode, optimised for mainly indoor / handset usage
1	Normal Sensitivity Mode, optimised for mainly automotive and outdoor usage
2	Dynamic Sensitivity Mode, optimally switching between the above High & Normal modes

<SensTtff>	Description
0	The default balanced approach between speed and sensitivity
1	Potentially faster cold start TTFF, but reduced cold start sensitivity
2	Increased sensitivity cold starts, but at potentially a slower cold start TTFF

<PowerPref>	Description
0	The default balanced approach between Power Usage and Performance
1	Higher Performance, but at potentially increased power usage
2	Lower power usage, but at potentially reduced performance

<ColdStart>	Description
0	Default mode for cold start (no settings to start cold start)
1	Only immediate session after the command will be cold start
2	All new sessions should be cold start

<SlpAddr>	Description
Format of SlpAddr is: AddressType[1byte]Length[1 byte]Address[Length bytes]	SLP address With: - AddressType[1 byte] 0 : Default SLP address 1: SLP address of type FQDN 2: SLP address of type IPV4

<SlpAddr>	Description
	3: SLP address of type IPV6
	- Length[1 byte]: 0: Default SLP address used … 2^8: Max length of SLP address
	- Address[Length bytes] format is char

4.1.13.5 *AGNOTIF AGps NOTIFication

Description	Command	Possible Response(s)
Acknowledgment of AGPS notification	*AGNOTIF=<NotificationHandle>,<Response>	OK
Read command	*AGNOTIF?	OK
Test command	*AGNOTIF=?	*AGNOTIF: :(list of supported <NotificationHandle>s),(0-1)
Notification of the AGPS request from the network (URC)	*AGNOTIF:<NotificationHandle>,<NotificationType>,<LcsServiceTypeId>,<RequestorId>,<ClientName>,<CodeWord>,<PhoneNumber>,<TonNpi>,<TonNpiConfig>	None

Description

This command is used to accept or reject the AGPS (SUPL or Control Plane) request from the network coming via URC *AGNOTIF.

Read command has no effect (just return OK).

Test command gets the supported values.

Parameters

<NotificationHandle>	Description
0..10	Notification handle range

<Response>	Description
0	Notification rejected
1	Notification accepted

\<NotificationType\>	Description
0	User is neither notified nor asked for verification
1	User is notified but not asked for verification
2	User is notified and asked for verification. Request will be allowed if user does not answer
3	User is notified and asked for verification. Request will be denied if user does not answer
4	Used for preventing notification and verification without leaving any traces

\<LcsServiceTypeId\>	Description
0	Emergency services
1	Emergency alert services
2	Person tracking
3	Fleet management
4	Asset management
5	Traffic congestion reporting
6	Road side assistance
7	Routing to the nearest commercial enterprise
8	Navigation
9	City sightseeing
10	Localized advertising
11	Mobile yellow pages

\<RequestorId\>	Description
Format of RequestorId is: EncodeType[1byte]Length[1 byte]RequestorId[Length bytes]	Requestor Id With: - EncodeType[1 byte] 0 : No encoding type specified 1: UCS2 format of type FQDN 2: GSM-default refers to the 7-bit default alphabet and the SMS packing specified in [3GPP 23.038] 3: UFT8 format 4: RAW 8-bit data.Can be ASCII-8bit 5: Compressed UCS2 format 6: GSM 7-bit alphabet padded with MSB 0 to make them 8-bits each - Length[1 byte]: 0: Default Requestor Id is used

<RequestorId>	Description
	… 72: Max length of the Requestor Id string - RequestorId[Length bytes] format is char

<ClientName>	Description
Format of ClientName is: EncodeType[1byte]Length[1 byte]Name[Length bytes]	Client Name With: - EncodeType[1 byte] 0 : No encoding type specified 1: UCS2 format of type FQDN 2: GSM-default refers to the 7-bit default alphabet and the SMS packing specified in [3GPP 23.038] 3: UFT8 format 4: RAW 8-bit data.Can be ASCII-8bit 5: Compressed UCS2 format 6: GSM 7-bit alphabet padded with MSB 0 to make them 8-bits each - Length[1 byte]: 0: Default Client Name is used … 64: Max length of the Client Name string - RequestorId[Length bytes] format is char

<CodeWord>	Description
Format of CodeWord is: EncodeType[1byte]Length[1 byte]CodeWord[Length bytes]	Code word With: - EncodeType[1 byte] 0 : No encoding type specified 1: UCS2 format of type FQDN 2: GSM-default refers to the 7-bit default alphabet and the SMS packing specified in [3GPP 23.038] 3: UFT8 format 4: RAW 8-bit data.Can be ASCII-8bit 5: Compressed UCS2 format 6: GSM 7-bit alphabet padded with MSB 0 to make them 8-bits each - Length[1 byte]: 0: Code word absent … 72: Max length of the Code Word string - CodeWord[Length bytes] format is char

<PhoneNumber>	Description
String of 64 characters max	Phone Number. If content is NULL string, not valid

<TonNpi>	Description
Number	Type of Number and number Plan identification. Refer 3GPP TS 24.008, section 10.5.4.7

<TonNpiConfig>	Description
Number	Indicates if TonNpi has been populated

4.1.13.6 *AGNAV AGps NAVigation data notification

Description	Command	Possible Response(s)
Notification of navigation data (URC)	*AGNAV:<Handle>,<NavigationData>	None

Description

This URC is used to send navigation data whose format has been previously defined in command *AGSFR or AGPFR (see <OutputType>).

Parameters

<Handle>	Description
0..10	Handle range

<NavigationData>	Description
String of NMEA format	NMEA data. Refer to XXX for details about NMEA format
String of GAD format	GAD format. Refer to t_cgps_CStructNavData of SwISD_CGPS_p26613 for details about format

4.1.13.7 *CTMCFG Activation/Deactivation of CTM Feature

Description	Command	Possible Response(s)

Description	Command	Possible Response(s)
Activation and Deactivation of CTM Feature	*CTMCFG=<CTM_Status>	OK
Read Command	*CTMCFG?	*CTMCFG: (Current setting of <CTM_Status>)
Test Command	*CTMCFG=?	*CTMCFG: (List of supported <CTM_Status>)

Description

This command is used to activate or deactivate CTM calls.

Parameters

<CTM_Status>	Description
0	CTM feature is inactive; All speech calls (incoming and outgoing) will be treated as normal speech calls (applies to emergency calls also)
1	CTM feature is active; All speech calls (incoming and outgoing) will be treated as CTM calls (applies to emergency calls also)

Clarification

Command available when CTM_FTR is enabled.

4.1.13.8   *CTMNOTIFY Notify whether the current call is a CTM call or Normal call

Description	Command	Possible Response(s)
Enable/Disable CTM Notification	*CTMNOTIFY=<CTM_Notify>	OK
Read Command	*CTMNOTIFY?	*CTMNOTIFY: (Current setting of <CTM_Notify>)
Test Command	*CTMNOTIFY=?	*CTMNOTIFY: (List of supported <CTM_Notify>)
Notification of current call type(CTM or Normal)	+CTM: <CTM_Ind>	None

Description

This command is used to Enable or Disable the notification as to whether the current call is a normal call or a CTM call using the URC +CTM. When an incoming call is received, if the <CTM_Notify> parameter has been set through AT *CTMNOTIFY command, a +CTM: <CTM_Ind> URC will be sent following the first RING / CRING notification.

Parameters

<CTM_Notify>	Description
0	+CTM result code shall not be sent on receiving an incoming call
1	+CTM result code shall be sent on receiving an incoming call

<CTM_Ind>	Description
0	Incoming call is a normal call (not a CTM call)
1	Incoming call is a CTM call

Clarification

Command available when CTM_FTR is enabled.

4.2 Proprietary AT commands for Windows Driver (MBN)

4.2.1 *PSSDC Supported Data Class

Description	Command	Possible Response(s)
SET command	*PSSDC=	OK
Get device capabilities	* PSSDC?	* PSSDC: <GSM cap>, <UMTS cap>
TEST Command	* PSSDC =?	OK

Description

The Read command gives the GSM and UMTS capabilities of the device

The SET and TEST commands are not applicable

Parameters

<GSM cap>	Description
0	GSM
1	GPRS
2	EDGE

<UMTS cap>	Description

<UMTS cap>	Description
0	No UMTS support
1	UMTS with no support for HSXPA
2	UMTS with HSDPA only support
3	UMTS with HSUPA only support
4	UMTS with both HSDPA and HSUPA support

4.2.2 *PSICCID Read ICCID of the SIM

Description	Command	Possible Response(s)
SET command	*PSICCID=	OK
READ ICCID	* PSICCID?	* PSICCID: <iccid>
TEST Command	* PSICCID=?	OK

Description

The Read command gives the ICCID of the SIM

The SET and TEST commands are not applicable

Parameters

<iccid>	Description
String Type	ICCID

4.2.3 *PSCPOL Preferred PLMN List

Description	Command	Possible Response(s)
Write an entry in list of preferred PLMNs	*PSCPOL==[<index>][,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UTRAN_AcT>]]]	
List all entries	*PSCPOL?	*PSCPOL: <index1>,<oper-name_1>,<oper-id_1>,<oper-state>,>[,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>][<CR><LF>+CPOL: <index2>,<oper-name_2>,<oper-d_2>,<oper-state>[,<GSM_AcT2>,<GSM_Compact_AcT2>,<UTRAN_AcT2>] [...]]
Get supported values	*PSCPOL=?	*PSCPOL: (list of supported <index>s),(list

Description	Command	Possible Response(s)
		of supported <format>s)

Description

This command reads and updates the preferred PLMN list stored in SIM

Note: This command will use AT+CPLS setting to operate on either:

- •User PLMN list - EF-UPLMNwAct OR
- •Operator PLMN list - EF-OPLMNwAct

(The user PLMN list is the default setting)

Parameters

<index>	Description
Integer Type	The order number of operator in the SIM/USIM preferred operator list

<format>	Description
0	Long format alphanumeric <oper>
1	Short format alphanumeric <oper>
2	Numeric <oper>

<oper-id>	Description
String Type	(country code digit 3)(country code digit 2)(country code digit 1)(network code digit 3)(network code digit 2)(network code digit 1)

<oper name>	Description
String Type	Provider Name (Long alphanumeric format)

<oper state>	Description
0	Preferred operator
1	Forbidden operator

<GSM_AcTn>	Description
0	Access technology not selected
1	Access technology selected

<GSM_Compact_AcTn>	Description
0	Access technology not selected

<UTRAN_AcTn>	Description
0	Access technology not selected
1	Access technology selected

4.2.4　*PSCMGD Delete SMS

Description	Command	Possible Response(s)
Delete a message	*PSMGD=<index>[,<delflag>]	*+CMS ERROR: <err>*
Get supported values	*PSMGD=?	+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]

Description

This command deletes SMS from SIM.

Parameters

<delflag>	Description
Integer Type	The order number of operator in the SIM/USIM preferred operator list
0 (Default value)	Delete the message specified in <index>
1	Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched
2	Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched
3	Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched
4	Delete all messages from preferred message storage including unread messages
5	Delete all new messages (message received but not yet

<delflag>	Description
	READ)
6	Delete all sent messages
7	Delete all draft messages (message not sent to the network)

<index>	Description
1..255	Message location in "SM" memory.

