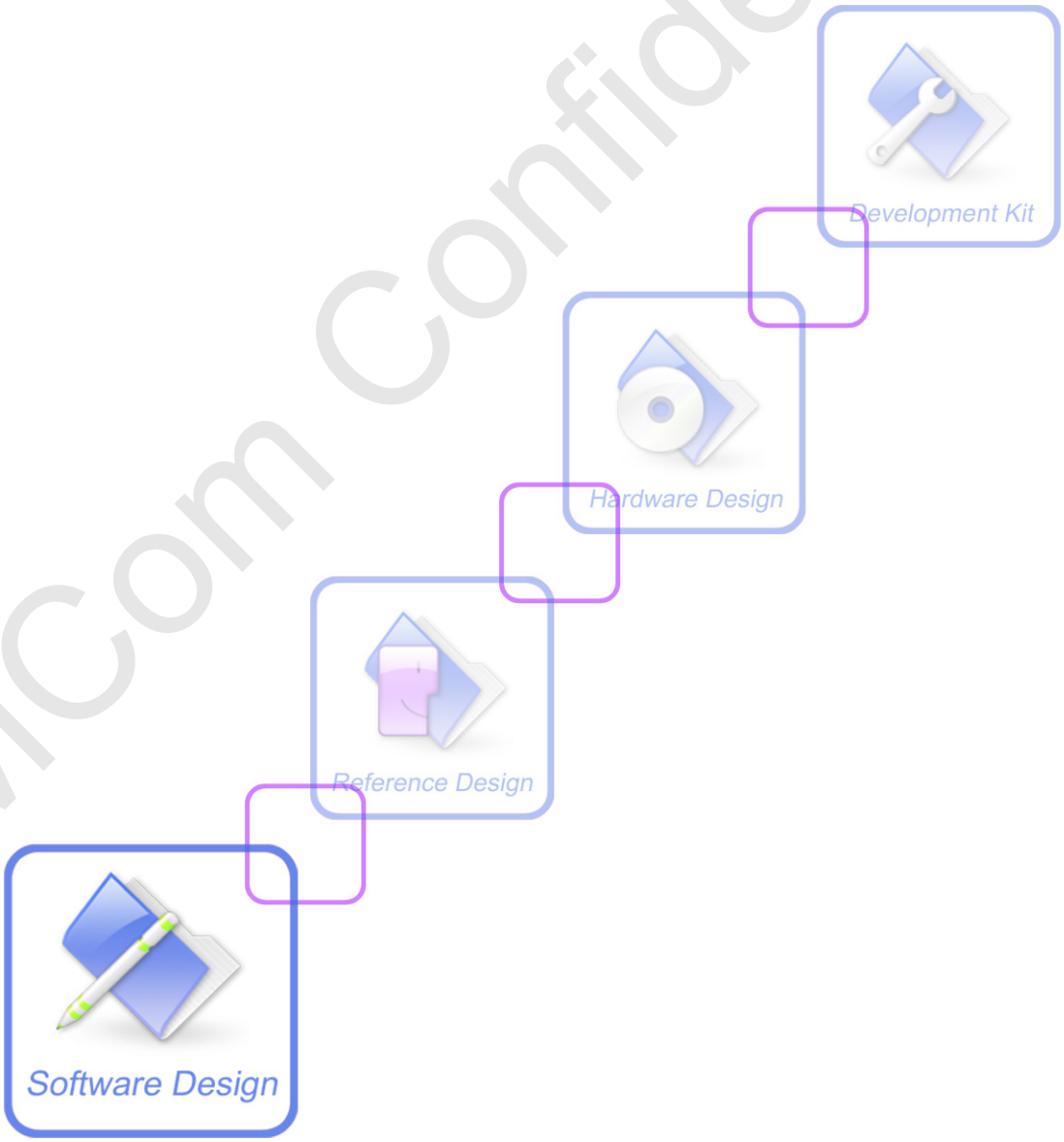
SIM7906_SIM7912 Series_AT Command Manual _V1.01



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Version History

Version	Date	Chapter	What is new
V1.00	2019-05-28		New version
V1.01	2019-06-12		Add Sim7912 support
V1.01	2019-09-16	4.19 AT+SIMEI	Modify this command

Contents

1 Introduction

1.1 Scope

The present document describes the AT Command Set for the SIMCom Module:
SIM7906/SIM7912 series

More information about the SIMCom Module which includes the Software Version information can be retrieved by the command ATI. In this document, a short description, the syntax, the possible setting values and responses, and some examples of AT commands are presented.

Prior to using the Module, please read this document and the Version History to know the difference from the previous document.

