Luat LTE Module

AT Command Interface

User Manual

Rev1.0

Definitions and Abbreviations

Definitions

For the purposes of the present document, the following syntactical definitions apply:

<CR> Carriage return character, which value is specified with command S3.

<LF> Linefeed character, which value is specified with command S4.

<...> Name enclosed in angle brackets is a syntactical element. Brackets themselves do not appear in the command line.

[...] Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in *parameter type* commands, new value equals to its previous value. In *action type* commands, action should be done on the basis of the recommended default setting of the subparameter.

Abbreviations

AT	Attention; this twocharacter abbreviation is always used to start a command line to be sent from TE to TA
DCE	Data Circuit terminating Equipment
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual-Tone Multi-Frequency
DTR	Data Terminal Ready
IMEI	International Mobile station Equipment Identity
IRA	International Reference Alphabet (ITUT T.50)
ME	Mobile Equipment
MEP	Mobile Equipment Personalization
MO	Mobile Original
MT	Mobile Termination
PDP	Packet Data Protocol
RD	Reliable Data
SIM	Subscriber Identity Module
SN	Serial Number
TA	Terminal Adaptor, e.g. a GSM data card (equal to DCE; Data Circuit terminating Equipment)
TE	Terminal Equipment, e.g. a computer (equal to DTE; Data Terminal Equipment)
TIA	Telecommunications Industry Association
UE	User Equipment
UICC	Universal Integrated Circuit Card
USIM	Universal Subscriber Identity Module
VBS	Voice Broadcast Service
VGCS	Voice Group Call Service
USIM	Universal Subscriber Identity Module
RDI	Restricted Digital Information

AT Command Interface

Summary of AT Commands Supported by AT Command Server

Table 3: Summary of AT Commands

Primitives	Category	Quick Description
ATS0	S-Register command	Set the automatic answering delay
ATS3	S-Register command	Set the Carriage Return character
ATS4	S-Register command	Set the Line Feed character
ATS5	S-Register command	Set the Backspace character
ATS6	S-Register command	Pause before blind dialing
ATS7	S-Register command	Set the Number of seconds to establishend-to-end data
ATS8	S-Register command	Set the Number of seconds to pause when“,” is encountered in dial string
ATS9	S-Register command	Set the Carrier detect threshold inincrements of 0.1 seconds
ATS10	S-Register command	Set the Lost Carrier Hang-up Delay
ATS11	S-Register command	This specifies the duration of tones in DTMF dialing
ATE	Basic command	Set whether or not the modem echoes characters
ATI	Basic command	Request manufacturer specific information about the TA
ATQ	Basic command	Determines whether the mobile equipment sends result codes or not
ATV	Basic command	Set TA response format
ATX	Basic command	Defines CONNECT result code format
ATZ	Basic command	Restores the configuration profile
AT&C	Basic command	Controls the Data Carrier Detect (DCD) signal

Primitives	Category	Quick Description
AT&D	Basic command	Controls the Data Terminal Ready (DTR) signal
AT&F	Basic command	Reloads the factory-stored default configurations
AT&S	Basic command	This command determines how the DSR signal operates.
AT&Z	Basic command	Stores a telephone number into the modems telephone directory
AT+CGMI	General command	Return information of manufacturer
AT+CGMM	General command	Return information of model
AT+CGMR	General command	Return information of revision
AT+CGSN	General command	Return information of serial number
AT+CSCS	General command	Informs TA which character set is used by the TE
AT+CIMI	General command	Causes the TA to return IMSI
AT+ASTO	General command	Save/fetch dial-string
AT+GMI	General command	Return information of the name of the manufacturer
AT+GMM	General command	Return information of the name of the product
AT+GMR	General command	Return information of the software version of the product
AT+GSN	General command	Return information of a manufacturer determined alpha-numeric string
AT^HVER	General command	Return information of the hardware version of the product
AT+GCAP	General command	Return a list of additional capabilities command
AT+IPR	General command	Specifies the data rate at which the DCE will accept commands
AT+ICF	General command	Determine the local serial port start-stop character framing
AT+IFC	General command	Control the operation of local flow control
AT+IDSR	General command	Determines how V.24 circuit 107shall behave

Primitives	Category	Quick Description
ATA	Call control command	Answer an incoming call
ATD	Call control command	Start an original call
ATH	Call control command	Hang up a call
AT+CBST	Call control command	Set the bearer service name and data rate
AT+CVHU	Call control command	Set whether ATH or “drop DTR” shall cause a voice connection to be disconnected or not
AT+CRLP	Call control command	Set Radio link protocol parameters
AT+CMUT	Call control command	Enable and disable the uplink voice muting during a voice call
AT+CHUP	Call control command	Causes the TA to hang-up the current UMTS call of the MT
AT+CSTA	Call control command	Selects the type of number for further dialing commands (D)
AT+CRC	Call control command	Controls whether or not the extended format of incoming call indication or GPRS network request for PDP context activation or notification for VBS/VGCS calls is used
AT+CMOD	Call control command	Select the call mode of further dialing commands or for next answering command.
AT+ECHUPVT	Call control command	Hangs up all connecting or connected CS calls and provide the cause.
AT+CREG	Network service related command	Controls the presentation of an unsolicited result for network registration status change
AT+CIND	Network service related command	Set the values of MT indicators
AT+COPS	Network service related command	Select and register the UMTS network operator
AT+CPOL	Network service related command	Edit the PLMN selector with Access Technology lists in the SIM card or active application in the UICC
AT+CLCK	Network service related command	Lock, unlock or interrogate a MT or a network facility
AT+CPWD	Network service related command	Sets a new password for the facility lock function

Primitives	Category	Quick Description
AT+CLIP	Network service related command	Enables a called subscriber to get the calling line identity
AT+CLIR	Network service related command	Enable or disable the presentation of the CLI to the called party when originating a call
AT+COLP	Network service related command	Enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call
AT+COLR	Network service related command	Interrogation of the CoLR Service support.
AT+CNAP	Network service related command	Requests status information for the CNAP (Calling Name Presentation) Supplementary Service
AT+CCFC	Network service related command	Control of the call forwarding supplementary service according to 3GPP TS 22.082
AT+CCWA	Network service related command	Control of the Call Waiting supplementary service
AT+CHLD	Network service related command	Control ofa calls can be put on hold, recovered, released, added to conversation, and transferred
AT+CUSD	Network service related command	Control of the Unstructured Supplementary Service Data (USSD)
AT+CAOC	Network service related command	Enables subscriber to get information about the cost of calls
AT+VTS	Network service related command	Allows the transmission of DTMF tones and arbitrary tones
AT+VTD	Network service related command	Refers to an integer <n> that defines the length of tones emitted as a result of the +VTS command.
AT+CSSN	Network service related command	Refers to supplementary service related network initiated notifications
AT+CLCC	Network service related command	Returns list of current calls of MT
AT+CEER	Network service related command	Causes the TA to return one or more lines of information text of result report

Primitives	Category	Quick Description
AT+PEER	Network service related command	Requests the failure cause code for the most recently failed PDP context activate
AT+CNUM	Network service related command	Rturns the MSISDNs related to the subscriber
AT+CSQ	Network service related command	Returns received signal strength indication <rssi> and channel bit error rate from the MT
AT+CDIP	Network service related command	Enables a called subscriber to get the called line identification of the called party when receiving a mobile terminated call
AT^SYSCONFIG	Network service related command	Sets the system mode,G/W access order,roaming support and domain.
+MSRI	Network service related indication	Indication of allowing/disallowing Manual PLMN selection option in the user menu
AT^CACAP	Network service related indication	Get the access technology of the serving cell.
AT+BGLTEPLMN	Network service related indication	Sets to bgeing cell background * torage* * .
AT+CPAS	Mobile control and status command	Returnsthe activity status of the MT
AT+CFUN	Mobile control and status command	Selects the level of functionalityin the MT
AT*CFUN	Mobile control and status command	Sets phone functionality status.
AT+CPIN	Mobile control and status command	Sends to the MT a password which is necessary before it can be operated
AT+CPIN2	Mobile control and status command	Verify PIN2 anytime after PIN ready not only in the case that PIN2 is required.
AT+EPIN	Mobile control and status command	Get Pin state
AT*SIMDETEC	Mobile control and status command	Detects the sim in specified slot was removed or not.

Primitives	Category	Quick Description
AT*EUICC	Mobile control and status command	Get the SIM card type.
AT+CCWE	Mobile control and status command	Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code +CCWV will be sent, if enabled by this command.
AT+CTZR	Mobile control and status command	Enables and disables the time zone change event reporting
AT+CTZU	Mobile control and status command	Enables and disables automatic time zone update via NITZ
AT+CPBS	Mobile control and status command	Selects phonebook memory storage
AT+CPBR	Mobile control and status command	Returns phonebook entries in location number range
AT+CPBW	Mobile control and status command	Writes phonebook entry in location number
AT+CSIM	Mobile control and status command	Transmits to the MT the SIM commandit then shall send as it is to the SIM
AT+CRSM	Mobile control and status command	Transmits to the MT the SIM command and its required parameters
AT+CACM	Mobile control and status command	Resets the Advice of Charge related accumulated call meter value in SIM card or in the active application in the UICC (GSM or USIM) file EFACM
AT+CAMM	Mobile control and status command	Sets the Advice of Charge related accumulated call meter maximum value in SIM card or in the active application in the UICC (GSM or USIM) file EFACMmax
AT+CPUC	Mobile control and status command	Sets the parameters of Advice of Charge related price per unit and currency table in SIM card or in the active application in the UICC (GSM or USIM) file $EF_{PUCT.}$
AT^SCPBR	Mobile control and status command	Returns phonebook entries in location number range index1 index2 from the current phonebook memory.
AT^SCPBW	Mobile control and status command	Write phonebook entry in location number <index> in the current phonebook memory storage.
AT^CARDMODE	Mobile control and status command	Controls the active report event ^CARDMODE

Primitives	Category	Quick Description
AT^SPN	Mobile control and status command	Reads brand information which includes network operator brand information and user brand information
AT^LKSMSSTA	Mobile control and status command	Lock/unlock the sms status in sim card.
AT+CPBF	Mobile control and status command	Returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with specific string
AT+CGREG	Packet domaincommand	Controls the presentation of an unsolicited result for package network registration status
AT+CGATT	Packet domaincommand	Attach the MT to, or detach the MT from, the Packet Domain service
AT+CGACT	Packet domaincommand	Activate or deactivate the specified PDP context (s)
AT+CGDATA	Packet domaincommand	Perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types
AT+CGDCONT	Packet domaincommand	Specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>
AT+CGDSCONT	Packet domaincommand	Specifies PDP context parameter values for a Secondary PDP context identified by the (local) context identification parameter, <cid>
AT+CGQMIN	Packet domaincommand	Allows the TE to specify a minimum acceptable profile
AT+CGQREQ	Packet domaincommand	Specify a Quality of Service Profile
AT+CGEQREQ	Packet domaincommand	Specify a UMTS Quality of Service Profile
AT+CGEQMIN	Packet domaincommand	Specify a minimum acceptable profile
AT+GETIP	Packet domaincommand	Search IP via cid from local IP list
AT*TGSINK	Packet domaincommand	Private AT command: used to send the data through the specified PS data channel identified by cid

Primitives	Category	Quick Description
AT+CGSEND	Packet domaincommand	Private AT command: used to send the data through current activated PS data channel
AT+CGCMOD	Packet domaincommand	Modify the specified PDP context (s) with repect to QoS profiles and TFTs
AT+CGTFT	Packet domaincommand	Specify a Packet Filter – PF for a Traffic Flow Template
AT+FCLASS	Commands from TIA IS 101	Puts the TA into a particular mode of operation
AT+CGEQOS	Packet domaincommand	Used to define the EPS bearer resource Quality of Service parameter. In UMTS/GPRS mode this would hold a mapping function to the UMTS/GPRS QoS parameters.
AT+CEREG	Packet domaincommand	Controls the presentation of an unsolicited result code
AT+CGCONTRDP	Packet domaincommand	Used to show dynamically allocated PDN parameters.
AT+CGSCONTRDP	Packet domaincommand	Used to show dynamically allocated EPS Bearer Resource parameters.
AT+CGTFTRDP	Packet domaincommand	Used to define a Traffic Flow Template for a PDP context or a Traffic Flow Aggregate for an EPS bearer resource.
AT+CGEQOSRDP	Packet domaincommand	Used to show the network assigned EPS QoS parameters for an EPS bearer resource. In UMTS/GPRS mode this would hold a mapping function to the UMTS/GPRS QoS parameters.
AT+CGEREP	Packet domaincommand	Enable or disable sending of unsolicited result codes，+CGEV：XXX.
AT+CVMOD	Packet domaincommand	Selects the voice call mode for making a Mobile Originated voicecall form UE.
AT+CEMODE	Packet domaincommand	Used to set the MT to operate according to the specified mode of operation for EPS.
AT+CGPADDR	Packet domaincommand	Gets a list of PDP address for the specified contex identifiers.
AT+CMGF	SMScommand	Tells the TAwhich input and output format of messages to use
AT+CMSS	SMScommand	Sends message with location value <index> from preferred message storage to the network

Primitives	Category	Quick Description
AT+CMGS	SMScommand	Transmits SMS message from TE to network in text or PDU mode
AT+CMGR	SMScommand	Retrieves a message from the short message storage
AT+CMGW	SMScommand	Stores a message in memory storage
AT+CSCA	SMScommand	Updates the SMSC address
AT+CSCB	SMScommand	Selects which types of CBMs are to be received by the ME
AT+CNMI	SMScommand	Selects the how receiving of new messages from the network is indicated to the TE
AT+CGSMS	SMScommand	Specify the service or service preference that the MT will use to send MO SMS messages
AT+CMMS	SMScommand	Controls the continuity of SMS relay protocol link
AT+CMGD	SMScommand	Deletes message from preferred message storage location
AT+CMGL	SMScommand	Returns messages with status value from preferred message storage to the TE
AT+CSMS	SMScommand	Selects messaging service
AT+CSMP	SMS command	Select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected
AT+CPMS	SMScommand	Selects memory storagesto be used for reading, writing, etc
AT+CNMA	SMScommand	Confirms correct reception of a new message
AT*RSTMemFull	SMS command	Reset memory full status.
AT+CMEE	Other command	Report Mobile Termination error
AT+MSTK	Other command	Services related to SIM Toolkit
AT+VDUMP	Other command	Set control loglevel. Store the log level to global variable
AT+VPDUS	Other command	Get Max PDU Size
AT*BAND	Other command	Set band mode

Primitives	Category	Quick Description
AT*BANDIND	Other command	Indicates the current band
AT+ERGA	Other command	This command is used to implement “RUN GSM ALGORITHM” in SIM
AT+ERTCA	Other command	This command is used to implement 3G Context authentication mechanism in USIM
AT*Cell	Other command	This proprietary AT command is used to requests to activate or to deactivate cell lock
AT+RESET	Other command	Reset MIFI.
AT+RSTSET	Other command	Restore the factory settings.
AT^SYSINFO	Network service related command	This command is used to query current system information
AT*EHSDPA	Network service related command	This command is used to enable/disable HSDPA and HSUPA.
AT*MRD_CDF	Other command	This command is used to copy an existing file into RD.
AT*POWERIND	Other command	This proprietary AT command is used to notify modem that AP sleep status. When AP goes to sleep, modem will not send indication to AP except MT call and SMS incoming.
AT+LPNWUL	Other command	This AT command is used to deliver measurements reports and/or status from A-GPS client to PS/NW.
AT+LPLOCVR	Other command	This AT command is used to respond to the location verification indication.
AT*ENVSIM	Other command	Enable Virtual SIM
AT*MEPCG	Other command	This command is used to read the MEP codes for a specified category.
AT*CLCK	Other command	This command is used to disable or unblock a specified MEP category
AT*FASTDORM	Other command	This proprietary AT command is used to make the device to initiate exit from DCH or FACH when the application knows that there is no more packet data expected.
AT*AUTHReq	Packet domaincommand	Request to add authentication parameters to a defined PDP context.
AT+MRD_WIFIPASSWD	Other command	This command is used to write, read, delete WIFI password in ReliableData.bin.

Summary of IndicationCommands Supported by AT Command Server

Table 4: Summary of Indication Commands

Primitives	Category	Quick Description
RING	Call control indication	Indicates an incoming call (voice,data or fax) is indicated by the cellular network.
+CRING	Call control indication	Indicates the type of incoming call when receive an incoming call
NO CARRIER	Call control indication	Indicates adisconnect for Call Clearing or a Call Failed for an outgoingcall.
+CHLD	Call control indication	Indication reminds the subscriber that there is a Held Call
+CCWA	Call control indication	Indicates Call Waiting (CW) information (when enabled) for an incoming call
+CLIP	Call control indication	Indicates the calling line identity of the calling party after every RING/+CRING
+CNAP	Call control indication	Indicates the calling name identity of the calling party after every RING/+CRING
+COLP	Call control indication	Indicates the connected line identity (COL) of the called party after setting up a mobile originated call
+CCCM	Call control indication	Unsolicited Periodic Current Call Meter (CCM) update indication
+CLCC	Call control indication	Presents an indication to list the current call information
+CSQ	Network service related indication	Indicates the received signal strengthand channel bit error rate
+CREG	Network service related indication	Indicates registration status and location information when there is a change in the MT’s circuit mode network registration status or there is a change of the network cell in GERAN/UTRAN/E-UTRAN
+CGREG	Network service related indication	Indicates registration status and location information when there is a change in the MT’s GPRS network registration status or there is a change of the network cell in GERAN/UTRAN
+NITZ	Network service related indication	Indicates local time and date information
*BANDIND	Network service related indication	Indicates the current band,Indications are sent when the band changes and band indications are enabled
+CSSI	Network service related indication	Supplementary Service Intermediate (SSI) Notification after mobile originated Call Setup, but before any Call Setup results are received

Primitives	Category	Quick Description
+CSSU	Network service related indication	Supplementary Service Unsolicited (SSU) Notificationduring a mobile terminated call setup or during a call
+CUSD	Network service related indication	Indicates incoming (received) USSD information
^MODE	Network service related indication	Indicates that system mode has changed.
+EEMUMTSSVC	Network service related indication	Indication of serving-cell information in UMTS Engineering Mode
+EEMUMTSINTRA	Network service related indication	Indication of Intra freq information in UMTS Engineering Mode
+EEMUMTSINTER	Network service related indication	Indication of inter freq information in UMTS Engineering Mode
+EEMUMTSINTERRAT	Network service related indication	Indication of inter RAT information in UMTS Engineering Mode
+EEMGINFOBASIC	Network service related indication	Indication of basic information in GSM Engineering Mode
+EEMGINFOSVC	Network service related indication	Indication of serving-cell information in GSM Engineering Mode
+EEMGINBFTM	Network service related indication	To notify current network status which used for EFEM
+EEMGINFOPS	Network service related indication	Indication of PS information in GSM Engineering Mode
+LPLOC	Network service related indication	Indication that the location information of the mobile was requested
+LPNWDL	Network service related indication	Indicates primitive from protocol stack to APPS, indicating of either RRC orRRLP positioning-related messagefrom the network to the AGPS client running on the APPS
*CellLock	Network service related indication	Indicates the status of cell lock
+MMSG	SMScommand indication	Indication of an Short Messages Storage status change

Primitives	Category	Quick Description
+REFRESH	Mobile control and status indication	Indicates that file(s) on the SIM have been updated, or the SIM has been reinitialized.
^CARDMODE	Mobile control and status indication	Indicates the state of SIM/USIM card.
AT+NASCHK	Other commands	Enable or disable nas integrity
AT*TDTR	Other command	This proprietary AT command is used to requests to set Tx or Rx on TD for radio testing.
AT*GSMTR	Other command	This proprietary AT command is used to requests to set Tx or Rx on GSM for radio testing.
AT*TGCTRL	Other command	This proprietary AT command is used to Requests to set GSM/TD for control interface.
AT*WBTR	Other command	This proprietary AT command is used to set Tx or Rx on WCDMA for radio testing.

1. S-Register commands

1.1 S0

Description

Set the automatic answering delay.

Syntax

Command	Possible responses
ATS0=<n> Note: <n>: Enable automatic answering after n seconds. Range: 0 – 255 Default Value: 0	1. If successful: OK 2. If failed ERROR
ATS0?	<n> OK

1.2 S3

Description

Set the Carriage Return character.

Syntax

Command	Possible responses
ATS3=<n>	If successful:

Note: <n>: Carriage Return character Range: 13 – 13 Default Value: 13	OK If failed ERROR
ATS3?	<n> OK

1.3 S4

Description

Set the Line Feed character.

Syntax

Command	Possible responses
ATS4=<n> Note: <n>: Line Feed character. Range: 10 – 10 Default Value: 10	If successful: OK If failed ERROR
ATS4?	<n> OK

1.4 S5

Description

Set the Backspace character.

Syntax

Command	Possible responses
ATS5=<n> Note: <n>: Backspace character. Range: 8 – 8 Default Value: 8	1) If successful: OK 2) If failed ERROR
ATS5?	<n> OK

1.5 S6

Description

Pause before blind dialing.

Syntax

Command	Possible responses
ATS6=<n> Note: <n>: PausedurationRange: 2. – 10	If successful: OK If failed

Default Value: 2	ERROR
ATS6?	<n> OK

1.6 S7

Description

Set the Number of seconds to establishend-to-end data.

Syntax

Command	Possible responses
ATS7=<n> Note: <n>: Number of seconds Range: 1 – 255 Default Value: 1	If successful: OK If failed ERROR
ATS7?	<n> OK

1.7 S8

Description

Set the Number of seconds to pause when“,” is encountered in dial string.

Syntax

Command	Possible responses
ATS8=<n> Note: <n>: Number of seconds Range: 0 – 255 Default Value: 2	If successful: OK If failed ERROR
ATS8?	<n> OK

1.8 S9

Description

Set the Carrier detect threshold inincrements of 0.1 seconds.

Syntax

Command	Possible responses
ATS9=<n> Note: <n>: Carrier detect threshold inincrements of 0.1 seconds. Range: 1– 255 Default Value: 6	If successful: OK If failed ERROR
ATS9?	<n>

	OK

1.9 S10

Description

Set the Lost Carrier Hang-up Delay.

Syntax

Command	Possible responses
ATS10=<n> Note: <n>: Number of tenths of a second fromcarrier loss to disconnect. Range: 1 – 254 Default Value: 7	If successful: OK If failed ERROR
ATS10?	<n> OK

1.10 S11

Description

This specifies the duration of tones in DTMF dialing.

Syntax

Command	Possible responses
ATS11=<n> Note: <n>: DTMF tone duration and spacing in milliseconds. Range: 50 – 255 Default Value: 63	If successful: OK If failed ERROR
ATS11?	<n> OK

2. Basic commands

2.1 ATE

Description

This command is used to determine whether or not the modem echoes characters received by an external application.

Syntax

Command	Possible responses
ATE0 Note : Characters are not echoed	OK/+CME ERROR: <err>
ATE1	OK/+CME ERROR: <err>

Note : Characters are echoed	

2.2 ATI

Description

Request manufacturer specific information about the TA

Syntax

Command	Possible responses
ATI	manufacturer specificinformation OK/+CME ERROR: <err>

2.3 ATQ

Description

This command determines whether the mobile equipment sends result codes or not

Syntax

Command	Possible responses
ATQ[<value>] Note: 0: DCE transmits result codes. 1: Result codes are suppressed and not transmitted.	OK If value is 0. (none) If value is 1 (because result codes are suppressed). ERROR For unsupported values (if previous value was Q0). (none) For unsupported values (if previous value was Q1).

2.4 ATV

Description

Set TA response format

Syntax

Command	Possible responses
ATV[<value>] Note: 0: DCE transmits limited headers and trailers and numeric text. 1: DCE transmits full headers and trailers and verbose response text.	**0** If value is 0 (because numeric response text is being used). **OK** If value is 1. For unsupported values (if previous value was V0). **ERROR** For unsupported values (if previous value was V1).

2.5 ATX

Description

Defines CONNECT result code format

Syntax

Command	Possible responses
ATX[<value>] Note: 0: CONNECT result code is given upon entering online data state. Dial tone and busydetection are disabled. 1: CONNECT <text> result code is given upon entering online data state. Dial tone andbusy detection are disabled. 2: CONNECT <text> result code is given upon entering online data state. Dial tonedetection is enabled, and busy detection is disabled. 3: CONNECT <text> result code is given upon entering online data state. Dial tonedetection is disabled, and busy detection is enabled. 4: CONNECT <text> result code is given upon entering online data state. Dial tone andbusy detection are both enabled.	**OK** If <value> is recognized. **ERROR** If <value> is not recognized or supported.

2.6 ATZ

Description

This command restores the configuration profile.

Syntax

Command	Possible responses
ATZ	OK/+CME ERROR: <err>

2.7 AT&C

Description

This command controls the Data Carrier Detect (DCD) signal.

Syntax

Command	Possible responses
AT&C0 Note： DCD always on	OK/+CME ERROR: <err>
AT&C1 Note： DCD matches state of the remote modem's data carrier	OK/+CME ERROR: <err>

2.8 AT&D

Description

This command controls the Data Terminal Ready (DTR) signal.

Syntax

Command	Possible responses
AT&D0 Note： The DTR signal is ignored	OK/+CME ERROR: <err>
AT&D1 Note： Modem switches from data to command mode when DTR switches from ON to OFF	OK/+CME ERROR: <err>

2.9 AT&F

Description

This command reloads the factory-stored default configurations into active memory. This commands is functionality the same as Z (reset).

Syntax

Command	Possible responses
AT&F	OK/+CME ERROR: <err>

2.10 AT&S

Description

This command determines how the DSR signal operates.

Syntax

Command	Possible responses
&S<n> Note: <n> 0: DSR always ON 1: DSR operates in accordance with V.24 spec	OK/+CME ERROR: <err>

2.11 AT&Z

Description

Stores a telephone number into the modems telephone directory

Syntax

Command	Possible responses
&Z<location>=<dial-string> &Z<location>=L (save last number dialed to <location>) &Z=<dial-string> (location defaults to 0) &Z=L (location defaults to 0) Note: <location> is a number Example: AT&Z0=12345678	OK/+CME ERROR: <err>
&Z<location>? &ZL? (print last number dialed) &Z? (location defaults to 0)	<phone number> Example: 12345678 OK

3. General commands

3.1 AT+CGMI

Description

Execution command causes the TA to return one or more lines of information text regarding manufacturer.

Syntax

Command	Possible responses
+CGMI	+CGMI: <manufacturer> OK

3.2 AT+CGMM

Description

Execution command causes the TA to return one or more lines of information text regarding model.

Syntax

Command	Possible responses
+CGMM	+CGMM: <model> OK

3.3 AT+CGMR

Description

Execution command causes the TA to return one or more lines of information text regarding revision. It can return COMM side image version.

Syntax

Command	Possible responses
+CGMR	+CGMR: <revision> OK

3.4 AT+CGSN

Description

Execution command causes the TA to return one or more lines of information text regarding serial number. It can return the IMEI information.

Syntax

Command	Possible responses
+CGSN	<sn> OK

3.5 AT+CSCS

Description

Set command informs TA which character set <* escr> is used by the TE.

Syntax

Command	Possible responses
+CSCS=[<* escr>] Note: <* escr>: “IRA”International reference alphabet “UCS2”16-bit universal multiple-octet coded character set “HEX”Character strings consist only of hexadecimal numbers from 00 to FF	OK/+CME ERROR: <err>
+CSCS?	+CSCS: <* escr> OK
+CSCS=?	+CSCS: (“IRA”,”UCS2”,”HEX”) OK

3.6 AT+CIMI

Description

Execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual SIM card or active application in the UICCwhich is attached to MT.

Syntax

Command	Possible responses
+CIMI	<IMSI> OK

3.7 AT+ASTO

Description

Save/fetch dial-string

Syntax

Command	Possible responses
AT+ASTO=<string>,<number> Note: Example: AT+ASTO=”\22fred\22”,123-4567	OK/+CME ERROR: <err>
AT+ASTO?	+ASTO:<information text> OK Example: +ASTO: “fred”,1234567 OK
AT+ASTO=?	+ASTO: (0-32),(64) OK

3.8 AT+GMI

Description

This command causes the MT to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT to identify the manufacturer. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired (e.g., address, telephone number for customer service, etc.). It is same as AT+CGMI.

Syntax

Command	Possible responses
+GMI	+GMI:<information string> OK Example: +GMI: “AirM2M” OK

3.9 AT+GMM

Description

This command causes the MT to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT to identify the specific model of the device. Typically, the text will consist of a single line containing the name of the product, but manufacturers may choose to provide any information desired. It’s same as AT+CGMM.

Syntax

Command	Possible responses
+GMM	+GMM:<information string> OK Example: +GMM: “LINUX” OK

3.10 AT+GMR

Description

This command causes the MT to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT to identify the version, revision level or date, or other pertinent information of the device. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide any information desired. It’s same as AT+CGMR.

Syntax

Command	Possible responses
+GMR	+GMR:<information string> OK Example: +GMR:”TTD_CP_01.06.054:TTD_TVRTD_MSA_1.08.047” OK

3.11 AT+GSN

Description

This command causes the MT to transmit one or more lines of information text, determined by the manufacturer, which is intended to permit the user of the MT to identify the individual device. Typically, the text will consist of a single line containing a manufacturer determined alpha-numeric string, but manufacturers may choose to provide any information desired. It's same as AT+CGSN.

Syntax

Command	Possible responses
+GSN	<sn> OK Example: 35253501158696 OK

3.12 AT^HVER

Description

This command get the hardware version of ME.

Syntax

Command	Possible responses
^HVER	^HVER:<hardversion> OK/+CME ERROR: <err> Example: ^HVER:"Rev 0000" OK

3.13 AT+GCAP

Description

This extended-format command causes the MT to transmit one or more lines of information text in a specific format. The content is a list of additional capabilities command +<name>s, which is intended to permit the user of the MT to identify the minimum capabilities of the MT.

Syntax

Command	Possible responses
+GCAP	+GCAP:<information string> OK

3.14 AT+IPR

Description

This command specifies the data rate at which the DCE will accept commands.

Syntax

Command	Possible responses
AT+IPR=<rate> Note : <rate>: data rate Example: AT+IPR=38400	OK/ERROR Note : Set rate to 38400 bps
AT+IPR?	+IPR: <current rate > OK
AT+IPR=?	+IPR: (0,1200,9600),(0,50,75,110,134,150,200,300,600,1200,1800,2400,4800,7200,9600,14400,19200,28800,38400,57600,76800,115200,230400) OK

3.15 AT+ICF

Description

This command is used to determine the local serial port start-stop (asynchronous) character framing that the DCE uses.

Syntax

Command	Possible responses
AT+ICF=<n>,<m> Note : <n>: determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame. 0: auto detect 1: 8 Data; 2 Stop 2: 8 Data; 1 Parity; 1 Stop 3: 8 Data; 1 Stop 4: 7 Data; 2 Stop 5: 7 Data; 1 Parity; 1 Stop 6: 7 Data; 1 Stop <m>: determines how the parity bit is generated and checked, if present. 0: Odd 1: Even 2: Mark 3: Space Example: AT+ICF =3,3	OK/ERROR
AT+ICF?	+ICF:<information text> OK Example: +ICF: 3,3 OK
AT+ICF=?	+ICF: (0-6),(0-3) OK

3.16 AT+IFC

Description

This command is used to control the operation of local flow control between the DTE and DCE.

Syntax

Command	Possible responses
AT+IFC=<n>,<m> Note : <n>, which specifies the method to be used by the DTE to control the flow of received data from the DCE; 0: None 1: DC1/DC3 on circuit 103; do not pass DC1/DC3 characters to the remote DCE 2: Circuit 133 (Ready for Receiving) 3: DC1/DC3 on circuit 103 with DC1/DC3 characters being passed through to the remote DCE in addition to being acted upon for local flow control <m>, which specifies the method to be used by the DCE to control the flow of transmitted data from the DTE. 0: None 1: DC1/DC3 on circuit 104 2: Circuit 106 (Clear to Send/Ready for Sending) Example: AT+IFC=0,0	OK/ERROR
AT+IFC?	+IFC: <information text> OK Example: +IFC: 2,2 OK
AT+IFC=?	+ICF: (0-3),(0-2) OK

3.17 AT+IDSR

Description

This parameter determines how V.24 circuit 107 (Data Set Ready, DSR) shall behave.

Syntax

Command	Possible responses
+IDSR=<value> Note: 0: DSR is always ON. 1: DSR functions as defined in ITU-T Rec. V.24 and the relevant V-series Recommendationfor the signal converter in use. 2: DSR is always ON except for 5 s after disconnect.	OK/ERROR
+IDSR?	+IDSR: <value> OK Example: +IDSR: 0 OK

+IDSR=?	+IDSR: (0-2) OK

4. Call controlcommands

4.1 ATA

Description

Instructs the modem to immediately go off-hook and attempt to establish a connection without waiting for a ring,this is used to answer an incoming call if auto answer (s0) is disabled.

Syntax

Command	Possible responses
ATA Note: Answer a call	OK/+CME ERROR: <err>

4.2 ATD

Description

Causes the MT to transition from the command state to the online state

Syntax

Command	Possible responses
ATD<dial string>; Note: The <dial string> is optional. For circuit switched data services, the dial string may contain the following characters: Digits 0 to 9, *, #; After dialing, the IWF enters the online command state andmaintains the connection	OK/+CME ERROR: <err>

4.3 ATH

Description

Causes the MT to transition from online command state to command state; use of the digit ‘0’ is optional.

Syntax

Command	Possible responses
ATH[<value>] Note: <value> 0: Disconnect from line and terminate call.	OK/+CME ERROR: <err>

4.4 AT+CBST

Description

Set command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated (refer 3GPP TS 22.002).