4.3 Proprietary AT commands to support ISIM Application

4.3.1 *SIMUAD – UICC Application Discovery

Description	Command	Possible Response(s)
SET command	*SIMUAD[=<app type>]	*SIMUAD: <aid>,<label>, <apptype><CR><LF> *SIMUAD: <aid>,<label>, <apptype><CR><LF> .. .. OK
READ Command	* SIMUAD?	OK
TEST Command	* SIMUAD =?	*SIMUAD: (list of supported <apptype>)

Description

SET Command asks the MT to discover what applications are available for selection on the UICC. According to TS 102.221 [60], the ME shall access and read the EF_{DIR} file in the UICC and return the values that are stored in its records. Each intermediate response contains the AID , Application Type and optionally AID Label

In case the SET command includes the <apptype> parameter the response would be filtered with the details of the applications belonging to the selected application type. If the SET command does not include <apptype>, then details of all the available applications irrespective of the application type will be returned.

Parameters

<aid>	Description
String Type in hexadecimal character format	Application ID (AID)

<label>	Description
String Type	Application Label

<label>	Description
	For 7bit Default GSM, each character is sent as one byte For UCS2 formats, each byte of the label is converted into 2 IRA characters

<apptype>	Description
0	2G SIM
1	3G USIM
2	3G ISIM
3	2G PKCS15
4	3G PKCS15
5	UNKNOWN

<apptype> is in integer format

Examples:

List All Applications

AT*SIMUAD

*SIMUAD: "00000000", "APPLICATION_0",1

*SIMUAD: "11111111", "APPLICATION_1",1

*SIMUAD: "22222222", "APPLICATION_2",2

OK

List Applications with Application Type1 (USIM Applications)

AT*SIMUAD=1

*SIMUAD: "00000000", "APPLICATION_0",1

*SIMUAD: "11111111", "APPLICATION_1",1

OK

List All Applications with Application Label in UCS2

AT*SIMUAD

*SIMUAD: "00000000", "8111223344",1

*SIMUAD: "11111111", "8211223344",2

OK

4.3.2 *ISIMAPC – ISIM APPLICATION CONTROL

Description	Command	Possible Response(s)
Open Logical Channel	*ISIMAPC=<optype>,<aid>	*OK* *+ISIM ERROR: <err cause>*
Read Command	* ISIMAPC?	OK
Test Command	* ISIMAPC=?	OK

Description

Execution of the command causes the ME to open a new logical channel for ISIM application access; select the application identified by the <aid> received with this command. The ME shall restrict the communication between the TE and the UICC to this logical channel opened for this application. The AID given in the SET command shall belong to an ISIM application. Otherwise ERROR will be returned.

Parameters

<optype>	Description
Integer type	OPEN -> 0
	CLOSE -> 1

<aid>	Description
String Type in hexadecimal character format	Application ID (AID)

<err cause>	Description
Integer Type	0 -> UNDEFINED_ERROR 1-> FILE_NOT_FOUND
	2-> STATUS_NOT_SATISFIED 3-> CARD_ERROR
	4-> INIT_ONGOING
	5-> ONLY_ISIM_OPERATION_ALLOWED

Examples:

Open ISIM Application

AT*ISIMAPC=0, "11223344"

OK

Close ISIM Application

AT*ISIMAPC=1, "11223344"

OK

4.3.3 *ISIMFCI – GET ISIM FILE CONTROL INFORMATION

Description	Command	Possible Response(s)
Get File Information	* ISIMFCI=<EF>	*ISIMFCI: <eftype>,<numrec>,<size>,<fcplen>,<fcp> OK
		+ISIM ERROR: <err cause>

Read Command	* ISIMFCI?	OK
Test Command	* ISIMFCI=?	OK

Description

Execution of this command gives the file characteristics of <EF>. This command results in implicit selection of the EF as well.

In case of Transparent EFs the <numrec> will be zero and the <size> will contain the Total File Size
In case of Linear Efs, <numrec> will contain the number of records and <size> will contain the length of each record

<fcp> contains the File Control parameters as coded in ETSI 102 221 OR 3GPP 11.11.

In case this command is given for a non-ISIM file, an error will be returned. Opening of a channel for ISIM application with the help of *ISIMAPC is a precondition to execute this command.

Parameters

<EF>	Description
Hex format	Gives the EF-ID for which FCP is requested

<eftpye>	Description
Integer Type	Gives the EF type, binary or record based
	LINEAR -> 0 TRANSPARENT ->1

<numrec>	Description
Integer Type	Gives the number of records present in this EF.It is set to 0 for a transparent file. Valid range 1-254 for Record Based file

<size>	Description
Integer Type	Gives the total size of a Transparent EF or the size of one record of a Record based EF

<fcplen>	Description
Integer Type	Length of the FCP in bytes

<fcp>	Description
String Type in hexadecimal character format	FCP contents in hex format

<err cause>	Description
Integer Type	0 -> UNDEFINED_ERROR 1-> FILE_NOT_FOUND
	2-> STATUS_NOT_SATISFIED 3-> CARD_ERROR 4-> INIT_ONGOING 5-> ONLY_ISIM_OPERATION_ALLOWED

Examples:

Get FCP for Transparent EF

AT*ISIMFCI=6F11

*ISIMFCI:1,0,200,20,"11223344556677889900112233445566778899900"

OK

Get FCP for Transparent EF

AT*ISIMFCI=6F22

*ISIMFCI:0,100,15,20,"11223344556677889900112233445566778899900"

OK

4.3.4 *ISIMREAD – READ ISIM EF

Description	Command	Possible Response(s)
SET command	*ISIMREAD= <EF>,<readtype>,<size>[,recnum]	*ISIMREAD: <rsplen>,<rsp> OK
		+ISIM ERROR: <err cause>
READ	* ISIMREAD?	OK
TEST Command	* ISIMREAD=?	OK

Description

This command is used to READ contents of a Transparent or a Record based ISIM EF

In case this command is given for a non-ISIM file, an error will be returned. Opening of a channel for ISIM application with the help of *ISIMAPC is a precondition to execute this command.

Parameters

<EF>	Description
Hex format	Gives the EF-ID to read

<readtype>	Description
Integer Type	0 -> READ RECORD
	1-> READ BINARY

<size>	Description
Integer Type	Gives the number of bytes to read

<recnum>	Description
Integer Type	Gived the record number to read

<rsplen>	Description
Integer Type	Gives the read length in number of bytes

<rsp>	Description

<rsp>	Description
String Type in hexadecimal character format	Contents of EF

<err cause>	Description
Integer Type	0 -> UNDEFINED_ERROR 1-> FILE_NOT_FOUND
	2-> STATUS_NOT_SATISFIED 3-> CARD_ERROR 4-> INIT_ONGOING 5-> ONLY_ISIM_OPERATION_ALLOWED

Examples:

Reading a Transparent EF

*ISIMREAD=6f11, 1,20

*ISIMREAD=20,20,"11223344556677889900112233445566778899 00"

OK

Reading a Record Based EF

*ISIMREAD=6f22, 0,20,200

*ISIMREAD=20,20,"11223344556677889900112233445566778899 00"

OK

4.3.5 *ISIMAUTH – ISIM AUTHENTICATION

Description	Command	Possible Response(s)
ISIM Authentication	*SIMAUTH=<authtype>,<cmdlen>,<cmd>	*SIMAUTH: <rsplen>,<rsp> OK +SIM ERROR: <err cause>
Read Command	*SIMAUTH?	OK
Test Command	*SIMAUTH=?	OK

Description

This command is used to execute the AUTHENTICATE procedure with the ISIM application. Opening of a channel for ISIM application with the help of *ISIMAPC is a precondition to execute this command.

Parameters

<authtype>	Description
Hex format	Gives the authentication context to execute
	IMS AKA -> 81
	HTTP DIGEST -> 82
	GBA CONTEXT -> 83

<cmdlen>	Description
Integer Type	Gives the authentication command (data part) length in bytes

<cmd>	Description
String Type in hexadecimal character format	Gives the authentication command (data part)

<rsplen>	Description
Integer Type	Gives the length of response in bytes

<rsp>	Description
String Type in hexadecimal character format	Gives the response contents

<err cause>	Description
Integer Type	0 -> UNDEFINED_ERROR 1-> FILE_NOT_FOUND
	2-> STATUS_NOT_SATISFIED 3-> CARD_ERROR 4-> INIT_ONGOING 5-> ONLY_ISIM_OPERATION_ALLOWED

Examples:

AT*ISIMAUTH = 81,16,"11223344556677889900112233445566'

*SIMAUTH: 8,"1122334455667788"

OK

4.3.6 *SIMRFSH – SIM REFRESH

Description	Command	Possible Response(s)
	URC	*SIMRFSH : <aid><CR><LF> *SIMRFSH : <EF><CR><LF> *SIMRFSH : <EF><CR><LF> *SIMRFSH : <EF><CR><LF> … … *SIMRFSH <CR><LF>

Description

This URC indicates that some SIM file belonging to an application (indicated by <aid>) has changed following a refresh, init or reset of the SIM.

The application that contains the changed EFs is indicated as the first command line of the response. The *SIMRFSH URC will be sent once for each file that have been changed, except in case of SIM init or SIM refresh where only one *SIMRFSH will be sent. The end of the file list is indicated by an empty *SIMRFSH command line.

<aid>	Description
String Type in hexadecimal character format	Application ID (AID)

Parameters

<EF>	Description
Hex format	Gives the SIM file which has changed. FFFF in case of SIM init FFFE in case of SIM reset

Examples:

*SIMRFSH: "1122334455667788"

*SIMRFSH: "6F11"

*SIMRFSH: "6F22"

*SIMRFSH: "6F33"

*SIMRFSH <CR><LF>

4.3.7 *ISIMWRT – ISIM WRITE

Description	Command	Possible Response(s)

Description	Command	Possible Response(s)
Write Binary	* ISIMWRT=<EF>,<wrtlen>,<wrtdata>	*OK*
		+ISIM ERROR: <err cause>
READ Command		OK
TEST Command		OK

Description

This command is used to WRITE contents of a Transparent based ISIM EF. This commands results in an implicit selection of the requested EF.

In case this command is given for a non-ISIM file, an error will be returned. Opening of a channel for ISIM application with the help of *ISIMAPC is a precondition to execute this command.

Parameters

<EF>	Description
Hex format	Gives the EF in which data needs to be written

<wrtlen>	Description
Integer type	Gives the length in bytes to write

<wrtdata>	Description
String Type in hexadecimal character format	Gives the data to write

<err cause>	Description
Integer Type	0 -> UNDEFINED_ERROR 1-> FILE_NOT_FOUND
	2-> STATUS_NOT_SATISFIED 3-> CARD_ERROR 4-> INIT_ONGOING 5-> ONLY_ISIM_OPERATION_ALLOWED

Examples:

AT*ISIMWRT=6F11, 10,"11223344556677889900"

OK

4.4 Operator proprietary commands

4.4.1 CMCC commands

4.4.1.1 ^HVER Hardware version

Description	Command	Possible Response(s)
Get hardware version	^HVER	<CR><LF>^HVER:<hardversion> <CR><LF> <CR><LF>OK<CR><LF>

Description

This command returns information on the IC id, the version and the revision.