In order to implement communication successfully between Customer Application and the Module, it is recommended to use the AT commands in this document, but not to use some commands which are not included in this document.

1.2 References

The present document is based on the following standards:

[1] 3GPP TS 27.005: Use of Data Terminal Equipment – Data Circuit terminating Equipment (DTE – DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS).
[2] 3GPP TS 27.007: AT command set for User Equipment (UE).
[3] WAP-224-WTP-20010710-a
[4] WAP-230-WSP-20010705-a
[5] WAP-209-MMSEncapsulation-20010601-a

1.3 Terms and abbreviations

For the purposes of the present document, the following abbreviations apply:

- AT ATtention; the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE
- DCE Data Communication Equipment; Data Circuit terminating Equipment
- DCS Digital Cellular Network
- DTE Data Terminal Equipment
- DTMF Dual Tone Multi–Frequency
- EGPRS Enhanced General Packet Radio Service

- GPIO General–Purpose Input/Output
- GPRS General Packet Radio Service
- GSM Global System for Mobile communications
- HSDPA High Speed Downlink Packet Access
- HSUPA High Speed Uplink Packet Access
- I2C Inter–Integrated Circuit
- IMEI International Mobile station Equipment Identity
- IMSI International Mobile Subscriber Identity
- ME Mobile Equipment
- MO Mobile–Originated
- MS Mobile Station
- MT Mobile–Terminated; Mobile Termination
- PCS Personal Communication System
- PDU Protocol Data Unit
- PIN Personal Identification Number
- PUK Personal Unlock Key
- SIM Subscriber Identity Module
- SMS Short Message Service
- SMS–SC Short Message Service – Service Center
- TA Terminal Adaptor; e.g. a data card (equal to DCE)
- TE Terminal Equipment; e.g. a computer (equal to DTE)
- UE User Equipment
- UMTS Universal Mobile Telecommunications System
- USIM Universal Subscriber Identity Module
- WCDMA Wideband Code Division Multiple Access
- FTP File Transfer Protocol
- HTTP Hyper Text Transfer Protocol
- RTC Real Time Clock
- URC Unsolicited Result Code

1.4 Definitions and conventions

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

<CR> Carriage return character.

<LF> Linefeed character.

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

[…] Optional subparameter of AT command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. If subparameter is not given, its value equals to its previous value or the recommended default value.

underline Underlined defined subparameter value is the recommended default setting or factory

setting.

2. Document conventions:

   - Display the examples of AT commands with *Italic* format.
   - Not display *blank-line* between command line and responses or inside the responses.
   - Generally, the characters <CR> and <LF> are intentionally omitted throughout this document.
   - If command response is ERROR, not list the ERROR response inside command syntax.

   NOTE: AT commands and responses in figures may be not following above conventions.

3. Special marks for commands or parameters:

   SIM PIN – Is the command PIN protected?

   YES – AT command can be used only when SIM PIN is READY.

   NO – AT command can be used when SIM card is absent or SIM PIN validation is pending.

   References – Where is the derivation of command?

   3GPP TS 27.007 – 3GPP Technical Specification 127 007.

   V.25ter – ITU–T Recommendation V.25ter.

   Vendor – This command is supported by SIMCom.

2 AT Interface Synopsis

2.1 Interface settings

Between Customer Application and the Module, standardized RS–232 interface is used for the communication, and default values for the interface settings as following:

115200bps, 8 bit data, no parity, 1 bit stop, no data stream control.

2.2 AT command syntax

The prefix “AT” or “at” (no case sensitive) must be included at the beginning of each command line (except A/ and +++), and the character <CR> is used to finish a command line so as to issue the command line to the Module. It is recommended that a command line only includes a command.

When Customer Application issues a series of AT commands on separate command lines, leave a pause between the preceding and the following command until information responses or result codes are retrieved by Customer Application, for example, “OK” is appeared. This advice avoids too many AT commands are issued at a time without waiting for a response for each command.

In the present document, AT commands are divided into three categories: Basic Command, S Parameter Command, and Extended Command.

1. Basic Command

The format of Basic Command is “AT<x><n>” or “AT&<x><n>”, “<x>” is the command name, and “<n>” is/are the parameter(s) for the basic command, and optional. An example of Basic Command is “ATE<n>”, which informs the TA/DCE whether received characters should be echoed back to the TE/DTE according to the value of “<n>”; “<n>” is optional and a default value will be used if omitted.

2. S Parameter Command

The format of S Parameter Command is “ATS<n>=<m>”, “<n>” is the index of the S–register to set, and “<m>” is the value to assign to it. “<m>” is optional; in this case, the format is “ATS<n>”, and then a default value is assigned.