Syntax:

Command	Possible responses
+CBST=<speed>[,<name>[,<ce>]] Sample: AT+CBST=134,1,0 Note: <speed>: 0 autobauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service) 1 300 bps (V.21) 2 1200 bps (V.22) 3 1200/75 bps (V.23) 4 2400 bps (V.22bis) 5 2400 bps (V.26ter) 6 4800 bps (V.32) 7 9600 bps (V.32) 12 9600 bps (V.34) 14 14400 bps (V.34) 15 19200 bps (V.34) 16 28800 bps (V.34) 17 33600 bps (V.34) 34 1200 bps (V.120) 36 2400 bps (V.120) 38 4800 bps (V.120) 39 9600 bps (V.120) 43 14400 bps (V.120) 47 19200 bps (V.120) 48 28800 bps (V.120) 49 38400 bps (V.120) 50 48000 bps (V.120) 51 56000 bps (V.120) 65 300 bps (V.110) 66 1200 bps (V.110) 68 2400 bps (V.110 or X.31 flag stuffing) 70 4800 bps (V.110 or X.31 flag stuffing) 71 9600 bps (V.110 or X.31 flag stuffing) 75 14400 bps (V.110 or X.31 flag stuffing) 79 19200 bps (V.110 or X.31 flag stuffing) 80 28800 bps (V.110 or X.31 flag stuffing) 81 38400 bps (V.110 or X.31 flag stuffing) 82 48000 bps (V.110 or X.31 flag stuffing) 83 56000 bps (V.110 or X.31 flag stuffing; 84 64000 bps (X.31 flag stuffing; 115 56000 bps (bit transparent) 116 64000 bps (bit transparent) 120 32000 bps (PIAFS32k) 121 64000 bps (PIAFS64k) 130 28800 bps (multimedia) 131 32000 bps (multimedia) 132 33600 bps (multimedia)	OK/+CME ERROR: <err>

133 56000 bps (multimedia) 134 64000 bps (multimedia) <name>: 0 data circuit asynchronous (UDI or 3.1 kHz modem) 1 data circuit synchronous (UDI or 3.1 kHz modem) 2 PAD Access (asynchronous) (UDI) 3 Packet Access (synchronous) (UDI) 4 data circuit asynchronous (RDI) 5 data circuit synchronous (RDI) 6 PAD Access (asynchronous) (RDI) 7 Packet Access (synchronous) (RDI) <ce>: 0 transparent 1 non-transparent 2 both, transparent preferred 3 both, non-transparent preferred	
+CBST?	+CBST:<speed>,<name>,<ce> OK/+CME ERROR: <err>
+CBST=?	+CBST: (list of supported <speed>s),(0-7),(0-3) OK

4.5 AT+CVHU

Description

Set command selects whether ATH or “drop DTR” shall cause a voice connection to be disconnected or not. By voice connection is also meant alternating mode calls that are currently in voice mode.

Syntax

Command	Possible responses
+CVHU=<mode> Note: <mode>: 0: “Drop DTR” ignored but OK response given. ATH disconnects. 1: “Drop DTR” and ATH ignored but OK response given. 2: “Drop DTR” * aximum* according to &D setting. ATH disconnects.	OK/+CME ERROR: <err> Note: <mode> is 0, 1 or 2 will return “OK”, other parameters will return an error
+CVHU?	+CVHU: <mode> OK
+CVHU=?	+CVHU☹0-2) OK

4.6 AT+CRLP

Description

Radio link protocol (RLP) parameters used when non-transparent data calls are originated may be altered with set command.

Syntax

Command	Possible responses
+CRLP=<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]] Note: <iws>: IWF to MS window size <mws>: MS to IWF window size	OK/+CME ERROR: <err>

<T1>: acknowledgement timer T1 <N2>: retransmission attempts <ver>: RLP version number in integer format; when version indication is not present it shall equal 0 <T4>: re-sequencing period	
+CRLP?	+CRLP:<iws>,<mws>,<T1>,<N2>[,<ver1>[,<T4>]] [<CR><LF> OK or +CRLP:<iws>,<mws>,<T1>,<N2>[,<ver2>[,<T4>]] [...]] OK Example: +CRLP:61,61,128,6,1,3 OK
+CRLP=?	+CRLP☹0-61),(0-61),(39-255),(1-255),(0-1),(3-255) OK

4.7 AT+CMUT

Description

This command is used to enable and disable the uplink voice muting during a voice call.

Syntax

Command	Possible responses
+CMUT=<n> Note: <n> 0: mute off 1: mute on	OK/+CME ERROR: <err>
+CMUT?	+CMUT: 0 OK
+CMUT=?	+CMUT: 0,1 OK

4.8 AT+CHUP

Description

Execution command causes the TA to hang-up the current UMTS call of the MT.

Syntax

Command	Possible responses
+CHUP	OK/+CME ERROR: <err>

4.9 AT+CSTA

Description

Set command selects the type of number for further dialing commands (D) according to UMTS specifications.

Syntax

Command	Possible responses
+CSTA=[<type>] Note: <type>: type of address octet in integer format(refer TS 24.008 subclause 10.5.4.7); default 145 when * aximum string includes international access code character “+”, otherwise 129	OK/+CME ERROR: <err>
+CSTA?	+CSTA: <type> OK Example: +CSTA:129 OK
+CSTA=?	+CSTA:(129,145,161,177) OK

4.10 AT+CRC

Description

Set command controls whether or not the extended format of incoming call indication or GPRS network request for PDP context activation or notification for VBS/VGCS calls is used. When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.

Syntax

Command	Possible responses
+CRC=[<mode>] Note: <mode>: 0: disables extended format 1: enables extended format	OK/+CME ERROR: <err> When enabled extended format, there will be unsolicited code +CRING: <type> <type> : ASYNC SYNC REL ASYNC REL SYNC FAX VOICE VOICE/ASYNC VOICE/SYNC VOICE/REL ASYNC VOICE/REL SYNC ALT VOICE/ASYNC ALT VOICE/SYNC ALT ASYNC/VOICE ALT SYNC/VOICE ALT REL ASYNC/VOICE ALT REL SYNC/VOICE ALT VOICE/FAX ALT FAX/VOICE
+CRC?	+CRC: <mode> OK Example: +CRC: 0 OK
+CRC=?	+CRC: (0,1) OK

4.11 AT+CMOD

Description

Set command selects the call mode of further dialing commands(D) or for next answering command(A). Mode can be either single or alternating (in the present document, terms “alternating mode” and “alternating call” refer to all GSM/UMTS bearer and teleservices that incorporate more than one basic service (voice, data, fax) within one call). When single mode is selected the call originating and hangup procedures are similar to procedures specified in ITUT Recommendations V.250 [14], T.31 [11] and T.32 [12]. In GSM/UMTS there can be voice followed by data (refer 3GPP TS 22.002 [1]), alternating voice/data (refer 3GPP TS 22.002 [1]) and alternating voice/fax calls (refer 3GPP TS 22.003 [2]). Refer next two subclauses for alternating call control methods.

Syntax

Command	Possible responses
+CMOD=[<MODE>] Note: <mode>: 0: single mode 1: alternating voice/fax 2: alternating voice/data 3: voice followed by data	OK/+CME ERROR: <err>
+CMOD?	+CMOD:<mode>
+CREG=?	+CMOD: (list of supported <mode>s)

4.12 AT+ECHUPVT

Description

The execution command is used to hang up all connecting or connected CS calls and provide the cause. It can be used when the user would like to fall back an incoming VT call to VOICE call.

Syntax

Command	Possible responses
+ECHUPVT=<value> Note: <value> 0 Unknow cause 1. Unassigned (unallocated) number 3. No route to destination 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 25. Pre-emption 26. Non selected user clearing 27. Destination out of order 28. Invalid number format (incomplete number)	OK/ +CME ERROR: <err>

29. Facility rejected 30. Response to STATUS ENQUIRY 31. Normal, unspecified 34. No circuit/channel available 38. Network out of order 41. Temporary failure 42. Switching equipment congestion 43. Access information discarded 44. requested circuit/channel not available 47. Resources unavailable, unspecified 49. Quality of service unavailable 50. Requested facility not subscribed 55. Incoming calls barred within the CUG 57. Bearer capability not authorized 58. Bearer capability not presently available 63. Service or option not available, unspecified 65. Bearer service not implemented 68. ACM equal to or greater than ACMmax 69. Requested facility not implemented 70. Only restricted digital information bearer capability is available 79. Service or option not implemented, unspecified 81. Invalid transaction identifier value 87. User not member of CUG 88. Incompatible destination 91. Invalid transit network selection 95. Semantically incorrect message 96. Invalid mandatory information 97. Message type non-existent or not implemented 98. Message type not compatible with protocol state 99. Information element non-existent or not implemented 100. Conditional IE error 101. Message not compatible with protocol state 102. Recovery on timer expiry 111. Protocol error, unspecified 127. Interworking, unspecified	
AT+ECHUPVT=?	+ECHUPVT: (0-127) OK

5. Network service related commands

5.1 AT+CREG

Description

Set command controls the presentation of an unsolicited result for network registration status change.

Read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT.

Syntax

Command	Possible responses
+CREG=[<n>] Note: <n>:	OK/+CME ERROR: <err>

0: disable network registration unsolicited result code 1: enable network registration unsolicited result code +CREG: <stat> 2: enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>[,<AcT>] <stat>: 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 6: registered, home network, SMS-only (applicable only when AcT is E-UTRAN) 7: registered, roaming, SMS-only (applicable only when AcT is E-UTRAN) 8: attached for emergency bearer services only (not applicable) 9: registered for “CSFB not preferred”,home network(applicable only when AcT is E-UTRAN) 10: registered for “CSFB not preferred”,roaming(applicable only when AcT is E-UTRAN) 11: only emergency services are available <lac>: string type; two byte location area code in hexadecimal format <ci>: string type; four byte cell identifier in hexadecimal format. GSM case: 16 least significant bits ,WCDMA case: CellId – 16 least significant bits ,RNCID – 12 most significant bits <AcT>: 0: GSM 1: GSM Compact 2: UTRAN 3: GSM w/EGPRS 4: UTRAN w/HSDPA 5: UTRAN w/HSUPA 6: UTRAN w/HSDPA and HSUPA 7: E-UTRAN 8: UTRAN HSPA+	
+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>[,<AcT>]] OK Example: +CREG: 2,1,”a842”,”01b29362”,2 OK
+CREG=?	+CREG: (0-2) OK

5.2 AT+CIND

Description

Set command is used to set the values of MT indicators.

Read command returns the status of MT indicators.

Test command returns pairs, where string value <* escry> is a maximum 16 character description of the indicator and compound value is the allowed values for the indicator.

Currently only support network mode indicator.

Syntax

Command	Possible responses
+CIND=<ind> Notes: <ind> 0 indicator is off 1 indicator is on	OK/+CME ERROR: <err>
+CIND?	+CIND: <ind>[,<ind>[,...]] OK Example: +CIND:1 OK
+CIND=?	+CIND: (“service”,(0-1)) OK

5.3 AT+COPS

Description

Set command forces an attempt to select and register the UMTS network operator.

Read command returns the current mode, the currently selected operator and the current Access Technology.

Syntax

Command	Possible responses
+COPS=<mode>[,<format>[,<oper>[,< AcT>[,<Domain>]]]] Note: <mode>: 0: automatic (<oper> field is ignored) 1: manual (<oper> field shall be present, and <AcT> optionally) 2: deregister from network 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>: 0: long format alphanumeric <oper> 1: short format alphanumeric <oper> 2: numeric <oper> <oper>: string type; <format> indicates if the format is alphanumeric or numeric; long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13); numeric format is the GSM Location Area Identification number (refer TS 24.008 subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITUT E.212 Annex A , plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in	OK/+CME ERROR: <err>

BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 3)(network code digit 2)(network code digit 1) <AcT> access technology selected: 0: GSM 1: GSM Compact 2: UTRAN 3: GSM w/EGPRS 4: UTRAN w/HSDPA 5: UTRAN w/HSUPA 6: UTRAN w/HSDPA and HSUPA 7: E-UTRAN 8: UTRAN HSPA+ <Domain> 0: CS only 1: PS only 2: Combined CS/PS	
+COPS?	+COPS: (<mode>[,<format>,<oper>[,<AcT>>[,<Domain>]]]),(<mode>[,<format>,<oper>[,< AcT>>[, <Domain>]]]) OK/+CME ERROR: <err> Example: +COPS: (0,2,"46000",2,0), (0,2,"46000",2,0) OK
+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)] OK/+CME ERROR: <err> <stat>: integer type 0 unknown 1 available 2 current 3 forbidden Example: +COPS: 1, "CHN-UNICOM", "UNICOM", "46001", 2),,(0,1,2,3,4), (0,1,2) OK

5.4 AT+CPOL

Description

This command is used to edit the PLMN selector with Access Technology lists in the SIM card or active application in the UICC (GSM or USIM).

Syntax

Command	Possible responses
+CPOL=[<index>[,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UT	OK/+CME ERROR: <err>

RAN_AcT>,<E-UTRAN_AcT>]]]] Note: <index>: integer type; the order number of operator in the SIM/USIM preferred operator list <format>: 0: long format alphanumeric <oper> 1: short format alphanumeric <oper> 2: numeric <oper> <oper>: string type; <format> indicates if the format is alphanumeric or numeric <GSM_AcT>: GSM access technology: 0: access technology not selected 1: access technology selected <GSM_Compact_AcT>: GSM compact access technology: 0: access technology not selected 1: access technology selected <UTRAN_AcT>: UTRAN access technology: 0: access technology not selected 1: access technology selected <E-UTRAN_Act>: integer type;E-UTRAN access technology 0 :access technology not selected 1: access technology selected	
+CPOL?	+CPOL: <index1>,<format>,<oper1>[,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>,<E-UTRAN_AcT1>] [<CR><LF>+CPOL: <index2>,<format>,<oper2>[,<GSM_AcT2>,<GSM_Compact_AcT2>,<UTRAN_AcT2>,<E-UTRAN_Act2>] [...]] OK/+CME ERROR: <err> Example: +CPOL: 1, 2, “46001” +CPOL: 2, 2, “46002” OK
+CPOL=?	+CPOL: (list of supported<index>s),(list of supported<format>s) +CME ERROR:<err>

5.5 AT+CLCK

Description

Execute command is used to lock, unlock or interrogate a MT or a network facility <fac>.

Syntax

Command	Possible responses
+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	OK/+CME ERROR: <err> Note: when <mode>=2 and command successful: +CLCK: <status>[,<class1> [<CR><LF>+CLCK: <status>,<class2> [...]]
+CLCK=?	+CLCK: (“CS”, “PS”, “PF”, “SC”, “AO”, “OI”,

	“OX”, “AI”, “IR”, “NT”, “NM”, “NS”, “NA”, “AB”, “AG”, “AC”, “FD”, “PN”, “PU”, “PP”,”PC”) OK

Defined values:

<fac>:

“PS” PHSIM (lock Phone to SIM/UICC card) (MT asks password when other than current SIM/UICC card inserted; MT may remember certain amount of previously used cards thus not requiring password when they are inserted)

“PF” lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other than the first SIM/UICC card is inserted)

“SC” SIM (lock SIM/UICC card) (SIM/UICC asks password in MT powerup and when this lock command issued)

“AO” BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 clause 1)

“OI” BOIC (Barr Outgoing International Calls) (refer 3GPP TS 22.088 clause 1)

“OX” BOICexHC (Barr Outgoing International Calls except to Home Country) (refer 3GPP TS 22.088 clause 1)

“AI” BAIC (Barr All Incoming Calls) (refer 3GPP TS 22.088 clause 2)

“IR” BICRoam (Barr Incoming Calls when Roaming outside the home country) (refer 3GPP TS 22.088 clause 2)

“AB” All Barring services (refer 3GPP TS 22.030) (applicable only for <mode>=0)

“AG” All * alled* g barring services (refer 3GPP TS 22.030) (applicable only for <mode>=0)

“AC” All * alled* g barring services (refer 3GPP TS 22.030) (applicable only for <mode>=0)

“FD” SIM card or active application in the UICC (GSM or USIM) fixed * aximum memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)

“PN” Network Personalization (refer 3GPP TS 22.022)

“PU” network sUbset Personalization (refer 3GPP TS 22.022)

“PP” service Provider Personalization (refer 3GPP TS 22.022)

“PC” Corporate Personalization (refer 3GPP TS 22.022)

<mode>:

0 unlock

1 lock

2 query status

<status>:

0 not active

1 active

<passwd>: string type; shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD

<class> is a sum of integers each representing a class of information (default 7):

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)

8 short message service

16 data circuit sync

32 data circuit async

64 dedicated packet access

128 dedicated PAD access

5.6 AT+CPWD

Description

Action command sets a new password for the facility lock function defined by command Facility Lock +CLCK.

Test command returns a list of pairs which present the available facilities and the maximum length of their password.

Syntax

Command	Possible responses
+CPWD=<fac>,<oldpwd>,<newpwd> <fac>: “P2”: SIM PIN2 refer +CLCK for other values <oldpwd>, <newpwd>: 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>	OK/+CME ERROR: <err>
+CPWD=?	+CPWD: list of supported (<fac>,<pwdlength>)s OK

5.7 AT+CLIP

Description

This command refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call.

Syntax

Command	Possible responses
+CLIP=<n> Note: <n> (parameter sets/shows the result code presentation status to the TE): 0: disable 1: enable <m> (parameter shows the subscriber CLIP service status in the network): 0: CLIP not provisioned 1: CLIP provisioned 2: unknown (e.g. no network, etc.)	OK/+CME ERROR: <err> When the presentation of the CLI at the TE is enabled (and calling subscriber allows), unsolicited result code +CLIP: <number>,<type> is returned after every RING <number>:string type phone number of format specified by <type> <type>:type of address octet in integer format, refer 3GPP TS 24.008 subclause 10.5.4.7
+CLIP?	+CLIP: <n>,<m> OK/+CME ERROR: <err>
+CLIP=?	+CLIP: (0-1) OK

5.8 AT+CLIR

Description

This command refers to CLIR service according to 3GPP TS 22.081 that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.

Syntax

Command	Possible responses
+CLIR=<n>	OK/+CME ERROR: <err>

Note: <n> (parameter sets the adjustment for outgoing calls): 0: presentation indicator is used according to the subscription of the CLIR service 1: CLIR invocation 2: CLIR suppression <m> (parameter shows the subscriber CLIR service status in the network): 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	
+CLIR?	+CLIR: <n>,<m> OK/+CME ERROR: <err>
+CLIR=?	+CLIR: (0-2) OK

5.9 AT+COLP

Description

This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call.

Syntax

Command	Possible responses
+COLP=<n> Note: <n> (parameter sets/shows the result code presentation status to the TE): 0: disable 1: enable <m> (parameter shows the subscriber COLP service status in the network): 0: COLP not provisioned 1: COLP provisioned 2: unknown (e.g. no network, etc.)	OK/+CME ERROR: <err> When enables the presentation of the COL at the TE(and called subscriber allows), +COLP: <number>,<type> intermediate result code is returned from TA to TE. <number> and <type> refer to 3.7.7
+COLP?	+COLP: <n>,<m> OK/+CME ERROR: <err>
+COLP=?	+COLP: (0-1) OK

5.10 AT+COLR

Description

Interrogation of the COLR Service support

Syntax

Command	Possible responses
AT+COLR?	+COLR: <local>,<provision> OK/+CME ERROR: <err>
AT+COLR=?	OK

Defined values

<local>: integer type (parameter shows the subscriber COLR service status in the local)

0 COLR not provisioned

< provision>: integer type (parameter shows the subscriber COLR service status in the network)

0 COLR not provisioned

1 COLR provisioned

2 unknown (e.g. no network, etc.)

5.11 AT+CNAP

Description

This command refers to the GSM/UMTS supplementary service CNAP (Calling Name Presentation) that enables a called subscriber to get a calling name indication (CNI) of the calling party when receiving a mobile terminated call. Set command enables or disables the presentation of the CNI at the TE. It has no effect on the execution of the supplementary service CNAP in the network.

Syntax

Command	Possible responses
AT+CNAP=[<n>] <n>: integer type (parameter sets/shows the result code presentation status to the TE) 0 disable 1 enable	OK/+CME ERROR: <err> When the presentation of the CNI at the TE is enabled (and CNI is provided), Unsolicited result code+CNAP: <name> will sent from MT to TE. <name>: string type, up to 31 characters long string containing the calling name
AT+CNAP?	+CNAP: <n>,<m> OK/+CME ERROR: <err> <m>: integer type (parameter shows the subscriber CNAP service status in the network) 0 CNAP not provisioned 1 CNAP provisioned 2 unknown(e.g. no network, etc.)
AT+CNAP=?	+CNAP: (0-1) OK

5.12 AT+CCFC

Description

This command allows control of the call forwarding supplementary service according to 3GPP TS 22.082. Registration, erasure, activation, deactivation, and status query are supported.

Test command returns reason values supported as a compound value.

Syntax

Command	Possible responses
+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]] Note: <reason>: 0: unconditional 1: mobile busy 2: no reply 3: not reachable 4: all call forwarding (refer 3GPP TS 22.030) 5: all conditional call forwarding (refer 3GPP TS 22.030) <mode>: 0: disable 1: enable 2: query status 3: registration 4: erasure <number>: string type phone number of forwarding address in format specified by <type> <type>: type of address octet in integer format (refer TS 24.008 subclause 10.5.4.7); default 145 when * aximum string includes international access code character “+”, otherwise 129 <subaddr>: string type subaddress of format specified by <satype> <satype>: type of subaddress octet in integer format (refer TS 24.008 subclause 10.5.4.8); default 128 <class> is a sum of integers each representing a class of information (default 7): 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) 8: short message service 16: data circuit sync 32: data circuit async 64: dedicated packet access 128: dedicated PAD access <time>: 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>: 0：not active 1：active	OK/+CME ERROR: <err> Note: when <mode>=2 and command successful: +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][<CR><LF> +CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] [...]]
+CCFC=?	+CCFC: (0,1,2,3,4,5) OK

5.13 AT+CCWA

Description

This command allows control of the Call Waiting supplementary service according to 3GPP TS 22.083.

Syntax

Command	Possible responses
+CCWA=[<n>[,<mode>[,<class>]]] Note: <n>(sets/shows the result code presentation status to the TE) 0: disable 1: enable <mode>integer type (when <mode> parameter is not given, network is not interrogated) 0:disable 1:enable 2:query status <class> refer to 3.7.12	OK/+CME ERROR: <err> Note: when <mode>=2 and command successful +CCWA: <status>,<class1> [<CR><LF>+CCWA: <status>,<class2> [...]] <status>: 0 not active 1 active <classx>: refer to 3.7.12 When the presentation of call-waiting indication at the TE is enabled(<n>=1), the following unsolicitedindication is sent to the TE from the MT: +CCWA:<number>,<type> <number> and <type> refer to 3.7.7
+CCWA?	+CCWA: <n> OK Example: +CCWA: 1 OK
+CCWA=?	+CCWA:(0-1) OK

5.14 AT+CHLD

Description

This command allows the control of the following call related services:

-a call can be temporarily disconnected from the MT but the connection is retained by the network;

- multiparty conversation (conference calls);

-the served subscriber who has two calls (one held and the other either active or alerting) can connect the other parties and release the served subscriber's own connection.

Calls can be put on hold, recovered, released, added to conversation, and transferred similarly as defined in 3GPP TS 22.030.

Syntax

Command	Possible responses
+CHLD=<n>	OK/+CME ERROR: <err> When there is a Held Call, unsolicited result code +CHLD: <* alled> will sent to remind subscriber. <* alled>: Integer type, unique Call Identifier indicate current held call.

+CHLD=?	+CHLD: (0, 1, 1x, 2, 2x, 3, 4) OK Call hold operation: 0 – Release all held calls or set User Determined User Busy (UDUB) for a waiting call 1 – Release all active calls (if any exist) and accept the other (held or waiting) call 1x - Release specific active call x,where x is the serial number of a call participating in an active Multiparty call. 2- Place all active calls (if any exist) on hold and accept other (held or waiting) call 2x – In the case of an active Multiparty call, places all active calls on hold, except for callx. Call x remains active. 3 – Add a held call to the conversation (Multiparty) 4 – Connects the two calls and disconnects the subscriber from both calls (ECT)

When there is a Held Call, indication +CHLD: <* alled> will sent to remind subscriber.
<* alled>: Integer type, unique Call Identifier indicate current held call.

5.15 AT+CUSD

Description

This command allows control of the Unstructured Supplementary Service Data (USSD) according to 3GPP TS 22.090.

Syntax

Command	Possible responses
+CUSD=<n>[,<str>[,<dcs>]] Note: <n>: 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>: string type USSD string (when <str> parameter is not given, network is not interrogated) <dcs>: 3GPP TS 23.038 Cell Broadcast Data Coding Scheme in integer format (default 0)	OK/+CME ERROR: <err> The Set command enables/disables thedisplay of the following unsolicited result code, +CUSD:<m>[,<str>,<dcs>] (theUSSD response from the network), tothe TE.
+CUSD?	+CUSD: <n> OK Example; +CUSD: 1 OK
+CUSD=?	+CUSD:(0-2) OK

+CUSD Notification values
<m>: integer type(shows the USSD response from the network or the network initiated operation)

0 no further user action required

1 further info needed for MO operation

2 USSD terminated by network

3 other local client has responded

4 operation not supported

5 network time out

6 phase 2 fail and retry phase 1

5.16 AT+CAOC

Description

This refers to Advice of Charge supplementary service (3GPP TS 22.024 and 3GPP TS 22.086) that enables subscriber to get information about the cost of calls.The command also includes the possibility to enable an unsolicited event reporting of the CCM information. The Read command indicates whether the unsolicited reporting is activated or not.

Syntax

Command	Possible responses
+CAOC[=<mode>] Note:<mode>: 0: query CCM value 1: deactivate the unsolicited reporting of CCM value 2: activate the unsolicited reporting of CCM value	[+CAOC: <ccm>] OK/+CME ERROR: <err> When enable an unsolicited event reporting of the CCM information. The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes, but not more that every 10 seconds. <ccm>: 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)
+CAOC?	+CAOC: <mode> OK Example +CAOC: 1 OK
+CAOC=?	+CAOC:(0-2) OK

5.17 AT+VTS

Description

This command allows the transmission of DTMF tones.

Syntax

Command	Possible responses
+VTS=<DTMF>[,<duration>] Note: <DTMF>: DTMF string, up to 32 characters, valid character: (0, 1, ..., 9, A, B, C, D, *, #). <duration>: range (300-600)	OK/+CME ERROR: <err>
+VTS=?	+VTS: <DTMF>, (300-600)

	OK

5.18 AT+VTD

Description

This refers to an integer <n> that defines the length of tones emitted as a result of the +VTS command.

Syntax

Command	Possible responses
+VTD=<n> Note: n 300-600	OK/+CME ERROR: <err>
+VTD?	+VTD: <n> OK
+VTD=?	+VTD: (300-600) OK

5.19 AT+CSSN

Description

This command refers to supplementary service related network initiated notifications. The set command enables/disables the presentation of notification result codes from TA to TE.

Syntax

Command	Possible responses
+CSSN=<n>[,<m>] Note: <n>: parameter sets/shows the +CSSI result code presentation status to the TE: 0 disable 1 enable <m>: parameter sets/shows the +CSSU result code presentation status to the TE: 0 disable 1 enable	OK/+CME ERROR: <err> When <n>=1 and a supplementaryservice notification is received after amobile-originated call setup, the+CSSI: <code1>[,<index>] notification is sent to the TEbefore any other mobile-originated callsetup result codes. When severaldifferent notifications are receivedfrom the network, each of themreceives its own +CSSI result code.When <m>=1 and a supplementaryservice notification is received duringa mobile-terminated call setup orduring a call, or when a forward checksupplementary service notification isreceived, the unsolicited result code+CSSU: <code2>[,<index>[,<number>,<type>[,<subaddr>,<satype>]]] is sent to the TE. In case of amobile-terminated call setup, a CSSUis sent after every +CLIP result code. When several differentevents are received from the network,each of them receives its own +CSSUresult code.
+CSSN?	+CSSN: <n>,<m> OK
+CSSN=?	+CSSN: (0-1), (0-1) OK

+CSSI Notification values

<code1>: integer type

0 unconditional call forwarding is active

1 some of the conditional call forwardings are active

2 call has been forwarded

3 call is waiting

4 this is a CUG call (also <index> present)

5 outgoing calls are barred

6 incoming calls are barred

7 CLIR suppression rejected

8 call has been deflected

<index>: integer type

0...9CUG (Closed User Group) index

10 no index (preferred CUG taken from subscriber data)

+CSSU Notification values
<code2> : integer type

0 this is a forwarded call (MT call setup)

1 this is a CUG call (also <index> present) (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)

6 forward check SS message received (can be received whenever)

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 (also number and subaddress parameters may be present) (during a voice call or MT call setup)

9 this is a deflected call (MT call setup)

10 additional incoming call forwarded

<index>: integer type

0...9CUG (Closed User Group) index

10 no index (preferred CUG taken from subscriber data)

<number>: string type phone number of format specified by <type>
<type>: type of address octet in integer format
<subaddr>: string type subaddress of format specified by <satype>
<satype>: type of subaddress octet in integer format

5.20 AT+CLCC

Description

Returns list of current calls of MT. If command succeeds but no calls are available, no information response is sent to TE.

Syntax

Command	Possible responses
+CLCC	[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]] [...]]](**Note**) OK/+CME ERROR: <err> Note: This can also be an indication to list the current call information.
+CLCC=?	OK

Defined values

`<idx>: integer type; call identification number as described in 3GPP TS 22.030 subclause 4.5.5.1; this number can be used in +CHLD command operations`

`<dir>`:

0 mobile originated (MO) call
1 mobile terminated (MT) call

`<stat>` (state of the call):

0 active
1 held
2 dialing (MO call)
3 alerting (MO call)
4 incoming (MT call)
5 waiting (MT call)
6 offering(MT call)

`<mode>` (bearer/teleservice):

0 voice
1 data
2 fax
3 voice followed by data, voice mode
4 alternating voice/data, voice mode
5 alternating voice/fax, voice mode
6 voice followed by data, data mode
7 alternating voice/data, data mode
8 alternating voice/fax, fax mode

9unknown

`<mpty>`:

0 call is not one of multiparty (conference) call parties
1 call is one of multiparty (conference) call parties

`<number>`: string type phone number in format specified by `<type>`

`<type>`: type of address octet in integer format (refer TS 24.008 subclause 10.5.4.7)

`<alpha>`: string type alphanumeric representation of `<number>` corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set `+CSCS`

5.21 AT+CEER

Description

Execution command causes the TA to return one or more lines of information text <report>.

Syntax

Command	Possible responses
+CEER	+CEER: <report> OK
+CEER=?	OK

5.22 AT+PEER

Description

Requests the failure cause code for the most recently failed PDP context activate

Syntax

Command	Possible responses
AT+PEER	+PEER: <information text> OK
AT+PEER=?	OK

5.23 AT*PSGAAT

Description

Execution command enables or disables PS auto attach when MIFI powers on.

Syntax

Command	Possible responses
*PSGAAT=<c> <c>: 0:disable 1:enable	OK/CME ERROR
*PSGAAT=?	*PSGAAT㊀0-1)
*PSGAAT?	*PSGAAT:0/1

5.24 AT+CNUM

Description

Action command returns the MSISDNs related to the subscriber (this information can be stored in the SIM/UICC or in the MT).

Syntax

Command	Possible responses
+CNUM	+CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]] [<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service> [,<itc>]] […]] OK/+CME ERROR: <err>
+CNUM=?	OK

Defined values

<alphax>: optional alphanumeric string associated with <* aximu>; used character set should be the one selected with command Select TE Character Set +CSCS

<* aximu>: string type phone number of format specified by <typex>

<typex>: type of address octet in integer format (refer TS 24.008 subclause 10.5.4.7)

<speed>: as defined in subclause 3.5.4

<service> (service related to the phone number):

0 asynchronous modem
1 synchronous modem
2 PAD Access (asynchronous)
3 Packet Access (synchronous)
4 voice

5 fax
also all other values below 128 are reserved by the present document
<itc> (information transfer capability) :
0 3,1 kHz
1 UDI

5.25 AT+BGLTEPLMN

Description

This command is used to set cell background searching.

Syntax

Command	Possible responses
+BGLTEPLMN?	+ BGLTEPLMN: <stat>,<interval> OK/+CME ERROR: <err> Example: + BGLTEPLMN: 0,30 OK
+BGLTEPLMN=<stat>,<interval> Note: < stat >: TRUE : enabled FALSE: disabled <interval>: 0 search immediately 0XFFFF don't search Other values between 1 and 0XFFFF back ground search with seconds.	+ BGLTEPLMN: OK/ +CME ERROR: <err>
+BGLTEPLMN=?	[list of supported (<stat>,long alphanumeric <oper>,short alphanumeric <oper>,numeric <oper>)[,<AcT>,<RSRP>]]s][,,(list of supported<format>s)] +CME ERROR:<err>

5.26 AT^CACAP

Description

Use this command to get the access technology of the serving cell.

. Syntax

Command	Possible responses
^CACAP=?	+CACAP:(0-7) OK
^CACA	+CACAP: <act>

<act>

0 GSM
1 GSM Compact
2 UTRAN
3 GSM w/EGPRS
4 UTRAN w/HSDPA
5 UTRAN w/HSUPA
6 UTRAN w/HSDPA and HSUPA
7 E-UTRAN
8 UTRAN HSPA+

5.27 AT+CDIP

Description

This command related to a network service that provides “multiple called numbers (called line identifications) service” to an MT. This command enables a called subscriber to get the called line identification of the called party when receiving a mobile terminated call. Set command enables or disables the presentation of the called line identifications at the TE.