Result code

<hardversion>	Description
String	<IC ID>_v<IC version>.<IC revision>

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.2 ^MODE system mode change event notification

Description

This is an URC returned when the ME registration state change.

Result code

Description	Result code
Registration state change	<CR><LF>^MODE:<sys_mode><CR><LF>

Parameter

<sys_mode >	Description
0	No service
3	GSM/GPRS
15	TD-SCDMA

Clarification

URC always activated when the switch AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.3   ^SYSINFO system information enquiry

Description	Command	Possible Response(s)
Get system information	^SYSINFO	<CR><LF>^SYSINFO:<srv_status>,<srv_domain>,<roam_status>, <sys_mode>,<sim_state><CR><LF> <CR><LF>OK <CR><LF>

Description

This command returns information on the system such as the domain, the roaming status, the smartcard state…

Result code

<srv_satus >	Description
0	No service
1	Emergency Idle Service
2	Idle Service
3	Restricted Local Service
4	Power Saving

<srv_domain>	Description
0	No service
1	Only CS service
2	only PS service
3	PS+CS service

<roam_satus>	Description
0	Not in roaming status
1	Roaming status

<sys_mode>	Description
0	No service
3	GSM/GPRS

<sys_mode>	Description
15	TD-SCDMA

<sim_state >	Description
0	Invalid USIM Card
1	Valid USIM card
255	No USIM card or PIN is not checked/locked

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.4   ^SYSCONFIG set system configuration

Description	Command	Possible Response(s)
Set system configuration	^SYSCONFIG = <mode>,<acqorder>,<roam>, <srvdomain>	<CR><LF>OK<CR><LF>
Get system configuration	^ SYSCONFIG?	<CR><LF>^SYSCONFIG:<mode>,<acqorder>, <roam>,<srvdomain> <CR><LF><CR><LF>OK<CR><LF>

Description

This command configure the ME behaviour. We can set the RAT, the preferred RAT and the class.

Parameters

<mode>	Description
2	Auto
13	GSM only
15	TDSCDMA only
16	No change

<acqorder>	Description
0	Auto
1	GSM first then UTRAN

<acqorder>	Description
2	UTRAN first then GSM
3	No change

<roam>	Description
0	Not in roaming status
1	Roaming status

<srv_domain>	Description
0	CS Only
1	PS Only
2	CS & PS
3	Any
4	No change

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

The setting of the parameter <roam_status> is not supported, MuTA doesn't care of this value in the set command. Nevertheless the right current status is returned in the read command.

4.4.1.5 ^CARDMODE returns the card type

Description	Command	Possible Response(s)
Returns the card type	^CARDMODE	<CR><LF>^CARDMODE:<sim_type><CR><LF><CR><LF>OK <CR><LF>

Description:

This command returns the type of the inserted smartcard SIM or USIM.

Parameters

<sim_type>	Description
0	Unknown mode
1	SIM card
2	USIM card

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.6   ^SPN operator name string

Description	Command	Possible Response(s)
Returns the EF SPN content	^SPN=<spn_type>	<CR><LF>^SPN:<disp_rplmn>,<coding>,<spn_name><CR><LF> <CR><LF>OK<CR><LF>

Description

This command returns the content of the EF SPN stored in the smartcard.

Parameters

<spn_type>	Description
0	EF SPN under MF (SIM)
1	EF SPN under ADF (USIM)

Result Code

<disp_rplmn>	Description
0	Not display the RPLMN
1	Required to display the RPLMN
99	This field is invalid and the spn_name field is not necessary to be read.

<coding>	Description
0	GSM 7 bits Default Alphabet
1	RAW mode (Namely report the spn_name as the raw data format)

<spn_name>	Description
string	Character string, its length is not more than 16 bytes. It contains the content of the SPN EF.

Clarification

If we request the content of the EF SPN under the ADF USIM when a SIM is inserted, the command will return an error. Same behaviour when we request the EF SPN under the MF with a USIM.

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.7 ^ORIG returns Call Id and Call Type

Description	Command	Possible Response(s)
Returns the Call Id and Call Type	^ORIG	<CR><LF>^ORIG:<call_x>,<call_type><CR><LF>

Description:

This command returns the Call Id and Call Type.

Parameters

<call_x>	Description
1-7	Call Id , the only identification of Call

<call_type>	Description
0	Voice Call
1	CS Data Call (GW)
2	PS Data Call (GW)
3	SMS Call
7	OTA Call, Standard OTASP Numbers
8	OTA Call, Non Standard OTASP Numbers
9	Emergency Call

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.8 ^CONF returns Call Id

Description	Command	Possible Response(s)

Description	Command	Possible Response(s)
Returns the Call Id	^CONF	\<CR>\<LF>^CONF:\<call_x>\<CR>\<LF>

Description:

This command returns the Call Id.

Parameters

\<call_x>	Description
1-7	Call Id , the only identification of Call

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled

4.4.1.9 ^CONN returns Call Id and Call Type

Description	Command	Possible Response(s)
Returns the Call Id and Call Type	^CONN	\<CR>\<LF>^CONN:\<call_x>,\<call_type>\<CR>\<LF>

Description:

This command returns the Call Id and Call Type.

Parameters

\<call_x>	Description
1-7	Call Id , the only identification of Call

\<call_type>	Description
0	Voice Call
1	CS Data Call (GW)
2	PS Data Call (GW)
3	SMS Call
7	OTA Call, Standard OTASP Numbers
8	OTA Call, Non Standard OTASP Numbers

<call_type>	Description
9	Emergency Call

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.10 ^CEND returns Call Id , Duration, End Status and CC Cause

Description	Command	Possible Response(s)
Returns the Call Id, Duration End Status and CC Cause	^CEND	<CR><LF>^CEND:<call_x>,<duration>,<end_status>[,<cc_cause>]<CR><LF>

Description:

This command returns the Call Id, Duration of Call, End status and CC cause if available..

Parameters

<call_x>	Description
1-7	Call Id , the only identification of Call

<duration>	Description
TIME	How long the call kept, Unit : Second

<end_status>	Description
CM_CALL_END_OFFLINE=0	Single board on OFFLINE state
CM_CALL_END_NO_SRV=21	Single board no service
CM_CALL_END_FADE=22	Normal Close
CM_CALL_END_INTERCEPT= 23	Break out by BS when calling
CM_CALL_END_REORDER=24	Received BS record when calling
CM_CALL_END_REL_NORMA L=25	BS set free the call
CM_CALL_END_REL_SO_REJ =26	BS refused the current SO service
CM_CALL_END_INCOM_CALL =27	Received incoming call from BS

<end_status>	Description
CM_CALL_END_ALERT_STOP =28	Received ring stop command when call incoming
CM_CALL_END_CLIENT_END =29	Client site Normal close
CM_CALL_END_ACTIVATION= 30	Activation stop when OTASP calling
CM_CALL_END_MC_ABORT=3 1	MC stop initiating call
CM_CALL_END_RUIM_NOT_P RESENT=34	No RUIM exist
CM_CALL_END_NDSS_FAIL=9 9	NDSS error
CM_CALL_END_LL_CAUSE=1 00	Release from Understratum, need further query from CC Cause
CM_CALL_END_CONF_FAILE D=101	After MO call, the network failed
CM_CALL_END_INCOM_REJ= 102	Local refused when MT call
CM_CALL_END_SETUP_REJ= 103	Refused during the call set up process
CM_CALL_END_NETWORK_E ND=104	Released reason caused by network, need further query from CC Cause
CM_CALL_END_NO_FUNDS=1 05	The Charge used up
CM_CALL_END_NO_GW_SRV =106	Out of service

<cc_cause>	Description
1	UNASSIGNED_CAUSE
3	NO_ROUTE_TO_DEST
6	CHANNEL_UNACCEPTABLE
8	OPERATOR_DETERMINED_BARRING
16	NORMAL_CALL_CLEARING
17	USER_BUSY
18	NO_USER_RESPONDING
19	USER_ALERTING_NO_ANSWER
21	CALL_REJECTED
22	NUMBER_CHANGED
26	NON_SELECTED_USER_CLEARING

<cc_cause>	Description
27	DESTINATION_OUT_OF_ORDER
28	INVALID_NUMBER_FORMAT
29	FACILITY_REJECTED
30	RESPONSE_TO_STATUS_ENQUIRY
31	NORMAL_UNSPECIFIED
34	NO_CIRCUIT_CHANNEL_AVAILABLE
38	NETWORK_OUT_OF_ORDER
41	TEMPORARY_FAILURE
42	SWITCHING_EQUIPMENT_CONGESTION
43	ACCESS_INFORMATION_DISCARDED
44	REQUESTED_CIRCUIT_CHANNEL_NOT_AVAILABLE
47	RESOURCES_UNAVAILABLE_UNSPECIFIED
49	QUALITY_OF_SERVICE_UNAVAILABLE
50	REQUESTED_FACILITY_NOT_SUBSCRIBED
55	INCOMING_CALL_BARRED_WITHIN_CUG
57	BEARER_CAPABILITY_NOT_AUTHORISED
58	BEARER_CAPABILITY_NOT_PRESENTLY_AVAILABLE
63	SERVICE_OR_OPTION_NOT_AVAILABLE
65	BEARER_SERVICE_NOT_IMPLEMENTED
68	ACM_GEQ_ACMMAX
69	REQUESTED_FACILITY_NOT_IMPLEMENTED
70	ONLY_RESTRICTED_DIGITAL_INFO_BC_AVAILABLE
79	SERVICE_OR_OPTION_NOT_IMPLEMENTED
81	INVALID_TRANSACTION_ID_VALUE
87	USER_NOT_MEMBER_OF_CUG
88	INCOMPATIBLE_DESTINATION
91	INVALID_TRANSIT_NETWORK_SELECTION
95	SEMANTICALLY_INCORRECT_MESSAGE
96	INVALID_MANDATORY_INFORMATION
97	MESSAGE_TYPE_NON_EXISTENT
98	MESSAGE_TYPE_NOT_COMPATIBLE_WITH_PROT_STATE
99	IE_NON_EXISTENT_OR_NOT_IMPLEMENTED
100	CONDITIONAL_IE_ERROR
101	MESSAGE_NOT_COMPATIBLE_WITH_PROTOCOL_STA

<cc_cause>	Description
	TE
102	RECOVERY_ON_TIMER_EXPIRY
111	PROTOCOL_ERROR_UNSPECIFIED
127	INTERWORKING_UNSPECIFIED
160	REJ_UNSPECIFIED
161	AS_REJ_RR_REL_IND
162	AS_REJ_RR_RANDOM_ACCESS_FAILURE
163	AS_REJ_RRC_REL_IND
164	AS_REJ_RRC_CLOSE_SESSION_IND
165	AS_REJ_RRC_OPEN_SESSION_FAILURE
166	AS_REJ_LOW_LEVEL_FAIL
167	AS_REJ_LOW_LEVEL_FAIL_REDIAL_NOT_ALLOWED
168	MM_REJ_INVALID_SIM
169	MM_REJ_NO_SERVICE
170	MM_REJ_TIMER_T3230_EXP
171	MM_REJ_NO_CELL_AVAILABLE
172	MM_REJ_WRONG_STATE
173	MM_REJ_ACCESS_CLASS_BLOCKED
174	ABORT_MSG_RECEIVED
175	OTHER_CAUSE
176	CNM_REJ_TIMER_T303_EXP
177	CNM_REJ_NO_RESOURCES
178	CNM_MM_REL_PENDING
179	CNM_INVALID_USER_DATA

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.11 ^CDUR returns Call Id and Call Duration

Description	Command	Possible Response(s)
Get Call Duration	^CDUR=<call_x>	<CR><LF>^CDUR:<call_x>,<duration><CR><LF><CR><LF>OK<CR><LF>
		+CME ERROR

Description	Command	Possible Response(s)
Test Command		<CR><LF>OK<CR><LF>

Description:

This command returns the Call Id and Call Duration.