3. Extended Command

The Extended Command has several formats, as following table list:

Table 2-1: Types of Extended Command

Command Type	Syntax	Comments
Test Command	AT+<NAME>=?	Test the existence of the command; give some information about the command subparameters.
Read Command	AT+<NAME>?	Check the current values of subparameters.
Write Command	AT+<NAME>=<…>	Set user-definable subparameter values.
Execution Command	AT+<NAME>	Read non-variable subparameters determined by internal processes.

NOTE: The character "+" between the prefix "AT" and command name may be replaced by other character. For example, using "#" or "$"instead of "+".

2.3 Information responses

If the commands included in the command line are supported by the Module and the subparameters are correct if presented, some information responses will be retrieved by from the Module. Otherwise, the Module will report "ERROR" or "+CME ERROR" or "+CMS ERROR" to Customer Application.

Information responses start and end with <CR><LF>, i.e. the format of information responses is "<CR><LF><response><CR><LF>". Inside information responses, there may be one or more <CR><LF>. Throughout this document, only the responses are presented, and <CR><LF> are intentionally omitted.

3 AT Commands According V.25TER

3.1 A/ Repeat last command

Description

This command is used for implement previous AT command repeatedly (except A/), and the return value depends on the last AT command. If A/ is issued to the Module firstly after power on, the response "OK" is only returned.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
A/	*The response the last AT command return*

Examples

```
AT+GCAP
+GCAP:+CWCDMA,+FCLASS,+DS
OK
A/
+GCAP:+CWCDMA,+FCLASS,+DS
OK
```

3.2 ATH Disconnect existing call

Description

This command is used to disconnect existing call. Before using ATH command to hang up a voice call, it must set AT+CVHU=0. Otherwise, ATH command will be ignored and "*OK*" response is given only.

This command is also used to disconnect PS data call, and in this case it doesn't depend on the value of AT+CVHU.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
ATH	*If AT+CVHU=0:* VOICE CALL: END: <time> OK
	OK

Defined values

<time>
Voice call connection time: Format – HHMMSS (HH: hour, MM: minute, SS: second)

Examples

```
AT+CVHU=0
OK
ATH
VOICE CALL:END:000017
OK
```

3.3 ATI Display product identification information

Description

This command is used to request the product information, which consists of manufacturer identification, model identification, revision identification, International Mobile station Equipment Identity (IMEI) and overall capabilities of the product.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
ATI	Manufacturer: <manufacturer> Model: <model> Revision: <revision> IMEI: <sn> +GCAP: list of <name>s OK

Defined values

<manufacturer>
The identification of manufacturer.
<model>
The identification of model.
<revision>
The revision identification of firmware.
<sn>
Serial number identification, which consists of a single line containing IMEI (International Mobile station Equipment Identity) number.
<name>
List of additional capabilities: +FCLASS FAX function is supported +DS Data compression is supported +ES Synchronous data mode is supported. +MS Mobile Specific command set

Examples

ATI
Manufacturer: SIMCOM INCORPORATED *Model: SIMCOM_SIM7906* *Revision:* SIM*7600C* _V3.0 *IMEI: 351602000330570* *+GCAP: +CGSM,+FCLASS,+DS* *OK*

3.4 ATE Enable command echo

Description

This command sets whether or not the TA echoes characters.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
ATE[<value>]	OK
	ERROR

Defined values

<value>
0 – Echo mode off 1 – Echo mode on

Examples

ATE1
OK

3.5 AT&V Display current configuration

Description

This command returns some of the base configuration parameters settings.

SIM PIN	References
YES	V.25ter

Syntax

Execution Command	Responses
AT&V	<TEXT> OK
	ERROR

Defined values

<TEXT>
All relative configuration information.

Examples

AT&V
&C: 0; &D: 2; &F: 0; E: 1; L: 0; M: 0; Q: 0; V: 1; X: 0; Z: 0; S0: 0; *S3: 13; S4: 10; S5: 8; S6: 2; S7: 50; S8: 2; S9: 6; S10: 14; S11: 95;* *+FCLASS: 0; +ICF: 3,3; +IFC: 2,2; +IPR: 115200; +DR: 0; +DS: 0,0,2048,6;* *+WS46: 12; +CBST: 0,0,1;* *……* *OK*

3.6 ATV Set result code format mode

Description

This parameter setting determines the contents of the header and trailer transmitted with result

codes and information responses.

NOTE: In case of using This command without parameter <value> will be set to 0.