Syntax

Command	Possible responses
+CDIP=<n> Note: <n>: parameter sets/shows the result code presentation status to the TE: 0 disable 1 enable <m>: parameter shows the subscriber “multiple called numbers” service status in the network: 0 “multiple called numbers service” is not provisioned 1 “multiple called numbers service” is provisioned 2 unknown (e.g. no network, etc.)	OK/+CME ERROR:<err>
+CDIP?	+CDIP: <n>,<m> OK Example: +CDIP: 1, 2 OK
+CDIP=?	+CDIP: (0-1) OK

5.28 AT*EHSDPA

Description

This command is used to enable/disable HSDPA and HSUPA and choose the specific HSxPA category.

Syntax

Command	Possible responses
AT*EHSDPA=<mode>[,<DL_CATEGORY>[,<UL_CATEGORY> [,<CPC_STATE>[,<DPA_CATEGORY_EXT>[,<EDCH_CATEGORY_EXT>[,<F-DPCHState>[,<enhanced F-	OK/+CME ERROR: <err>

DPCHState>]]]]]]]	
*EHSDPA?	*EHSDPA:<mode>,<DL_CATEGORY>,<UL_CATEGORY>,<CPC_STATE>,<DPA_CATEGORY_EXT>,<EDCH_CATEGORY_EXT>,<F-DPCHState>,<enhanced F-DPCHState>
*EHSDPA?	In TDSCDMA mode: *EHSDPA: (0-3),(1-11,13-16,23,35),(6),(0),(0),(0),(0),(0) OK In WCDMA mode: *EHSDPA: (0-2,4),(1-12),(1-6),(0,1),(1-14),(7),(0,1),(0,1) OK

Defined values:

<mode>:
0: disable HSDPA(also disable HSUPA if UE is supported) for Rel5
1: enable HSDPA(also Enable HSUPA if UE is supported) for Rel7
2: enable HSDPA only (not include HSUPA) for Rel5
3: enable DLDC for Rel9 for TD production
4: enable HSPA only for Rel6

In TDSCDMA mode:
<DL_CATEGORY>: default value is 14

Category	Max TB size	Max speed
1	2788	0.5M
2		
3		
4	5600	1.1M
5		
6		
7	8416	1.6M
8		
9		
10	11226	2.2M
11		
13	14043	2.8M
14		

<UL_CATEGORY>: default value is 6

Category	Max TB size	Max speed
6	11160	2.2M

<CPC_STATE>: 0 (not supported)

In WCDMA mode:
<DL_CATEGORY>: default value is 6

Category	Max TB size	Max speed
1	7298	1.2 M
2	7298	1.2 M
3	7298	1.8 M
4	7298	1.8 M
5	7298	3.6 M
6	7298	3.6 M

<UL_CATEGORY>: 0(not supported)
<CPC_STATE>: 0(not supported)

<DPA_CATEGORY_EXT>:DPA category ext, for WCDMA Rel7 support 1~20,

default 14 for Rel7.

<EDCH_CATEGORY_EXT>:EDCH category ext, for WCDMA Rel7 only support 7.

<F-DPCHState>:F-DPCH enabled or disabled on R6/R7 for WCDMA
In TD mode:
0(not supported, default value)
In WCDMA:
0 disabled
1 enabled

<enhanced F-DPCH State>:Enhanced F-DPCH enabled or disabled on R7 for WCDMA.
In TD mode:
0(not supported, default value)
In WCDMA:
0 disabled
1 enabled

5.29 Unsolicited result code: +MSRI

Description

Notification of allowing/disallowing Manual PLMN selection option in the user menu. The protocol stack sends an indication regarding whether manual PLMN selectionappearance in the user's menu. The decision regarding allowing / disallowing the appearance of this option in the user's menu is done by SIM.

Syntax

+MSRI: <ind>

Defined Values

<ind>: indicate if allow manual PLMN selection option in the user menu

0 not allowed

1 allowed

Example:

+MSRI: 0

5.30 Unsolicited result code: +EEMGINFOBASIC

Description

Indication of basic information in GSM Engineering Mode

Syntax

+EEMGINFOBASIC: <state>

Defined Values

<state>:

0: ME in Idle mode

1: ME in Dedicated mode

2: ME in PS PTM mode

5.31 Unsolicited result code: +EEMGINFOSVC

Description

Indication of serving-cell information in GSM Engineering Mode

Syntax

+EEMGINFOSVC: <mcc>, <mnc>, <lac>, <ci>, <nom>, <nco>, <bsic>, <C1>, <C2>, <TA>, <TxPwr>,<RxSig>, <RxSigFull>, <RxSigSub>, <RxQualFull>, <RxQualSub>, <ARFCN_tch>, <hopping_chnl>,<chnl_type>, <TS>, <PacketIdle>, <rac>, <arfcn>, <bs_pa_mfrms>, <C31>, <C32>, <t3212>, <t3312>,<pbcch_support>, <EDGE_support>, <ncc_permitted>, <rl_timeout>, <ho_count>, <ho_succ>,<chnl_access_count>, <chnl_access_succ_count>

Defined Values

<mcc>: Mobile Country Code
<mnc> : Mobile Network Code
<lac> : Location Area Code
<ci> : Cell Identifier
<nom>: Network Operation Mode
<nco>: Network Control Order
<bsic>: Base Station Identity Code
<C1>: C1 value
<C2>: C2 value
<TA>: Timing Advance
<TxPwr>: Transmit Power
<RxSig>: Receive level BCCH
<RxSigFull>: Receive level for full set of TCH
<RxSigSub>: Receive level for sub set of TCH
<RxQualFull>: BER in DTX mode
<RxQualSub>: BER in non-DTX mode
<ARFCN_tch>: Traffic Channel ARFCN(Absolute Radio Frequency Channel)
<hopping_chnl>: Channel is hopping
<chnl_type>: Channel type
<TS>: Serving timeslot
<PacketIdle>: In packet idle mode
<rac>: Routing Area Code
<arfcn>: Absolute Radio Frequency Channel
<bs_pa_mfrms>: BS PA frames
<C31>: C31 value
<C32>: C32 value
<t3212>: timeout No. 3212
<t3312>: timeout No. 3312
<pbcch_support>: Support PBCCH
<EDGE_support>: Support EDGE
<ncc_permitted>: NCC permitted
<rl_timeout>: Radio link timeout

<ho_count>: Total hand-over count
<ho_succ>: Success hand-over count
<chnl_access_count>: Total channel access count
<chnl_access_succ_count>: Success channel access count

5.32 Unsolicited result code: +EEMGINFOPS

Description

Indication of PS information in GSM Engineering Mode

Syntax

+EEMGINFOPS: <PS_attached>, <attach_type>, <service_type>, <tx_power>, <c_value>, <ul_ts>, <dl_ts>,<ul_cs>, <dl_cs>, <ul_modulation>, <dl_modulation>, <gmsk_cv_bep>, <8psk_cv_bep>,<gmsk_mean_bep>,<8psk_mean_bep>, <EDGE_bep_period>, <single_gmm_rej_cause>, <pdp_active_num>, <mac_mode>,<network_control>, <network_mode>, <EDGE_slq_measurement_mode>, <edge_status>

Defined Values

<PS_attached>: GPRS/EDGE attached
<attach_type>: Attach type
<service_type>: Service type
<tx_power>: Transmit power
<c_value>: C value
<ul_ts>: Uplink timeslot
<dl_ts>: Downlink timeslot
<ul_cs>: Uplink Coding Scheme
<dl_cs>: Downlink Coding Scheme
<ul_modulation>: Uplink modulation
<dl_modulation>: Downlink modulation
<gmsk_cv_bep>: GMSK CV BEP(Block Error Probability)
<8psk_cv_bep>: 8PSK CV BEP
<gmsk_mean_bep>: GMSK mean BEP
<8psk_mean_bep>: 8PSK mean BEP
<EDGE_bep_period>: EDGE BEP period
<single_gmm_rej_cause>: Is single GMM reject cause
<pdp_active_num>: Activated PDP number
<mac_mode>: MAC mode
<network_control>: Network control
<network_mode>: network mode
<EDGE_slq_measurement_mode>: EDGE SLQ measurement mode
<edge_status>: EDGE status

5.33 Unsolicited result code: +EEMGINFONC

Description

Indication of cell information in GSM Engineering Mode

Syntax

+EEMGINFONC: <nc_num>, [<mcc>, <mnc>, <lac>, <rac>, <ci>, <rx_lv>, <bsic>, <C1>, <C2>, <arfcn>,
<C31>, <C32>, […]]

Defined Values

<nc_num>: Neighbor cell number
<mcc>: Mobile Country Code
<mnc>: Mobile Network Code
<lac>: Location Area Code
<rac>: Routing Area Code
<ci>: Cell Indetifier
<rx_lv>: Receive signal level
<bsic>: Base Station Identity Code
<C1>: C1 value
<C2>: C2 value
<arfcn>: Absolute Radio Frequency Channel
<C31>: C31 value
<C32>: C32 value

5.34 Unsolicited result code: +EEMGINBFTM

Description

To notify current network status which used for EFEM

Syntax

+EEMGINBFTM:<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>,<p11>,<p12>,<p13>,<p14>,<p15>,<p16>,<p17>,<p18>,<p19>

Defined Values

<p1>: Engineering Mode
<p2>: mcc
<p3>: mnc
<p4>: lac
<p5>: cell Identifier
<p6>: bsic
<p7>: C1
<p8>: C2
<p9>: Timing advance
<p10>: TxPowerLevel
<p11>: rxSigLevel

<p12>: rxSigLevelFull
<p13>: rxSigLevelSub
<p14>: rxQualityFull
<p15>: rxQualitySub
<p16>: arfcnTch
<p17>: hopping status
<p18>: channel type
<p19>: Server Timeslot

5.35 Unsolicited result code:+EEMUMTSSV

Description

Indication of serving-cell information in UMTS Engineering Mode

Syntax

+EEMUMTSSVC:<p1>,<p2>,<p3>,<p4>,[<p5>,<p6>,<p7>,<p8>],[<p9>,<p10>,…,<p26>],[<p27>,<p28>,…,<p53>]

Define values:

<p1>: Engineer Mode
<p2> sCMeasPresent
<p3>sCParamPresent
<p4> ueOpStatusPresent

If **sCMeasPresent** is TRUE, the following 4 items will be printed.

<p5> pccpchRSCP
<p6> utraRssi
<p7> sRxLev
<p8> txPower

If **sCParamPresent** is TRUE, the following 18 items will be printed.

<p9> rac
<p10> nom
<p11> mcc
<p12> mnc
<p13> lac
<p14> ci
<p15> uraId
<p16> cellParameterId
<p17> arfcn
<p18> t3212
<p19> t3312
<p20> hcsUsed
<p21> attDetAllowed
<p22> csDrxCycleLen
<p23> psDrxCycleLen
<p24> utranDrxCycleLen

<p25> HSDPASupport
<p26> HSUPASupport

If **ueOpStatusPresent** is TRUE, the following 27 items will be printed.
<p27>rrcState
<p28>numLinks
<p29>srncId
<p30>sRnti
<p31>algPresent
<p32>cipherAlg
<p33>cipherOn
<p34>algPresent
<p35>cipherAlg
<p36>cipherOn
<p37>HSDPAActive
<p38>HSUPAActive
<p39>MccLastRegisteredNetwork
<p40>MncLastRegisteredNetwork
<p41>TMSI
<p42>PTMSI
<p43>IsSingleMmRejectCause
<p44>IsSingleGmmRejectCause
<p45>MMRejectCause
<p46>GMMRejectCause
<p47>mmState
<p48>gmmState
<p49>gprsReadyState
<p50>readyTimerValueInSecs
<p51>NumActivePDPContext
<p52>ULThroughput
<p53>DLThroughput

5.36 Unsolicited result code:+EEMUMTSINTRA

Description

Indication of Intra freq information in UMTS Engineering Mode

Syntax

+EEMUMTSINTRA: <p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>
Define Values:
<p1> index of ENGMODEINTRAFREQ
<p2> pccpchRSCP
<p3> utraRssi
<p4> sRxLev
<p5> mcc

<p6> mnc
<p7> lac
<p8> ci
<p9> arfcn
<p10> cellParameterId

5.37 Unsolicited result code:+EEMUMTSINTER

Description

Indication of inter freq information in UMTS Engineering Mode

Syntax

+EEMUMTSINTER:<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>

Define Values:

<p1> index of ENGMODEINTERFREQ
<p2> pccpchRSCP
<p3> utraRssi
<p4> sRxLev
<p5> mcc
<p6> mnc
<p7> lac
<p8> ci
<p9> arfcn
<p10> cellParameterId

5.38 Unsolicited result code:+EEMUMTSINTERRAT

Description

Indication of inter RAT information in UMTS Engineering Mode

Syntax

+EEMUMTSINTERRAT:<p1>,<p2>,<p3>,<p4>,<p5>,<p6>,<p7>,<p8>,<p9>,<p10>,<p11>

Defined Values:

<p1> index of ENGMODEINTERRAT
<p2> gsmRssi
<p3> rxLev
<p4> C1
<p5> C2
<p6> mcc
<p7> mnc
<p8> lac
<p9> ci
<p10> arfcn
<p11> bsic

5.39 Unsolicited result code: +EEMLTESVC

Description

Indication of serving-cell information in LTE Engineering Mode

Syntax

+EEMLTESVC: <mcc>, <length of mnc>, <mnc>, <tac>, <PCI>, <dlEuarfcn>, <ulEuarfcn>, <band>, <dlBandwidth>, <ci>,<rsrp>,<rsrq>, <sinr>, <MainRsrp>,<DiversityRsrp>, <MainRsrq>,<DiversityRsrq>, <rssi>,<cqi>,<ErrorModeState>,<emmState>,<serviceState>,<IsSingleEmmRejectCause>,<EMMRejectCause>,<MmeGroupId>,<MmeCode>,<mTmsi>

Defined Values

<mcc>: Mobile Country Code
<length of mnc>: length of mnc
<mnc> : Mobile Network Code
<tac> : Tracking area code
<PCI> : Physical Cell Identifier
< dlEuarfcn>: dl arfcn
< ulEuarfcn>: ul arfcn
<band>: band
<dlBandwidth>: dl band width
<ci> Cell ID
<rsrp>: rsrp
<rsrq>: rsrq
<sinr>: sinr
<MainRsrp>: Rsrp in main antenna
<DiversityRsrp>: Rsrp in slave antenna
<MainRsrq>: Rsrq in main antenna
<DiversityRsrq>: Rsrq in slave antenna
<rssi>: rssi
<cqi>: cqi
<ErrorModeState>: ErrorModeState
<emmState>: emmState
<serviceState>: serviceState
<IsSingleEmmRejectCause>: IsSingleEmmRejectCause
<EMMRejectCause>: EMMRejectCause
<MmeGroupId>: MmeGroupId
<MmeCode>: MmeCode
<mTmsi>: mTmsi

5.40 AT*AUTHReq

Description

This proprietary AT command is used to requests to add authentication parameters to a defined PDP context. The command must be sent after the PDP context was defined and

before the PDP context is activated. The authentication parameters will be sent to the GGSN in a protocol configuration information entry, when PDP context is activated.

In case authentication parameters are already defined for this PDP context the new authentication parameters will replace the existing parameters. Set authentication type to none will delete authentication parameters defined for this PDP context.

Syntax

Command	Possible responses
AT*AUTHReq=<cid>,<type>[,<UserName>[,<Password>]]	OK/+CME ERROR: <err>
AT*AUTHReq=?	*AUTHReq: <cid>,<type>(0-None;1-PAP;2-CHAP),<UserName>,<Password> OK

Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands)

<type>:(Authentication Protocol type) a numeric parameter which specifies the type of authentication data protocol

0 – None
1 – PAP (Password Authentication Protocol)
2 – CHAP (Challenge Handshake Authentication Protocol)

<Username>:a string parameter that specifies a user name added in PPP authentication packet and sent to server forauthentication
<Password>: a string parameter that specifies a password added in PPP authentication packet and sent to server for authentication

Note: The example when use this AT command is as following:
AT*AUTHReq=1,1,AirM2M,123456

OK
AT*AUTHReq=?

*AUTHReq: <cid>,<type>(0-None;1-PAP;2-CHAP),<UserName>,<Password>

5.41 AT*CGDFAUTH

Description

This proprietary AT command is used to requests to add authentication parameters to LTE defaultbearer.

Syntax

Command	Possible responses
AT*CGDFAUTH=<mode><auth_prot>[,<userid>[,<password>]]	OK/+CME ERROR: <err>
AT*CGDFAUTH =?	*CGDFAUTH: < auth_prot >(0-None;1-PAP;2-CHAP),<UserName>,<Password> OK

Defined values

<Mode >：
0 not write into NVM

1 write into NVM
<auth_prot>：
0 – None
1 – PAP (Password Authentication Protocol)
2 – CHAP (Challenge Handshake Authentication Protocol)
<Username>: a string parameter that specifies a user name added in authentication packet
<Password>: a string parameter that specifies a password added in authentication packet

5.42 AT^SYSCONFIG

Description

This command sets the system mode,G/W access order ,roaming support and domain characteristics

Syntax

Command	Possible responses
^SYSCONFIG=<mode>,<acqorder>,<roam>, <srvdomani>	<CR><LF>OK<CR><LF>
^SYSCONFIG?	<CR><LF>^SYSCONFIG:<mode>,<acqorder>, <roam>,<srvdomain><CR><LF><CR><LF> OK<CR><LF>

Defined values

<mode>(system mode):
2Automatic selection
13 GSM ONLY
14 WCDMA ONLY
15 TD-SCDMA ONLY
16 No Change

<acqorder>(Network access sequence):
0 Automatic
1 GSM first, then UTRAN
2 UTRAN first ,then GSM
3 No Change

<roam>(Roaming support):
0 No supported
1 Enable Roaming
2 No change

<srvdomain>(Domain Setting):
0 CS_ONLY
1 PS_ONLY
2 CS_PS
3 ANY
4 No Change

The select order of the four network: 3G priority,2G priority,3G only,2G only. The distinction among the four connect-type is thedifference in the system mode and network access order.as shown in the following table:

Connect-type	Mode	Acqorder	Explan:
3G priority	2	2	Connect 3G firstly, ifunsuccessful connect 2G
2G priority	2	1	Connect 2G firstly, if unsuccessful connect 3G
3G only	15	2	Connect 3G only

2G only	13	1	Connect 2G only

6. Mobile * erminationcontrol and status commands

6.1 AT+CPAS

Description

Execution command returns the activity status <pas> of the MT. It can be used to interrogate the MT before requesting action from the phone.

Test command returns values supported by the MT as a compound value.

Syntax

Command	Possible responses
+CPAS	+CPAS: <pas> OK/+CME ERROR: <err> Example: +CPAS: 2 OK
+CPAS=?	+CPAS: (0,2,3,4) OK

Defined values

<pas>:

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)

6.2 AT+CFUN

Description

Set command selects the level of functionality <fun> in the MT.

Syntax

Command	Possible responses
+CFUN=[<fun>[,<rst>]] Note: <fun>: 0: minimum functionality 1: full functionality 3: disable phone receive RF circuits. 4: disable phone both transmit and receive RF circuits 5: disable SIM 6: turn off full secondary receive. <rst>: 0: do not reset the MT before setting it to <fun> power level 1: reset the MT before setting it to <fun> power level	OK/+CME ERROR: <err>
+CFUN?	+CFUN: <fun> OK/+CME ERROR: <err>

	Example: +CFUN: 1 OK
+CFUN=?	+CFUN: (0,1,3,4,5,6),(0-1) OK

6.3 AT*CFUN

Description

Set phone functionality status

Syntax

Command	Possible responses
AT*CFUN=<fun>[,<rst>,<isFeatureCfg>,<featureCfg>] Note: <fun>: 0: minimum functionality 1: full functionality 4: disable phone both transmit and receive RF circuits 5: update NVM file with minimum functionality mode 6: update NVM file with full functionality mode 9: update NVM file with both transmit and receive RF circuits disable mode <rst>: 0: do not reset the MT before setting it to <fun> power level 1: reset the MT before setting it to <fun> power level <isFeatureCfg> 0: < featureCfg > is not present 1: < featureCfg > is present < featureCfg > 0-63: bitmap for * aske. Configurations for CSD, FAX, PRODUCTION, CONVENTIONAL_GPS, MS_BASED_GPS, MS_ASSISTED_GPS	OK/+CME ERROR: <err>
AT*CFUN?	*CFUN : <func>, <featureCfg> OK
AT*CFUN=?	*CFUN: (0,1,4,5,6,9),(0-1),(0,1),(0-63) OK

6.4 AT+CPIN

Description

Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards MT and an error message, +CME ERROR, is returned to TE.

Syntax

Command	Possible responses
+CPIN=<pin>[,<newpin>]	OK/+CME ERROR: <err>
+CPIN?	+CPIN: <code>**(Note)** OK/+CME ERROR: <err> Example: +CPIN: READY

	OK Note: +CPIN: <code> can also be unsolicited result code sent from MT to TE when current SIM status changed.
+CPIN=?	OK

Defined values

<pin>, <newpin>: string type values

<code> values reserved by the present document:

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
PH-SIMLOCK PIN	MT is waiting phonetoSIM card password to be given
PH-SIMLOCK PUK	MT is waiting phonetoSIM card unblocking password to be given
PH-FSIM PIN	MT is waiting phone-to-very first SIM card password to be given
PH-FSIM PUK	MT is waiting phone-to-very first SIM card unblocking password to be given
SIM PIN2	MT is waiting SIM PIN2 to be given (this <code> is recommended to be 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, it is recommended that MT does not block its operation)
SIM PUK2	MT is waiting SIM PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that MT does not block its operation)
PH-NET PIN	MT is waiting network personalization password to be given
PH-NET PUK	MT is waiting network personalization unblocking password to be given
PH-NETSUB PIN	MT is waiting network subset personalization password to be given
PH-NETSUB PUK	MT is waiting network subset personalization unblocking password to be given
PH-SP PIN	MT is waiting service provider personalization password to be given
PH-SP PUK	MT is waiting service provider personalization unblocking password to be given
PH-CORP PIN	MT is waiting corporate personalization password to be given
PH-CORP PUK	MT is waiting corporate personalization unblocking password to be given

6.5 AT+CPIN2

Description

Verify PIN2 anytime after PIN ready not only in the case that PIN2 is required.

Syntax

Command	Possible responses
AT+CPIN2=<pin2> Note: <pin2>:SIM PIN2, string type values	OK/+CME ERROR: <err> Exmaple: AT+CPIN2=12345 OK
AT+CPIN2?	+CPIN: <code> OK/+CME ERROR: <err> <code>:refer to 3.8.4 Example: +CPIN: READY OK
AT+CPIN2=?	OK

6.6 AT+EPIN

Description

Get PIN's number of remaining retry.

Syntax

Command	Possible responses
AT+EPIN? Note: <p1 retry>: P1 status, number of remaining retries <p2 retry>: P2 status, number of remaining retries <puk1 retry>: PUK1 status, number of remaining retries <puk2 retry>: PUK2 status, number of remaining retries	+EPIN:<p1 retry>,<p2 retry>,<puk1 retry>,<puk2 retry> OK Example: +EPIN:3,3,10,10 OK
AT+EPIN=?	+EPIN: (0-3),(0-3),(0-10),(0-10) OK

6.7 AT+CSQ

Description

Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the MT.

Test command returns values supported as compound values.

Syntax

Command	Possible responses
+CSQ	+CSQ: <rssi>,<ber>(**Note**) OK/+CME ERROR: <err> Example: +CSQ:3,0 OK Note: this can also be an unsolicited result code to indicate signal quality.
+CSQ=?	+CSQ:(0-31),(0-7) OK

Defined values

<rssi>:

0 113 dBm or less

1 111 dBm

2…30 109… 53 dBm

31 51 dBm or greater

99 not known or not detectable

<ber> (in percent):

0…7 as RXQUAL values in the table in TS 45.008 subclause 8.2.4

6.8 AT+CESQ

Syntax

Command	Possible response(s)
+CESQ	+CESQ: <rxlev>,<ber>,<rscp>,<ecno>,<rsrq>,<rsrp> +CME ERROR: <err>
+CESQ=?	+CESQ: (list of supported <rxlev>s),(list of supported <ber>s),(list of supported <rscp>s),(list of supported <ecno>s),(list of supported <rsrq>s),(list of supported <rsrp>s)

Description

Execution command returns received signal quality parameters. If the current serving cell is not a GERAN cell, <rxlev> and <ber> are set to value 99. If the current serving cell is not a UTRA FDD or UTRA TDD cell, <rscp> is set to 255. If the current serving cell is not a UTRA FDD cell, <ecno> is set to 255. If the current serving cell is not an E-UTRA cell, <rsrq> and <rsrp> are set to 255.
Test command returns values supported as compound values.

Defined values

<rxlev>: integer type, received signal strength level (see 3GPP TS 45.008 [20] subclause 8.1.4).

0	rssi < -110 dBm
1	-110 dBm ≤ rssi < -109 dBm
2	-109 dBm ≤ rssi < -108 dBm
:	: : :
61	-50 dBm ≤ rssi < -49 dBm
62	-49 dBm ≤ rssi < -48 dBm
63	-48 dBm ≤ rssi
99	not known or not detectable

<ber>: integer type; channel bit error rate (in percent)

0...7	as RXQUAL values in the table in 3GPP TS 45.008 [20] subclause 8.2.4
99	not known or not detectable

<rscp>: integer type, received signal code power (see 3GPP TS 25.133 [95] subclause 9.1.1.3 and 3GPP TS 25.123 [96] subclause 9.1.1.1.3).

0	rscp < -120 dBm
1	-120 dBm ≤ rscp < -119 dBm
2	-119 dBm ≤ rscp < -118 dBm
:	: : :
94	-27 dBm ≤ rscp < -26 dBm
95	-26 dBm ≤ rscp < -25 dBm
96	- 25 dBm ≤ rscp
255	not known or not detectable

<ecno>: integer type, ratio of the received energy per PN chip to the total received power spectral density (see 3GPP TS 25.133 [95] subclause).

0	Ec/Io < -24 dB
1	-24 dB ≤ Ec/Io < -23.5 dB
2	-23.5 dB ≤ Ec/Io < -23 dB
:	: : :
47	-1 dB ≤ Ec/Io < -0.5 dB
48	-0.5 dB ≤ Ec/Io < 0 dB

49 0 dB ≤ Ec/Io
255 not known or not detectable

<rsrq>: integer type, reference signal received quality (see 3GPP TS 36.133 [96] subclause 9.1.7).
0 rsrq < -19.5 dB
1 -19.5 dB ≤ rsrq < -19 dB
2 -19 dB ≤ rsrq < -18.5 dB
: : : :
32 -4 dB ≤ rsrq < -3.5 dB
33 -3.5 dB ≤ rsrq < -3 dB
34 -3 dB ≤ rsrq
255 not known or not detectable

<rsrp>: integer type, reference signal received power (see 3GPP TS 36.133 [96] subclause 9.1.4).
0 rsrp < -140 dBm
1 -140 dBm ≤ rsrp < -139 dBm
2 -139 dBm ≤ rsrp < -138 dBm
: : : :
95 -46 dBm ≤ rsrp < -45 dBm
96 -45 dBm ≤ rsrp < -44 dBm
97 -44 dBm ≤ rsrp
255 not known or not detectable

6.9 AT*SIMDETEC

Description

The set command is used todetect the sim in specified slot was removed or not.
The test command returns supported sim slot.

Syntax

Command	Possible responses
AT*SIMDETEC=<simslot>	*SIMDETEC: <state> OK/+CME ERROR
AT*SIMDETEC=?	*SIMDETEC: (1,2) OK

Defined values

<simslot>:
1 - master sim.
2. - slave sim.
Note: the slave sim is not supported now.

<state>:
"NOS"- SIM was removed
"SIM"- SIM was inserted

Note: The example when use this AT command is as following:

```
AT*SIMDETEC=?

*SIMDETEC: (1,2)

OK
AT*SIMDETEC=1
```

```
*SIMDETEC: NOS                          //the master sim was removed

OK
```

6.10 AT*EUICC

Description

Get the SIM card type.

Syntax

Command	Possible responses
*EUICC?	*EUICC: <n>**(Note)** OK <n>**(Note1)** 0: SIM 1: USIM 2: TEST SIM 3: TEST USIM 4: UNKNOWN **Note**: *EUICC: <n> can also be unsolicited result code sent from MT to TEwhen there is a change in the PIN status of theSIM/USIM card. **Note1**: the value (2,3,4) is protected by special MACRO, by default the MACRO is not defined and will not return these values.

6.11 AT+CCWE

Description

Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code +CCWV will be sent, if enabled by this command.

Read command returns the current setting.

Test command returns supported settings.

Syntax

Command	Possible responses
+CCWE=<mode> Note: <mode> 0: Disable the call meter warning event 1: Enable the call meter warning event	OK/+CME ERROR: <err>
+CCWE?	+CCWE: <mode> OK/+CME ERROR: <err>
+CCWE=?	+CCWE: (list of supported <mode>s) +CME ERROR: <err>

6.12 AT+CTZR

Description

Read command returns the current settings in the MT.
Test command returns supported on- and off-values.

Syntax

Command	Possible responses
+CTZR?	+CTZR: 1 OK Note: 1, enable
+CTZR=?	OK

6.13 AT+CTZU

Description.

Read command returns the current settings in the MT.
Test command returns supported on- and off-values.

Syntax

Command	Possible responses
+CTZU?	+CTZU: 1 OK Note: 1, enable
+CTZU=?	OK

6.14 Unsolicited result code: +NITZ

Description

NITZ, or Network Identity and Time Zone, is a mechanism for provisioning local time and dateinformation to mobile devices via a wireless network

Syntax

+NITZ:<DST>[,<sign><timezone>[,<year>/<month>/<day>,<hour>:<minute>:<second>]]

Defined Values

<year>: The integer value is in range [00…99].
<month>: The integer value is in range [1…12].
<day>:The integer value is in range [1…31].
<hour>: The integer value is in range [0…59]
<minute>: The integer value is in range [0…59]
<second>: The integer value is in range [0…59]
<sign>: a char value
‘+’– local time zone is passive.
‘-’– local time zone is negative.

<time zone>: time zone

<DST>:Daylight Saving Time (DST),also summer time.

2. -- no adjustment
2. -- +1 hour

2 -- +2 hour

Example:

+NITZ: 0,+32,11/08/02,09:27:39

6.15 AT+CPBS

Description

Set command selects phonebook memory storage <storage>, which is used by other phonebook commands.

Read command returns currently selected memory, and when supported by manufacturer, number of used locations and total number of locations in the memory.

Test command returns supported storages as compound value.

Syntax

Command	Possible responses
+CPBS=<storage>[,<password>]	OK/+CME ERROR: <err>
+CPBS?	+CPBS: <storage>[,<used>,<total>] OK/+CME ERROR: <err> Example: +CPBS:"SM" OK
+CPBS=?	+CPBS: ("SM","FD","LD","DC","ON","AP") OK

Defined values

<storage> values reserved by the present document:

"DC" MT * aximu 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 fixdiallingphonebook. If a SIM card is present or if a UICC with an active GSM application is present, the information in EF_{FDN} under $DF_{Telecom}$ is selected. If a UICC with an active USIM application is present, the information in EF_{FDN} under ADF_{USIM} is selected.

"LD" SIM/UICC lastdiallingphonebook

"MC" MT missed (unanswered received) calls list (+CPBW may not be applicable for this storage)

"ME" MT phonebook

"MT" combined MT and SIM/USIM phonebook

"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 EF_{MSISDN} under $DF_{Telecom}$ is selected. If a UICC with an active USIM application is present, the information in EF_{MSISDN} under ADF_{USIM} 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 EF_{ADN} under $DF_{Telecom}$ is selected. If a UICC with an active USIM application is present, the global phonebook, $DF_{PHONEBOOK}$ under $DF_{Telecom}$ is selected.

"AP" Selected application phonebook. If a UICC with an active USIM application is present, the application phonebook, $DF_{PHONEBOOK}$ under ADF_{USIM} is selected.

"MBDN" SIM card CPHS MBDN.

"MN" SIM card CPHS MN.

6.16 AT+CPBR

Description

Execution command returns phonebook entries in location number range <index1>… <index2> from the current phonebook memory storage selected with +CPBS.

Test command returns location range supported by the current storage as a compound value and the maximum lengths of <number> fields.

Syntax

Command	Possible responses
+CPBR=<index1>[,<index2>] Example: AT+CPBR=7	[+CPBR: <index1>,<number>,<type>,<text><CR><LF> +CPBR: <index2>,<number>,<type>,<text>] OK Example: +CPBR:7,”12345678”,129,”John” OK/+CME ERROR: <err>
+CPBR=?	+CPBR: (list of supported <index>s),[<nlength>] OK/+CME ERROR: <err>

6.17 AT+CPBF

Description

Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field starts with string <findtext>.

Test command returns the maximum lengths of <number> fields.

Syntax

Command	Possible responses
+CPBF=<findtext>	[+CPBF: <index1>,<number>,<type>,<text> <CR><LF>+CBPF: <index2>,<number>,<type>,<text>] OK/+CME ERROR: <err>
+CPBF=?	OK/+CME ERROR: <err>

6.18 AT+CPBW

Description

Execution command writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS.

Test command returns location range supported by the current storage as a compound value, the maximum length of <number> field, supported number formats of the storage.

Syntax

Command	Possible responses
+CPBW=[<index>][,<number> [,<type>[,<text>]]]	+CPBW:<index> OK/+CME ERROR: <err>
+CPBW=?	+CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s) OK/+CME ERROR: <err> Example: +CPBW☹1-2),40,(128,129,145,161,177)

	OK

6.19 AT+CSIM

Description

Set command transmits to the MT the SIM command it then shall send as it is to the SIM. This command allows a direct control of the SIM by a distant application on the TE. The TE shall then take care of processing SIM information within the frame specified by GSM/UMTS.