Parameters

<call_x>	Description
1-7	Call Id , the only identification of Call

<duration>	Description
TIME	How long the call kept, Unit : Second

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.12 ^MBIMSI returns status of IMSI

Description	Command	Possible Response(s)
Get IMSI Status	^MBIMSI	<CR><LF>^MBIMSI: <status><CR><LF><CR><LF>OK<CR><LF> +CME ERROR
Test Command	^MBIMSI=?	<CR><LF>OK<CR><LF>

Description:

This command is used to query if IMSI is altered.

Parameters

<status>	Description
0	Current IMSI is same with the one latest stored in UE
1	Current IMSI is not same with the one latest stored in UE

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled

4.4.1.13 *EHSDPA Enable or Disable HSDPA

Description	Command	Possible Response(s)
Set Command	*EHSDPA=<flag>	<CR><LF>OK<CR><LF> +CME ERROR
Read Command	*EHSDPA?	<CR><LF>*EHSDPA: <flag><CR><LF> <CR><LF>OK<CR><LF>
Test Command	*EHSDPA=?	<CR><LF>*EHSDPA: (list of supported <flag>s)<CR><LF><CR><LF>OK<CR><LF>

Description:

This command is used to enable/disable HSDPA for PS calls. Read command gives the current flag. Test command returns values supported as a compound value.

.

Parameters

<status>	Description
0	HSDPA is not allowed
1	HSDPA is allowed for PS calls.

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled

4.4.1.14 ^RESET Reset the MT

Description	Command	Possible Response(s)
Set Command	^RESET=<state>	<CR><LF>OK<CR><LF> +CME ERROR

Description:

This command is used to reset MT, which will cause MT unregistration.

Parameters

<state>	Description
0	Reset with IMSI detach
1	Reset without IMSI detach

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled

4.4.1.15   *TRACE Trace layer 3 messages

Description	Command	Possible Response(s)
Set Command	*TRACE=<state>	<CR><LF>OK<CR><LF> +CME ERROR
Read Command	*TRACE?	<CR><LF>*TARCE: <state><CR><LF><CR><LF>OK<CR><LF>

Description:

This command is used to trace out all the layer 3 messages except system information.

Parameters

<state>	Description
0	Disable
1	Enable

Clarification

Command available only if AT_RITT_TCG_CMD_FTR is enabled

4.4.1.16   ^SCPBW Write phonebook entry

Description	Command	Possible Response(s)
Write entry	^SCPBW=[<index>][,<num 1>[,<type>[,<num2>[,<type >[,<num3>[,<type> [,<num4>[,<type>[,<text>,< coding>[,email]]]]]]]]]]	<CR><LF>OK<CR><LF> For any error <CR><LF>+CME ERROR: <err><CR><LF>
Get location ranges and supported values	^SCPBW=?	<CR><LF>^SCPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>],[<mlength>] <CR><LF><CR><LF>OK<CR><LF>

Description	Command	Possible Response(s)
		For any error <CR><LF>+CME ERROR: <err><CR><LF>

Interface Description

Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS. If only the <index> given, phonebook entry is deleted. If <index> is left out, but <num> is given, entry is written to the first free location in the phonebook (the implementation of this feature is manufacturer specific). If the location is full,+CME ERROR: memory full is returned. If writing fails in an MT error, +CME ERROR: <err> is returned.

Test command returns location range supported by the current storage as a compound value, the maximum length of <num> field, supported number formats of the storage, the maximum length of <text> field,the maximum length of <email>. If MT is not currently reachable, +CME ERROR: <err> is returned.

Parameters

<index1>, <index2>, <index>	Description
Integer type	Values in the range of location numbers of phonebook memory.

<num1>	Description
String type	phone number of format <type>;the mobile number. Max length 32 bytes

<num1>	Description
String type	phone number of format <type>;the work number. Max length 32 bytes

<num1>	Description
String type	phone number of format <type>;the home number. Max length 32 bytes

<num1>	Description
String type	phone number of format <type>;the fax number. Max length 32 bytes

<type>	Description
Integer type	type of address octet

<text>	Description
String type	name.when <coding>=1 inditcate the <text>is original hex

<coding>	Description
Integer type	indication the <text>coding 0: GSM 7 bit Default Alphabet 1: USC2 coding

<email>	Description
String type	email string.only for USIM card,and the max length is 64 bytes

<nlength>	Description
Integer type	integer type value indicating the maximum length of field <num>.

<tlength>	Description
Integer type	integer type value indicating the maximum length of field <text>.

<mlength>	Description
Integer type	integer type value indicating the maximum length of field <email>.

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.17 ^SCPBR Read phonebook entry

Description	Command	Possible Response(s)
Read entries	^SCPBR=<index1>[,<index2>]	[<CR><LF>^SCPBR: <index1>,<num1>,<type>,<num2>, <type>,<num3>,<type>,<num4>,<type>, <text> ,<coding>[,<email>]][[...] <CR><LF>^CPBR: <index2>,<num1>,<type>,<num2>, <type>,<num3>,<type>,<num4>,<type>, <text>

Description	Command	Possible Response(s)
		],<coding>[,<email>]]<CR><LF>]<CR><LF>OK<CR><LF>
		For any error<CR><LF>+CME ERROR: <err><CR><LF>
Get location ranges and supported values	^SCPBR=?	<CR><LF>^SCPBR: (list of supported <index>s),[<nlength>],[<tlength>], [<mlenth>]<CR><LF><CR><LF>OK<CR><LF>
		For any error<CR><LF>+CME ERROR: <err><CR><LF>

Interface Description

Execution command returns phonebook entries in location number range <index1>... <index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned. If all queried locations are empty (but available), no information text lines may be returned. If listing fails in an MT error, +CME ERROR: <err> is returned.

Test command returns location range supported by the current storage as a compound value and the maximum lengths of <number>, <text>, <email> fields. If MT is not currently reachable, +CME ERROR: <err> is returned.

Parameters

Refer ^SCPBW command

Clarification

Command available only if AT_CMCC_PROPRIO_CMD_FTR is enabled.

4.4.1.18 ^MBAU Authentication command

Description	Command	Possible Response(s)
Authenticate SIM or USIM	^MBAU=<RAND>,<AUTN/Ks_input>	<CR><LF>^MBAU: <status>[,<RES/AUTS>]<CR><LF><CR><LF>OK<CR><LF> For any error <CR><LF>+CME ERROR: <err><CR><LF>
Authentication support	^MBAU=?	<CR><LF>OK<CR><LF>
		For any error<CR><LF>+CME ERROR: <err><CR><LF>

Parameters

< RAND>	Description
String type	Value of RAND

<AUTN/Ks_input>	Description
String type	AUTN if USIM card,　Ks_input if SIM card

<status>	Description
0	authentication success
1	synclyzation fail
2	MAC is not correct（status word'9862'）
3	security context not supported （status word'9864'）
255	other error

<RES/AUTS>	Description
String type	
RES	return RES if <status> is 0
AUTS	return AUTS when <status> is 1

Clarification

Command available only if TDSCDMA_MBBMS_AT_FTR is enabled.

4.5 Proprietary AT commands for Testing Purpose

The AT commands in this section are specifically added for testing requirement but doesn't restrict in any ways to be used for production solutions with ENABLING the respective switches

4.5.1 AT&T Testing

The AT commands in this section are available only if AT_CMD_ATNT_FTR is enabled

4.5.1.1　*PSPNNU Display PNN name of the registered PLMN

Description	Command	Possible Response(s)
Select PNN notification	*PSPNNU=<mode>	+CME ERROR: <err>

Description	Command	Possible Response(s)
mode		
Get the current PNN notification mode	*PSPNNU?	PSPNNU : <mode>
Get supported modes	*PSPNNU=?	*PSPNNU: (list of supported <mode>s)

Description

This command allows presentation of PNN name when any change in registration.

Set command enable (or disable) the presentation of *PSPNNU each time PNN name of the registered PLMN changes.

Description	Result code
PNN notification	*PSPNNU: <PNN name>

Parameters

<mode>	Description
0	Disable presentation of notification
1	Enable presentation of notification

<PNN name>	Description
String Type	PNN name in long alphanumeric format

4.5.1.2   *PSPNNR : Display PNN names for a Location Area/PLMN

Description	Command	Possible Response(s)
Get PNN	*PSPNNR= <MCC>, <MNC>, [LAC]	*PSPNN: <PNN> <CR><LF>*PSPNN: <PNN> <CR><LF>*PSPNN: <PNN> <CR><LF>OK<CR><LF> OR +CME ERROR: <err>
Test if command is supported	*PSPNNR=?	OK

Description

In Set command user has to input MCC, MNC and LAC (optional) fields. In the response to TE corresponding PNN Name is returned.

Note : This AT command will available only if AT_CMD_ATNT_FTR is enabled

Parameters

<MCC>	Description
String type	Mobile country code in numeric format (e.g. "208")

<MNC>	Description
String type	Mobile network code in numeric format (e.g. "10")

<LAC>	Description
String type	Location area code in numeric format

<PNN>	Description
String type	PLMN network name in long alphanumeric format.

4.5.1.3   *PSAHPLMN Read Acting HPLMN

Description	Command	Possible Response(s)
Set command	*PSAHPLMN	OK
Get AHPLMN information	*PSAHPLMN?	*PSAHPLMN: <mcc>, <mnc>

Description

Read command reads the AHPLMN.

Parameters

<MCC>	Description
String type	Mobile country code in numeric format (e.g. "208")

<MNC>	Description
String type	Mobile network code in numeric format (e.g. "10")

4.5.1.4   *PSVMWI Remaining Voice Message Waiting Indication

Description	Command	Possible Response(s)
Get VMWI	*PSVMWI?	*PS: < SIM Position >, <Type> ,<Number>
Test if command is	*PSVMWI=?	PSVMWI: (list of supported <index>s),(list

Description	Command	Possible Response(s)
supported		of supported <type>),<Number>

Description

PSVMWI Read command gets the position in SIM, type of message and the number of waiting messages.