Syntax

Command	Possible responses
+CSIM=<length>,<command>	+CSIM: <length>,<response> OK/+CME ERROR: <err>
+CSIM=?	OK

Defined values

<length> : 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> : command passed on by the MT to the SIM in the format as described in GSM 51.011 (hexadecimal character format; refer +CSCS)

<response> : response to the command passed on by the SIM to the MT in the format as described in GSM 51.011 (hexadecimal character format; refer +CSCS)

A command APDU has the following general format:

CLA	INS	P1	P2	P3	Data

The response APDU has the following general format:

Data	SW1	SW2

The bytes have the following meaning:
CLA is the class of instruction, 'A0' is used in the GSM application;

INS is the instruction code for each command.

- P1, P2, P3 are parameters for the instruction. P1, P2, P3 are parameters for the instruction. They are specified in below table. 'FF' is a valid value for P1, P2 and P3. P3 gives the length of the data element. P3='00' introduces a 256 byte data transfer from the SIM in an outgoing data transfer command (response direction). In an ingoing data transfer command (command direction), P3='00' introduces no transfer of data;
- SW1 and SW2 are the status words indicating the successful or unsuccessful outcome of the command.

Coding of the commands

COMMAND	INS	P1	P2	P3	S/R
SELECT	'A4'	'00'	'00'	'02'	S/R
STATUS	'F2'	'00'	'00'	lgth	R
READ BINARY	'B0'	offset high	offset low	lgth	R
UPDATE BINARY	'D6'	offset high	offset low	lgth	S
READ RECORD	'B2'	rec No.	Mode	lgth	R
UPDATE RECORD	'DC'	rec No.	Mode	lgth	S
SEEK	'A2'	'00'	type/mode	lgth	S/R
INCREASE	'32'	'00'	'00'	'03'	S/R
VERIFY CHV	'20'	'00'	CHV No.	'08'	S
CHANGE CHV	'24'	'00'	CHV No.	'10'	S
DISABLE CHV	'26'	'00'	'01'	'08'	S
ENABLE CHV	'28'	'00'	'01'	'08'	S
UNBLOCK CHV	'2C'	'00'	see note2	'10'	S
INVALIDATE	'04'	'00'	'00'	'00'	
REHABILITATE	'44'	'00'	'00'	'00'	
RUN GSM ALGORITHM	'88'	'00'	'00'	'10'	S/R
SLEEP	'FA'	'00'	'00'	'00'	
GET RESPONSE	'C0'	'00'	'00'	lgth	R
TERMINAL PROFILE	'10'	'00'	'00'	lgth	S
ENVELOPE	'C2'	'00'	'00'	lgth	S/R
FETCH	'12'	'00'	'00'	lgth	R
TERMINAL RESPONSE	'14'	'00'	'00'	lgth	S

NOTE1: The direction of the data is indicated by (S) and I, where (S) stands for data sent by the ME while I stands for data received by the ME.
NOTE2:If the UNBLOCK CHV command applies to CHV1 then P2 is coded '00'; if it applies to CHV2 then P2 is coded '02'.

Note: for detail information, please refer to 3GPP TS 11.11
Below demonstrate a example to use CSIM read the IMSI

AT+CSIM=14,A0A40000023F00 //first use "SELECT" command(INS is A4) to select master file of GSM, file ID is 3F00
+CSIM:48,000000003F00100000000000993010204008 38A838A9000 //the end two bytes 9000 mapping SW1 and SW2 show the correctly executed of command
AT+CSIM=14,A0A40000026F07 //then use "SELECT" command to select element //file EF_{IMSI} that contain IMSI, file ID is 6F07
+CSIM:34,000000096F07040014FF14010200009000
AT+CSIM=10,A0B0000009 //use "READ BINARY" command(INS is B0) to read the IMSI
+CSIM:22,084906005743219944 9000

6.20 AT+CRSM

Description

By using this command instead of Generic SIM Access +CSIM TE application has easier but more limited access to the SIM database. Set command transmits to the MT the SIM command and its required parameters.

Syntax

Command	Possible responses
+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]]	+CRSM: <sw1>,<sw2>[,<response>] OK/+CME ERROR: <err>
+CRSM=?	+CRSM: (176,178,192,214,220,242),(12037-28599),(0-255),(0-255),(0-255),<data>,<pathid>

	OK

Defined values

<command> (command passed on by the MT to the SIM; refer GSM 51.011):

176 READ BINARY
178 READ RECORD
192 GET RESPONSE
214 UPDATE BINARY
220 UPDATE RECORD
242 STATUS
all other values are reserved

NOTE 1: The MT internally executes all commands necessary for selecting the desired file, before performing the actual command.

<fileid>: integer type; this is the identifierMandatory for every command except STATUS

NOTE 2: The range of valid file identifiers depends on the actual SIM and is defined in GSM 51.011 . Optional files may not be present at all.

<P1>, <P2>, <P3>: integer type; parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 51.011

READ BINARY
<P1>Offset high (0…255)
<P2>Offset low (0…255)
<P3>Length (0…255)
READ RECORD
<P1>Rec. No. (0…255)
<P2>Mode "02" = next record
"03" = previous record
"04" = absolute mode/current mode, the recordnumber is given in P1 with P1='00' denoting the current record.
<P3>Length (0…255)
GET RESPONSE
<P1>"00"
<P2>"00"
<P3>Length (0…255)

UPDATE BINARY
<P1>Offset high (0…255)
<P2>Offset low (0…255)
<P3>Length (0…255)
UPDATE RECORD
<P1>Rec. No. (0…255)
<P2>Mode "02" = next record
"03" = previous record
"04" = absolute mode/current mode, the recordnumber is given in P1 with P1='00' denoting the current record.
<P3>Length (0…255)
STATUS
<P1>"00"
<P2>"00"
<P3>Length (0…255)

<data>: information which shall be written to the SIM (hexadecimal character format; refer +CSCS)
<pathid>: string type; contains the path of an elementary file on the SIM/UICC in hexadecimal format as defined in ETSI TS 102 221 (e.g. "7F205F70" in SIM and UICC case). The <pathid> shall only be used in the mode "select by path from MF" as defined in ETSI TS 102 221.

NOTE 3: Since valid elementary file identifiers may not be unique over all valid dedicated file identifiers the <pathid> indicates the targeted UICC/SIM directory path in case of ambiguous file identifiers. For earlier versions of this specification or if <pathid>is omitted, it could be implementation specific which one will be selected.

<sw1>, <sw2>: 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

Responses to commands which are correctly executed:

<sw1><sw2>Description

144 0 Normal ending of the command

145 XX Normal ending of the command, with extra information from the proactive SIM, containing a command for the ME. Length 'XX' of the response data.

158 XX Length 'XX' of the response data given in case of a SIM data download error.

159 XX Length 'XX' of the response data.

Responses to commands which are postponed:

<sw1><sw2>Error Description

147 0 SIM Application Toolkit is busy. Command cannot be executed at present, further normal commands are allowed.

146 0X Command successful but after using an internal update retry routine 'X' times.

146 64 Memory problem.

148 0 No EF selected.

148 2 Out of range (invalid address).

148 4 • File ID not found.
• Pattern not found.

148 8 File is inconsistent with the command

152 2 No CHV initialized

152 4 • Access condition not fulfilled.
• Unsuccessful CHV verification, at least one attempt left.
• Unsuccessful UNBLOCK CHV verification, at least one attempt left.
• Authentication failed.

152 8 In contradiction with CHV status.

152 16 In contradiction with invalidation status.

152 64 • Unsuccessful CHV verification, no attempt left.
• Unsuccessful UNBLOCK CHV verification, no attempt left.
• CHV blocked.
• UNBLOCK CHV blocked.

152 80 Increase cannot be performed, Max value reached.

103 XX Incorrect parameter P3 (NOTE: 'XX' gives the correct length or states that no additional information is given

107 XX Incorrect parameter P1 or P2.

109 XX Unknown instruction code given in the command.

110 XX Wrong instruction class given in the command.

111 XX Technical problem with no diagnostic given.

<response>: response of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. This information includes the type of file and its size (refer GSM 51.011). After READ BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command

Example:

read IMSI

```
AT+CRSM=176,28423,0,0,9                 //READ BINARY,  file ID(6F07),0,0,9 bytes
+CRSM: 144,0,084906005743219944         //generic success code, 9 bytes of file data
2. read last number * aximu
AT+CRSM=192,28484                       //GET RESPONSE, file ID(6F44)

+CRSM: 144,0,000001186F44044011FF440102031C   // generic success code, 0000-> RFU
                                              0118->File size 6F44-> File ID04-> Type of the file (EF) 40->RFU
                                              11FF44->Access conditions (READ=1-CHV1, UPDATE=1- CHV1)
                                              01->File status 02->Length of the following data (byte 14 to the end)
```

03->Structure of EF (cyclic) 1C->Length of a record (For cyclic and linear fixed Efs this byte denotes the length of a record. For atransparent EF, this byte shall be coded '00')

AT+CRSM=178,28484,0,4,28 //READ RECORD, EFLND file ID(6F44), 0, current,28 bytes of the record(according to above get response return value length of record 1C)

+CRSM: 144,0,FFFFFFFFFFFFFFFFFFFFFFFFFFFF04810180F6FFFFFFFFFFFFFFFF // FFFFFFFFFFFFFFFFFFFFFFFFFFFF->Alpha Identifier, 04->length of BCD number, 81->TON and NPI, 0180F6FFFFFFFFFFFF->Dialling number(10086)

6.21 AT+CACM

Description

Set command resets the Advice of Charge related accumulated call meter value in SIM card or in the active application in the UICC (GSM or USIM) file EFACM.

Read command returns the current value of ACM.

Syntax

Command	Possible responses
+CACM=[<passwd>]	OK/+CME ERROR: <err>
+CACM?	+CACM: <acm> OK/+CME ERROR: <err> Example: +CACM: "000000" OK
+CACM=?	+CACM☹0 – FFFFFF) OK

Defined values

<passwd>: string type; SIM PIN2

<acm>: string type; accumulated call meter value similarly coded as <ccm> under +CAOC

6.22 AT+CAMM

Description

Set command sets the Advice of Charge related accumulated call meter maximum value in SIM card or in the active application in the UICC (GSM or USIM) file EFACMmax.

Read command returns the current value of ACMmax.

Syntax

Command	Possible responses
+CAMM=[<acmmax>[,<passwd>]]	OK/+CME ERROR: <err>
+CAMM?	+CAMM: <acmmax> OK/+CME ERROR: <err> Example: +CAMM: "000000" OK
+CAMM=?	+CAMM☹000000 – FFFFFF) OK

Defined values

<acmmax>: string type; accumulated call meter maximum value similarly coded as <ccm> under +CAOC; value zero disables ACMmax feature
<passwd>: string type; SIM PIN2

6.23 AT+CPUC

Description

Set command sets the parameters of Advice of Charge related price per unit and currency table in SIM card or in the active application in the UICC (GSM or USIM) file EF_{PUCT}.

Read command returns the current parameters of PUCT.

Syntax

Command	Possible responses
+CPUC=<currency>,<ppu>[,<passwd>]	OK/+CME ERROR: <err>
+CPUC?	+CPUC: <currency>,<ppu> OK/+CME ERROR: <err>
+CPUC=?	+CPUC: <currency>, <ppu>, <PIN2> OK

Defined values

<currency>: string type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command Select TE Character Set +CSCS
<ppu>: string type; price per unit; (e.g. "2.66","2.10E1", "2.10E-1")
<passwd>: string type; SIM PIN2

6.24 Unsolicited result code: +MPBK

Description

AirM2M extended AT command to indicate that the SIM and/or NVRAM phonebooks are ready to use

Syntax

+MPBK: <bReady >

Defined Values
< bReady>: indicate whether SIM and/or NVRAM phonebooks are ready to use
0 –ready
1 –not ready

Example
+MPBK: 1

6.25 AT^SCPBR

Description

Execution command returns phonebook entries in location number range <index1>… <index2> from the current phonebook memory storage selected with +CPBS.

Test command returns location range supported by the current storage as a compound value and the maximum lengths of <number> fields.

The fields of this command are in accordance with the requirements of China Mobile's USIM phonebook's VCARD data fields.

Syntax

Command	Possible responses
^SCPBR=<index1>[,<index2>]	[<CR><LF>^SCPBR: <index1>,<num1>,<type>,<num2>,<type>,<num3>,<type>,<num4>,<type>,<text>,<coding>[,<email>][[…] <CR><LF>^SCPBR: <index1>,<num1>,<type>,<num2>,<type>,<num3>,<type>,<num4>,<type>,<text>,<coding>[,<email>][[…] If error: <CR><LF>+CME ERROR: <err><CR><LF>
^Scpbr=?	<CR><LF>^CPBR: (list of supported <index>s),[<nlength>],[<tlength>],[<mlength>]<CR><LF>OK<CR><LF> If error: <CR><LF>+CME ERROR: <err><CR><LF>

Defined values

<index1>,<index2>,<index3> integer value, phonebook entries in location number ,the value of index1,index2 should less than total returned by +CPBS?

<num1>: string style ,mobile phone number, not more than 32 bytes

<num2>: string style ,mobile phone number, not more than 32 bytes

<num3> :string style ,mobile phone number, not more than 32 bytes

<num4>: string style ,mobile phone number, not more than 32 bytes

<type>: the type of the phone number

<text>:string style,name

<code>:coding scheme, show the coding scheme of the <text> and specify the language.

0:GSM 7 bit Default Alphabet

1: USC2 mode (the original saved value in SIM CARD)

<email>: string style. Show the email address,not more than 64 bytes.

<nlength>:integer value, the maximum of the phone number.

<tlength>: integer value, the maximum of the name number

<mlength>: integer value, the maximum of the EMAIL number

6.26 AT^SCPBW

Description

Execution command writes phonebook entry in location number <index> in the current phonebook memory storage. If thecommand parameter contains only index, the phonebook entry in location number<index> in the current phonebook memory storage will be deleted. If the index fields is omitted, then this phonebook entry will be writed into the first blank location. If there is no blank location, +CME ERROR: memory full will be returned.

Test command returns location range supported by the current storage as a compound value, the maximum length of num1~num4 field, all values of the <type> fields ,the maximum length of the <text> fields and <email>fields.

Syntax

Command	Possible responses
^SCPBW=[<index>][,<num1>[,<type>[,<num2>[,<type>[,<num3>[,<type>[,<num4>[,<type>[,<text>,<>coding>[,email]]]]]]]]]	<CR><LF>OK<CR><LF> If error <CR><LF>+CME ERROR: <err><CR><LF>
^SCPBW=?	<CR><LF>^SCPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>],[<mlength>]<CR><LF><CR><LF>OK<CR><LF> If error: <CR><LF>+CME ERROR: <err><CR><LF>

Defined values

Same as the command AT^SCPBR

6.27 AT^CARDMODE

Description

The set command controls the active report event ^CARDMODE.

When <n>=1 and the state of the SIM/USIM card changes,^CARDMODE:<sim_state> will be reported.

The read command returns the current SIM/USIM card state.

Syntax

Command	Possible responses
^CARDMODE=[<n>]	<CR><LF>OK<CR><LF> If error: <CR><LF>+CME ERROR:<err><CR><LF>
^CARDMODE?	<CR><LF>^CARDMODE:<sim_state>[,<n>]<CR><LF><CR><LF>OK<CR><LF>
^CARDMODE=?	<CR><LF>^CARDMODE: (list of supported <n>s)<CR><LF><CR><LF>OK<CR><LF>

Defined values

<n>:

0 : prohibit the active report event ^CARDMODE

1: enable the active report event ^CARDMODE:<sim_state>.

<sim_state>:

0 : unknown mode

1: SIM CARD

2: USIM CARD

255: no SIM/USIM card or the pin has not been checked or unlocked.

6.28 AT^SPN

This command can read the brand information which includes network operator brand such as China Mobile, ChinaUnicom, China Telecom etc. and user brand such as M-zone,GoTone etc.The brand information is usually * torage in the files with the file identifier EFSPN and the file ID 6F46 in the SIM/USIM card.

This command is used to read the brand information in ths SIM/USIM card.For USIM card, there're two EFSPN files, which respectively locates in the GSM directory and in the USIM

directory, so it needs to specify which file to read.The EFSPN file format follows the 3GPP TS 31.102 V5.9.0.

Syntax

Command	Possible responses
^SPN=<spn_type>	<CR><LF>^SPN:<disp_rplmn>,<coding>,<spn_name><CR><LF> <CR><LF>OK<CR><LF> If error: <CR><LF>+CME ERROR:<err><CR><LF>
^SPN =?	<CR><LF>^SPN㉿list of supported <spn_type>)<CR><LF><CR><LF>OK<CR><LF>

Defined values

<spn_state>:

0: GSM_SPN

1: USIM_SPN

<disp_state>:

0： not display RPLMN

1: display RPLMN

99: the field is invalid, and no need to read the span_name field

<coding>: (coding scheme: identify the <span_name> field character encoding and specify language)

0: GSM 7 bit Default Alphabet

1: USC2 coding

<spn_name>: stringstyle. When<spn_name> is coded using GSM7bit, it is no more than 16 bytes; when coded using USC2,the content data of this string is described with the type of sixteen hexadecimal text value, and the length is no more than 32 bytes.

6.29 AT^LKSMSSTA

This command can lock or unlock the sms status in the sim card.

Syntax

Command	Possible responses
^LKSMSSTA=<n> n: 0 unlock the sms status n:1 lock the sms status in sim card	OK If error: +CME ERROR:<err>

7. Packet domain commands

7.1 AT+CGREG

Description

The set command controls the presentation of an unsolicited result for package network registration status: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>,<AcT>,<rac>] when <n>=2 and there is a change of the network cell, or code +CGREG: <stat>[,[<lac>],[<ci>],
[<AcT>],[<rac>][,<cause_type>,<reject_cause>]] when <n>=3 and there is a change of the network cell.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT.

Syntax

Command	Possible responses
+CGREG=<n> Note: <n>: 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>] 3: enable network registration, location information and cause value information unsolicited result code +CGREG: <stat>[,[<lac>],[<ci>],[<AcT>],[<rac>] [,<cause_type>,<reject_cause>]]	OK/+CME ERROR: <err>
+CGREG?	+CGREG: <n>,<stat>[,[<lac>],[<ci>],[<AcT>],[<rac>] [,<cause_type>,<reject_cause>]] OK/+CME ERROR: <err> Note: <stat>,<lac>,<ci>,<AcT>,<cause_type>, <reject_cause> refer to 3.7.1 Example: +CGREG: 2,1,”43018”,”01b29362”,2,0 OK
+CGREG=?	+CGREG: (0,3) OK

7.2 AT+CGATT

Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service.

The read command returns the current Packet Domain service state.

The test command is used for requesting information on the supported Packet Domain service states.

Syntax

Command	Possible responses
+CGATT= <state> Note: <state>: indicates the state of PS attachment 0 – detached 1 – attached	OK/+CME ERROR: <err>
+CGATT?	+CGATT: <state> OK Example +CGATT: 1 OK
+CGATT=?	+CGATT: (0-1) OK

7.3 AT+CGACT

Description

The execution command is used to activate or deactivate the specified PDP context (s).

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

Syntax

Command	Possible responses
+CGACT=<state> [,<cid>] Note: <state>: indicates the state of PDP context activation 0 – deactivated 1 – activated	OK/+CME ERROR: <err>
+CGACT?	[+CGACT: <cid>, <state>[<CR><LF>+CGACT: <cid>, <state>[…]]] OK/+CME ERROR: <err>
+CGACT=?	+CGACT: (0,1) OK

7.4 AT+CGDATA

Description

The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types.

The test command is used for requesting information on the supported layer 2 protocols.

Syntax

Command	Possible responses
+CGDATA=<L2P>,<cid> Note: <L2P>: a string parameter that indicates the layer 2 protocol to be used between the TE and MT PPP: Point-to-point protocol for a PDP such as IP <cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). Example: AT+CGDATA=”PPP”,1 AT+CGDATA=””,1	CONNECT/ERROR
+CGDATA=?	+CGDATA:(“PPP”), (1- 8) OK

7.5 AT+CGDCONT

Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value.

Syntax

Command	Possible responses
+CGDCONT=<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]]	OK/+CME ERROR: <err>
+CGDCONT?	[+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] […]]] OK Example: +CGDCONT: 1,"IP","","",0,0,, OK
+CGDCONT=?	+CGDCONT: (1-8),"IP",,,(0,2),(0,1) +CGDCONT: (1-8),"PPP",,,(0,2),(0,1) +CGDCONT: (1-8),"IPV6",,,(0,2),(0,1) OK

Defined values

<cid>: (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.

<PDP_type>: (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol

IP	Internet Protocol (IETF STD 5)
IPV6	Internet Protocol, version 6 (IETF RFC 2460)
PPP	Point to Point Protocol (IETF STD 51)

<APN>: (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.
If the value is null or omitted, then the subscription value will be requested.

<PDP_address>: a string parameter that identifies the MT in the address space applicable to the PDP.
If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.
The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.

<d_comp>: a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065)
0 – off (default if value is omitted)
1 – on (manufacturer preferred compression)
2 – V.42bis
Other values are reserved.

Note: only support 0 and 2 now.

<h_comp>: a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 and 3GPP TS 25.323)
0 – off (default if value is omitted)

1 – RFC1144 (applicable for SNDCP only)
2 – RFC2507
Note: only support 0 and 1 now.
<pd1>, … <pdN>: zero to N string parameters whose meanings are specific to the <PDP_type>

7.6 AT+CGDSCONT

Description

The set command specifies PDP context parameter values for a Secondary PDP context identified by the (local) context identification parameter, <cid>.

The read command returns the current settings for each defined context.

Syntax

Command	Possible responses
+CGDSCONT=<cid>[,<p_cid>[,<d_comp> [,<h_comp>]]]	OK/+CME ERROR: <err>
+CGDSCONT?	[+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp>[…]]] OK/+CME ERROR: <err>
+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) OK

Defined values

<cid>: (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.

<p_cid>: (Primary PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. The list of permitted values is returned by the test form of the command.

<d_comp>: a numeric parameter that controls PDP data compression (applicable for SNDCPonly) (refer 3GPP TS 44.065)
0 – off (default if value is omitted)
1 – on (manufacturer preferred compression)
2 – V.42bis
Other values are reserved.
Note: only support 0 and 2 now.

<h_comp>: a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 and 3GPP TS 25.323)
0 – off (default if value is omitted)
1 – RFC1144 (applicable for SNDCP only)
2 – RFC2507
Other values are reserved.
Note: only support 0 and 1 now.

7.7 AT+CGQMIN

Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value.

Syntax

Command	Possible responses
+CGQMIN=<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]	OK/+CME ERROR: <err>
+CGQMIN?	+CGQMIN: +CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> […]] OK Example: CGQMIN: 1,3,4,5,1,1 CGQMIN: 2,3,4,5,1,1 CGQMIN: 3,3,4,5,1,1 CGQMIN: 4,3,4,5,1,1 CGQMIN: 5,3,4,5,1,1 CGQMIN: 6,3,4,5,1,1 CGQMIN: 7,3,4,5,1,1 CGQMIN: 8,3,4,5,1,1 OK
+CGQMIN=?	+CGQMIN: “IP”,(0-4),(0-3),(0-5),(0-9),(0-18,31) OK

Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

The following parameters are defined in -3GPP TS 23.107:

<precedence>: a numeric parameter which specifies the precedence class

<delay>: a numeric parameter which specifies the delay class

<reliability>: a numeric parameter which specifies the reliability class

<peak>: a numeric parameter which specifies the peak throughput class

<mean>: a numeric parameter which specifies the mean throughput class

7.8 AT+CGQREQ

Description

This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.

The read command returns the current settings for each defined context.

The test command returns values supported as a compound value.

Syntax

Command	Possible responses
+CGQREQ=<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]	OK/+CME ERROR: <err>
+CGQREQ?	[+CGQREQ: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> […]]] OK Example:

	CGQREQ: 1,0,0,0,0,0 CGQREQ: 2,0,0,0,0,0 CGQREQ: 3,0,0,0,0,0 CGQREQ: 4,0,0,0,0,0 CGQREQ: 5,0,0,0,0,0 CGQREQ: 6,0,0,0,0,0 CGQREQ: 7,0,0,0,0,0 CGQREQ: 8,0,0,0,0,0 OK
+CGQREQ=?	+CGQREQ: “IP”,(0-4),(0-3),(0-5),(0-9),(0-18,31) OK

7.9 AT+CGEQREQ

Description

This command allows the TE to specify a UMTS Quality of Service Profile that is used when the MT activates a PDPcontext.
The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>.The specified profile will be stored in the MT and sent to the network only at activation or MS-initiated modification ofthe related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONTcommands, the+CGEQREQ command is effectively an extension to these commands. The QoS profile consists of a number ofparameters, each of which may be set to a separate value.
A special form of the set command, +CGEQREQ=<cid> causes the requested profile for context number <cid> tobecome undefined.
The read command returns the current settings for each defined context.
The test command returns values supported as a compound value. If the MT supports several PDP types, the parametervalue ranges for each PDP type are returned on a separate line.

Syntax

Command	Possible responses
+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>]]]]]]]]]]]]]	OK/+CME ERROR: <err>
+CGEQREQ?	+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>, <Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Deliveryorder>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statisticsdescriptor>,<Signalling 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> […]]
+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) […]]

Defined values

<cid>: a numeric parameter which specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands).

The following parameters are defined in 3GPP TS 23.107

<Traffic class>: a numeric parameter that indicates the type of application for which the UMTS bearer service is * aximum* * .

0 – conversational
1 – streaming
2 – interactive
3 – background
4 – subscribed value

If the Traffic class is specified as conversational or streaming, then the Guaranteed and Maximum bitrate parameters should also be provided. Other values are reserved.

<Maximum bitrate UL>: a numeric parameter that indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). This parameter should be provided if the Traffic class is specified as conversational or streaming (refer TS 24.008 subclause 10.5.6.5).

<Maximum bitrate DL>: a numeric parameter that indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer TS 24.008 subclause 10.5.6.5).

<Guaranteed bitrate UL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer TS 24.008 subclause 10.5.6.5).

<Guaranteed bitrate DL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer TS 24.008 subclause 10.5.6.5).

<Delivery order>: a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.
0 – no
1 – yes
2 – subscribed value.
Other values are reserved.

<Maximum SDU size>: a numeric parameter (1,2,3,…) that indicates the maximum allowed SDU size in octets. If the parameter is set to '0' the subscribed value will be requested (refer TS 24.008 subclause 10.5.6.5).

<SDU error ratio>: a string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of $5•10^{-3}$ would be specified as '5E3' (e.g. AT+CGEQREQ=…,"5E3",…). '0E0' means subscribed value (refer TS 24.008 subclause 10.5.6.5).

<Residual bit error ratio>: a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of $5•10^{-3}$ would be specified as '5E3' (e.g. AT+CGEQREQ=…,"5E3",…). '0E0' means subscribed value (refer TS 24.008 subclause 10.5.6.5).

<Delivery of erroneous SDUs>: a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.
0 – no
1 – yes
2 – no detect
3 – subscribed value
Other values are reserved.

<Transfer delay>: a numeric parameter (0,1,2,…) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to '0' the subscribed value will be requested (refer TS 24.008 subclause 10.5.6.5).

<Traffic handling priority>: a numeric parameter (1,2,3,…) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested (refer TS 24.008 subclause 10.5.6.5).

<Source Statistics Descriptor>: a numeric parameter that specifies characteristics of the source of thesubmitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified asconversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
0: Characteristics of SDUs is unknown
1: Characteristics of SDUs corresponds to a speech source
Other values are reserved.

<Signalling Indication>: a numeric parameter used to indicate * asked* ng content of submitted SDUs fora PDP context. This parameter should be provided if the Traffic class is specified as interactive

(refer3GPP TS 24.008 [8] subclause 10.5.6.5).
0 : PDP context is not optimized for * asked* ng
1 :PDP context is optimized for * asked* ng<PDP_type> (see +CGDCONT and +CGDSCONT commands).
If a value is omitted for a particular class then the value is considered to be unspecified.
NOTE: When in dual mode with EPS the MT provides a mapping function to EPS Quality of Service parameterused for an EPS bearer resource activation request.

7.10 AT+CGEQMIN

Description

This command allows the TE to specify a minimum acceptable profile, which is checked by the MT against the negotiated profile returned in the PDP context establishment and PDP contect modification procedures.
The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. The specified profile will be stored in the MT and checked against the negotiated profile only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGEQMIN command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.
A special form of the set command, +CGEQMIN=<cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.
The read command returns the current settings for each defined context.
The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

Syntax

Command	Possible responses
+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>]]]]]]]]]]]]]]	OK/+CME:ERROR <err>
+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> […]]
+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),(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) […]]

Defined values:

<cid>: integer type; specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands).

<PDP_type>: string type; specifies the type of packet data protocol (see the +CGDCONT command).

For the following parameters, see also 3GPP TS 23.107 [46].

<Traffic class>: integer type; indicates the type of application for which the UMTS bearer service is * aximum* * (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 conversational

1 streaming

2 interactive

3 background

<Maximum bitrate UL>: integer type; indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Maximum bitrate DL>: integer type; indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate UL>: integer type; indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate DL>: integer type; indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery order>: integer type; indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 no

1 yes

<Maximum SDU size>: integer type; (1,2,3,…) indicates the maximum allowed SDU size in octets (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<SDU error ratio>: string type; indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as “mEe”. As an example a target SDU error ratio of $5•10^{-3}$ would be specified as “5E3” (e.g. AT+CGEQMIN=…,”5E3”,…) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Residual bit error ratio>: string type; indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as “mEe”. As an example a target residual bit error ratio of $5•10^{-3}$ would be specified as “5E3” (e.g. AT+CGEQMIN=…,”5E3”,…) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery of erroneous SDUs>: integer type; indicates whether SDUs detected as erroneous shall be delivered or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 no

1 yes

2 no detect

<Transfer delay>: integer type; (0,1,2,…) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Traffic handling priority>: integer type; (1,2,3,…) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Source Statistics Descriptor>: integer type; specifies characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 Characteristics of SDUs is unknown

1 Characteristics of SDUs corresponds to a speech source

<Signalling Indication>: integer type; indicates * aximum* * content of submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

0 PDP context is not optimized for * aximum* *

1 PDP context is optimized for * aximum* *

If a value is omitted for a particular class then the value is considered to be unspecified.

7.11 AT+GETIP

Description

Search IP via cid from local IP list

Syntax

Command	Possible responses
AT+GETIP=<cid> Note: <cid>: PDP context id. Range 1-8 <ip>: IP address	+GETIP: <ip>,<gateway> OK/+CME ERROR: <err>

<gateway>: gateway address	

7.12 AT*TGSINK

Description

Private AT command: used to send the data through the specified PS data channel identified by cid.

Syntax

Command	Possible responses
AT*TGSINK=<cid>[,<PacketSize>[,<PacketCount>]] Note: cid: 1-11 PacketSize: 0-10000 PacketCount: 1-20	OK/+CME ERROR: <err>
AT*TGSINK=?	*TGSINK: (1-8),(0-10000),(1-20) OK

7.13 AT+CGSEND

Description

Private AT command: used to send the data through current activated PS data channel.

Syntax

Command	Possible responses
AT+CGSEND=<datalen>	OK/+CME ERROR: <err>
AT+CGSEND?	+CGSEND: (0-20000) OK
AT+CGSEND=?	+CGSEND: (0-20000) OK

7.14 AT+CGCMOD

Description

The execution command is used to modify the specified PDP context (s) with repect to QoS profiles and TFTs.

The test command returns a list of <cid>s associated with active contexts.

Syntax

Command	Possible responses
+CGCMOD=[<cid>]	OK/+CME ERROR: <err>
+CGCMOD=?	+CGCMOD: (list of <cid>s associated with active contexts) OK

7.15 AT+CGTFT

Description

This command allows the TE to specify a Packet Filter – PF for a Traffic Flow Template – TFT that is used in the GGSN for routing of down-link packets onto different QoS flows towards the TE.

The set command specifies a Packet Filters that is to be added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, <cid>.

The read command returns the current settings for all Packet Filters for each defined context.

The test command returns values supported as a compound value.

Syntax

Command	Possible responses
+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)>]]]]]]]	OK/+CME ERROR: <err>
+CGTFT?	OK
+CGTFT=?	+CGTFT: <cid>, <packet filter identifier>(1-8), <evaluation precedence index>(0-255), <source address and subnet mask>, <protocol number (ipv4) / next header (ipv6)>, <destination port range>, <source port range>, <ipsec security parameter index (spi)>(00000000-FFFFFFFF), <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>, <flow label (ipv6)>(00000-FFFFF) OK

7.16 AT+FCLASS

Description

This command puts the TA into a particular mode of operation (data, fax, voice etc.).

Syntax

Command	Possible responses
+FCLASS=<n> Note: <n> 0: data 1: fax class 1 (TIA 578 A)	OK/+CME ERROR: <err>
+FCLASS?	+FCLASS: <n> OK Example: +FCLASS: 0 OK
+FCLASS=?	+FCLASS: 0,1 OK

7.17 Unsolicited result code: +CGEV

Description

Indication from MT to TE in the case of certain events occurring in the Packet Domain MT or the network.

Syntax

+CGEV: XXX

Examples:

+CGEV: NW DETACH

ME has detached from packet service domain. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: NW DEACT <PDP_type>, [<PDP_addr>], <cid>

The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

Examples:

+CGEV: “IP”,”10.0.0.0”,1

+CGEV: “PPP”,””,2

+CGEV: NW DETACH

7.18 AT+CGEQOS

Description

The set command allows the TE to specify the EPS Quality of Service parameters <cid>, <QCI>, [<DL_GBR> and <UL_GBR>] and [<DL_MBR> and <UL_MBR>] for a PDP context or Traffic Flows (see 3GPP TS 24.301 [83] and 3GPP TS 23.203 [85]). When in UMTS/GPRS the MT applies a mapping function to UTMS/GPRS Quality of Service. Refer subclause 9.2 for possible <err> values. A special form of the set command, +CGEQOS= <cid> causes the values for context number <cid> to become undefined.