Parameters

<SIM Position>	Description
1-255	Position in sim, where the received msg has been saved

< Type>	Description
0	SPECIAL VOICE
1	SPECIAL FAX
2	SPECIAL EMAIL
3	SPECIAL OTHER

< Number >	Description
1-255	Number of waiting information

4.5.2 ADAPT Testing

4.5.2.1 AT*EVCD

Description	Command	Possible Response(s)
Start video call	AT*EVCD=<dial_string>	
Test command to show if the command is supported	AT*EVCD=?	(List of supported <>s)

Description

This command is used to initiate a video call using the video application in the phone.

Parameters

<dialstring>	Description
Dialling digits	Dialling digits: 0 1 2 3 4 5 6 7 8 9 * # + a b c d A B C D , T P t p ! W w @ Note: T, P, D, !, @ are ignored

Command is available only if AT_MAPPING_AUTOMATION_SFI and VIDEOTELEPHONY_FTR is enabled

4.5.2.2 AT*EVCA

Description	Command	Possible Response(s)
Answer and start video call	AT*EVCA	
Test command to show if the command is supported	AT*EVCA=?	(List of supported <>s)

Description

Action command that answers an incoming videocall using the video application in the phone.

Command is available only if AT_MAPPING_AUTOMATION_SFI and VIDEOTELEPHONY_FTR is enabled

4.5.2.3 AT*EVCH

Description	Command	Possible Response(s)
Hang up video call	AT*EVCH	
Test command to show if the command is supported	AT*EVCH=?	(List of supported <>s)

Description

Action command that ends a video call initiated by the video application in the phone.

Command is available only if AT_MAPPING_AUTOMATION_SFI and VIDEOTELEPHONY_FTR is enabled

4.5.2.4 +EREG Network registration

Description	Command	Possible Response(s)
Control +CREG notification	+EREG=[<n>]	
Get current registration status	+EREG ?	+EREG: <n>,<stat>[,<lac>,<ci>[,<Act>]]
Get supported values	+EREG =?	+EREG: (list of supported <n>s)

Parameters

<n>	Description
0	Disable network registration unsolicited result code
1	Enable network registration and location information unsolicited result code +EREG: <stat>
2	Enable network registration and location information unsolicited result code +EREG: <stat>[,<lac>,<ci>]

<stat>	Description
0	not registered, MT is not currently searching a new operator to register to
1	Registered, home network
2	Not registered, but MT is currently searching a new operator to register to
3	Registration denied
4	Unknown
5	Registered, roaming

<lac>	Description
String type	Two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>	Description
String type	Four byte UTRAN/GERAN cell ID in hexadecimal format

<Act>	Description
0	Registered on GSM RAT
1	Registered on GSM Compact
2	Registered on UTRAN
3	Registered on GSM w/EGPRS
4	Registered on UTRAN w/HSDPA
5	Registered on UTRAN w/HSUPA

<Act>	Description
6	Registered on UTRAN w/HSDPA and HSUPA
7	Registered on E-UTRAN

Command is available only if AT_MAPPING_AUTOMATION_SFI enabled.

4.5.2.5 +CFUN Set phone functionality

Description	Command	Possible Response(s)
Select the level of functionality	+CFUN=[<fun>[,<rst>]]	
Get current level	+CFUN?	+CFUN: <fun>
Get supported values	+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s)

Parameters

<fun>	Description
5	GSM RAT only
6	WCDMA RAT only

Clarification

Standard AT+CFUN supports additional <fun> values to support ADAPT testing

These new <fun> values are available only if AT_MAPPING_AUTOMATION_SFI and SPN_MS_TYPE_CHANGE_FTR are enabled

In case of <fun> parameter 5 & 6, we should not gave the second parameter. As it is not

supported because in this case we are just dynamically updating the supported bands. So giving the second parameter <rst> is not appropriate in this case.

5. List of Internal AT Commands

Internal commands are used by AT modules to interact with each other to get the service. These commands are internally used and attempting these command from external TE results in error. The following are the list of Internal AT commands

1. *CBFCBM
2. *CLCIND
3. *CLPBEN
4. *DRPBRS
5. *DRPBFN

6. *DRSCCL

7. *DTGDCS

8. *DTCIND

9. *NTCGATT

10.*NTFCGEV

11.*NTCIND

12.*PPCIND

13.*SCPIN

14.*SMCIND

*SCPIN command was declared as internal command previously. But now it is changed to Extended type to allow RIL to use the command for PIN verification before using SIM access commands.

6.   AT commands customisation

ATCUST module can be used to implement new AT command or overload existing ones.

Refer SwUM Multi-TA : customisation manual (Vyn_ps13809)

7.   General clarifications & behaviours

7.1.1   Non volatile memory needs

Settings accessed through AT commands are stored in non-volatile memory and gathered in several sets called profile:

Factory setting profile: used to reset to factory default setting a set of variables. This set of values can't be modified and therefore is stored in ROM.

Profile 0 and 1: These profiles, stored in non-volatile memory, contain 2 subsets of variables:

-   Z profile used by Z command
-    +CSAS profile used by +CSAS command

Default Profile: This profile, stored in non-volatile memory, is used to initialise a channel when it is opened. It contains 3 subsets of variables:

- &W profile: Gather the variables accessed with &W command (same set as for Z profile).

- +CSAS profile: it gather variables accessed with +CSAS and +CRES commands

- Other data profile: used to gather other settings (settings of Factory setting profile not contained in &W profile nor CSAS profile).

Active Profile: Same as the &W profile of Default Profile.

Channel profile: This is a set of variables affected to a channel. It is stored in volatile memory. At the channel creation, the content of the default profile is copied in it.

The diagram below shows the profiles and where they are stored:
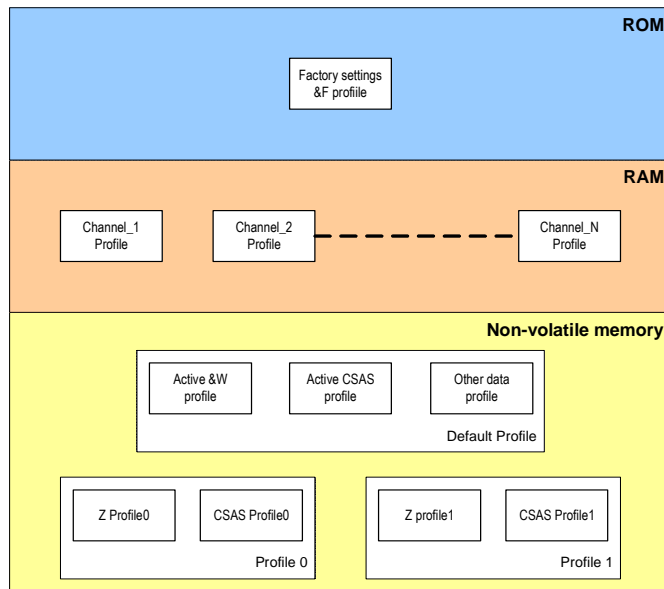
The &F command modifies both the Active Profile of the channel on which the commands has been requested as well as the Default &W profile:
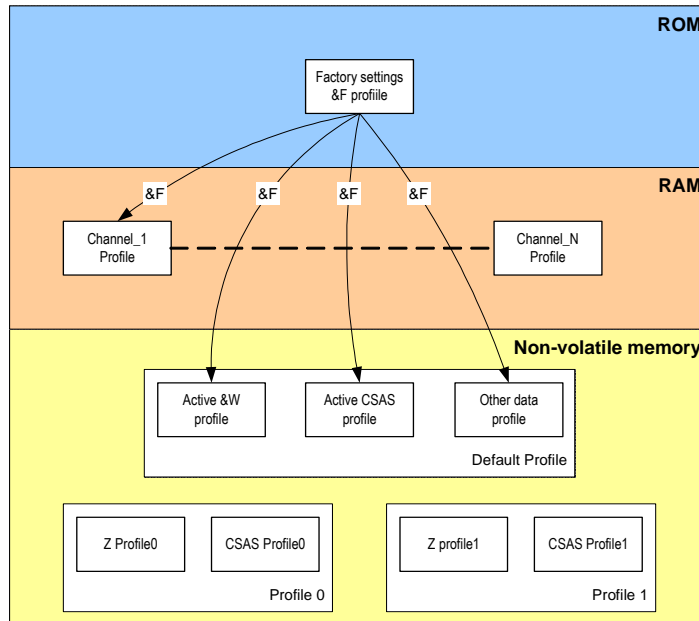
The &W command copy the Active &W Profile into the Default Z Profile and into Z profile 0 or 1 according to the parameter of &W. The Z command copy Z profile 0 or 1, according the parameter, to Active &W Profile on which the command has been requested and to the Default &W Profile:
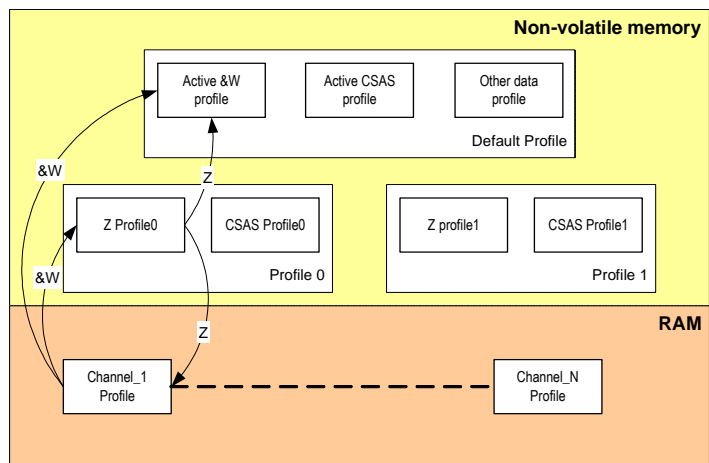
The +CSAS command copy the Default CSAS profile into CSAS Profile 0 or 1 according to the parameter:
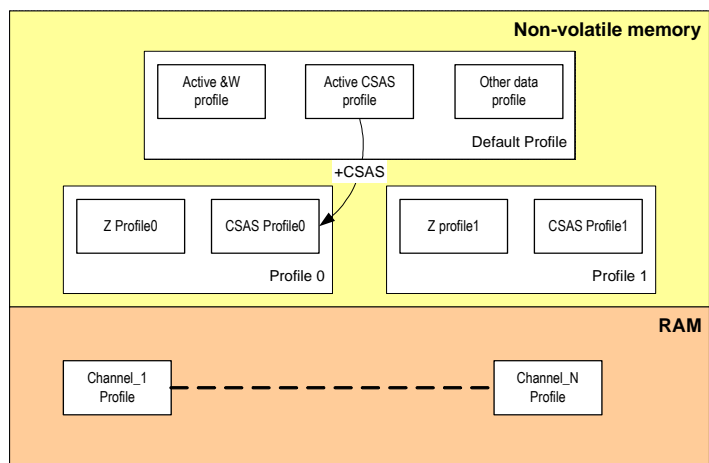
The +CRES command copy the CSAS Profile 0 or 1, according to the parameter, to Default CSAS Profile:
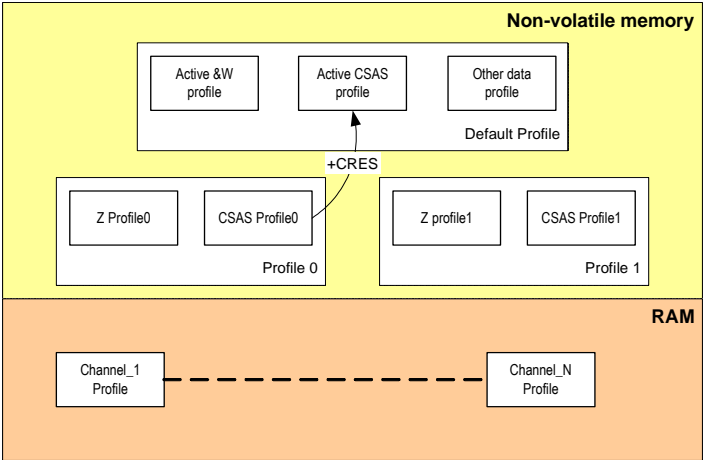
7.1.2 Quality of service (QoS) attributes mapping

Recommendation [23.107] explains how to determine R99 attributes from R97/R98 attributes and how to determine R97/R98 attributes from R99 attributes depending of the release of the MS and the network.