The read command returns the current settings for each defined QoS.

The test command returns the ranges of the supported parameters.

Syntax

Command	Possible responses
+CGEQOS=[<cid>[,<QCI>[,<DL_GBR>,<UL_GBR>[,<DL_MBR>,<UL_MBR>]]]]	OK/+CMS ERROR: <err>
+CGEQOS?	[+CGEQOS: <cid>,<QCI>,[<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>]] [<CR>>LF>+CGEQOS: <cid>,<QCI>,[<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>] […]]
+CGEQOS=?	+CGEQOS: (range of supported <cid>s),(list of supported <QCI>s),(list of supported <DL_GBR>s),(list of supported <UL_GBR>s),(list of supported <DL_MBR>s),(list of supported <UL_MBR>s)

Defined Values

<cid>: integer type; specifies a particular EPS Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS (see the +CGDCONT and +CGDSCONT commands).

<QCI>: integer type; specifies a class of EPS QoS (see 3GPP TS 24.301 [83]).

0	QCI is selected by network
[1 – 4]	value range for guaranteed bit rate Traffic Flows
[5 – 9]	value range for non-guarenteed bit rate Traffic Flows
[128 – 254]	value range for Operator-specific QCIs

<DL_GBR>: integer type; indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

<UL_GBR>: integer type; indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

<DL_MBR>: integer type; indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

<UL_MBR>: integer type; indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

7.19 AT+CEREG

Description

The set command controls the presentation of an unsolicited result code +CEREG: <stat> when <n>=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code +CEREG: <stat>[,[<tac>],[<ci>],[<AcT>]] when <n>=2 and there is a change of the network cell in E-UTRAN. The parameters <AcT>, <tac> and <ci> are sent only if available.The value <n>=3 further extends the unsolicited result code with [,<cause_type>,<reject_cause>], when available, when the value of <stat> changes.

NOTE 1: If the EPS MT in GERAN/UTRAN/E-UTRAN also supports circuit mode services and/or GPRS services, the +CREG command and +CREG: result codes and/or the +CGREG command and +CGREG: result codes apply to the registration status and location information for those services.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT. Location information elements <tac>, <ci> and <AcT>, if available, are returned only when <n>=2 and MT is registered in the network. The parameters [,<cause_type>,<reject_cause>], if available, are returned when <n>=3. Test command returns values supported as a compound value.

Syntax

Command	Possible responses
+CEREG=[<n>]	*+CME ERROR: <err>*
+CEREG?	+CEREG: <n>,<stat>[,[<tac>],[<ci>],[<AcT>[,<cause_type>,<reject_cause>]]]
+CEREG=?	+CEREG: (list of supported <n>s)

Defined Values

<n>: integer type

0 disable network registration unsolicited result code

1 enable network registration unsolicited result code +CEREG: <stat>

2 enable network registration and location information unsolicited result code
`+CEREG: <stat>[,[<tac>],[<ci>],[<AcT>]]`

3 enable network registration, location information and EMM cause value information unsolicited result code `+CEREG: <stat>[,[<tac>],[<ci>],[<AcT>][,<cause_type>,<reject_cause>]]`

`<stat>`: integer type; indicates the EPS registration status

0 not registered, MT is not currently searching an operator to register to

1 registered, home network

2 not registered, but MT is currently trying to attach or searching an operator to register to

3 registration denied

4 unknown (e.g. out of E-UTRAN coverage)

5 registered, roaming

6 registered for “SMS only”, home network (not applicable)

7 registered for “SMS only”, roaming (not applicable)

8 attached for emergency bearer services only (See NOTE 2)

9 registered for “CSFB not preferred”, home network (not applicable)

10 registered for “CSFB not preferred”, roaming (not applicable)

11 emergency bearer services only

NOTE 2: 3GPP TS 24.008 [8] and 3GPP TS 24.301 [83] specify the condition when the MS is considered as attached for emergency bearer services.

`<tac>`: string type; two byte tracking area code in hexadecimal format (e.g. “00C3” equals 195 in decimal)
`<ci>`: string type; four byte E-UTRAN cell ID in hexadecimal format
`<AcT>`: integer type; indicates the access technology of the serving cell

0 GSM (not applicable)

1 GSM Compact (not applicable)

2 UTRAN (not applicable)

3 GSM w/EGPRS (see NOTE 3) (not applicable)

4 UTRAN w/HSDPA (see NOTE 4) (not applicable)

5 UTRAN w/HSUPA (see NOTE 4) (not applicable)

6 UTRAN w/HSDPA and HSUPA (see NOTE 4) (not applicable)

7 E-UTRAN

8 UTRAN HSPA+

NOTE 3: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS.

NOTE 4: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.

`<cause_type>`: integer type; indicates the type of `<reject_cause>`.

0 Indicates that <reject_cause> contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A.

1 Indicates that <reject_cause> contains a manufacturer-specific cause.

<reject_cause>: integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.

7.20 AT+CGCONTRDP

Description

The execution command returns the relevant information <bearer_id>, <apn>, <local_addr and subnet_mask>, <gw_addr>, <DNS_prim_addr>, <DNS_sec_addr>, <P-CSCF_prim_addr>, <P-CSCF_sec_addr>, <IM_CN_Signalling_Flag> and <LIPA_indication>for an active non secondary PDP context with the context identifier <cid>.
If the MT has dual stack capabilities, two lines of information are returned per <cid>. First one line with the Ipv4 parameters followed by one line with the Ipv6 parameters.
If the parameter <cid> is omitted, the relevant information for all active non secondary PDP contexts is returned.
The test command returns a list of <cid>s associated with active non secondary contexts.

Syntax

Command	Possible responses
+CGCONTRDP[=<cid>]	[+CGCONTRDP: <cid>,<bearer_id>,<apn>[,<local_addr and subnet_mask>[,<gw_addr>[,<DNS_prim_addr>[,<DNS_sec_addr>[,<P-CSCF_prim_addr>[,<P-CSCF_sec_addr>[,<IM_CN_Signalling_Flag>[,<LIPA_indication>]]]]]]]] [<CR><LF>+CGCONTRDP: <cid>,<bearer_id>,<apn>[,<local_addr and subnet_mask>[,<gw_addr>[,<DNS_prim_addr>[,<DNS_sec_addr>[,<P-CSCF_prim_addr>[,<P-CSCF_sec_addr>[,<IM_CN_Signalling_Flag>[,<LIPA_indication>]]]]]]]] […]]
+CGCONTRDP=?	+CGCONTRDP: (list of <cid>s associated with active contexts)
NOTE: The syntax of the AT Set Command is corrected to be according to ITUT Recommendation V.250 [14]. Older versions of the specification specify incorrect syntax +CGCONTRDP=[<cid>]	

Defined Values

<cid>: integer type; specifies a particular non secondary PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands (see the +CGDCONT and +CGDSCONT commands).

<bearer_id>: integer type; identifies the bearer, i.e. the EPS bearer in EPS and the NSAPI in UMTS/GPRS.

<apn>: string type; a logical name that was used to select the GGSN or the external packet data network.

<local_addr and subnet_mask>: string type; shows the IP address and subnet mask of the MT. The string is given as dot-separated numeric (0-255) parameters on the form:
“a1.a2.a3.a4.m1.m2.m3.m4” for Ipv4 or
“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.
When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.

<gw_addr>: string type; shows the Gateway Address of the MT. The string is given as dot-separated numeric (0-255) parameters.

When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.

<DNS_prim_addr>: string type; shows the IP address of the primary DNS server.
When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.
<DNS_sec_addr>: string type; shows the IP address of the secondary DNS server.
When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.
<P_CSCF_prim_addr>: string type; shows the IP address of the primary P-CSCF server.
When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.
<P_CSCF_sec_addr>: string type; shows the IP address of the secondary P-CSCF server.
When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGCONTRDP.
<IM_CN_Signalling_Flag>: integer type; shows whether the PDP context is for IM CN subsystem-related * aximum* * only or not.

0 PDP context is not forIM CN subsystem-related * aximum* * only

1 PDP context is forIM CN subsystem-related * aximum* * only

<LIPA_indication>: integer type; indicates that the PDP context provides connectivityusing a LIPA PDN connection. This parameter cannot be set by the TE.

0 indication not received that the PDP context provides connectivity using a LIPA PDN connection

1 indication received that the PDP context provides connectivity using a LIPA PDN connection

7.21 AT+CGSCONTRDP

Description

The execution command returns <p_cid>, <bearer_id> and <IM_CN_Signalling_Flag> for an active secondary PDP context with the context identifier <cid>.
If the parameter <cid> is omitted, the <cid>, <p_cid>, <bearer_id> and <IM_CN_Signalling_Flag> are returned for all active secondary PDP contexts.
In EPS, the Traffic Flow parameters are returned.
NOTE: Parameters for UE initiated and network initiated PDP contexts are returned.

The test command returns a list of <cid>s associated with active secondary PDP contexts.

Syntax

Command	Possible responses
+CGSCONTRDP[=<cid>]	[+CGSCONTRDP: <cid>,<p_cid>,<bearer_id>[,<IM_CN_Signalling_Flag>]] [<CR><LF>+CGSCONTRDP: <cid>,<p_cid>,<bearer_id>[,<IM_CN_Signalling_Flag>] […]]
+CGSCONTRDP=?	+CGSCONTRDP: (list of <cid>s associated with active contexts)
NOTE: The syntax of the AT Set Command is corrected to be according to ITUT Recommendation V.250 [14]. Older versions of the specification specify incorrect syntax +CGSCONTRDP=[<cid>]	

Defined Values

<cid>: integer type; specifies a particular active secondary PDP context or Traffic Flows definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands (see the +CGDCONT and +CGDSCONT commands).

<p_cid>: integer type; specifies a particular PDP context definition or default EPS context Identifier which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface (see the +CGDSCONT command).

<bearer_id>: integer type; identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.

<IM_CN_Signalling_Flag>: integer type; shows whether the PDP context is for IM CN subsystem-related * aximum* * only or not.

0 PDP context is not forIM CN subsystem-related * aximum* * only

1 PDP context is forIM CN subsystem-related * aximum* * only

7.22 AT+CGTFTRDP

Description

The execution command returns the relevant information about Traffic Flow Template for an active secondary or non secondary PDP context specified by <cid> together with the additional network assigned values when established by the network. If the parameter <cid> is omitted, the Traffic Flow Templates for all active secondary and non secondary PDP contexts are returned.
Parameters of both network and MT/TA initiated PDP contexts will be returned.

Syntax

Command	Possible responses
+CGTFTRDP[=<cid>]	[+CGTFTRDP: <cid>,<packet filter identifier>,<evaluation precedence index>,<remote address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<local port range>,<remote port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)>,<direction>,<NW packet filter Identifier>] [<CR><LF>+CGTFTRDP: <cid>,<packet filter identifier>,<evaluation precedence index>,<remote address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<local port range>, <remote port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)>,<direction>,<NW packet filter Identifier> […]]
+CGTFTRDP=?	+CGTFTRDP: (list of <cid>s associated with active contexts)
NOTE: The syntax of the AT Set Command is corrected to be according to ITUT Recommendation V.250 [14]. Older versions of the specification specify incorrect syntax +CGTFTRDP=[<cid>]	

Defined Values

<cid>: integer type; Specifies a particular secondary or non secondary PDP context definition or Traffic Flows definition (see +CGDCONT and +CGDSCONT commands).

For the following parameters, see also 3GPP TS 23.060 [47]

<packet filter identifier>: integer type. The value range is from 1 to 16.

<evaluation precedence index>: integer type. The value range is from 0 to 255.

<remote address and subnet mask>: string type. The string is given as dot-separated numeric (0-255) parameters on the form:
“a1.a2.a3.a4.m1.m2.m3.m4” for Ipv4 or
“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.
When +CGPIAF is supported, its settings can influence the format of this parameter returned with the execute form of +CGTFTRDP.

<protocol number (ipv4) / next header (ipv6)>: integer type. The value range is from 0 to 255.

<local port range> : string type. The string is given as dot-separated numeric (0-65535) parameters on the form “f.t”.

<remote port range>: string type. The string is given as dot-separated numeric (0-65535) parameters on the form “f.t”.

<ipsec security parameter index (spi)>: numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.

<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>: string type. The string is given as dot-separated numeric (0-255) parameters on the form “t.m”.

<flow label (ipv6)>: numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for Ipv6 only.

<direction> integer type. Specifies the transmission direction in which the Packet Filter shall be applied.

0 Pre Release 7 TFT Filter (see 3GPP TS 24.008 [8], table 10.5.162)

1 Uplink

2 Downlink

3 Bidirectional (Used for Uplink and Downlink)

<NW packet filter Identifier> integer type. The value range is from 1 to 16. In EPS the value is assigned by the network when established

NOTE: Some of the above listed attributes can coexist in a Packet Filter while others mutually exclude each other. The possible combinations are shown in 3GPP TS 23.060 [47].

7.23 AT+CGEQOSRDP

Description

The execution command returns the Quality of Service parameters<QCI>, [<DL_GBR> and <UL_GBR>] and [<DL_MBR> and <UL_MBR>] of the active secondary or non secondary PDP context associated to the provided context identifier <cid>.
If the parameter <cid> is omitted, the Quality of Service parameters for all secondary and non secondary active PDP contexts are returned.
The test command returns a list of <cid>s associated with secondary or non secondary active PDP contexts.
Parameters of both network and MT/TA initiated PDP contexts will be returned.

Syntax

Command	Possible responses
+CGEQOSRDP[=<cid>]	[+CGEQOSRDP: <cid>,<QCI>,[<DL_GBR>,<UL_GBR>], [<DL_MBR>,<UL_MBR>]] [<CR>>LF>+CGEQOSRDP: <cid>,<QCI>, [<DL_GBR>,<UL_GBR>],[<DL_MBR>,<UL_MBR>] […]]
+CGEQOSRDP=?	+CGEQOSRDP: (list of <cid>s associated with active contexts)
NOTE: The syntax of the AT Set Command is corrected to be according to ITUT Recommendation V.250 [14]. Older versions of the specification specify incorrect syntax +CGEQOSRDP=[<cid>]	

Defined Values

<cid>: integer type; specifies a particular Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS (see the +CGDCONT and +CGDSCONT commands).

<QCI>: integer type; specifies a class of EPS QoS (see 3GPP TS 24.301 [83]).

0 QCI is selected by network

[1 – 4] value range for * aximum* * d bit rate Traffic Flows

[5 – 9] value range for non-guarenteed bit rate Traffic Flows

[128 – 254] value range for Operator-specific QCIs

<DL_GBR>: integer type; indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<UL_GBR>: integer type; indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<DL_MBR>: integer type; indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).
<UL_MBR>: integer type; indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI (see 3GPP TS 24.301 [83]).

7.24 AT+CGEREP

Description

Set command enables or disables sending of unsolicited result codes, +CGEV: XXX from MT to TE in the case of certain events occurring in the Packet Domain MT or the network. <mode> controls the processing of unsolicited result codes specified within this command. <bfr> controls the effect on buffered codes when <mode> 1 or 2 is entered. If a setting is not supported by the MT, ERROR or +CME ERROR: is returned. Refer subclause 9.2 for possible <err> values.
Read command returns the current mode and buffer settings
Test command returns the modes and buffer settings supported by the MT as compound values.

Syntax

Command	Possible responses
+CGEREP=[<mode>[,<bfr>]]	*+CME ERROR: <err>*
+CGEREP?	+CGEREP: <mode>,<bfr>
+CGEREP=?	+CGEREP: (list of supported <mode>s),(list of supported <bfr>s)

Defined Values

<mode>: integer type

0 buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE.

1 discard unsolicited result codes when MTTE link is reserved (e.g. in online data mode); otherwise forward them directly to the TE

2 buffer unsolicited result codes in the MT when MTTE link is reserved (e.g. in online data mode) and flush them to the TE when MTTE link becomes available; otherwise forward them directly to the TE

<bfr>: integer type

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 (OK response shall be given before flushing the codes)

Defined Events

The events are valid for GPRS/UMTS and LTE unless explicitly mentioned.
For network attachment, the following unsolicited result codes and the corresponding events are defined:
+CGEV: NW DETACH

The network has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately.

+CGEV: ME DETACH

The mobile termination has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately.

For MT class, the following unsolicited result codes and the corresponding events are defined:

+CGEV: NW CLASS <class>

The network has forced a change of MT class. The highest available class is reported (see +CGCLASS). The format of the parameter <class> is found in command +CGCLASS.

+CGEV: ME CLASS <class>

The mobile termination has forced a change of MT class. The highest available class is reported (see +CGCLASS). The format of the parameter <class> is found in command +CGCLASS.

For PDP context activation, the following unsolicited result codes and the corresponding events are defined:

+CGEV: NW PDN ACT <cid>

The network has activated a context. The context represents a Primary PDP context in GSM/UMTS. The <cid>for this context is provided to the TE. The format of the parameter <cid> is found in command +CGDCONT.

NOTE 1: This event is not applicable for EPS.

+CGEV: ME PDN ACT <cid>[,<reason>[,<cid_other>]]

The mobile termination has activated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM/UMTS. The <cid> for this context is provided to the TE. This event is sent either in result of explicit context activation request (+CGACT), or in result of implicit context activation request associated to attach request (+CGATT=1). The format of the parameters <cid>and <cid_other> are found in command +CGDCONT.

<reason>: integer type; indicates the reason why the context activation request for PDP type Ipv4v6 was not granted. This parameter is only included if the requested PDP type associated with <cid> is Ipv4v6, and the PDP type assigned by the network for <cid> is either Ipv4 or Ipv6.

0 Ipv4 only allowed

1 Ipv6 only allowed

2 single address bearers only allowed.

3 single address bearers only allowed and MT initiated context activation for a second address type bearer was not successful.

<cid_other>: integer type; indicates the context identifier allocated by MT for an MT initiated context of a second address type. MT shall only include this parameter if <reason> parameter indicates single address bearers only allowed, and MT supports MT initiated context activation of a second address type without additional commands from TE, and MT has activated the PDN connection or PDP context associated with <cid_other>.

NOTE 1A: For legacy Tes supporting MT initiated context activation without TE requests, there is also a subsequent event +CGEV: ME PDN ACT<cid_other> returned to TE.

+CGEV: NW ACT <p_cid>, <cid>, <event_type>

The network has activated a context. The <cid> for this context is provided to the TE in addition to the associated primary <p_cid>. The format of the parameters <p_cid> and <cid> are found in command +CGDSCONT.

<event_type>: integer type; indicates whether this is an informational event or whether the TE has to acknowledge it.

0 Informational event

1 Information request: Acknowledgement required. The acknowledgement can be accept or reject, see +CGANS.

+CGEV: ME ACT <p_cid>, <cid>, <event_type>

The network has responded to an ME initiated context activation. The <cid> for this context is provided to the TE in addition to the associated primary <p_cid>. The format of the parameters <p_cid> and <cid> are found in command +CGDSCONT. The format of the parameter <event_type> is defined above.

For PDP context deactivation, the following unsolicited result codes and the corresponding events are defined:

+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]

The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>]

The mobile termination has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

+CGEV: NW PDN DEACT <cid>

The network has deactivated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM/UMTS. The associated <cid>for this context is provided to the TE. The format of the parameter <cid> is found in command +CGDCONT.

NOTE 2: Occurrence of this event replaces usage of the event +CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>].

+CGEV: ME PDN DEACT <cid>

The mobile termination has deactivated a context. The context represents a PDN connection in LTE or a Primary PDP context in GSM/UMTS. The <cid> for this context is provided to the TE. The format of the parameter <cid> is found in command +CGDCONT.

NOTE 3: Occurrence of this event replaces usage of the event +CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>].

+CGEV: NW DEACT <p_cid>, <cid>, <event_type>

The network has deactivated a context. The <cid> for this context is provided to the TE in addition to the associated primary <p_cid>. The format of the parameters <p_cid> and <cid> are found in command +CGDSCONT. The format of the parameter <event_type> is defined above.

NOTE 4: Occurrence of this event replaces usage of the event +CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>].

+CGEV: ME DEACT <p_cid>, <cid>, <event_type>

The network has responded to an ME initiated context deactivation request. The associated <cid> is provided to the TE in addition to the associated primary <p_cid>. The format of the parameters <p_cid> and <cid> are found in command +CGDSCONT. The format of the parameter <event_type> is defined above.

NOTE 5: Occurrence of this event replaces usage of the event +CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>].

For PDP context modification, the following unsolicited result codes and the corresponding events are defined:

+CGEV: NW MODIFY <cid>, <change_reason>, <event_type>

The network has * aximum* context. The associated <cid> is provided to the TE in addition to the <change_reason> and <event_type>. The format of the parameter <cid> is found in command +CGDCONT or +CGDSCONT. The format of the parameters <change_reason> and <event_type> are defined above.

<change_reason>: integer type; indicates what kind of change occurred.

1 TFT only changed

2 Qos only changed

3 Both TFT and QoS changed

+CGEV: ME MODIFY <cid>, <change_reason>, <event_type>

The mobile termination has modified a context. The associated <cid> is provided to the TE in addition to the <change_reason> and <event_type>. The format of the parameter <cid> is found in command +CGDCONT or +CGDSCONT. The format of the parameters <change_reason> and <event_type> are defined above.

For other PDP context handling, the following unsolicited result codes and the corresponding events are defined:

+CGEV: REJECT <PDP_type>, <PDP_addr>

A network request for context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected. The format of the parameters <PDP_type> and <PDP_addr> are found in command +CGDCONT.

NOTE 6: This event is not applicable for EPS.

+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>]

The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

NOTE 7: This event is not applicable for EPS.

7.25 AT+CVMOD

Description

Set command selects the voice call mode for making a Mobile Originated voice call from the UE. The voice call mode can be CS_ONLY, VOIP_ONLY, CS_PREFERRED or VOIP_PREFERRED. Type of VoIP session preferred (e.g. SIP VoIP, IMS VoIP) is manufacturer specific issue.

NOTE 1: If the Call Mode is set to CS_ONLY, then the ATD command will make a call in CS mode.

If the Call Mode is set to VOIP_ONLY, then the ATD command will make a call in VoIP mode.

If the Call Mode is set to CS_PREFERRED, then the ATD command gives preference for CS based voice call.

If the Call Mode is set to VOIP_PREFERRED, then the ATD command gives preference for VoIP based voice call

NOTE 2: The preferences are not applicable for the emergency call.

NOTE 3: The preferences are not applicable if operator has set preferences for UE originated calls/sessions, 3GPP TS 24.216 [75] subclause 5.6.

Read command returns the current value of <voice_mode>.
Test command returns the values supported by the UE.

Syntax

Command	Possible responses
+CVMOD=[<voice_mode>]	OK/+CMS ERROR: <err>
+CVMOD?	+CVMOD:<voice_mode>
+CVMOD=?	+CMGF:(list of supported<voice_mode>s)

Defined Values

<voice_mode>: integer type

0 CS_ONLY

1 VOIP_ONLY

2 CS_PREFERRED

3 VOIP_PREFERRED

7.26 AT+CEMODE

Description

The set command is used to set the MT to operate according to the specified mode of operation for EPS, see 3GPP TS 24.301 [83]. If the requested mode of operation is not supported, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. Refer subclause 9.2 for possible <err> values.
The read command returns the mode of operation set by the TE, independent of the current serving cell capability and independent of the current serving cell Access Technology.
The test command is used for requesting information on the supported MT mode of operation.

Syntax

Command	Possible responses
+CEMODE=[<mode>]	*+CME ERROR: <err>*
+CEMODE?	+CEMODE: <mode>
+CEMODE=?	+CEMODE: (list of supported <mode>s)

Defined Values

<mode>: integer type; indicates the mode of operation

0 PS mode 2 of operation

1 CS/PS mode 1 of operation

2 CS/PS mode 2 of operation

3 PS mode 1 of operation

NOTE: the definition for UE modes of operation can be found in 3GPP TS 24.301 [83]

7.27 AT+CGPADDR

Description

The execution command returns a list of PDP addresses for the specified context identifiers. If no <cid> is specified, the addresses for all defined contexts are returned.
The test command returns a list of defined <cid>s.

Syntax

Command	Possible responses
+CGPADDR[=<cid>[,<cid>[,…]]]	[+CGPADDR: <cid>[,<PDP_addr_1>[,<PDP_addr_2>]]] [<CR><LF>+CGPADDR: <cid>,[<PDP_addr_1> [,<PDP_addr_2>]] […]]
+CGPADDR=?	+CGPADDR: (list of defined <cid>s)

NOTE:	The syntax of the AT Set Command is corrected to be according to ITUT Recommendation V.250 [14]. Older versions of the specification specify incorrect syntax +CGPADDR=[,<cid>[,<cid>[,…]]].

Defined Values

<cid>: integer type; specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

<PDP_addr_1> and <PDP_addr_2>: each is a string type that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT and +CGDSCONT commands when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. Both <PDP_addr_1> and <PDP_addr_2>are omitted if none is available. Both <PDP_addr_1> and <PDP_addr_2> are included when both Ipv4 and Ipv6 addresses are assigned, with <PDP_addr_1> containing the Ipv4 address and <PDP_addr_2>containing the Ipv6 address.
The string is given as dot-separated numeric (0-255) parameter of the form:
a1.a2.a3.a4 for Ipv4 and
a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16 for Ipv6.
When +CGPIAF is supported, its settings can influence the format of the Ipv6 address in parameter <PDP_addr_1> or <PDP_addr_2> returned with the execute form of +CGPADDR.

NOTE: In dual-stack terminals (<PDP_type> IPV4V6), the Ipv6 address will be provided in <PDP_addr_2>. For terminals with a single Ipv6 stack (<PDP_type> IPV6) or due to backwards compatibility, the Ipv6 address can be provided in parameter <PDP_addr_1>.

7.28 AT*CGDFLT

Description

This proprietary AT command is used to set/get default PDP context info under LTE.

Syntax

Command	Possible responses
AT*CGDFLT = <mode>,[<PDP_type>,[<APN>,[<emg_ind>,[<ipcp_req>,[<pcscf_v6>,[<imcn_sig>,[<dns_v6>,[<nw_bear>,[<dsm_v6_ha>,[<dsm_v6_pref>,[<dsm_v6_ha_v4>,[<ip_via_nas>,[<ip_via_dhcp>,[<pcscf_v4>,[<dns_v4>,[<msisdn>,[<ifom>,[<v4mtu>,[<local_tft>,[<etif>]]]]]]]]]]]]]]]]]	OK/+CME ERROR:<err>
AT*CGDFLT?	*CGDFLT:<PDP_type>,[<APN>,[<emg_ind>,[<ipcp_req>,[<pcscf_v6>,[<imcn_sig>,[<dns_v6>,[<nw_bear>,[<dsm_v6_ha>,[<dsm_v6_pref>,[<dsm_v6_ha_v4>,[<ip_via_nas>,[<ip_via_dhcp>,[<pcscf_v4>,[<dns_v4>,[<msisdn>,[<ifom>,[<v4mtu>,[<local_tft>,[<etif>]]]]]]]]]]]]]]]]] OK/+CME ERROR:<err>

Defined values

<mode>: integer type; indicates whether saved to NVM.
0 - not save to NVM
1 - save to NUM
<PDP_type>: string type; specifies the type of packet data protocol
IP Internet Protocol (IETF STD 5)
IPV6 Internet Protocol, version 6 (IETF RFC 2460)
IPV4V6 Virtual <PDP_type> introduced to handle dual IP stack UE capability. (See 3GPP TS 24.301 [83])
<APN>: stringtype; used to select the GGSN or the external packet data network.
<emg_ind>:integer type; indicates whether it's for emergency bear.

0 – the default PDP Context isn't for emergency bear
1 – the default PDP Context is for emergency bear
<ipcp_req>:integer type; indicates whether need IPCP protocol.
0 – doesn't need IPCP protocol
1 – need IPCP protocol
<pcscf_v6>: integer type; P-CSCF ipv6 address request.
0 – doesn't need P-CSCF ipv6 address
1 – need P-CSCF ipv6 address
<imcn_sig>: integer type; indicates whether the PDP context is for IM CN subsystem-related signalling only or not..
0 - the PDP context is not for IM CN subsystem-related signalling only
1 - the PDP context is for IM CN subsystem-related signalling only
<dns_v6>: integer type; DNS Server IPv6 Address Request.
0 – doesn't need DNS Server IPv6 Address
1 – need DNS Server IPv6 Address
<nw_bear>: integer type; MS support of Network Requested Bearer Control indicator.
0 – not support
1 - support
<dsm_v6_ha>: integer type; DSMIPv6 HOME agent address request.
0 – doesn't need DSMIPv6 HOME agent address
1 – needDSMIPv6 HOME agent address
<dsm_v6_pref>: integer type; DSMIPv6 HOME network Prefix Request.
0 – doesn't need DSMIPv6 HOME network Prefix
1 – need DSMIPv6 HOME network Prefix
<dsm_v6_ha_v4>:integer type; DSMIPV6 IPv4 Home Agent Address Request.
0 – doesn't need DSMIPV6 IPv4 Home Agent Address
1 – need DSMIPV6 IPv4 Home Agent Address
<ip_via_nas>: integer type; IP address allocation via NAS signalling.
0 –IPv4 address allocation isn't via signalling
1 –IP address allocation via NAS signalling
<ip_via_dhcp>: integer type; IPv4 address allocation via DHCPv4.
0 – IPv4 address allocation isn't via DHCPv4
1 – IPv4 address allocation via DHCPv4
<pcscf_v4>: integer type; P-CSCF IPv4 Address Request.
0 – doesn't need P-CSCF IPv4 Address
1 – need P-CSCF IPv4 Address
<dns_v4>: integer type; DNS Server IPv4 address Request.
0 – doesn't need DNS Server IPv4 address
1 – needDNS Server IPv4 address
<msisdn>: integer type; MSISDN Request.
0 – doesn't need MSISDN
1 – need MSISDN
<ifom>:integer type; IFOM-Support-Request.
0 – doesn't need IFOM-Support
1 – need IFOM-Support
<v4mtu>: integer type; IPv4 Link MTU Request.
0 – doesn't need IPv4 Link MTU
1 – need IPv4 Link MTU
<local_tft>: integer type; MS support of Local address in TFT indicator.
0 – support
1 – not support
<etif>: integer type; etif request
0 – doesn't need etif
1 – need eitf

8. SMS commands

8.1 AT+CMGF

Description

Set command tells the TA, which input and output format of messages to use.
Test command returns supported modes as a compound value.

Syntax

Command	Possible responses
+CMGF=<mode>	OK/+CMS ERROR: <err>
+CMGF?	+CMGF: <mode> OK Example; +CMGF: 0 OK
+CMGF=?	+CMGF:(0,1) OK

Defined Values

<mode>:

0 PDU mode (default when implemented)
1 text mode

8.2 AT+CMSS

Description

This command sends message with location value <index> from preferred message storage to the network.

Syntax

Command	Possible responses

+CMSS=<index>[,<da>[,<toda>]]	if sending successful:
	+CMSS: <mr>
	OK
	if sending fails:
	+CMS ERROR: <err>

+CMSS=?	OK

8.3 AT+CMGS

Description

This command transmits SMS message from TE to network in text or PDU mode.

Syntax

Command	Possible responses
if PDU mode (+CMGF=0): +CMGS=<length><CR> PDU is given<ctrl-Z/ESC>	if sending successful: +CMGS: <mr> OK

if text mode (+CMGF=1): +CMGS=<da>[,<toda>]<CR> text is entered<ctrl-Z/ESC>	if sending fails: +CMS ERROR: <err>
+CMGS=?	OK

8.4 AT+CMGR

Description

This command retrieves a message from the short message storage. The short message storage being used is defined by the command +CPMS

Syntax

Command	Possible responses

+CMGR=<index>	if PDU mode (+CMGF=0)， command successful:
	+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>
	OK
	if text mode (+CMGF=1), command successful and SMS-DELIVER:
	+CMGR:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,
	<sca>,<tosca>,<length>]<CR><LF><data>
	OK
	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>
	OK
	otherwise:
	+CMS ERROR: <err>

+CMGR=?	OK

8.5 AT+CMGW

Description

This command stores a message in memory storage. Memory location <index> of the stored message is returned.

Syntax

Command	Possible responses

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>
	if sending successful:
	+CMGW: <index>
	OK
	if sending fails:
	+CMS ERROR: <err>

+CMGW=?	OK

Layout of SMS-SUBMIT in PDU Mode

Reference	Description	Length
<sca>	Service Center address: 1 BYTE: length (number of followedoctets). Mandatory 1 BYTE: <tosca> - value between 128-255	1, 3-12 BYTES (When length is 1, length BYTE = 0)
<fo>	First Octet.	1 BYTE
<TP-MR>	Message Reference. An integer	1 BYTE

	representation of a reference number ofthe SM submitted to the SC by the MS. Values between 0-255.	
<TP-DA>	Destination address formatted accordingto the formatting rules of address fields.	2-12 BYTES
<TP-PID>	Protocol-Identifier. Values between0-255.	1 BYTE
<TP-DCS>	Data Coding Scheme. Values between0-255.	1 BYTE
<TP-UDL>	User data length	1 BYTE
<TP-UD>	User data	0-140 BYTES

8.6 AT+CSCA

Description

Set command updates the SMSC address, through which mobile originated SMs are transmitted. In text mode, setting is used by send and write commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero.