The mapping of each attribute is done depending on which AT command +CGQREQ and/or CGQEREQ is sent to the TA before activation of the PDP.

Use case	Behaviour
No +CGQREQ or +CGEQREQ is sent to TA	EEPROM default values are used to activate the PDP. No mapping is done
Only +CGQREQ is sent to TA	If R97/R98 attribute is set to subscribed value, derived R99 attribute is the default value (EEPROM value, no mapping done) else R99 attribute is calculated according to [23.107] Table 6
Only +CGEQREQ is sent to TA	If R99 attribute is set to subscribed value, derived R97/R98 attribute is the default value (EEPROM value, no mapping done) else R97/R98 attribute is calculated according to [23.107] Table 7
First +CGQREQ then +CGEQREQ are sent to TA	R99 attribute has the priority in this case. If R99 attribute is set to subscribed value, derived R97/R98 attribute is the one set in +CGQREQ command else R97/R98 attribute is calculated

Use case	Behaviour
	according to [23.107] Table 7.
First +CGEQREQ then +CGQREQ are sent to TA	R99 attribute has the priority in this case. If R97/R98 attribute is set to subscribed value, no mapping is done else R97/R98 attribute is calculated according to [23.107] Table 7 (the value set by +CGQREQ is ignored).

The same rules apply when using +CGQMIN and +CGEQMIN commands.

Note: If +CGQREQ or +CGEQREQ read command is sent to TA, returned value will be the one provided in the set command. Mapped values will not be returned; they are calculated and used only during PDP activation request.

7.1.3   Video telephony by AT commands

Justification for implementation of a proprietary implementation of video telephony by AT commands:

[27.007] Specifies how to manage multimedia calls (BS 30 either MO or MT) by specifying dedicated values (+CBST command, +CRC/CRING) but [27.007] does not specify how to manage 2 bearer capability negotiation during call setup and how to manage services changes initiated by TE or network in case of multimedia call.

However [27.007] gives an example on how to manage alternating voice/data service (BS 61). Especially it explains how to go from voice to data or from data to voice mode.

This example can has been used to manage multimedia calls by adding proprietary notification and commands where needed.

Video telephony calls are not managed as data calls. Especially, when call is in multimedia mode, AT channel is note switched to online data mode. Data exchange between network and video telephony application on TE side use a proprietary interface. AT commands are only used to control the call through a serial link.

For MO video telephony calls:

 +CMOD command is used to choose the request a multimedia call setup.

*PSVTCP notification informs TE about call mode accepted by network.

Bearer capability for multimedia calls is not controlled by +CBST commands. However, +CBST commands can be used to select the user rate (<speed> parameter for the VT call)

For MT video telephony calls:

*PSVTCS notification is used to request bearer capability negotiation. TE has to response with *PSVTCS command.

+CRING informs about call mode.
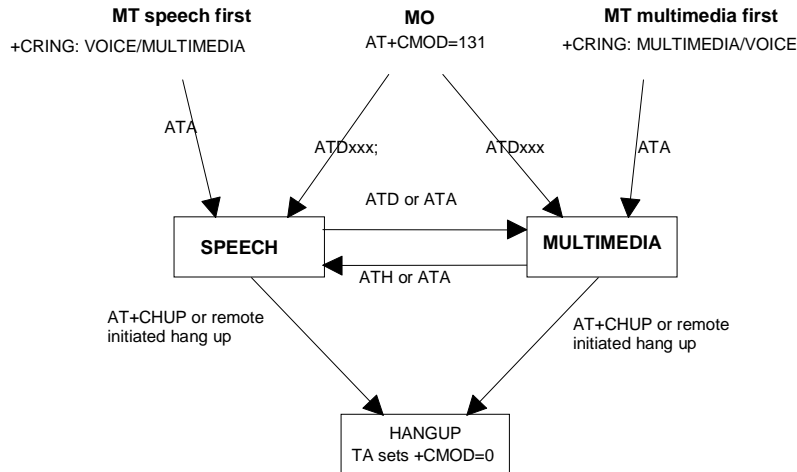
7.1.4 3G Phonebook AT commands

Justification for implementation of a proprietary implementation AT commands for 3G phonebook:

+CPBR/+CPBF/+CPBW AT commands have been extended for 3G phonebook in Release 6 version of 27.007 recommendation. But the extension is not sufficient to properly and fully manage 3G phonebook entries.

A 3G phonebook entry can belong to several groups (GRP), can have several secondary names (SNE), several additional numbers (ANR) and several emails.

With 27.007 commands:

- It is not possible to read or write several SNE, ANR, EMAIL,GRP.

- It is not possible to manage additional number type (EF AAS)

- It is not easy to manage (read/write) independently each part of an entry (to manage groups only for example).

8. Use cases & examples

The aim of this chapter is to give an overview of some use cases. It doesn't illustrate all the possible cases for each command (optional parameters, error cases,) but it shows

the most general cases. Some optional URC are activated in order to enrich the illustration.

8.1 Switch on and services availability

This example illustrates how to add service availability URC on mobile switch on

Channel 1	Direction	Comment
at*psseav=1	TE→ME	Switch on presentation of service availability
OK	ME→TE	
switch off then switch on the ME		
*PSREADY: 0	ME→TE	Phone book service available
*PSREADY: 2	ME→TE	SMS-CB service available
*PSREADY: 1	ME→TE	SMS service available

8.2 PIN code related commands

This example illustrates the use of +cpin command to enter PIN code and *pspras to check the remaining attempt status:

Channel 1	Direction	Comment
at+cmee=2	TE→ME	
OK	ME→TE	
at+cpin?	TE→ME	Set ME to full functionality state
+CPIN: SIM PIN	ME→TE	SIM requests PIN
AT+CPIN="1234"	TE→ME	
+CME ERROR: incorrect password	ME→TE	user entered wrong password
at*pspras?	TE→ME	Pin remaining attempt status
*PSPRAS: 2,3,3,3	ME→TE	
AP+CPIN="4321"	TE→ME	
OK	ME→TE	

8.3 SMS edition

Here is an example of command sequence used to edit an SMS:

Channel 1	Direction	Comment
at+cmgf=1	TE→ME	Select message format
OK	ME→TE	
at+csca="0123456789"	TE→ME	Set the service centre address
OK	ME→TE	
at+csmp=17,167,100,0	TE→ME	Set text mode parameter
OK	ME→TE	
at+cmgs="+01234567890123456789"	TE→ME	dial the number the sms will be sent to
OK	ME→TE	
>This is a example<cr> >Of SMS editing^z	ME→TE	'>' prompt indicate we are in editing mode.' ^z' ends the edition
OK	ME→TE	
+CMGS: 2	ME→TE	

In case of an incoming call during an SMS edition we have the following possible scenarios:

1) In mono channel mode: The edition is exited and the RING URC is displayed.

2) In multi channel mode without available channel to display the URC: The behaviour is the same as in mono channel mode (the edition mode is exited allowing the display of RING URC and allowing the user to answer the call).

3) In multi channel mode with at least 1 available channel: The URC is broadcasted on every available channel without exiting the SMS edition mode.

8.4 Phone book access

This example shows the use of +cpbs test command to get the list of available phonebooks, +cpbs set command to select the phonebook and +cpbr set command to read the selected phonebook:

Channel 1	Direction	Comment
at+cpbs=?	TE→ME	Get a list of available phonebook
+CPBS: "DC","EN","FD","MC","ON","RC","SM" OK	ME→TE	
at+cpbs="SM"	TE→ME	Select SIM phonebook.
OK	ME→TE	
at+CPBR=?	TE→ME	Get information on SIM phonebook
+CPBR: (1-4),7,4	ME→TE	4 numbers,

Channel 1	Direction	Comment
OK		max length of <number> =7 max length of <text>=4
at+cpbr=1,3	TE→ME	Read the first 3 entries
+CPBR: 1,123456789,129,"ABCD" +CPBR: 2,234567890,129,"EFGH" +CPBR: 3,345678901,129,"IJKL" OK	ME→TE	
atd>"ABCD";	TE→ME	Search " ABCD" in the entries of phonebooks and call it.
OK	ME→TE	

8.5 Call command

8.5.1 General rules

A call is linked to a channel. As a consequence, in multi channel mode some commands won't affect the call if they are not requested on the right channel.

It is the case of A,O,Z, H, H[x] and +CHUP commands.

8.5.2 Incoming calls

This example illustrates the case of an incoming call in multi channel mode with 2 channels opened. It also illustrates the membership of call with channel.

Channel 1	Channel 2	Direction	Comment
at+clip=1;+crc=1; *psccdn=1		TE→ME	Enable CLIP urc Extended cellular result code Call Connection and Disconnection enabled
OK		ME→TE	
+CRING: VOICE +CLIP: "0243411331",129,"",128,,0	+CRING: VOICE +CLIP: "0243411331",129,"",128,,0	ME→TE	Incoming voice calls
			5 seconds between rings
+CRING: VOICE +CLIP:	+CRING: VOICE +CLIP:	ME→TE	

Channel 1	Channel 2	Direction	Comment
"0243411331",129,"",128,,0	"0243411331",129,"",128,,0		
ATA		TE→ME	answer the incoming call
*PSCALL: 1,1,"0243411331"		ME→TE	Status of call #1
OK		ME→TE	
	ATH	ME→TE	The call is not hung up
	OK	ME→TE	
AT+CHUP		TE→ME	Hang up the call (with +CHUP or ATH)
*PSCALL: 1,0		ME→TE	Status of call #1
OK		ME→TE	

8.5.3 Outgoing calls

This example illustrates an outgoing call hung up by called part.

Channel 1	Channel 2	Direction	Comment
at+colp=1;*psccdn=1		TE→ME	Enable COLP urc Call Connection and Disconnection enabled
OK		ME→TE	
atd0123456789;		TE→ME	Dial "0123456789" for speech call
*PSCALL: 1,1,"0123456789"		ME→TE	Status of call #1
+COLP: "0123456789",129		ME→TE	
NO CARRIER		ME→TE	The called part hang up
*PSCALL: 1,0		ME→TE	Status of call #1

8.5.4 Use of +CHLD

This command is used to manage multiparty conversation, to set on hold current call and answer a waiting call, etc…

A call is linked to a channel. For +CHLD command the following rules are:

- When call number is not specified, the list of calls impacted by the command is deduced from their state (held, active, …) and not from the channel they are linked to.

- A call becoming active due to the execution of +CHLD command is linked to the channel on which the command has been sent.

A call is on hold on CHANNEL_1 and "at+chld=2" is requested on CHANNEL_2. The call become active and is associated to the CHANNEL_2:

Channel 1	Channel 2	Channel 3	Direction	Comment
Call #1 on HOLD	No call	No call		Initial state
	AT+CHLD=2		TE→ME	Accept held call
	OK		ME→TE	The call is now active and is linked to CHANNEL_2
No call	Call #1 ACTIVE	No call		New state

A call is active on CHANNEL_1 and "at+chld=1" is requested on another channel. The call is ended:

Channel 1	Channel 2	Channel 3	Direction	Comment
Call #1 ACTIVE	No call	No call		Initial state
	AT+CHLD=1		TE→ME	Release active call
	OK		ME→TE	The call is released
No call	No call	No call		New state

A call is active on CHANNEL_1, a second call is on hold on CHANNEL_2 and "at+chld=2" is requested on CHANNEL_3. The active call is set on hold:

Channel 1	Channel 2	Channel 3	Direction	Comment
Call #1 ACTIVE	Call #2 on HOLD	No call		Initial state
		AT+CHLD=2	TE→ME	Place ACTIVE calls on hold and accept held call
		OK	ME→TE	Call #1 is on hold, Call #2 is active and linked to CHANNEL_3
Call #1 on HOLD	No call	Call #2 ACTIVE		New state

8.5.5 Disconnecting calls

This example shows how the ATH request with parameter works. It is also an illustration of the use of CLCC command to get information on calls ongoing and their state.

Channel 1	Channel 2	Channel 3	Direction	Comment
Call #1 on MPTY HOLD	Call #2 ACTIVE	Call #3 on MPTY HOLD		initial state
		AT+CLCC	TE→ME	List current calls managed by TE
		+CLCC: 1,0,1,0,1 +CLCC: 2,0,0,0,0 +CLCC: 3,0,1,0,1 OK	ME→TE	A call is on mpty hold on channel 1, another one is active on channel 2 and the last one is on mpty hold on channel 3.
		ATH1	TE→ME	This command hang up every calls
NO CARRIER			ME→TE	
	NO CARRIER		ME→TE	
		OK	ME→TE	
		AT+CLCC	TE→ME	
		OK	ME→TE	Every calls have been released

8.5.6 Data calls

This example demonstrates the use of +CGDCONT, +CGQREQ, +CGACT, +CGDATA and ATD to perform data call. It also demonstrates the capacity to multiplex data connection

Channel 1	Channel 2	Direction	Comment
at+cgdcont=1,"IP", "orange.fr","0.0.0.0"		TE→ME	Configure PDP context 1
OK		ME→TE	
at+cgqreq=1,,,3		TE→ME	Quality of service requested
OK		ME→TE	
at+cgact=1,1 OK		TE→ME ME→TE	PDP context activate
at+cgdata=		TE→ME	Enter data state
CONNECT		ME→TE	data connection is ongoing on channel 1
	at+cgdcont=2,"IP", "APN_SUBSCRIBED"	TE→ME	Configure PDP context 2
	OK	ME→TE	

Channel 1	Channel 2	Direction	Comment
	at+cgqreq=2,,,4	TE→ME	Quality of service requested
	OK	ME→TE	
	atd*98*2#	TE→ME	Enter data state
	CONNECT	ME→TE	data connection is ongoing on channel 1

8.6　Working on registers

From the register management point of view, MUX mode with a single connected channel is managed as a mono channel mode. Never less here are examples that illustrate the comportment in the 2 modes.

In mono channel mode, on a link creation (i.e. when a cable is plugged) the Default Profile stored in non-volatile memory is used to initialize channel's sets of variables and registers. The registers are gathered in a subset we call &W profile. If one wants to modify register values used the next time a link is created, he must save the current profile in active profile with the &W command. This &W profile is also copied in &w Profile 0 or 1 according to the parameter:

Channel 1	Direction	Comment
at&w0	TE→ME	Copy active &w profile into &w profile0 and into Default &W profile.
OK	ME→TE	
at&v	TE→ME	View current configuration
ACTIVE PROFILE: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 0: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 1: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 OK	ME→TE	
ats0=2	TE→ME	2 rings before auto answer
OK	ME→TE	

Channel 1	Direction	Comment
at&v	TE→ME	View current configuration
ACTIVE PROFILE: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:2 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 0: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 1: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 OK	ME→TE	The modified register appears in bold.
Cable is unplugged then re-plugged		
at&v	TE→ME	
ACTIVE PROFILE: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 0: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 1: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 OK	ME→TE	The changes made before unplugging are lost
ats0=2	TE→ME	2 rings before auto answer
OK	ME→TE	
at&w1		Copy active &w profile into &w profile1 and into Default &W profile.
OK	ME→TE	
at&v	TE→ME	
ACTIVE PROFILE: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:2 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 0:	ME→TE	In bold the modified registers

Channel 1	Direction	Comment
E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 1: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:2 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14		
OK		
Cable is unplugged then re-plugged		
at&v	TE→ME	
ACTIVE PROFILE: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:2 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 0: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:0 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14 STORED PROFILE 1: E1 Q0 V1 X4 &C1 &D1 &S0 +IFC= 1,0 &K0 +FCLASS0 S00:2 S01:0 S03:13 S04:10 S05:8 S07:50 S08:2 S10:14	ME→TE	We verify that the values were saved.
OK		

In multi channel mode, each channel manages its own Active profile. If a register is modified on CHANNEL_n it doesn't affect its value in non-volatile memory till &w0 or &w1 command has been executed on CHANNEL_n.

As in mono channel mode, it is the default &W profile saved in non-volatile memory that is used for the creation of a new channel

Channel 0	Channel 1	Channel 2	Channel 3	Direction	Comment
					CHANNEL_1 and 2 opened
	ats0?	ats0?		TE→ME	Read S0 value on
	000 OK			ME→TE	each channeli-> they have the same value
		000 OK			

Channel 0	Channel 1	Channel 2	Channel 3	Direction	Comment
	atS0=2			TE→ME	Set 2 in S0 on CHANNEL_1
	OK			ME→TE	
	ats0?	ats0?		TE→ME	Verify S0 value
	002 OK			ME→TE	SO=2 on CHANNEL_1
		000 OK		ME→TE	S0=0 on CHANNEL_2
OPEN(CHANNEL_3)					Open CHANNEL_3
ACKNOWLEDGE(CHANNEL_3)					
		ats0?		TE→ME	Read SO value
		000 OK		ME→TE	SO=0 on CHANNEL_3
DISC(CHANNEL_3)					Close CHANNEL_3
ACKNOWLEDGE(CHANNEL_3)					
	at&w0			TE→ME	Save registers of
	OK			ME→TE	CHANNEL_1 in Profile0
OPEN(CHANNEL_3)					Open CHANNEL_3
ACKNOWLEDGE(CHANNEL_3)					
		ats0		TE→ME	Read S0 value
		002		ME→TE	S0=2 on CHANNEL_3
		OK		ME→TE	
	ats0?			TE→ME	
	000			ME→TE	S0=0 on CHANNEL_2
	OK			ME→TE	

8.7 Video telephony by AT commands

8.7.1 MO call

VT call with fallback to speech:

Channel 1	Direction	Comment
AT+CBST=134,1,0	TE->ME	Set the multimedia call bearer: 64k, synchronous, transparent
OK	ME->TE	
AT+CMOD=130	TE→ME	Set the mode for the multimedia call
OK	ME→TE	
ATD12345679	TE→ME	Start dialing
*PSVTCP: MULTIMEDIA/FALLBACK	ME→TE	Call proceed notif
CONNECT 64000	ME→TE	Call connected in VT mode Channel remains in command mode
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

VT call with service change, multimedia first:

Channel 1	Direction	Comment
AT+CBST=134,1,0	TE->ME	Set the multimedia call bearer: 64k, synchronous, transparent
OK	ME->TE	
AT+CMOD=131	TE→ME	Set the mode for the multimedia call
OK	ME→TE	
ATD12345679	TE→ME	Start dialling no ";" --> VT first
*PSVTCP: MULTIMEDIA/VOICE	ME→TE	Call proceed notification
CONNECT 64000	ME→TE	Call connected in VT mode Channel remains in command mode
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

VT call with service change, multimedia first:

Channel 1	Direction	Comment
AT+CBST=134,1,0	TE->ME	Set the multimedia call bearer: 64k, synchronous, transparent

Channel 1	Direction	Comment
OK	ME->TE	
AT+CMOD=131	TE→ME	Set the mode for the multimedia call
OK	ME->TE	
ATD12345679 ;	TE→ME	Start dialling ";"--> speech first
*PSVTCP: VOICE/MULTIMEDIA	ME→TE	Call proceed notification
CONNECT 64000	ME→TE	Call connected in VT mode Channel remains in command mode
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

8.7.2 MT call

VT call, fallback to speech possible

Channel 1	Direction	Comment
*PSVTCS: MULTIMEDIA/FALLBACK	ME→TE	SETUP message received
AT*PSVTCS=3	TE→ME	Accept VT call with fallback to speech possible (CALL CONFIRM message)
OK	ME→TE	
+CRING: MULTIMEDIA/FALLBACK	ME→TE	Alerting information with negotiated mode
ATA	TE→ME	Answer the call
CONNECT 64000	ME→TE	Call connected in VT mode Channel remains in command mode
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

VT call, mode is service change, multimedia first asked by the TE

Channel 1	Direction	Comment
*PSVTCS: MULTIMEDIA/VOICE	ME→TE	
AT*PSVTCS=4	TE→ME	Set the request mode for negotiation with the network
OK	ME→TE	
+CRING: MULTIMEDIA/VOICE	ME→TE	Alerting information with negotiated mode
ATA	TE→ME	Answer the call

Channel 1	Direction	Comment
CONNECT 64000	ME→TE	Call connected in VT mode Channel remains in command mode
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

VT call, mode is service change, speech first asked by the TE

Channel 1	Direction	Comment
*PSVTCS: MULTIMEDIA/VOICE	ME→TE	
AT*PSVTCS=3	TE→ME	Set the request mode for negotiation with the network
OK	ME→TE	
+CRING: VOICE/MULTIMEDIA	ME→TE	Alerting information with negotiated mode
ATA	TE→ME	Answer the call
OK	ME→TE	Call connected in speech mode
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