Syntax

Command	Possible responses
+CSCA=<sca>[,<tosca>]	OK/+CMS ERROR: <err>
+CSCA?	+CSCA: <sca>,<tosca> OK Example: +CSCA: “8613010314500”,145 OK
+CSCA=?	OK

8.7 AT+CSCB

Description

Set command selects which types of CBMs are to be received by the ME.

Test command returns supported modes as a compound value.

Syntax

Command	Possible responses
+CSCB=<mode>,<mids>[,<dcss>] Note: <mode>: 0: message types specified in <mids> and <dcss> are accepted 1: message types specified in <mids> and <dcss> are not accepted <mids>: string type; all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string); e.g. “0,1,5,320-478,922” <dcss>: string type; all different possible combinations of CBM data coding schemes (refer <dcs>) (default is empty string); e.g. “0-3,5”	OK/+CMS ERROR: <err>
+CSCB?	+CSCB:<mode>,<mids>,<dcss> OK

	Example; +CSCB:1, “0,1,5,320-478,922”,”0-3,5” OK
+CSCB=?	+CSCB☹0,1) OK

8.8 AT+CNMI

Description

Set command selects the procedure, how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON.

Test command gives the settings supported by the TA as compound values.

Syntax

Command	Possible responses
+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]] Note: <mode> 0: Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 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. 3: Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.	OK/+CMS ERROR: <err>
+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> OK Example: +CNMI:1,2,2,1,1 OK
+CNMI=?	+CNMI: (0-3),(0-3),(0,2),(0-1),(0-1) OK

8.9 AT+CGSMS

Description

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.

The read command returns the currently selected service or service preference.

The test command is used for requesting information on the currently available services and service preferences.

Syntax

Command	Possible responses
+CGSMS= <service> Note: <service>: a numeric parameter which indicates the service or service preference to be used 0: Packet Domain 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)	OK/+CMS ERROR: <err>
+CGSMS?	+CGSMS: <service> OK Example: +CGSMS:3 OK
+CGSMS=?	+CGSMS:(0-3) OK

8.10 AT+CMMS

Description

Set command controls the continuity of SMS relay protocol link.

Test command returns supported values as a compound value.

Syntax

Command	Possible responses
+CMMS=<n> Note: <n>: 0: 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)	OK/+CMS ERROR: <err>
+CMMS?	+CMMS: <n> OK Example: +CMMS:0 OK
+CMMS=?	+CMMS: (0,1,2) OK

8.11 AT+CMGD

Description

This command deletes message from preferred message storage <mem1> location <index>.

Syntax

Command	Possible responses
+CMGD=<index>[,<delflag>] Note: <delflag>: 0Deletes the message specified in <index> 1 Deletes all read messages 2 Deletes all read messages and sent MO messages 3 Deletes all read messages, sent and unsent MO messages 4 Deletes all messages	OK/+CMS ERROR: <err>
+CMGD=?	+CMGD: (list of valid<index>s), (list of valid<deflag>s) OK Example: +CMGD☹1,3,4,5),(0-4) OK

8.12 AT+CMGL

Description

Execution command returns messages with status value <stat> from preferred message storage <mem1> to the TE.

Test command shall give a list of all status values supported by the TA.

Syntax

Command	Possible responses
+CMGL[=<stat>]	if PDU mode(+CMGF=0), command successful +CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu> [<CR><LF>+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu> […]] OK **i**f text mode (+CMGF=1), command successful and SMS-DELIVERs: +CMGL:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]<CR><LF><data>[<CR><LF>+CMGL:<stat>,<oa>,[alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF> <data>[…]] OK **i**f text mode (+CMGF=1), command successful and SMS-SUBMITs: +CMGL: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>], <sca>,<tosca>,<length>]<CR><LF><data>[<CR><LF>+ CMGL: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<lengt h>]<CR><LF><data>[...]] OK otherwise: +CMS ERROR: <err> Example: +CMGL: 4,1,,147 0891683110304105F24008A10156353000040110529183152382060504 0B8 423F0EA06246170706C69636174696F6E2F766E642E7761702E6D6D732D 6D65737361676500B487AF848C82985A546D4142745443 OK +CMGL: 6,1,,153 0891683110503905F0000BA13151621597F400080110629070612386 5E7F5 BCC6C7D8D384F18552E5C0F8F6622365B9D9A6CFF154E07002C59658F EAFF144E07002C4E307530672C7530FF134E07002C5E1586

	OK
+CMGL=?	If PDU mode (+CMGF=0) +CMGL: (0-4) OK if text mode (+CMGF=0) +CMGL: “REC UNREAD”,”REC READ”,”STO UNSENT”,”STO SENT”,”ALL” OK

8.13 AT+CSMS

Description

Set command selects messaging service <service>.

Test command returns a list of all services supported by the TA.

Read command returns supported message types along the current service setting.

Syntax

Command	Possible responses
+CSMS=<service>	+CSMS: <mt>,<mo>,<bm> OK/+CMS ERROR: <err>
+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm> OK Example: +CSMS: 0,1,1,1 OK
+CSMS=?	+CSMS:(0,1) OK

8.14 AT+CSMP

Description

Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0… 255) or define the absolute time of the validity period termination (<vp> is a string). The format of <vp> is given by <fo>. If TA supports the EVPF, see 3GPP TS 23.040 [3], it shall be given as a hexadecimal coded string (refer e.g. <pdu>) with double quotes.

NOTE: When storing a SMS-DELIVER from the TE to the preferred memory storage in text mode (refer command Write Message to Memory +CMGW), <vp> field can be used for <scts>.

Syntax

Command	Possible responses
+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]	OK/CME ERROR
+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs>
+CSMP=?	OK

8.15 AT+CPMS

Description

Set command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

Test command returns lists of memory storages supported by the TA.

Syntax

Command	Possible responses
+CPMS=<mem1>[, <mem2>[,<mem3>]]	+CPMS:<used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK/+CMS ERROR: <err>
+CPMS?	+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK/+CMS ERROR: <err>
+CPMS=?	+CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s) OK

8.16 AT+CNMA

Description

Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE.

Syntax

Command	Possible responses

if text mode (+CMGF=1):
+CNMA
if PDU mode (+CMGF=0):
+CNMA[=<n>]
	OK/+CMS ERROR: <err>

+CNMA=?	OK

8.17 AT*RSTMemFull

Description

Execution command resets memory full status.The PS will send the networkan indication that there is enough memory to send at least one SMS.The network can start forwarding the pending messages that were held due to memeory full status.

Syntax

Command	Possible responses
*RSTMemFull	OK/+CMS ERROR: <err>
*RSTMemFull =?	*RSTMemFull: OK

8.18 Unsolicited result code: +MMSG

Description

AirM2M extended AT command to Indicate an Short Messages Storage status change

Syntax

+MMSG: <smsReady>, <smsFull>

Defined Values

<smsReady>: indicates if the SIM is ready for SMS

0 not ready

1 ready

<smsFull>: indicates if the memory capacity of SIM for SMS has been reached

0 not reached

1 reached

Example:

+MMSG: 1, 0

+MMSG: 1, 1

8.19 Unsolicited result code: +CMTI

Description

The +CMTI unsolicited response is sent to the TE upon receipt of a new SMS-DELIVER SM, ifthe +CNMI parameter <mt> is set to 1.

This unsolicited message indicates that a new SMS-DELIVER message was received, and isstored in location <index>:

Syntax

+CMTI: <mem>, <index>

Defined Values

<mem> : string type, memory to which received SMS are preferred to be stored (unless forwarded directly to TE; refer command New Message Indications +CNMI)

BM: broadcast message storage

ME: ME message storage

MT: any of the storages associated with ME

SM: SIM message storage

SR: status report storage

<index>: integer type; value in the range of location numbers supported by the associated memory

Example:

+CMTI: “ME”,2

8.20 Unsolicited result code: +CMT

Description

The +CMT unsolicited response is sent to the TE upon receipt of a new SMS-DELIVER SM ifthe +CNMI parameter <mt> is set to 2.
This unsolicited message displays the received SMS-DELIVER message:

Syntax

+CMT : [<alpha>],<length><CR><LF><pdu> (PDU mode)
+CMT: <oa>, [<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,
<length>]<CR><LF><data>(Text mode)

Defined Values

PDU mode:
<alpha>: string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; used character set should be the one selected with command Select TE Character Set +CSCS
<length>: the length of the actual TP data unit in octets
<pdu>: Message header and contents in PDU mode format.
Text mode:
<oa>: TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set
<alpha>: string type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; used character set should be the one selected with command Select TE Character Set +CSCS
<scts>: TP-Service-Centre-Time-Stamp in time-string format
<tooa>: TP-Originating-Address Type-of-Address octet in integer format
<fo>: first octet of SMS-DELIVER in integer format
<pid>: TP-Protocol-Identifier in integer format
<dcs>: SMS Data Coding Scheme
<sca>: RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set.
<tosca>: RP SC address Type-of-Address octet in integer format
<length>: the length of the message body <data>
<data>: Message contents.

Example:
+CMT: ,23
07917952120100950 40C91795244650543000450203211543080044142 4344

+CMT: “+972544565034”,,”04/11/04,09:48:36 GMT+08”
ABC

8.21 Unsolicited result code: +CBM

Description

The +CBM unsolicited response is sent to the TE upon receipt of a new cell broadcast message if+CNMI parameter <bm> is set to 2.
This unsolicited message displays the received CB message. The displayed CBM is not saved inmessage storage. (only support PDU mode)

Syntax

+CBM: <length><CR><LF><pdu>

Defined Values

<length>: Size of message in PDU mode format, in octets.
<pdu>: Message header and contents in PDU mode format.

8.22 Unsolicited result code: +CDS

Description

Received SMS status report content (only PDU mode supported).

Syntax

+CDS: <length><CR><LF><pdu> (PDU mode enabled)

9. Othercommands

9.1 AT+CMEE

Description

Set command disables or enables the use of result code +CME ERROR: <err> as an indication of an error relating to the functionality of the MT.

Syntax

Command	Possible responses
+CMEE=[<n>] Note: <n>: 0: disable +CME ERROR: <err> result code and use ERROR instead 1: enable +CME ERROR: <err> result code and use numeric <err> values 2: enable +CME ERROR: <err> result code and use verbose <err> values	OK/+CME ERROR: <err>
+CMEE?	+CMEE: <n> OK
+CMEE=?	+CMEE: (list of supported <n>s) OK

9.2 AT+MSTK

Description

Services related to SIM Toolkit application [AirM2M private AT command]

Syntax

Command	Possible responses
+MSTK=<cmd>[,<data>] Note: <cmd>: 0: enable/disable proactive command Indication 1: download ME capability profile 2. requests SIMAT notification capability info 3. get SIM card profile 4. send envelope command 11. respond to proactive command 12. respond to setup call request from STK app	+MSTK:<cmd>, <response data> OK There will be unsolicited result code +MSTK:<cmdType>[,<value>]sent from MT to TE. < cmdType >: 11: proactive indication 12: set up call indication 13: display Info indication 14: session end indication 15: set up call status indication 16: set up call result indication 18: send SM status indication 19: send SM result indication 20: send USSD result indication
+MSTK=?	+MSTK: (0-3),<data> OK

Example:

AT+MSTK=0,0 //disable proactive command indication
OK
AT+MSTK=0,1 //enable proactive command indication
OK
AT+MSTK=3 //get SIM(USIM) card profile, every bit represent each facility support or not by SIM
+MSTK:3, FFFFFFFF7F11009F3F0000000000000000 //SIM
(+MSTK:3, FFFFFFFF7F1100DFFF000000000000000000) //USIM
OK
AT+MSTK=2 //request SIMAT notification capability info
+MSTK: 2, 111212111333421211
OK
AT+MSTK=1, FFFFFFFF7F11009F3F0000000000000000(SIM)
AT+MSTK=1, FFFFFFFF7F1100DFBF000000000000000000 (USIM)
//download ME capability profile, every bit represent each facility support or not by SIM(USIM)
OK

+MSTK: 11,
D05E0103022500020281820 50F80005500530049004D53615E9475280F082880624B673A62A50F0C5680624B673A84254E1A53850F06688070AB94C30F0A778065B095FB5A314E500F0AA880638C4E0A80A15E020F0ABF807CBE5F694E0A6D77
//proactive SIM commands ”SET UP MENU” indication

AT+MSTK=11,0103022500820282818301 00 // respond to proactive command “SET UP MENU”

OK

AT+MSTK=4,d30782020181900128 // send envelope command “MENU SELECTION”

OK

+MSTK: 11,
D02F010304240002028182OF10018065B095FB65E9665A62A55B9A52360F06028053D66D88
0F0A03804E1A52A14ECB7ECD
//proactive SIM commands “SELECT ITEM” indication

AT+MSTK=11,01030424008202828183O111 // respond to proactive command “SELECT ITEM”

OK

+MSTK: 14 // Session End indication

9.3 AT+VDUMP

Description

Set control log level. Store the log level to global variable. It can control log print to android log buffer and to file, log level less than the control log level will be print,

Syntax

Command	Possible responses
+VDUMP=<loglevel> Note: <loglevel> the log level less than loglevel will be displayed. 0: LOG_SILENT 1: LOG_EMERG 2: LOG_ALERT 3: LOG_CRIT 4: LOG_ERR 5: LOG_WARNING 6: LOG_NOTICE 7: LOG_INFO 8: LOG_DEBUG	OK/+CME ERROR: <err>
+VDUMP?	+VDUMP: <loglevel> OK
+VDUMP=?	+VDUMP: (0-8) OK

9.4 AT+VPDUS

Description

Get Max PDU Size

Syntax

Command	Possible responses
+VPDUS?	+VPDUS:<PDU size> OK

9.5 AT*BAND

Description

Set command controls parameters for GSM/UMTS/LTE user mode and optionally band settings.

The new parameters will be saved in NVM
UE will be reset to apply the new settings.

<mode>=0 forces the UE to search GSM network only, whereas
<mode>=1 forces the UE to search UMTS network only.
<mode>=2 forces the UE to dual mode (GSM and UMTS) (auto)
<mode>=3 forces the UE to dual mode(GSM and UMTS) (GSM preferred)
<mode>=4 forces the UE to dual mode(GSM and UMTS) (UMTS preferred)
<mode>=5 forces the UE to search LTE network only.
<mode>=6 forces the UE to dual mode(GSM and LTE) (auto)
<mode>=7 forces the UE to dual mode(GSM and LTE).(GSM preferred)
<mode>=8 forces the UE to dual mode(GSM and LTE).(LTE preferred)
<mode>=9 forces the UE to dual mode(UMTS and LTE).(auto)
<mode>=10 forces the UE to dual mode(UMTS and LTE). (UMTS preferred)
<mode>=11 forces the UE to dual mode(UMTS and LTE). (LTE preferred)
<mode>=12 forces the UE to trip mode(GSM,UMTS,LTE).(auto)
<mode>=13 forces the UE to trip mode(GSM,UMTS,LTE).(GSM preferred)
<mode>=14 forces the UE to trip mode(GSM,UMTS,LTE).(UMTS preferred)
<mode>=15 forces the UE to trip mode(GSM,UMTS,LTE). (LTE preferred)

Detailed <band>setting refers to below chart.

<roamingConfig>=0 forces the UE not support roaming.
<roamingConfig>=1 forces the UE to support roaming.
<roamingConfig>=2 means the UE should not change the roaming setting.

<srvDomain>=0 forces the UE to change service to CS (circuit service) only.
<srvDomain>=1 forces the UE to change service to PS (GPRS service) only.
<srvDomain>=2 forces the UE to change service to CS and PS both.
<srvDomain>=3 means let the UE choose a default service domain.
<srvDomain>=4 means the UE should not change the service domain setting.

< bandPriorityFlag > =0: default.
< bandPriorityFlag > =1: set TD-LTE band preferred.
< bandPriorityFlag > =2: set FDD-LTE band preferred.

If <mode> is GSM network, only bands defined in GSM band options can be selected.
If <mode> is UMTS network, one or more of the defined UMTS bands can be selected.
If <mode> is LTE network ,one or more of the defined LTE bands can be selected.
If <mode>are Dual mode, trip mode, there is no need to enter <band> parameter(s) since band will bereset to default settings. If this parameter will be entered it will be ignored.
Note that if <band> is not entered for <mode> GSM or UMTS the band setting inTTPCom_NRAM2_ABMM_WRITEABLE_DATA.gki will remain unmodified.
The default values of <roamingConfig> and <srvDomain> are 2 and 4.
The default value of <bandPriorityFlag> is 0, it only works if <mode> is LTE.

Read command returns the settings.

Syntax

Command	Possible responses
*BAND=[<mode>[<GSMband>,<UMTSband>,<LTEbandH>,<LTEbandL>[,<roamingConfig>,<srvDomain>,<bandPriorityFlag>]]] Note: <mode>: integer type 0 –GSM network 1 –UMTS network 2 –Dual mode(GSM and UMTS) (auto) 3 –Dual mode(GSM and UMTS) (GSM preferred) 4 –Dual mode(GSM and UMTS) (UMTS preferred) 5 –LTE network 6–Dual mode(GSM and LTE)(auto) 7–Dual mode(GSM and LTE)(GSM preferred) 8–Dual mode(GSM and LTE)(LTE preferred) 9–Dual mode(UMTS and LTE)(auto) 10–Dual mode(UMTS and LTE)(UMTS preferred) 11–Dual mode(UMTS and LTE)(LTE preferred) 12–Trip mode(auto) 13–Trip mode(GSM preferred) 14–Trip mode(TD preferred) 15–Trip mode(LTE preferred) <GSMband>: integer type <GSMband> is a sum of integers each representing a GSM band (in other words bit mask) 1 –PGSM 900 (standard or primary) 2 –DCS GSM 1800 4 –PCS GSM 1900 8 –EGSM 900 (extended) 16 –GSM 450 32 –GSM 480 64 –GSM 850 <UMTSband>: integer type <UMTSband> is a sum of integers each representing a UMTS band (in other words bit mask) 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 <LTEbandH>: integer type <LTEbandH> is a sum of integers each representing a TDD LTEband (in other words bit mask) 32 –TDLTE_BAND_38 64 –TDLTE _BAND_39 128 –TDLTE _BAND_40 256 –TDLTE _BAND_41 <LTEbandL> integer type <LTEbandL>is a sum of integers each representing a FDD	OK/+CME ERROR: <err>

LTEband (in other words bit mask) 1 –FDDLTE_BAND_1 4 –FDDLTE _BAND_3 8 –FDDLTE _BAND_4 64– FDDLTE _BAND_7 65536 –FDDLTE _BAND_17 524288 –FDDLTE _BAND_20 <roamingConfig>: integer value 0 –not support 1 –support 2 –no change <srvDomain>: integer value 0 –CS only 1 –PS only 2 –CS and PS 3 –ANY 4 –no change <bandPriorityFlag> 0 –default 1 –TD-LTE 2 –FDD-LTE	
*BAND?	*BAND :<mode>,<GSMband>, <UMTSband>,<LTEbandH>, LTEbandL>,<roamingConfig>, <srvDomain>, bandPriorityFlag > OK Example: *BAND : 1, 1, 1,128, 64, 1, 2,0 OK
*BAND=?	*BAND: (list of supported <mode>s),<GSMband>, <UMTSband>,<LTEbandH>, LTEbandL>,<bandPriorityFlag >,<srvDomain> , < bandPriorityFlag > OK/+CME ERROR: <err>

9.6 AT*BANDIND

Description

Indicates the current band

Syntax

Command	Possible responses
*BANDIND=[<n>] Note: <n>: 0: disable 1: enable	OK/+CME ERROR: <err> When enable band indications and the band changes, there will be indication *BANDIND: <band>, <Act> set from MT to TE. <band> refer to 3.12.5 <AcT> access technology selected: 0: GSM 1: GSM Compact 2: UTRAN

	3: GSM EGPRS 4: UTRAN HSDPA 5: UTRAN HSUPA 6: UTRAN HSPA 7: EUTRAN 8: UTRAN HSPA+
*BANDIND?	*BANDIND: <n>[,<band>,<AcT>] OK
*BANDIND=?	*BANDIND: (0,1) OK

9.7 AT+ERGA

Description

This command is used to implement “RUN GSM ALGORITHM” in SIM(refer 3GPP TS 51.011)

Syntax

Command	Possible responses
+ERGA=<rand>	+ERGA:<sres>,<kc> OK/+CME ERROR: <err>

Defined values

<rand>: 32 bytes length, string type values. (16 bytes defined in 3GPP TS 51.011)
<sres>: 8 bytes length, string type values. (4 bytes defined in 3GPP TS 51.011)
<kc>: Cipher Key Kc, 16 bytes length, string type values. (8 bytes defined in 3GPP TS 51.011)
NOTE: According to3GPP 51.011, <rand> is 16bytes length; here 32 bytes are generated by expanding 16bytes with Hex format. <sres>, and <kc> are also expanded to double size with Hex format.
For example, <rand> defined in TS51.011[28] is 16 bytes like {0x11, 0x22, 0x33, 0x44, 0x55, 0x66, 0x77, 0x88, 0x88, 0x77, 0x66, 0x55, 0x44, 0x33, 0x22, 0x11}. <rand> used in +ERGA is expanded to 32 bytes string “11223344556677888877665544332211”.

AT CMD: AT+ERGA=” 11223344556677888877665544332211”
RESPONSE: +ERGA:BD27B8A3,5B3FCBEA771F4800

From the response, <sres> is “BD27B8A3”. Its string size is 8bytes. But <sres> should be parse into 4 bytes values {0Xbd, 0x27, 0Xb8, 0Xa3}, and <kc> is 16 bytes string values, should be parse to 8 bytes values {0x5B, 0x3F, 0Xcb, 0Xea, 0x77, 0x1F, 0x48, 0x00}.

9.8 AT+ERTCA

Description

This command is used to implement 3G Context authentication mechanism in USIM(refer to 3GPP TS 31.102).

Syntax

Command	Possible responses
+ERTCA=<rand>,<* ask>	+ERTCA:<status>,[<res/auts>[,

	<ck>,<ik>[,<kc>]]] OK/+CME ERROR: <err>

Defined values

<status>:

0: Success

1: Synchronisation failure

2: Authentication error, incorrect MAC(the status word SW1&SW2 : '9862')

3: Unsupported security context (the status word SW1&SW2: '9864 ')

<rand>: 32 bytes length, string type values. (16 bytes defined in 3GPP TS31.102)

<* ask>: 32 bytes length, string type values. (16 bytes defined in 3GPP TS31.102)

<res>: string type values

<auts>: string type values

<ck>: string type values

<ik>: string type values

<kc>: string type values

NOTE: According to3GPP TS31.102, <rand> and <* ask> are 16bytes length, here 32 bytes are generated by expanding 16bytes with Hex format. <res>, <auts>, <ck>, <ik> and <kc> are also expanded to double size with Hex format.

For example, <rand> defined in TS31.102 is 16 bytes like {0x85, 0xba, 0x47, 0x63, 0x19, 0xa3, 0x91, 0xc3, 0xb3, 0xf0, 0xe1, 0x5b, 0xb2, 0x62, 0x16, 0x8a}. <* ask> defined in TS31.102 is 16 bytes like {0x9f, 0x19, 0xe5, 0xc3, 0x1a, 0xce, 0x00, 0x00, 0xb5, 0xea, 0x9b, 0xfa, 0xa5, 0xaf, 0xfc, 0xe5}. <rand> used in +ERTCA is expanded to 32 bytes string "85ba476319a391c3b3f0e15bb262168a". And <* ask> used in +ERTCA is expanded to 32 bytes string "9f19e5c31ace0000b5ea9bfaa5affce5".

AT CMD: AT+ERTCA=" 85ba476319a391c3b3f0e15bb262168a", "9f19e5c31ace0000b5ea9bfaa5affce5"
RESPONSE:+ERTCA:1, 1AED78F49C6E92281D3996B2065C

From the response, <auts> is "1AED78F49C6E92281D3996B2065C". Its string size is 28bytes. But <auts> should be parse into 14 bytes values {0x1A, 0Xed, 0x78, 0Xf4, 0x9C, 0x6E, 0x92, 0x28, 0x1D, 0x39, 0x96, 0Xb2, 0x06, 0x5C }

9.9 AT*Cell

Description

This proprietary AT command is used to requests to activate or to deactivate Cell/Frequency lock.

Syntax

Command	Possible responses
*Cell=<mode>[,<act>[,<band>][,<freq>[,<cellId>]]] <mode> : 0 –Cell/Frequency disabled 1 –Frequency lock enabled 2 –Cell lockenabled <network mode> 0 –GSM 1 –UMTS_TD 2 –UMTS_WB 3–LTE	OK/+CME ERROR:<err> An indication *Cell:<mode>,<act>,<band>,<freq>,<cellId>will sent to TE when power on indicates the status of cell lock. Example: AT*Cell=0 OK AT*Cell=1,1,1,10700 OK

<BAND>: 255 band is invalid. <gsm_band>: /*GSM, 0~7*/ 0 PGSM 900 1 DCS GSM 1800 2 PCS GSM 1900 3 EGSM 900 (extended) 4 GSM 450 5 GSM 480 6 GSM 850 7 GSM750 <umts_band>: /*WB：0~8, TD:0~7*/ 0: Band_1 arfcn 10562-10838 1: Band_2 arfcn 9662-9938 2: Band_3 arfcn 1162-1513 3: Band_4 arfcn 1537-1738 4: Band_5 arfcn 4357-4458 5: Band_6 arfcn 4387-4413 6: Band_7 arfcn 2237-2563 7: Band_8 arfcn 2937-3088 8: Band_9 arfcn 9237-9387 <lte_band>: /*FDDLTE: 0~30; TDDLTE:32~43*/ 0-63: Band1~Band64 <FREQ>:Absolute radio frequency channel number GSM:no needed UMTS-TD:arfcn range defined in from umts_band_0 to umts_band_7 UMTS-WB:arfcn range defined in from umts_band_0 to umts_band_8 LTE：range is 0-599, 1200-1949, 2400-2649, 2750-3449, 3450-3799, 5180-5279, 5730-5849,6150-6449, 37750-38249,38250-38649, 38650-39649, 39650-41589. <CELLID>: Physical Cell ID GSM: cell ID no needed as freq UMTS: CELL ID: 0-127 LTE: CELL ID: 0-503	
*Cell=?	*Cell: <mode>,<act>,<band>,<freq>,<cellId> OK

9.10 AT*MEPCG

Description

This AT command is used to read the MEP codes for a specified category.

Syntax

Command	Possible responses
*MEPCG=<fac>	*MEPCG: <val> OK/+CME ERROR: <err>
*MEPCG=?	*MEPCG : (“PS”,”PN”,”PU”,”PP”,”PC”)

Defined values

<fac> MEP category:
“PS”: SIM MEP category
“PN”: NETWORK MEP category
“PU”: Sub network MEP category
“PP”: Service Provider category
“PC”: Corporate MEP category

<val> value of MEP category:
“PS” : IMSI
“PN” : MCC+MNC
“PU” : network subnet code
“PP” : service provide ID
“PC” : corporate ID

9.11 AT*CLCK

Description

This AT command is used to disable or unblock a specified MEP category.

Syntax

Command	Possible responses
*CLCK=<fac>,<mode>[,<passwork>]	If <mode>=2 *CLCK: <status> OK/+CME ERROR: <err> If <mode>=0,1 OK/+CME ERROR: <err>
*CLCK=?	*CLCK : (“PS”,”PN”,”PU”,”PP”,”PC”), (0-2), <password> OK

Defined values

<fac>:
“PS”: SIM MEP category
“PN”: NETWORK MEP category
“PU”: Sub network MEP category
“PP”: Service Provider category
“PC”: Corporate MEP category
<mode>:
0: disable
1: unblock
2: query status
<password>: facility password
<status>

0: Lock is enabled and activated
1: Lock is enabled and de-activated
2: Lock is disabled
3: Lock is blocked since wrong key entry exceeded retry counter
4: Lock state was not read from data base yet
5: MEP feature is not supported

9.12 AT*READVER

Description

Reads the MIFI's system release version and the release date.

Syntax

Command	Possible responses
*READVER	*READVER release_version: <system release version> release_time:<system release time> OK

9.13 AT+MIFIBAT

Description

Reads the MIFI's battery connection status and temperature.

. Syntax

Command	Possible responses
+MIFIBAT?	+MIFIBAT:BAT_CONNECTED/BAT_LATCHUPED,temperature. OK

9.14 AT+RESET

Description

Reset MIFI.

. Syntax

Command	Possible responses
+RESET	OK

9.15 AT*FASTDORM

Description

This proprietary AT command is used to make the device to initiate exit from DCH or FACH when the application knows that there is no more packet data expected.

Syntax

Command	Possible responses
*FASTDORM	OK/+CME ERROR: <err>
*FASTDORM =?	OK

9.16 AT+RSTSET

Description

Restore the factory settings.

. Syntax

Command	Possible responses
+RSTSET	OK

9.17 Unsolicited result code: +LPLOC

Description

Indication that the location information of the mobile was requested.

Syntax

+LPNWDL:<p1>,<p2>,<p3>,<p4>,[<p5>,]<p6>,[<p7>,[<p8>,<p9>,]]<p10>,[<p11>,<p12>,<p13>,<p14>,[<p15>,]]<p16>,[<p17>,<p18>,<p19>,<p20>,[<p21>]]

Defined Values
<p1>: Radio This must correspond to a ‘live’ invokeHandle associated with anoutgoing invoke. If a matching invoke handle is not found then thissignal is not generated
<p2>: LCS notification type
<p3>: LCS Location estimate type
<p4>: Indicated if deferred location type is present
<p5>: Deferred location type
<p6>: Indicated if LCS client external ID is present
<p7>: Indicates if address is present
<p8>: Address length, max is 20
<p9>: External Address
<p10>: Indicated if LCS client name is present
<p11>: Data coding scheme
<p12>: LCS client name length
<p13>: LCS client name
<p14>: Indicated if Format indicator is present
<p15>: format indicator
<p16>:Indicated if LCS requestor ID is present
<p17>: Data coding scheme
<p18>: LCS requestor ID length
<p19>: LCS requestor ID
<p20>: Indicated if Format indicator is present
<p21>: format indicator

9.18 Unsolicited result code: +LPNWDL

Description

An indication primitive from protocol stack to APPS, indicating of either RRC or RRLP positioning-related messagefrom the network to the AGPS client running on the APPS.

Syntax

+LPNWDL:<p1>,<p2>,<p3>,<p4>,<p5>,<p6>

Defined Values

<p1>: Radio bearer type
<p2>: data
<p3>:Size of data
<p4>: Session type info
<p5>: RRC state
<p6>: Ordinal number of the message

9.19 Unsolicited result code: +LPSTATE

Description

AGPS C-Plane indication primitive from protocol stack to APPS, indicating of RRC state change. It should be called by ABPS whenever the RRC state changes while a positioning session is active

Syntax

+LPSTATE:<p1>,<p2>

Defined Values

<p1>: Radio bearer type
<p2>: Current RRC state

9.20 Unsolicited result code: +LPMEAST

Description

Indication primitive from protocol stack to APPS, indicating of RAT termination (either of GSM or WCDMA)

Syntax

+LPMEAST:<p1>

Defined Values

<p1>: Radio bearer type

9.21 Unsolicited result code: +LPRESET

Description

This is an indication primitive from protocol stack to APPS, which is a testI/F message (TIM) requesting the UE to erase all the assistance data that may have been previously stored in the UE, priorto the execution of the test

Syntax

+LPRESET:<p1>

Defined Values

<p1>: Radio bearer type

9.22 Unsolicited result code: +REFRESH

Description

Indicates that file(s) on the SIM have been updated, or the SIM has been reinitialized.

Syntax

+REFRESH:<rc>, <EFID>

Defined Values

<rc>: result of a SIM refresh.

0 –a file on SIM has been updated.

1 –SIM initialized, all file should be re-read

2 –SIM reset, SIM power required, SIM may be locked and all files should be re-read

<EFID>: EFID of the updated file if <rc> is 0

9.23 AT*POWERIND

Description

This proprietary AT command is used to notify modem that AP sleep status. When AP goes to sleep, modem will not send indication to AP except MT call and SMS incoming.

Syntax

Command	Possible responses
*POWERIND=<n>	OK/+CME ERROR: <err>
*POWERIND =?	*POWERIND☹0-1) OK

Defined values

<n>:

0 – AP is awake

1 – AP is sleep

Note: The example when use this AT command is as following:

1. Send a command that will provide indications, after that AP will receive many indications, e.g. enable engineering mode indication: AT+EEMOPT=2,1
2. Send AT*POWERIND=1 to CP, then CP will not send indications to AP except MT call and MT SMS;

3. Send AT*POWERIND=0 to CP, AP can receive indications again.

9.24 AT+EEMOPT

Description

Set/Get GSM/UMTS Engineering Mode indicator

Syntax

Command	Possible responses
+EEMOPT=<option>[,<value>]	OK/+CME ERROR: <err>
+ EEMOPT?	+EEMOPT: <option>[,<value>] +CME ERROR: <err>
+ EEMOPT=?	List of options

Defined values

<option>:

0: Turn off indicator. This is the default mode after ME boot-up.

1: Set to query mode. In this mode, no indicator reported.

(NOTE: but user can query the network parameter by +EEMGINFO)

2: Set to periodic mode. In this mode, the GSM Engineering Mode's information will be reported in specific timeinterval, which specified by <value> second.

(NOTE: refer to indicator +EEMGINFOBASIC, +EEMGINFOSVC, +EEMGINFOPS, +EEMGINFONC)

3: Snapshot mode. The old <value> will stored as snapshot.

4: Restore to snapshot <value>.

<value>:

Time interval in seconds for reporting indicators. Only valid when option is set to 2.

9.25 AT+EEMGINFO

Description

Query GSM/UMTS/LTE information in Engineering Mode. Only valid in query mode (use AT+EEMOPT=1 to set UE to query mode).

Syntax

Command	Possible responses
+ EEMGINFO?	+EEMGINFO:<state>,<nw_type> OK/+CME ERROR: <err>

Defined values

<state>:

0: ME in Idle mode

1: ME in Dedicated mode

2: ME in PS PTM mode

3: invalid state
<nw_type>:
0: GSM
1: UMTS
2: LTE

9.26 AT+LPNWUL

Description

This AT command is used to deliver measurements reports and/or status from A-GPS client to PS/NW.

Syntax

Command	Possible responses
+LPNWUL =[<msg_data>],<msg_data_len>, <count>, <bearer_type>, <ifinal>	+LPNWUL: <val> OK/+CME ERROR: <err>

Defined values

<msg_data>: max 1000 bytes length, string type values in HEX. ASN.1 payload, divided to 4 segments of 500 bytes. If msg_data is empty, it means msg_data is NULL, and msg_data_len should be set 0.
< msg_data_len >: length of ASN.1 payload.
<count>: index of the message
<bearer_type>: specifies the over-the-air message type (RRC or RRLP). If the value is 0, bearer type is RRC; 1 for RRLP.
<ifinal>: True if this is the last message on this session from the Location Manager, (to free MS/UE resources).

NOTE: ASN.1 payload is divided to 4 segments of 500 bytes. Here 1000 bytes <msg_data> are generated by expanding 500bytes with Hex format. <msg_data_len> is the length of ASN.1 payload, which size is not larger than 500bytes.

For example, for the Test Case "17.2.4.1_LCS MT-LR UE-based" of Control Plane 3G Conformance – 3GPP TS 34.123, one ASN.1 payload is 18bytes like {0xc8, 0xbc, 0xbc, 0xb4, 0xc1, 0x0c, 0xb0, 0x19, 0x78, 0xd8, 0x61, 0x00, 0x0c, 0x42, 0x85, 0x8e, 0x22, 0x18}. And this is last message on this session from the Location Manager.

AT CMD1:AT+LPNWUL=c8bcbcb4c10cb01978d861000c42858e2218,18,0,0,1
RESPONSE1:+LPNWUL:0

AT CMD2:AT+LPNWUL=,18,1,0,1
RESPONSE2:+LPNWUL:0

AT CMD3:AT+LPNWUL=,18,2,0,1
RESPONSE3:+LPNWUL:0

AT CMD4:AT+LPNWUL=,18,3,0,1
RESPONSE4:+LPNWUL:0

From the response, <val> is 0, which means ASN.1 payload is delivered successfully.

9.27 AT+LPLOCVR

Description

This AT command is used to respond to the location verification indication.

Syntax

Command	Possible responses
+LPLOCVR=<* asked>, <invokeHandle>, <present>[,<verificationRsp>]	OK/+CME ERROR

Defined values

<* asked>: Application background task ID (It is copied from APEX interface), 0 as default value.
<invokeHandle>: This must correspond to a 'live' invokeHandle associated with an outgoing invoke. If a matching invoke handle is not found then this signal is not generated (It is copied from APEX interface).
<present>: True if Location notification response is present.
<verificationRsp>: Location notification response.

1: GRANTED
0: DENIED

NOTE: This AT command is used to respond to the location verification indication.

For example, location verification indication is granted, and < invokeHandle > is 0xffff8000.
AT CMD:AT+LPLOCVR=0,4294934528,1,1
RESPONSE: OK

9.28 AT^SYSINFO

Description

This command is used to query current system information, for example: system service status, domain, roaming or not, etc.

Syntax

Command	Possible responses
^SYSINFO	^SYSINFO:< srv_status >,< srv_domain >, roam_status >,< sys_mode >,< sim_state >, sys_submode> OK <srv_status>: 0 –no service 1 –restricted service 2 –valid service 3 –restricted area service 4 –power saving <srv_domain>: 0 –no service 1 –CS only 2 –PS only 3 –CP and PS <roam_status>: 0 –no roaming

	1 –roaming <sys_mode>: 0 –no service 1 –reserve 2 –reserve 3 –GSM/GPRS 4 –WCDMA 5 –TD_SCDMA 17 – LTE <sim_state>: 0 sim invalid 1 sim valid 255 sim not insert or PINunchecked/unblocked < sys_submode> 0 GSM 1 GSM Compact 2 UTRAN 3 GSM w/EGPRS 4 UTRAN w/HSDPA 5 UTRAN w/HSUPA 6 UTRAN w/HSDPA and HSUPA 7 E-UTRAN

9.29 AT*ENVSIM

Description

Enable Virtual SIM

Syntax

Command	Possible responses
*ENVSIM	OK/+CME ERROR: <err>
*ENVSIM?	*ENVSIM: <n> OK/+CME ERROR: <err> Notes: <n> 0 enabled 1-disabled

9.30 Unsolicited result code: ^MODE

Description

Indicates that system mode has changed..

Syntax

^MODE :<sys_mode>

Defined Values

< sys_mode>: system mode

0 –no service

1 –reserved
2 –reserved
3 –GSM/GPRS
4 –WCDMA
5 –TD_SCDMA

9.31 AT*MRD_CDF

Description

This is a generic AT command for copying an existing file into RD (reliable data), for example, it can be used when RF calibration is done and copy the calibration nvm files into RD.

Syntax

Command	Possible responses
*MRD_CDF=<a>,<f> Example: AT*MRD_CDF=W,UDP.nvm AT*MRD_CDF=Q,UDP.nvm AT*MRD_CDF=D,UDP.nvm	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if file already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist If <a>=Q *MRD_CDF: 1/0 – 1: the file exist in RD – 0: no such file +CME ERROR: <err> – if other cases
*MRD_CDF=?	*MRD_CDF=<a>,<f>

9.32 AT*MRD_SN

Description

This is a generic AT command for writing SN (serial number) to RD (reliable data).

Syntax

Command	Possible responses
*MRD_SN=<a>,[<v>,<d>,<s>] Example: AT*MRD_SN=W,0101,12NOV2010, SN-Q1234567890 AT*MRD_SN=R AT*MRD_SN=D	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if SN already exist in RD – if any parameters are not right – if error when write RD

	if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist If <a>=R *MRD_SN: <v>, <d>, <s> +CME ERROR: <err> – if SN does not exist
*MRD_SN=?	*MRD_SN=<a>,[<v>,<d>,<s>]

<a>:
W: write SN to RD
D: delete SN from RD
R: read SN from RD
<v>: Version string, must be 4 ASCII strings like 0201, 0311, etc
<d>: Date string, must be 9 ASCII strings like 06JUN2010
<s>: The ASCII strings of SN, must terminated with NULL, the max is 32 bytes

9.33 AT*MRD_IMEI

Description

This is a generic AT command for writing IMEI to RD (reliable data). This command can only be used in production mode (when power on, press SEND/END key will enter production mode).

Syntax

Command	Possible responses
*MRD_IMEI=<a>[,<v>,<d>,<s>] Example: AT*MRD_IMEI=W,0101,12NOV2010,012 34567890123 AT*MRD_IMEI=R AT*MRD_IMEI=D	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if IMEI already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if IMEI does not exist If <a>=R *MRD_IMEI: <v>, <d>, <s> +CME ERROR: <err> – if IMEI does not exist
*MRD_IMEI?	*MRD_IMEI: <s> +CME ERROR: <err> – if IMEI does not exist
*MRD_IMEI=?	*MRD_IMEI=<a>[,<v>,<d>,<s>]

Defined values
<a>:
W: write IMEI to RD
D: delete IMEI from RD
R: read IMEI from RD

<v>: Version string, must be 4 ASCII strings like 0201, 0311, etc
<d>: Date string, must be 9 ASCII strings like 06JUN2010
<s>: The ASCII strings of IMEI, must be 14 or 15 or 16 digits, must terminated with NULL

9.34 AT*MRD_MEP

Description

This is a generic AT command for writing MEP to RD (reliable data).

Syntax

Command	Possible responses
*MRD_MEP=<a>[,<v>,<d>,<s1>,<s2>,<s3>,<s4>,<s5>,<s6>,<s7>] Example: AT*MRD_MEP=W,0101,12NOV2010,1234567890123456,2345678901234567,3456789012345678,4567890123456789,5678901234567890,6789012345678901,10 AT*MRD_MEP=Q AT*MRD_MEP=D	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if MEP already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = Q *MRD_MEP: <v>, <d> – if MEP exist in RD +CME ERROR: <err> – if MEP does not exist
*MRD_MEP=?	*MRD_MEP=<a>[,<v>,<d>,<s1>,<s2>,<s3>,<s4>,<s5>,<s6>,<s7>]

Defined values

<a>:
W: write MEP to RD (No need to delete MEP before write new password)
D: delete MEP from RD
Q: query MEP from RD
<v>: Version string, must be 4 ASCII strings like 0201, 0311, etc
<d>: Date string, must be 9 ASCII strings like 06JUN2010
<s1>: The ASCII strings of 16 characters representing NCK (network control key)
<s2>: The ASCII strings of 16 characters representing NSCK (network subset control key)
<s3>: The ASCII strings of 16 characters representing SPCK (service provider control key)
<s4>: The ASCII strings of 16 characters representing CCK (corporate control key)
<s5>: The ASCII strings of 16 characters representing PCK (SIM lock control key)
<s6>: The ASCII strings of 16 characters representing the MEP unblock password
<s7>: The ASCII strings of up to 16 characters representing the trial repeat limit

9.35 AT+MIFIHSUPA

Description

This is a generic AT command for

9.36 AT+MIFIMAC

Description

This is a generic AT command used to write,read or delete the WIFI mac address data.

Syntax

Command	Possible responses
+MIFIMAC=<c>,[<mac-addr>] Note: <c> w: write the mifi mac address r: read the mifi mac address d: delete the mifi mac address <mac-addr>: string type mifi mac address , the length of the mac address is 12	OK/+CME ERROR: <err> For example: AT+MIFIMAC=W,1234567890E3 AT+MIFIMAC=R AT+MIFIMAC=D
+MIFIMAC?	+MIFIMAC:<mac-address> OK Example; +MIFIMAC:12:34:56:78:90:E3 OK
+MIFIMAC=?	+MIFIMAC

9.37 AT+MIFISSID

Description

This is a generic AT command used to write,read or delete the WIFI SSID data.

Syntax

Command	Possible responses
+MIFISSID=<c>,[<SSID NAME>] Note: <c> w: write the mifi SSID name r: read the mifi SSIDname d: delete the mifi SSIDname <SSID NAME>: string type SSID NAME, the max length of the SSIDname is 128	OK/+CME ERROR: <err> Example: AT+MIFISSID=W,AirM2M_nezha +OK +CME ERROR: – if UE is not in production mode – if SN already exist in RD – if any parameters are not right – if error when write RD AT+MIFISSID=R +MIFISSID:AirM2M_nezha OK +CME ERROR: <err> – if SSID does not exist
+MIFISSID?	+MIFISSID:ssid name OK +CME ERROR: <err> – if SSID does not exist

+MIFISSID=?	+MIFISSID:<SSID NAME>

9.38 AT+MIFIPASSWORD

Description

This is a generic AT command used to write,read or delete the MIFI password.

Syntax

Command	Possible responses
+MIFIPASSWORD=<c>,[<password>] Note: <c> w: write the MIFI password r: read the MIFIpassword d: delete the MIFI password <password>: string type password, the max length of the password is 128	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if PASSWORD already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = R +MIFIPASSWORD: <password> – if password exist in RD +CME ERROR: <err> if password does not exist
+MIFIPASSWORD?	+MIFIPASSWORD:<password> – if password exist in RD +CME ERROR:<err> If password dose not exit
+MIFISSID=?	+MIFIPASSWORD:<SSID NAME>

9.39 AT*MRD_PID

Description

This is a generic AT command used to write,read or delete the MIFI USB PID data.

Syntax

Command	Possible responses
*MRD_PID=<a>[<v>,<d>,<s>] Note: <c> w: write the MIFI usb pid data r: read the MIFIusb pid data d: delete the MIFI usb pid data <v>: string type version <d>:string type date <s>:string :pid data	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if PID already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err>

	– if file does not exist <a> = R *MRD_PID: <v>,<d>,<s> – if pid exist in RD +CME ERROR: <err> if pid does not exist
*MRD_PID?	*MRD_PID:<v >,<d>,<s> – if pid exist in RD +CME ERROR:<err> If pid dose not exit

Defined values
<a>:
W: write the MIFI usb pid data
D: delete the MIFI usb pid data
R: read the MIFI usb pid data
<v>: Version string, must be 4 ASCII strings like 0201, 0311, etc
<d>: Date string, must be 9 ASCII strings like 06JUN2010
<s>: PID data.

9.40 AT*MRD_VID

Description

This is a generic AT command used to write,read or delete the MIFI USB PID data

Syntax

Command	Possible responses
*MRD_VID=<a>[<v>,<d>,<s>] Note: <c> w: write the MIFI usb vid data r: read the MIFIusb vid data d: delete the MIFI usb vid data <v>: string type version <d>:string type date <s>:string :pid data	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if vid data already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = R *MRD_VID: <v>,<d>,<s> – if pid exist in RD +CME ERROR: <err> if pid does not exist
*MRD_VID?	*MRD_VID:<v >,<d>,<s> – if pid exist in RD +CME ERROR:<err> If pid dose not exit

Defined values
<a>:
W: write the MIFI usb pid data
D: delete the MIFI usb pid data
R: read the MIFI usb pid data
<v>: Version string, must be 4 ASCII strings like 0201, 0311, etc

<d>: Date string, must be 9 ASCII strings like 06JUN2010
<s>: VID data.

9.41 AT+MIFISIMKEY

Description

This is a generic AT command used to write,read or delete the MIFI SIMKEY data

Syntax

Command	Possible responses
+MIFISIMKEY=<a>[,<simcom>,<simver>,<encry>] Note: <a> w: write the MIFI usb vid data d: delete the MIFI usb vid data <simcom>: string type manufacturer code <simver>:string type version number <encry>:string :key	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if simkey already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist
*MIFISIMKEY?	+MIFISIMKEY:<simcom >,<simver>,<encry> – if simkey file exist in RD +CME ERROR:<err> If simkey file dose not exit

9.42 AT+MIFIWIFI

Description

This is a generic AT command used to enable or disable the wifi function

Syntax

Command	Possible responses
+MIFIWIFI=<c> Note: <c> 0: disable the wifi function 1: enable the wifi function	OK/+CME ERROR
+MIFIWIFI?	+MIFIWIFI:0/1 OK
+MIFIWIFI=?	OK +MIFIWIFI☹0-1)

9.43 AT+MIFIUSBMODE

Description

This is a generic AT command used to write,read or delete the MIFI usb mode

Syntax

Command	Possible responses
+MIFIUSBMODE=<a>,[<usbmode>] Note: <a> w write the MIFI usb mode r: read the MIFIusb data d: delete the MIFI usb data <usbmode> 0:calibration mode 1:engineering mode	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if usbmode data already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = R +MIFIUSBMODE: <usbmode> – if usbmode exist in RD +CME ERROR: <err> if usbmode does not exist
+MIFIUSBMODE?	+MIFIUSBMODE:<usbmode> – if usbmode exist in RD +CME ERROR:<err> If usbmode dose not exit

9.44 AT+MIFIVER

Description

This is a generic AT command used to write,read or delete the mifi softeware version,hardware version and production mode.

Syntax

Command	Possible responses
+MIFIVER=<a>,[<SwVer>,<HwVer>,<ProType>] Note: <a> w:write the MIFI version data r: read the MIFIversion data d: delete the MIFI version data <SwVer>:software version,max length is 32 <HwVer>:hardware version Max length is 32 <ProType>:production type Max length is 32	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if version data already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = R +MIFIVER: <SwVer>,<HwVer>,<ProType> – if version data exist in RD +CME ERROR: <err> if version data does not exist
+MIFIVER?	+MIFIVER:<SwVer>,<HwVer>,<ProType> – if version data exist in RD

	+CME ERROR:<err> If version data dose not exit

9.45 AT+MIFIDIALMODE

Description

This is a generic AT command used to write,read or delete the mifi dial mode.

Syntax

Command	Possible responses
+MIFIDIALMODE=<a>,[<dial mode>] Note: <a> w write the MIFI dial mode r: read the MIFIdial mode d: delete the MIFI dial data <dial mode> 0: auto dial mode 1:manual dial mode	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if dial mode data already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = R +MIFIDIALMODE: <dial mode> – if dial mode data exist in RD +CME ERROR: <err> if dial mode file does not exist
+MIFIDIALMODE?	+MIFIDIALMODE:<dial mode> – if dial mode exist in RD +CME ERROR:<err> If dial mode dose not exit

9.46 AT*NASCHK

This is a generic AT command used to enable or disable NAS integrity check.

AT*NASCHK=<flag>

<flag>

0:Disable NAS integrity check

1:Enable NAS integrity check

9.47 AT+MIFISAVERD

Description

Use this AT command to save ReliableData to file system, or delete ReliabData from file system

Syntax

Command	Possible responses
+ MIFISAVERD =<c>,[filename] <c> W, save rd to file system	+MIFISAVERD = W,"filename" Return: OK

R: to make sure wheather there's file "filename" in file system D: Delete file "filename" from system "filename": name of saved file	-- if no error happens +CME ERROR: <err> Notes: if there's a file named "filename",oldone will be replaced with new one +MIFISAVERD = R, "filename" Return Values: 0 - -there's no file named "filename" in file system, 1 – there's file named "filename" in file system

9.48 AT*CSQ

Description

This is a generic AT command used to enable or disable CSQ Indicator

Syntax

Command	Possible responses
*CSQ = 0/1 0: disable CSQ Indicator 1: enable CSQ Indicator	OK/+CME ERROR
*CSQ ?	*CSQ:1 1 – CSQ Indicator is Enabled 0 – CSQ Indicator is Disabled
*CSQ = ?	*CSQ: (0-1)

9.49 AT+WIFIIDRW

Description

This is a generic AT command used to read and write wifi mac address.

Syntax

Command	Possible responses
+WIFIIDRW=<c>,<mac_addr> Note: <c> 1: Read when mac_addr = 0 2: Write <mac_addr> Mac_address with 12 numbers. When mac_addr = 0 and c = 0; The AT command is * axi to read wifi mac.	OK – if no error happens +CME ERROR: <err> Note:When there's wifimac address in RD file, Old mac address will be replaced with new one. Eg. AT+WIFIIDRW=1,0(READ) AT+WIFIIDRW=2,123456789012(Write)

9.50 AT+POWERSAVE

Description

This is a generic AT command used to set the mifi powersave function

Syntax

Command	Possible responses
+POWERSAVE=<c>,[<min_sleep>,<max_sleep>,<inactivity time>,<min_awake>,<max_awake>] Note: <c> 0: disable 1: enable <min_sleep>:minimum sleep period (micro second),value>500 <max_sleep>:maximum sleep period (micro second),value<320000 <inactivity_time>:inactivity time ,valid when c=1; <min_awake>:miniumu awake period valid when c=1,value>2000 <max_awake>:maximum awake period walid when c=1	OK – if no error happens +CME ERROR: <err>
AT+POWERSAVE=?	+POWERSAVE=(0-1),(5000-32000),(5000-32000),(>=0),(>=2000),(>=2000)
AT+POWERSAVE?	+POWERSAVE:<c>,[<min_sleep>,<max_sleep>,<inactivity time>,<min_awake>,<max_awake>]

9.51 AT+DIALMODE

Description

This is a generic AT command used to change the mifi dial mode function

Syntax

Command	Possible responses
+DIALMODE=<c> Note : <c> 0 : auto dial mode 1: manual dial mode	OK – if no error happens +CME ERROR: <err>
AT+ DIALMODE?	+ DIALMODE:<c>

9.52 AT*TDTR

Description

This proprietary AT command is used to set Tx or Rx on TD for radio testing.

Syntax

Command	Possible responses
*TDTR =<op>	OK/+CME ERROR:<err>

[,<gain>,<freq>]	
*TDTR=?	*TDTR=<op>[,<gain>,<freq>] OK

Defined values
<op>:
Operations:
0 – start TD Tx
1 – start TD Rx
2 – stop TD Tx or Rx

<gain>:
Tx or Rx gain
For Tx, range: (0-157)
For Rx, range: ((-20)-(-110))

<freq>:
TD frequency
range (18808-19192) and (20108-20242)

Note: The example when use this AT command is as following:
This command only can be used when radio is off, so before using this command, send AT+CFUN=0,0 to turn off radio first.

1.Test TD Rx
Start TD Rx:
AT*TDTR=1,-20,19000
OK

Stop TD Rx:
AT*TDTR=2
OK

2.Test TD Tx
Start TD Tx:
AT*TDTR=0,0,19000
OK

Stop TD Tx:
AT*TDTR=2
OK

9.53 AT*GSMTR

Description

This proprietary AT command is used to set Tx or Rx on GSM for radio testing.

Syntax

Command	Possible responses
*GSMTR=<op>[,<band>,<arfcn>,<afcDac>[,<txRampScale>,<rxGainCode>]]	*GSMTR: <rssiDbmValue> OK/+CME ERROR:<err>
*GSMTR=?	*GSMTR=<op>[,<band>,<arfcn>,<afcDac>[,<txRampScale>,<rxGainCode>]] OK

Defined values
<op>:
Operations:
0 – start GSM Tx
1 – start GSM Rx
2 – start GSM Tx and RX
3 – stop GSM Tx or Rx

<band>:
GSM band mode:
1 – PGSM 900 (standard or primary)
2 – DCS GSM 1800
4 – PCS GSM 1900
8 – EGSM 900 (extended)
16 – GSM 450
32 – GSM 480
64 – GSM 850

<arfcn>:
Absolute Radio Frequency Channel Number:
For PGSM 900, range: (1-124)
For DCS1800, range: (512-885)
For PCS1900, range: (512-810)
For EGSM 900, range: (0-124) and (975-1023)
For GSM 450, range: (259-293)
For GSM 480, range: (306-340)
For GSM850, range: (128-251)

<afcDac>:
AFC DAC:
Range : (5000-32000)

<txRampScale> :
Tx ramp scale :
Only valid for Tx or Tx+Rx mode.
Range: (0-1023), suggested range is (200-700)(too bigger will cause Tx saturated, and equipment could not detect it)

<rxGainCode>:
Rx gain code:
Only valid for Rx or Tx+Rx mode
Range: (0-49)

<rssiDbmValue>:
The Rssi value to be returned in case of GSM Rx mode and loop back mode.
Range:((-110)-(-20))

Note: The example when use this AT command is as following:
This command only can be used when radio is off, so before using this command, send AT+CFUN=0,0 to turn off radio first.

1. Test GSM Rx
Start GSM Rx:
AT*GSMTR=1,1,10,6000,200,20
*GSMTR: -61
OK

Stop GSM RX:
AT*GSMTR=3
*GSMTR: -61
OK

2. Test GSM Tx
Start GSM Tx:
AT*GSMTR=0,1,10,6000,200,20
*GSMTR: -61
OK

Stop GSM Tx:
AT*GSMTR=3
*GSMTR: -61
OK

3. Test GSM Tx and Rx
Start GSM Tx and Rx:
AT*GSMTR=2,1,10,6000,200,20
*GSMTR: -61
OK

Stop GSM TX and RX:
AT*GSMTR=3
*GSMTR: -61
OK

9.54 AT*TGCTRL

Description

This proprietary AT command is used to configure GSM/TD RF through control interface.

Syntax

Command	Possible responses
*TGCTRL=<nw >,<op> ,<value>[,<addr>]	If nw = 0, op = 2 (TD loopback mode) *TGCTRL: <value> OK/+CME ERROR:<err> If nw = 1, (GSM mode) *TGCTRL: <value>,<addr> OK +CME ERROR
*TGCTRL=?	*TGCTRL=<nw >,<op>,<value>[,<addr>] OK

Defined values

<nw >:
network type:
0 – TD

< op >
Operation mode:
0– read (only available for GSM)
1– write (only available for GSM)
2– loopback

<value>:
register value to be written into RF register(available for TD loopback, or GSM write/loopback).

<addr>:
Register addresshexadecimal format. (only available for GSM)
Range: (0x0280-0x02BB)

Note: The example when use this AT command is as following:
This command only can be used when radio is off, so before using this command, send AT+CFUN=0,0 to turn off radio first.

1. Test TD loopback
AT*TGCTRL=0,2,111
*TGCTRL: 111
OK

2. Test GSM read
AT*TGCTRL=1,0,11,280
*TGCTRL: 0,280
OK

3. Test GSM write
AT*TGCTRL=1,1,11,280
*TGCTRL: 0,280
OK

4. Test GSM loopback
AT*TGCTRL=1,2,11,280
*TGCTRL: 11,280
OK

9.55 AT*WBTR

Description

This proprietary AT command is used to set Tx or Rx on WCDMA for radio testing

Syntax

Command	Possible responses
AT*WBTR=<op>[,<dlUarfcn>,<ulUarfcn>[,<paMode>[,<apcDac>[,<afcDac>]]]] <op>: Operations 0 start WCDMA Tx 1 start WCDMA Rx 2 stop WCDMA Tx or Rx <dlUarfcn>: Downlink UARFCN. valid range are [10562, 10838], [9662, 9938], [4357, 4458] and [2937, 3088].	

<ulUarfcn>: Uplink UARFCN. Valid range are [9612, 9888], [9262, 9538], [4132, 4233] and [2712, 2863]. <paMode>: PA mode :2; range (0,1,2). <apcDac>: APC DAC GONGGA RF card default value1600; range [0,2047]. Mynah RF card default value 800; range [0,880] <afcDac>: AFC DAC : GONGGA RF card default value18000;range[4000,32000]. Mynah RF card default value 0; range[-512,512]	
*WBTR=?	*WBTR=<op>[,<dlUarfcn>,<ulUarfcn>[,<paMode>[,<apcDac>[,<afcDac>]]]] OK

Note: The example when use this AT command is as following:
This command only can be used when radio is off, so before using this command, send AT+CFUN=0,0 to turn off radio first.

1. Test WCDMATx
Start WCDMA Rx:
AT*WBTR=0,10700,9750,2,1600,18000
*WBTR:-31355
OK

Stop WCDMATX:
AT*WBTR=2
*WBTR:-31355
OK

2. Test WCDMARx
Start WCDMARx:
AT*WBTR=1,10700,9750,2,1600,18000
*WBTR:-31355
OK

Stop WCDMARx:
AT*WBTR=2
*WBTR:-31355
OK

9.56 AT+MAXPOWER

Description

This proprietary AT command is used to set Tx on GSM andUMTS for radio testing.

Syntax

Command	Possible responses
+MAXPOWER=<op>,<para1>,<para2>	OK/+CME ERROR:<err>
+MAXPOWER =?	+MAXPOWER=<op>,<para1>,<para2> OK

Defined values
<op>:

0 -- start GSM/WCDMA Tx or Stop Tx

<para1>:
0 -- GSM900 (band8)
1 -- DCS1800 (band3)
2 -- PCS1900 (band2)
3 -- GSM850 (band5)
4 -- WCDMA band1
5 -- WCDMA band2
7 -- WCDMA band5
8 -- WCDMA band8
9 -- Tx off

<para2>:
0 -- maxpower
1 -- 10dBm
9 -- Tx off

Sample:
1. start GSM850 Maxpower Tx:
AT+MAXPOWER=0, 3, 0
2. start WCDMA band8 10dBm Tx:
AT+MAXPOWER= 0, 8,1
3. stop Tx
AT+MAXPOWER=0,9,9

Note:
Need to execute AT+CFUN=0 before starting radio testing.
Need to stop Tx between every two radio testing command.

9.57 AT+LTEPOWER

Description

This proprietary AT command is used to set Tx on LTE for radio testing.

Syntax

Command	Possible responses
+LTEPOWER=<op>,<band>,<power>	OK/+CME ERROR:<err>
+LTEPOWER =?	+LTEPOWER=<op>,<band>,<power> OK

Defined values

<op>:
0 -- Tx on or Tx off

< band >: 1-41

<power>:
0 -- maxpower
1 -- 10dBm
9 -- Tx off

Sample:
1. start LTE band39 Maxpower Tx:
AT+LTEPOWER=0, 39, 0

2. stop Tx

AT+LTEPOWER=0,1,9 (common for every band)

9.58 AT*MRD_MEPPLMN

Description

This is a generic AT command for writing PLMN of MEP to RD (reliable data).

Syntax

Command	Possible responses
*MRD_MEPPLMN=<a>[,<v>,<d>,<index>,<MCC>,<MNC>] Example: AT*MRD_MEPPLMN=U,0101,12NOV2010,1,460,02, AT*MRD_MEPPLMN=R,index AT*MRD_MEPPLMN=D,index	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if any parameters are not right – if error when write RD if <a>=D,index(with specified index) OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = R,index *MRD_MEPPLMN: PLMN (with specified index) – if MEP exist in RD +CME ERROR: <err> – if MEP does not exist
*MRD_MEPPLMN=?	*MRD_MEPPLMN=<a>[,<v>,<d>,<index>,<MCC>,<MNC>,]

Defined values

<a>:
u/U : update MCC/MNC at “index”, (No need to delete MEP before upgrading new PLMN)
D ; Deletet the PLMN at “index”
R: ; Read all PLMNs
<Index>:
There’re 100 PLMNs in MEP.
Index should be in 1~100
<MCC>: ASCII strings , MCC code; for example : 460, must be less than 3 chacracters.
<MNC> : ASCII strings, MNC code : for example :02, must be less than 3 characters
<v>: Version string, must be 4 ASCII strings like 0201, 0311, etc
<d>: Date string, must be 9 ASCII strings like 06JUN2010

9.59 AT+MIFIUPDATEPASWD

Description

This is a generic AT command for updating and reading password of admin

Syntax

Command	Possible responses
+MIFIUPDATEPASWD=<a>,[<passwd>] <a>: u/U: update password r/R: read password	If <a>=u/U OK – if no error happens +CME ERROR: <err>

<paswd>: password Example: AT+MIFIUPDATEPASWD=U,"admin" AT+MIFIUPDATEPASWD=R	<a> = R +MIFIUPDATEPASWD: <paswd> +CME ERROR: <err>

9.60 AT+WIFIWEPKEY

Description

This is a generic AT command for updating and reading wep key1 of WIFI

Syntax

Command	Possible responses
+ WIFIWEPKEY=<a>,[<key>] <a>: w/W: writewep key1 r/R: read wep key1 < key>: wep key1	If <a>=w/W OK – if no error happens +CME ERROR: <err> <a> = r/R + WIFIWEPKEY: <key> +CME ERROR: <err>

9.61 AT+WIFIWPAKEY

Description

This is a generic AT command for updating and reading wpa key1 of WIFI

Syntax

Command	Possible responses
+ WIFIWPAKEY =<a>,[<key>] <a>: w/W: write wpa key r/R: read wpa key < key>: wpa key	If <a>=w/W OK – if no error happens +CME ERROR: <err> <a> = r/R + WIFIWPAKEY: <key> +CME ERROR: <err>

9.62 AT+WIFIWPA2KEY

Description

This is a generic AT command for updating and reading wpa2 key of WIFI

Syntax

Command	Possible responses
+ WIFIWPA2KEY =<a>,[<key>] <a>: w/W: write wpa2 key r/R: read wpa2 key	If <a>=w/W OK – if no error happens +CME ERROR: <err>

< key>: wpa2 key	<a> = r/R + WIFIWPA2KEY: <key> +CME ERROR: <err>

9.63 AT+WIFIMIXEDKEY

Description

This is a generic AT command for updating and reading mixed key of WIFI

Syntax

Command	Possible responses
+WIFIMIXEDKEY=<a>,[<key>] <a>: w/W: write mixed key r/R: read mixed key < key>: mixed key	If <a>=w/W OK – if no error happens +CME ERROR: <err> <a> = r/R +WIFIMIXEDKEY: <key> +CME ERROR: <err>

9.64 AT+MRD_WIFIPASWD

Description

This is a generic AT command used to write,read or delete the WIFI Password in ReliableData.bin.

Syntax

Command	Possible responses
+MRD_WIFIPASWD=<a>,[<wifipasswd>] Note: <a> W: write the WIFI password in ReliableData r: read the WIFI password in ReliableData d: delete the WIFI password in ReliableData <wifipaswd> Wifi password, * aximum length is 32	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – ifWIFI password already exist in RD – if any parameters are not right – if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist <a> = R +MRD_WIFIPASWD: <wifipassword> – if wifipasswordexist in RD +CME ERROR: <err> if wifipassworddoes not exist
+ MRD_WIFIPASWD?	+ MRD_WIFIPASWD:< wifipassword> – if wifipasswordexist in RD +CME ERROR:<err> If wifipassworddose not exit

9.65 AT*L1DEBUG

Description

This AT is used to get internal state in L1.

L1 related document will describe detailed usage on parameter.

Syntax

Command	Possible responses
*L1DEBUG=<data>	OK/+CME ERROR: <err> Unsolicited result code: AT*L1DEBUG:<info>

< data >: input hex string, maximum size is 10 bytes.

< info >: returned string, maximum size is 256 bytes

Example:

AT*L1DEBUG=A0F0

*L1DEBUG:020772442010FC5200800301

9.66 AT+WIFISTA?

Description

This AT is used to get all client information that connect with WiFi

Syntax

Command	Possible responses
AT+WIFISTA?	MAC: XX: XX: XX: XX: XX: XX Power mfg status: active/power save RSSI: value

9.67 AT*MRD_PREPWD

Description

This is a generic AT command for writing PREPWD (pre-password) to RD (reliable data).