8.7.3 In-call modification

A VT in multimedia mode is active

Channel 1	Direction	Comment
ATH	TE→ME	Modify to speech
OK	ME→TE	Call has been modified to speech
ATD	TE→ME	Modify to multimedia
CONNECT 64000	ME→TE	Call has been modified to multimedia
ATH	TE→ME	Modify to speech
OK	ME→TE	ME→TE
ATH	TE→ME	Modify to speech
ERROR	ME→TE	Call has not been modified to speech, it is speech yet
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

A VT in speech mode is active

Channel 1	Direction	Comment
ATD	TE→ME	Modify to multimedia
CONNECT 64000	ME→TE	Call has been modified to multimedia
ATD	TE→ME	Modify to multimedia
ERROR	ME→TE	Call is already multimedia
ATH	TE→ME	Modify to speech
OK	ME→TE	Call has been modified to speech
AT+CHUP	TE→ME	Disconnect the call
OK	ME→TE	

A VT in multimedia mode is active, network request service change to voice

Channel 1	Direction	Comment
*PSVTCMNW: VOICE	ME→TE	URC indicates a request to modify the call to speech
ATA	TE→ME	Modify to speech
OK	ME→TE	Call has been modified to speech

A VT in multimedia mode is active, network request service change to voice

Channel 1	Direction	Comment
*PSVTCMNW: VOICE	ME→TE	URC indicates a request to modify the call to speech
ATA	TE→ME	Modify to speech
NO CARRIER	ME→TE	Call has NOT been modified to speech (remains in VT mode)

A VT in multimedia mode is active, network request service change to multimedia

Channel 1	Direction	Comment
*PSVTCMNW: MULTIMEDIA	ME→TE	URC indicates a request to modify the call to multimedia
ATA	TE→ME	Modify to multimedia
CONNECT 64000	ME→TE	Call has been modified to multimedia

8.8 3G phonebook

8.8.1 Common resources management

Channel 1	Direction	Comment
AT*PS3GPBCRR = 0, 0, 5	TE→ME	Get recourse id and group name allowed for entry 5
	ME→TE	
*PS3GPBCRR: 257, "Family" *PS3GPBCRR: 258, "Work" *PS3GPBCRR: 259, "" *PS3GPBCRR: 260,"" *PS3GPBCRR: 261, "Restaurants"		257 → 0x0101 258 → 0x0102 empty string = resource free empty string = resource free 261 → 0x0105
OK	ME→TE	
AT*PS3GPBCRR = 0, 0, 800	TE→ME	Get recourse id and group name allowed for entry 800
	ME→TE	
*PS3GPBCRR: 1025, "Friends" *PS3GPBCRR: 1026, "" *PS3GPBCRR: 1027, "Work"		1025 → 0x0401 empty string = resource free 1025 → 0x0403
OK	ME→TE	
AT*PS3GPBCRR = 0, 1	TE→ME	Get the number of group resource id range available for a range of record indexes
*PS3GPBCRR: 257, "1-254" *PS3GPBCRR: 513, "255-508" *PS3GPBCRR: 257, "509-762" *PS3GPBCRR: 1025, "763-1016"	ME→TE	257 (0x0101) means resources id from 257 (0x0101) to 510 (0x01FE = 0x0101+0x00FD) are possible for indexes from 1 to 254 and 509 to 762
OK	ME→TE	
AT*PS3GPBCRW=0,259,"Friends"	TE→ME	Creation of group "friends"
OK	ME→TE	
AT*PS3GPBCRR = 0, 0, 5	TE→ME	Get recourse id and group name allowed for entry 5
	ME→TE	
*PS3GPBCRR: 257, "Family" *PS3GPBCRR: 258, "Work" *PS3GPBCRR: 259, "Friends" *PS3GPBCRR: 260,"" *PS3GPBCRR: 261, "Restaurants"		257 → 0x0101 258 → 0x0102 259 → 0x0109 empty string = resource free 261 → 0x0105
OK	ME→TE	

From these examples we deduce that:

- For record indexes from 1 to 254 & 509 to 762 "Familly","Work","Restaurants" are group name allowed
- For record indexes from 763 to 1016 "Friends","Work" are group name allowed

Same behaviour for ANR type reading.

8.8.2 Entries reading

Channel 1	Direction	Comment
AT*PS3GPBR=1,3	TE→ME	Reading of an indexes 1,2,3 of a 3G phonebook with structure: 2 group, 2 anr, 1 sne ,1 email
*PS2GPBR: 1,"123456",129,"Dessenne", 0<CR><LF> *PSGRP: "FRIENDS"<CR><LF> *PSGRP: ""<CR><LF> *PSANR: "369852",129,"Home"<CR><LF> *PSSNE: "JC Duce"><CR><LF> *PSEMAIL: "jc.duce@google.Fr"<CR><LF> ***PS2GPBR**: 2,"666666",129,"Wayne", 0<CR><LF> *PSANR: "369852",129,MOBILE"<CR><LF> *PSANR: "7777",129,"FAX"<CR><LF> *PSSNE: "JOE"<CR><LF> *PSSNE: "JWA"<CR><LF> *PSEMAIL: "john.wayne@google.Fr"<CR><LF> ***PS2GPBR**: 3,"123456",129,"Eastwood", 0<CR><LF> *PSGRP: "FRIENDS"<CR><LF> *PSGRP: "Work"<CR><LF>	ME→TE	Index1: 2 groups 1 anr 1 sne 1 email Index 2 0 group 2 anr 2 sne 1 email Index 3 0 group, anr, sne, email
OK	ME→TE	

8.8.3 Entry writing

Entry creation

Channel 1	Direction	Comment
AT+CSCS="GSM"	TE→ME	TE Charset = GSM
OK	ME→TE	
AT+CPBS="AP"	TE→ME	Select Global phonebook

Channel 1	Direction	Comment
OK	ME→TE	
AT*PS3GPBW=5,1<CR>	TE→ME	Creation of a new entry in index 5
NB>	ME→TE	
123456<CR>	TE→ME	Number
TP>	ME→TE	Prompt on type of number
129<CR>1	TE→ME	Type of number
NM>	ME→TE	Prompt of name
Dessenne Fabien<CR>	TE→ME	Name
HD>	ME→TE	Prompt of hidden
0<CR>	TE→ME	Hidden info
GRPID>	ME→TE	Prompt of 1st group
291<CR>	TE→ME	Group identified with resource Id 291 is associated to entry
GRPID>	ME→TE	Prompt of 2nd group
<CR>	TE→ME	No 2nd group
ANRNB>	ME→TE	Prompt of 1st anr number
12345678<CR>	TE→ME	1st anr number=12345678
ANRTP>	ME→TE	Prompt of 1st anr nb type
129<CR>	TE→ME	1st anr nb type=129
ANRTID>	ME→TE	No 2 nd anr type
519<CR>	TE→ME	ANR type identified with resource Id 519 is associated to entry
ANRNB>	ME→TE	Prompt of 2nd anr name
<CR>	TE→ME	No 2 nd anr
ANRTP>	ME→TE	Prompt of 2nd anr nb type
<CR>	TE→ME	No 2 nd anr
ANRTID>	ME→TE	Prompt of 2nd anr type
<CR>	TE→ME	No 2 nd anr
ANRNB>	ME→TE	Prompt of 3rd anr name
<CR>	TE→ME	No 3rd anr
ANRTP>	ME→TE	Prompt of 3rd anr nb type
<CR>	TE→ME	No 3rd anr
ANRTID>	ME→TE	Prompt of 3rd anr type
<CR>	TE→ME	No 3rd anr
SNE>	ME→TE	Prompt of 1st sne

Channel 1	Direction	Comment
JC Duce<CR>	TE→ME	1st sne = JC Duce
SNE>	ME→TE	Prompt of 2nd sne
BOB<CR>	TE→ME	2nd sne = BOB
EMAIL>	ME→TE	Prompt of email
billy@yahoo.fr<CR>	TE→ME	Email + end of edition
*PS3GPBW: 5	ME→TE	Index stored in index 5
OK	TE→ME	

Update of SNE

Channel 1	Direction	Comment
AT+CSCS="UCS2"	TE→ME	TE Charset = UCS2
OK	ME→TE	
AT+CPBS="SM"	TE→ME	Select local phonebook
OK	ME→TE	
AT*PS3GPBW=12,5<CR>	TE→ME	Update of SNE files of index 12
SNE>	ME→TE	Prompt of 1st sne
002A0023005F007800A3006F <CR>	TE→ME	1st sne in UCS2
SNE>	ME→TE	Prompt of 2nd sne
00220033005F00AA000A3005C <CR>	TE→ME	2nd sne in UCS2
*PS3GPBW: 12	ME→TE	Index stored in index 12
OK	TE→ME	

9. Document management

9.1 Abbreviations and terminology

Table 1:   Abbreviations and terminology

Abbreviation	Description
CS	Circuit Switch
DLC	Data Link Control
DSL	Data Serial Link, the driver that manage the physical link between the TE and the TA

Abbreviation	Description
GPRS	Global Packet Radio Service
SMS	Short Message Service
TE	Terminal Equipment e.g. a computer (equal to DTE; Data Terminal Equipment)
MT	Mobile Terminated
SAT	Sim Application Toolkit
TA	Terminal Adapter (e.g. a GSM data card (equal to DCE; Data Circuit terminating Equipment)
MUX	Multiplex protocol (07.10 implementation)
ME	Mobile equipment

9.2 Referenced documents

Table 2:   Referenced documents

Doc ID	Doc Title	Version	Author	Issue Date
[27.005]	TS 100 585 Digital cellular telecommunications system (Phase 2+) – Use of Data Terminal Equipment – Data Circuit terminating Equipment (DTE – DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)	-	3GPP	
[27.007]	3GPP TS 27.007 AT command set for User Equipment	-	3GPP	
[V25ter]	ITU-T V.25 ter Data communication over the telephone network – Serial asynchronous automatic dialing and control	-	ITU-T	
[TIA578A]	TIA/EIA-578-A Facsimile Digital Interfaces – Asynchronous Facsimile DCE Control Standard, Service Class	-		
[23.040]	ETS 300 901 Digital cellular	-	3GPP	

Doc ID	Doc Title	Version	Author	Issue Date
	telecommunications system (Phase 2+) – Technical realization of the Short Message Service (SMS) Point-to-Point (PP)			
[23.041]	Technical Specification Group Terminals; Technical realization of Cell Broadcast Service (CBS)	-	3GPP	
[24.008]	ETS 300 940 Digital cellular telecommunications system (Phase 2+) – Mobile radio interface layer 3 specification	-	3GPP	
[21.004]	TR 101 748 Digital cellular telecommunications system (Phase 2+) – Abbreviations and acronyms	-	3GPP	
[27.010]	3GPP 27.010 Terminal Equipment to Mobile Station (TE-MS) Multiplexer protocol	-	3GPP	
[23.107]	3GPP TS 23.107 Quality of Service (QoS) concept and architecture	-	3GPP	
[DF_SUM_SPVMMI]	Vyn_ps11956 External DF Software User Manual SPV/MMI	-		
[SUM_SPVMMI]	Vyn_ps19158 SwUM SPV MMI User Manual	-		
[ISD_UPV]	Vyn_ps11434 SwISD UPV	-		
[SwUM]	Vyn_ps13809 Multi-TA : customization manual	-		