Syntax

Command	Possible responses
*MRD_PREPWD=<a>,[<d>] Example: AT*MRD_PREPWD=W,0123456789abcdef AT*MRD_ PREPWD =R AT*MRD_ PREPWD =D	If <a>=W OK – if no error happens +CME ERROR: <err> – if UE is not in production mode – if PREPWD already exist in RD – if any parameters are not right

	– if error when write RD if <a>=D OK – if no error in deleting +CME ERROR: <err> – if file does not exist If <a>=R *MRD_ PREPWD: <d> +CME ERROR: <err> – if PREPWD does not exist
*MRD_ PREPWD =?	*MRD_ PREPWD =<a>,[<d>]

<a>:
W: write PREPWD to RD
D: delete PREPWD from RD
R: read PREPWD from RD
<d>: Date string, must be 16 ASCII strings like 0123456789abcdef

AT Command – CCI Primitive Mapping

Table 5: Summary of Indication Commands

AT commands		CCI Primitives
“AT+CGSN”, “AT+GSN”, “AT+GSN?”		CI_DEV_PRIM_GET_SERIALNUM_ID_REQ
“AT+CIMI”		CI_SIM_PRIM_GET_SUBSCRIBER_ID_REQ
“ATA”		CI_CC_PRIM_ANSWER_CALL_REQ
“ATD[Tt]*99…#”		CI_PS_PRIM_ENTER_DATA_STATE_REQ
“ATD**04*…#”, “ATD**05*…#”, “ATD**042*…#”, “ATD**052*…#”		CI_SIM_PRIM_OPERCHV_REQ
Call forwarding MMI code (SC=21/67/61/62/ 002/004)	“ATD*SC…#”, “ATD#SC…#”	CI_SS_PRIM_SET_CF_ACTIVATION_REQ
	“ATD*#SC…#”	CI_SS_PRIM_INTERROGATE_CF_INFO_REQ
	“ATD*SC…#”, “ATD**SC…#”	CI_SS_PRIM_REGISTER_CF_INFO_REQ
	“ATD##SC…#”	CI_SS_PRIM_ERASE_CF_INFO_REQ
Call waiting MMI code (SC=43)	“ATD*SC…#”, “ATD#SC…#”, “ATD**SC…#”	CI_SS_PRIM_SET_CW_ACTIVATION_REQ
	“ATD*#SC…#”	CI_SS_PRIM_GET_ACTIVE_CW_CLASSES_REQ
COLP MMI code (SC=76)	“ATD*#SC…#”	CI_SS_PRIM_GET_COLP_STATUS_REQ
CLIR MMI code (SC=31)	“ATD*#SC…#”	CI_SS_PRIM_GET_CLIR_STATUS_REQ
COLR MMI code (SC=77)	“ATD*#SC…#”	CI_SS_PRIM_GET_COLR_STATUS_REQ
CLIP MMI code (SC=30)	“ATD*#SC…#”	CI_SS_PRIM_GET_CLIP_STATUS_REQ
CNAP MMI code (SC=300)	“ATD*#SC…#”	CI_SS_PRIM_GET_CNAP_STATUS_REQ
Change call barring password MMI code (SC=03)	“ATD*SC…#”, “ATD#SC…#”, “ATD*#SC…#”, “ATD**SC…#”, “ATD*#SC…#”	CI_SS_PRIM_CHANGE_CB_PASSWORD_REQ
Call barring MMI code (SC=33/35/330/331 /332/333/351/353)	“ATD*SC…#”, “ATD#SC…#”, “ATD**SC…#”	CI_SS_PRIM_SET_CB_ACTIVATE_REQ
	“ATD*#SC…#”	CI_SS_PRIM_GET_CB_MAP_STATUS_REQ
USSD MMI code (SC=60)	“ATD*SC…#”, “ATD**SC…#”	if USSD operations is idle: CI_SS_PRIM_START_USSD_SESSION_REQ, otherwise: CI_SS_PRIM_RECEIVED_USSD_INFO_RSP
“ATD##3424*9#”		CI_DEV_PRIM_COMM_ASSERT_REQ
“ATD<number>[li][;]”		CI_CC_PRIM_MAKE_CALL_REQ
“ATH”		CI_CC_PRIM_RELEASE_CALL_REQ
“AT+CBST=”		CI_CC_PRIM_SET_DATA_BSTYPE_REQ
“AT+CBST?”		CI_CC_PRIM_GET_DATA_BSTYPE_REQ
“AT+CBST=?”		CI_CC_PRIM_GET_SUPPORTED_DATA_BSTYPES_REQ
“AT+CRLP=”		CI_CC_PRIM_SET_RLP_CFG_REQ
“AT+CRLP?”		CI_CC_PRIM_GET_RLP_CFG_REQ
“AT+CRLP=?”		CI_CC_PRIM_GET_RLP_CAP_REQ
“AT+ECHUPVT=<cause>”		CI_CC_PRIM_REFUSE_CALL_REQ
“AT+ECHUPVT”		CI_CC_PRIM_RELEASE_CALL_REQ

“AT+CREG=”	CI_MM_PRIM_SET_REGRESULT_OPTION_REQ
“AT+CREG?”	CI_MM_PRIM_GET_REGRESULT_INFO_REQ
“AT+CIND=”	CI_MM_PRIM_ENABLE_NETWORK_MODE_IND_REQ
“AT+COPS=0”	CI_MM_PRIM_AUTO_REGISTER_REQ
“AT+COPS=1/4,….”	CI_MM_PRIM_MANUAL_REGISTER_REQ
“AT+COPS=2”	CI_MM_PRIM_DEREGISTER_REQ
“AT+COPS=3,….”	CI_MM_PRIM_SET_ID_FORMAT_REQ
“AT+COPS?”	CI_MM_PRIM_GET_CURRENT_OPERATOR_INFO_REQ
“AT+COPS=?”	CI_MM_PRIM_GET_NUM_NETWORK_OPERATORS_REQ
“AT+CPOL=[<index>],[<format>],<oper>”	CI_MM_PRIM_ADD_PREFERRED_OPERATOR_REQ
“AT+CPOL=<index>”	CI_MM_PRIM_DELETE_PREFERRED_OPERATOR_REQ
“AT+CPOL=,<format>”	CI_MM_PRIM_SET_ID_FORMAT_REQ
“AT+CLCK=<call barring facility>, 0/1”	CI_SS_PRIM_SET_CB_ACTIVATE_REQ
“AT+CLCK=<call barring facility>, 2”	CI_SS_PRIM_GET_CB_MAP_STATUS_REQ
“AT+CLCK=<MEP facility>,…”	CI_SIM_PRIM_PERSONALIZEME_REQ
“AT+CLCK=<other facility>,…”	CI_SIM_PRIM_LOCK_FACILITY_REQ
“AT+CPWD=<call barring facility>,….”	CI_SS_PRIM_CHANGE_CB_PASSWORD_REQ
“AT+CPWD=SC/P2,….”	CI_SIM_PRIM_OPERCHV_REQ
“AT+CLIP=”	CI_SS_PRIM_SET_CLIP_OPTION_REQ
“AT+CLIP?”	CI_SS_PRIM_GET_CLIP_STATUS_REQ
“AT+CLIR=”	CI_SS_PRIM_SET_CLIR_OPTION_REQ
“AT+CLIR?”	CI_SS_PRIM_GET_CLIR_STATUS_REQ
“AT+COLP=”	CI_SS_PRIM_SET_COLP_OPTION_REQ
“AT+COLP?”	CI_SS_PRIM_GET_COLP_STATUS_REQ
“AT+COLR?”	CI_SS_PRIM_GET_COLR_STATUS_REQ
“AT+CNAP=”	CI_SS_PRIM_SET_CNAP_OPTION_REQ
“AT+CNAP?”	CI_SS_PRIM_GET_CNAP_STATUS_REQ
“AT+CCFC=<reason>,0/1”	CI_SS_PRIM_SET_CF_ACTIVATION_REQ
“AT+CCFC=<reason>,2”	CI_SS_PRIM_INTERROGATE_CF_INFO_REQ
“AT+CCFC=<reason>,3”	CI_SS_PRIM_REGISTER_CF_INFO_REQ
“AT+CCFC=<reason>,4”	CI_SS_PRIM_ERASE_CF_INFO_REQ
“AT+CCWA=,2”	CI_SS_PRIM_GET_ACTIVE_CW_CLASSES_REQ
“AT+CCWA=,0/1”	CI_SS_PRIM_SET_CW_ACTIVATION_REQ
“AT+CHLD=19”	CI_CC_PRIM_RELEASE_ALL_CALLS_REQ
“AT+CHLD=1/1X” (X is from 1 to 7)	CI_CC_PRIM_RELEASE_CALL_REQ

“AT+CHLD=0/2/2X/3/4” (X is from 1 to 7)	CI_CC_PRIM_MANIPULATE_CALLS_REQ
“AT+CUSD=2”	CI_SS_PRIM_ABORT_USSD_SESSION_REQ
“AT+CUSD=0/1, ##3424*9#”	CI_DEV_PRIM_COMM_ASSERT_REQ
“AT+CUSD=0/1, ….”	If USSD operations is idle: CI_SS_PRIM_START_USSD_SESSION_REQ, otherwise: CI_SS_PRIM_RECEIVED_USSD_INFO_RSP
“AT+CAOC=0”	CI_CC_PRIM_GET_CCM_VALUE_REQ
“AT+CAOC=1”	CI_SS_PRIM_SET_CCM_OPTION_REQ
“AT+CAOC=2”	CI_SS_PRIM_SET_CCM_OPTION_REQ
“AT+CAOC?”	CI_SS_PRIM_GET_CCM_OPTION_REQ
“AT+VTS=<DTMF string>, [<duration>]”	If <duration> is not equal previous set CI_CC_PRIM_SET_DTMF_PACING_REQ, CI_CC_PRIM_SEND_DTMF_STRING_REQ otherwise: CI_CC_PRIM_SEND_DTMF_STRING_REQ
“AT+VTD=”	CI_CC_PRIM_SET_DTMF_PACING_REQ
“AT+VTD?”	CI_CC_PRIM_GET_DTMF_PACING_REQ
“AT+CSSN=”	CI_SS_PRIM_SET_SS_NOTIFY_OPTIONS_REQ
“AT+CSSN?”	CI_SS_PRIM_GET_SS_NOTIFY_OPTIONS_REQ
“AT+CLCC”	CI_CC_PRIM_LIST_CURRENT_CALLS_REQ
“AT+CFUN=”	CI_DEV_PRIM_SET_FUNC_REQ
“AT+CFUN?”	CI_DEV_PRIM_GET_FUNC_REQ
“AT+CPIN=”	CI_SIM_PRIM_OPERCHV_REQ
“AT+CPIN?”	CI_SIM_PRIM_GET_PIN_STATE_REQ
“AT+CPIN2=”	CI_SIM_PRIM_OPERCHV_REQ
“AT+CPIN2?”	CI_SIM_PRIM_GET_PIN_STATE_REQ
“AT+EPIN?”	CI_SIM_PRIM_GET_EPIN_STATE_REQ
“AT*SIMDETEC=”	CI_SIM_PRIM_GET_PIN_STATE_REQ
“AT*CTZR?”	CI_MM_PRIM_GET_NITZ_INFO_REQ
“AT+CPBS=”	CI_PB_PRIM_SELECT_PHONEBOOK_REQ
“AT+CPBS?”	CI_PB_PRIM_GET_PHONEBOOK_INFO_REQ
“AT+CPBS=?”	CI_PB_PRIM_GET_SUPPORTED_PHONEBOOKS_REQ
“AT+CPBR=<index1>[,<index2>]”	(Numbers of below request dependent on <index1> and <index2> value set) CI_PB_PRIM_READ_PHONEBOOK_ENTRY_REQ ……
“AT+CPBR=?”	CI_PB_PRIM_GET_PHONEBOOK_INFO_REQ
“AT+CPBW=<index>”	CI_PB_PRIM_DELETE_PHONEBOOK_ENTRY_REQ
“AT+CPBW=<index>,<number>,….”	If index is valid: CI_PB_PRIM_REPLACE_PHONEBOOK_ENTRY_REQ Otherwise: CI_PB_PRIM_ADD_PHONEBOOK_ENTRY_REQ
“AT+CSIM=”	CI_SIM_PRIM_EXECCMD_REQ
“AT+CRSM=”	CI_SIM_PRIM_GENERIC_CMD_REQ
“AT+MSTK=0”	CI_SIM_PRIM_ENABLE_SIMAT_INDS_REQ
“AT+MSTK=1”	CI_SIM_PRIM_DOWNLOADPROFILE_REQ
“AT+MSTK=2”	CI_SIM_PRIM_GET_SIMAT_NOTIFY_CAP_REQ
“AT+MSTK=3”	CI_SIM_PRIM_GET_TERMINALPROFILE_REQ
“AT+MSTK=4”	CI_SIM_PRIM_ENVELOPE_CMD_REQ
“AT+MSTK=11”	CI_SIM_PRIM_PROACTIVE_CMD_RSP
“AT+MSTK=12”	CI_SIM_PRIM_GET_CALL_SETUP_ACK_RSP

“AT+CACM=[<password>]”	If <password> specified: CI_SIM_PRIM_OPERCHV_REQ CI_CC_PRIM_RESET_ACM_VALUE_REQ Otherwise: CI_CC_PRIM_RESET_ACM_VALUE_REQ
“AT+CACM?”	CI_CC_PRIM_GET_ACM_VALUE_REQ
“AT+CAMM=[<acmmax>[,<passwd>]]”	If <password> specified: CI_SIM_PRIM_OPERCHV_REQ CI_CC_PRIM_SET_ACMMAX_VALUE_REQ Otherwise: CI_CC_PRIM_SET_ACMMAX_VALUE_REQ
“AT+CAMM?”	CI_CC_PRIM_GET_ACMMAX_VALUE_REQ
“AT+CCWE=”	CI_SS_PRIM_SET_AOC_WARNING_ENABLE_REQ
“AT+CCWE?”	CI_SS_PRIM_GET_AOC_WARNING_ENABLE_REQ
“AT+CGREG=”	CI_PS_PRIM_ENABLE_NW_REG_IND_REQ
“AT+CGREG?”	CI_PS_PRIM_GET_NW_REG_STATUS_REQ
“AT+CGATT=”	CI_PS_PRIM_SET_ATTACH_STATE_REQ CI_PS_PRIM_SET_DETACH_STATE_REQ
“AT+CGATT?”	CI_PS_PRIM_GET_ATTACH_STATE_REQ
“AT+CGACT=”	CI_PS_PRIM_SET_PDP_CTX_ACT_STATE_REQ
“AT+CGACT?”	CI_PS_PRIM_GET_PDP_CTX_REQ
“AT+CGDATA=”	CI_PS_PRIM_ENTER_DATA_STATE_REQ
“AT+CGDCONT=<cid>”	CI_PS_PRIM_DELETE_PDP_CTX_REQ
“AT+CGDCONT=<cid>,….”	CI_PS_PRIM_DEFINE_PDP_CTX_REQ
“AT+CGDCONT?”	(There are 8 below request) CI_PS_PRIM_GET_PDP_CTX_REQ ……
“AT+CGDSCONT=<cid>”	CI_PS_PRIM_DELETE_SEC_PDP_CTX_REQ
“AT+CGDSCONT=<cid>,….”	CI_PS_PRIM_DEFINE_SEC_PDP_CTX_REQ
“AT+CGDSCONT?	(There are 8 below request) CI_PS_PRIM_GET_SEC_PDP_CTX_REQ ……
“AT+CGDSCONT=?”	CI_PS_PRIM_GET_PDP_CTX_REQ
“AT+CGQMIN=”	CI_PS_PRIM_SET_QOS_REQ
“AT+CGQMIN?”	(There are 8 below request) CI_PS_PRIM_GET_QOS_REQ ……
“AT+CGQMIN=?”	CI_PS_PRIM_GET_QOS_CAPS_REQ
“AT+CGQREQ=”	CI_PS_PRIM_SET_QOS_REQ
“AT+CGQREQ?”	(There are 8 below request) CI_PS_PRIM_GET_QOS_REQ ……
“AT+CGQREQ=?”	CI_PS_PRIM_GET_QOS_CAPS_REQ
“AT+CGEQREQ=”	CI_PS_PRIM_SET_3G_QOS_REQ
“AT+CGEQREQ?”	(There are 8 below request) CI_PS_PRIM_GET_3G_QOS_REQ ……
“AT+CGEQREQ=?”	CI_PS_PRIM_GET_3G_QOS_CAPS_REQ
“AT+CGEQMIN=”	CI_PS_PRIM_SET_3G_QOS_REQ
“AT+CGEQMIN?”	(There are 8 below request) CI_PS_PRIM_GET_3G_QOS_REQ ……
“AT+CGEQMIN=?”	CI_PS_PRIM_GET_3G_QOS_CAPS_REQ
“AT+GETIP=”	CI_PS_PRIM_GET_PDP_CTX_REQ
“AT+CMSS=”	CI_MSG_PRIM_SEND_STORED_MESSAGE_REQ
“AT+CMGS=”	CI_MSG_PRIM_SEND_MESSAGE_REQ
“AT+CMGR=”	CI_MSG_PRIM_READ_MESSAGE_REQ
“AT+CMGW=”	CI_MSG_PRIM_WRITE_MESSAGE_REQ
“AT+CSCA=”	CI_MSG_PRIM_SET_SMSC_ADDR_REQ

“AT+CSCA?”	CI_MSG_PRIM_GET_SMSC_ADDR_REQ
“AT+CSCB=”	CI_MSG_PRIM_SET_CBM_TYPES_REQ
“AT+CSCB?”	CI_MSG_PRIM_GET_CBM_TYPES_REQ
“AT+CNMI=”	CI_MSG_PRIM_CONFIG_MSG_IND_REQ
“AT+CGSMS=”	CI_MSG_PRIM_SET_MOSMS_SERVICE_REQ
“AT+CGSMS?”	CI_MSG_PRIM_GET_MOSMS_SERVICE_REQ
“AT+CMGD=,0/1/2/3”	CI_MSG_PRIM_DELETE_MESSAGE_REQ
“AT+CMGD=,4”	(Numbers of CI_MSG_PRIM_DELETE_MESSAGE_REQ dependent on total message numbers in memory) CI_MSG_PRIM_GET_CURRENT_STORAGE_INFO_REQ, CI_MSG_PRIM_DELETE_MESSAGE_REQ ……
“AT+CMGD=?”	(Numbers of CI_MSG_PRIM_READ_MESSAGE_REQ dependent on total message numbers in memory) CI_MSG_PRIM_GET_CURRENT_STORAGE_INFO_REQ CI_MSG_PRIM_READ_MESSAGE_REQ ……
“AT+CMGL=”	(Numbers of CI_MSG_PRIM_READ_MESSAGE_REQ dependent on total message numbers in memory) CI_MSG_PRIM_GET_CURRENT_STORAGE_INFO_REQ CI_MSG_PRIM_READ_MESSAGE_REQ
“AT+CSMS=”	CI_MSG_PRIM_SELECT_SERVICE_REQ
“AT+CSMS?”	CI_MSG_PRIM_GET_CURRENT_SERVICE_INFO_REQ
“AT+CSMS=?”	CI_MSG_PRIM_GET_SUPPORTED_SERVICES_REQ
“AT+CPMS=”	CI_MSG_PRIM_SELECT_STORAGES_REQ
“AT+CPMS?”	CI_MSG_PRIM_GET_CURRENT_STORAGE_INFO_REQ
“AT+CPMS=?”	CI_MSG_PRIM_GET_SUPPORTED_STORAGES_REQ
“AT+CNMA=”	CI_MSG_PRIM_NEWMSG_RSP
“AT*POWERIND=”	CI_DEV_PRIM_AP_POWER_NOTIFY_REQ
“AT*RSTMemFull”	CI_MSG_PRIM_RESET_MEMCAP_FULL_REQ
“AT+EEMOPT=”	CI_DEV_PRIM_SET_ENGMODE_REPORT_OPTION_REQ
“AT+VPDUS”	CI_DAT_PRIM_GET_MAX_PDU_SIZE_REQ
“AT+CPUC=<currency>,<ppu>[,<passwd>]”	If <password> specified: CI_SIM_PRIM_OPERCHV_REQ CI_CC_PRIM_SET_PUCT_INFO_REQ Otherwise: CI_CC_PRIM_SET_PUCT_INFO_REQ
“AT+CPUC?”	CI_CC_PRIM_GET_PUCT_INFO_REQ
“AT^SCPBR=?”	CI_PB_PRIM_GET_PHONEBOOK_INFO_REQ
“AT^SCPBR=”	CI_PB_PRIM_READ_PHONEBOOK_ENTRY_REQ
“AT+CPBW=?”	CI_PB_PRIM_GET_PHONEBOOK_INFO_REQ
“AT+CPBW=”	Delete: CI_PB_PRIM_DELETE_PHONEBOOK_ENTRY_REQ Else: CI_PB_PRIM_REPLACE_PHONEBOOK_ENTRY_REQ Or CI_PB_PRIM_ADD_PHONEBOOK_ENTRY_REQ
“AT^LKSMSSTA=”	CI_MSG_PRIM_LOCK_SMS_STATUS_REQ
“AT+CHUP”	CI_CC_PRIM_RELEASE_CALL_REQ
“AT+CSTA=”	CI_CC_PRIM_SET_NUMBERTYPE_REQ
“AT+CSTA?”	CI_CC_PRIM_GET_NUMBERTYPE_REQ
“AT+CDIP=”	CI_SS_PRIM_SET_CDIP_OPTION_REQ
“AT+CDIP?”	CI_SS_PRIM_GET_CDIP_STATUS_REQ
“AT+CMOD=”	CI_CC_PRIM_SET_CALLMODE_REQ
“AT+CMOD?”	CI_CC_PRIM_GET_CALLMODE_REQ
“AT+CMOD=?”	CI_CC_PRIM_GET_CALLMODE_REQ
“AT^SYSCONFIG?”	CI_DEV_PRIM_GET_BAND_MODE_REQ
“AT^SYSCONFIG=”	CI_DEV_PRIM_SET_BAND_MODE_REQ
“AT+CGCMOD=”	CI_PS_PRIM_MODIFY_PDP_CTX_REQ

“AT+CGCMOD?”	CI_PS_PRIM_GET_PDP_CTXS_ACT_STATE_REQ
“AT+CNUM”	(Numbers of CI_MM_PRIM_GET_SUBSCRIBER_INFO_REQ dependent on MSISDN numbers of subscriber) CI_MM_PRIM_GET_NUM_SUBSCRIBER_NUMBERS_REQ CI_MM_PRIM_GET_SUBSCRIBER_INFO_REQ ……
“AT+CPBF=”	(Numbers of CI_PB_PRIM_READ_PHONEBOOK_ENTRY_REQ dependent on total number of entries) CI_PB_PRIM_GET_PHONEBOOK_INFO_REQ CI_PB_PRIM_READ_PHONEBOOK_ENTRY_REQ ……
“AT+CGTFT=<cid>”	CI_PS_PRIM_DELETE_TFT_REQ
“AT+CGTFT=<cid>,….”	CI_PS_PRIM_DEFINE_TFT_FILTER_REQ
“AT+CGTFT?”	(There are 8 below request) CI_PS_PRIM_GET_PDP_CTX_REQ ……
“AT*BAND=”	CI_DEV_PRIM_SET_BAND_MODE_REQ
“AT*ENVSIM”	CI_SIM_PRIM_SET_VSIM_REQ
“AT*BAND?”	CI_DEV_PRIM_GET_BAND_MODE_REQ
“AT*BAND=?”	CI_DEV_PRIM_GET_SUPPORTED_BAND_MODE_REQ
“AT*BANDIND=”	CI_MM_PRIM_SET_BANDIND_REQ
“AT*BANDIND?”	CI_MM_PRIM_GET_BANDIND_REQ
“AT+ERGA=”	CI_SIM_PRIM_GENERIC_CMD_REQ
“AT+ERTCA=”	CI_SIM_PRIM_GENERIC_CMD_REQ
“AT*Cell=”	CI_MM_PRIM_CELL_LOCK_REQ
“AT*CGSN?”	CI_DEV_PRIM_GET_SV_REQ
“AT+CGEQOS?”	CI_PS_PRIM_GET_4G_QOS_REQ
“AT+CGEQOS=?”	CI_PS_PRIM_GET_4G_QOS_CAPS_REQ
“AT+CGEQOS=”	CI_PS_PRIM_SET_4G_QOS_REQ Or CI_PS_PRIM_DELETE_PDP_CTX_REQ
“AT+CEREG?”	CI_PS_PRIM_GET_4G_NW_REG_STATUS_REQ
“AT+CEREG=”	CI_PS_PRIM_ENABLE_4G_NW_REG_IND_REQ
“AT+CGCONTRDP=?”	CI_PS_PRIM_READ_4G_PDP_CTXS_ACT_DYN_PARA_REQ
“AT+CGCONTRDP=”	CI_PS_PRIM_READ_4G_PDP_CTX_DYN_PARA_REQ
“AT+CGSCONTRDP=?”	CI_PS_PRIM_READ_4G_SEC_PDP_CTXS_ACT_DYN_PARA_REQ
“AT+CGSCONTRDP=”	CI_PS_PRIM_READ_4G_SEC_PDP_CTXS_DYN_PARA_REQ
“AT+CGTFTRDP=?”	CI_PS_PRIM_READ_4G_TRAFFIC_FLOW_TEMP_DYN_PARA_CAPS_REQ
“AT+CGTFTRDP=”	CI_PS_PRIM_READ_4G_TRAFFIC_FLOW_TEMP_DYN_PARA _REQ
“AT+CGEQOSRDP=?”	CI_PS_PRIM_READ_4G_QOS_DYN_PARA_CAPS_REQ
“AT+CGEQOSRDP=”	CI_PS_PRIM_READ_4G_QOS_DYN_PARA_REQ
“AT+CGEREP?”	CI_PS_PRIM_GET_4G_EVET_REP_REQ
“AT+CGEREP=?”	CI_PS_PRIM_GET_4G_EVET_REP_CAPS_REQ
“AT+CGEREP=”	CI_PS_PRIM_SET_4G_EVET_REP_REQ
“AT+CVMOD?”	CI_PS_PRIM_GET_4G_VOICE_CALL_MODE_REQ
“AT+CVMOD=?”	CI_PS_PRIM_GET_4G_VOICE_CALL_MODE_CAPS_REQ
“AT+CVMOD=”	CI_PS_PRIM_SET_4G_VOICE_CALL_MODE_REQ
“AT+CEMODE?”	CI_PS_PRIM_GET_4G_MODE_REQ
“AT+CEMODE=?”	CI_PS_PRIM_GET_4G_MODE_CAPS_REQ
“AT+CEMODE=”	CI_PS_PRIM_SET_4G_MODE_REQ
“AT+CGPADDR=?”	CI_PS_PRIM_GET_PDP_ADDR_LIST_REQ
“AT+CGPADDR=”	CI_PS_PRIM_GET_PDP_ADDR _REQ
“AT+EEMOPT=”	CI_DEV_PRIM_SET_ENGMODE_REPORT_OPTION_REQ
“AT+LPNWUL=”	CI_DEV_PRIM_LP_NWUL_MSG_REQ
“AT+LPLOCVR=”	CI_SS_PRIM_LOCATION_VERIFY_RSP
“AT*EHSDPA=”	CI_DEV_PRIM_ENABLE_HSDPA_REQ

“AT*EHSDPA?”	CI_DEV_PRIM_GET_HSDPA_STATUS_REQ
“AT*PSGAAT=”	CI_PS_PRIM_ENABLE_POWERON_AUTO_ATTACH_REQ
“AT*MEPCG=”	CI_SIM_PRIM_READ_MEP_CODES_REQ
“AT*CLCK=”	CI_SIM_PRIM_PERSONALIZEME_REQ
“AT*FASTDORM”	CI_PS_PRIM_FAST_DORMANT_REQ
“AT+NASCHK=”	CI_MM_PRIM_SET_NAS_INTEGRITY_CHECK_REQ
AT command Indications	
“CRING/RING”	CI_CC_PRIM_INCOMING_CALL_IND
“+CLCC”	CI_CC_PRIM_LIST_CURRENT_CALLS_IND
“+CSSI”	CI_CC_PRIM_SSI_NOTIFY_IND
“+CSSU”	CI_CC_PRIM_SSU_NOTIFY_IND
“+CHLD”	CI_CC_PRIM_HELD_CALL_IND
“+CCWA”	CI_CC_PRIM_CALL_WAITING_IND
“+CLIP”	CI_CC_PRIM_CLIP_INFO_IND
“+CNAP”	CI_CC_PRIM_CLIP_INFO_IND
“+COLP”	CI_CC_PRIM_COLP_INFO_IND
“+CCCM”	CI_CC_PRIM_CCM_UPDATE_IND
“+CREG”	CI_MM_PRIM_REGRESULT_IND
“+NITZ”	CI_MM_PRIM_NITZ_INFO_IND
“+CSQ”	CI_MM_PRIM_SIGQUALITY_INFO_IND
“^MODE”	CI_MM_PRIM_NETWORK_MODE_IND
“*BANDIND”	CI_MM_PRIM_BANDIND_IND
“*CellLock”	CI_MM_PRIM_CELL_LOCK_IND
“+MSRI”	CI_MM_PRIM_SERVICE_RESTRICTIONS_IND
“+CUSD”	CI_SS_PRIM_RECEIVED_USSD_INFO_IND
“+LPLOC”	CI_SS_PRIM_LOCATION_IND
“+EEMGINFOBASIC”, “+EEMGINFOSVC”, “+EEMGINFOPS”, “+EEMGINFONC”, “+EEMGINBFTM”	CI_DEV_PRIM_GSM_ENGMODE_INFO_IND
“+EEMUMTSSVC”	CI_DEV_PRIM_UMTS_ENGMODE_SVCCELL_INFO_IND
“+EEMUMTSINTRA”	CI_DEV_PRIM_UMTS_ENGMODE_INTRAFREQ_INFO_IND
“+ EEMUMTSINTER”	CI_DEV_PRIM_UMTS_ENGMODE_INTERFREQ_INFO_IND
“+EEMUMTSINTERRAT”	CI_DEV_PRIM_UMTS_ENGMODE_INTERRAT_INFO_IND
“+LPNWDL”	CI_DEV_PRIM_LP_NWDL_MSG_IND
“+LPSTATE”	CI_DEV_PRIM_LP_RRC_STATE_IND
“+ LPMEAST”	CI_DEV_PRIM_LP_MEAS_TERMINATE_IND
“+LPRESET”	CI_DEV_PRIM_LP_RESET_STORED_UE_POS_IND
“^DEVEI”	CI_DEV_PRIM_EVENT_REPORT_IND
“^DNPR”	CI_DEV_PRIM_WIRELESS_PARAM_IND
“^DUSR”	CI_DEV_PRIM_SIGNALING_REPORT_IND
“+MPBK”	CI_PB_PRIM_PHONEBOOK_READY_IND
“+CPIN”	CI_SIM_PRIM_DEVICE_IND
“+MSTK: 11”	CI_SIM_PRIM_PROACTIVE_CMD_IND
“+MSTK: 15”	CI_SIM_PRIM_SIMAT_CC_STATUS_IND
“+MSYK: 16”	CI_SIM_PRIM_SIMAT_SEND_CALL_SETUP_RSP_IND
“+MSTK: 20”	CI_SIM_PRIM_SIMAT_SEND_SS_USSD_RSP_IND
“+MSTK: 18”	CI_SIM_PRIM_SIMAT_SM_CONTROL_STATUS_IND
“+MSTK: 19”	CI_SIM_PRIM_SIMAT_SEND_SM_RSP_IND
“+MSTK: 12”	CI_SIM_PRIM_GET_CALL_SETUP_ACK_IND
“+MSTK: 13”	CI_SIM_PRIM_SIMAT_DISPLAY_INFO_IND
“+MSTK: 14”	CI_SIM_PRIM_ENDATSESSION_IND
“*EUICC”	CI_SIM_PRIM_CARD_IND
“+MMSG”	CI_MSG_PRIM_STORAGE_STATUS_IND

“+CMTI”	CI_MSG_PRIM_NEWMSG_INDEX_IND
“+CMT/+CDS/+CBM”	CI_MSG_PRIM_NEWMSG_IND
“+CGEV: NW DEACT”	CI_PS_PRIM_PDP_CTX_DEACTED_IND
“+CGREG”	CI_PS_PRIM_NW_REG_IND
“+CGEV: NW DETACH”	CI_PS_PRIM_DETACHED_IND
“CONNECT”	CI_DAT_PRIM_OK_IND
“NO CARRIER”	CI_DAT_PRIM_NOK_IND
^CARDMODE	CI_SIM_PRIM_CARD_IND
AT+BGLTEPLMN=[<mode>[,<format>[,<oper>[,<Act>]]]]	CI_MM_PRIM_SET_LTE_BACKGOUND_INFO_REQ
AT+BGLTEPLMN?	CI_MM_PRIM_GET_LTE_BACKGOUND_INFO_REQ
AT+BGLTEPLMN=?	CI_MM_PRIM_GET_NUM_LTE_NETWORK_OPERATORS_REQ CI_MM_PRIM_GET_LTE_NETWORK_OPERATORS_INFO_REQ
“AT*TDTR=”	CI_DEV_PRIM_SET_TD_MODE_TX_RX_REQ
“AT*GSMTR=”	CI_DEV_PRIM_SET_GSM_MODE_TX_RX_REQ
“AT*TGCTRL=0”	CI_DEV_PRIM_SET_TD_MODE_LOOPBACK_REQ
“AT*TGCTRL=1”	CI_DEV_PRIM_SET_GSM_CONTROL_INTERFACE_REQ
“AT*WBTR=””	CI_DEV_PRIM_SET_WCDMA_MODE_TX_RX_REQ

Note1: If a request CCI primitive is “XXX_XXX_REQ”, then the confirm CCI primitive of this request is “XXX_XXX_CNF”.

Note2: If a single AT command mapping to multiple CCI primitives, the later request can be sent only after receive the success confirm of previous request.

Note3:[Tt] means this position can be character ‘T’ or character ‘t’ or nothing, so as [Ii] and [;].