SIM PIN	References
No	V.25ter

Syntax

Write Command	Responses
ATV[<value>]	*If <value> =0* 0 *If <value> =1* OK

Defined values

<value>	
0	Information response: <text><CR><LF> Short result code format: <numeric code><CR>
1	Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF>

Examples

```
ATV1
OK
```

3.7 AT&F Set all current parameters to manufacturer defaults

Description

This command is used to set all current parameters to the manufacturer defined profile.

NOTE: List of parameters reset to manufacturer default can be found in defined values, factory default settings restorable with AT&F[<value>].

Every ongoing or incoming call will be terminated.

SIM PIN	References
NO	V.250

Syntax

Execution Command	Responses
AT&F[<value>]	OK

Defined values

<value>
0 — Set some temporary TA parameters to manufacturer defaults. The setting after power on or reset is same as value 0.
default values

TA parameters	VALUE
AT+CATR	0
AT+CNMP	2
AT+CNAOP ①	7,9,4,2,5,3,11
AT+CTZU	0

Examples

AT&F
OK

3.8 ATQ Set Result Code Presentation Mode

Description

Specify whether the TA transmits any result code to the TE or not. Text information transmitted in response is not affected by this setting

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Write Command	Responses
ATQ<n>	If <n>=0: OK
	If <n>=1: No Responses
Execution Command	**Responses**
ATQ	*Set default value:0* OK
	No Responses

Defined values

<n>
0 – DCE transmits result code
1 – DCE not transmits result code

Examples

ATQ0
OK

3.9 ATX Set CONNECT Result Code Format

Description

This parameter setting determines whether the TA transmits unsolicited result codes or not. The unsolicited result codes are

<CONNECT><SPEED><COMMUNICATION PROTOCOL>[<TEXT>]

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Write Command	Responses
ATX<VALUE>	OK
	ERROR
Execution Command	Responses
ATX	*Set default value:1* OK
	ERROR

Defined values

<value>
0 – CONNECT result code returned
1,2,3,4 – May be transmits extern result codes according to AT&E and AT\V settings. Refer to AT&E.

Examples

ATX1
OK

3.10 AT\V Set CONNECT Result Code Format About Protocol

Description

This parameter setting determines whether report the communication protocol. If PS call, it also determines wether report APN, uplink rate, downlink rate.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Write Command	Responses
AT\V<value>	OK
	ERROR
Execution Command	Responses
AT\V	*Set default value: 0* OK
	ERROR

Defined values

<value>	
0	– Don't report
1	– Report communication protocol. And report APN, uplink rate, downlink rate if PS call. Refer to AT&E. The maybe communication protocol report include "NONE","PPPoverUD","AV32K","AV64K","PACKET". And APN in string format while uplink rate and downlink rate in integer format with kb unit.

Examples

```
AT\V0
OK
```

3.11 AT&E Set CONNECT Result Code Format About Speed

Description

This parameter setting determines to report Serial connection rate or Wireless connection speed. It is valid only ATX above 0.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Write Command	Responses
AT&E<value>	OK
	ERROR
Execution Command	Responses

AT&E	*Set default value: 1* OK

Defined values

<value>
0 – Wireless connection speed in integer format.
1 – Serial connection rate in integer format. Such as: “115200”

Examples

AT&E0
OK

3.12 AT&W Save the user setting to ME

Description

This command will save the user settings to ME which set by ATE, ATQ, ATV, ATX, AT&C AT&D, AT&S, AT\V, AT+IFC and ATS0.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Write Command	Responses
AT&W<value>	OK
	ERROR
Execution Command	Responses
AT&W	*Set default value: 0* OK
	ERROR

Defined values

<value>
0 – Save

Examples

AT&W0
OK

3.13 ATZ Restore the user setting from ME

Description

This command will restore the user setting from ME which set by ATE, ATQ, ATV, ATX, AT&C AT&D, AT&S, AT\Q, AT\V, and ATS0.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Write Command	Responses
ATZ<value>	OK
	ERROR
Execution Command	Responses
ATZ	*Set default value: 0* OK
	ERROR

Defined values

<value>
0 – Restore

Examples

```
ATZ0
OK
```

3.14 AT+CGMI Request manufacturer identification

Description

This command is used to request the manufacturer identification text, which is intended to permit the user of the Module to identify the manufacturer.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGMI=?	OK

Execution Command	Responses
AT+CGMI	<manufacturer> OK

Defined values

<manufacturer>
The identification of manufacturer.

Examples

AT+CGMI
SIMCOM INCORPORATED *OK*

3.15 AT+CGMM Request model identification

Description

This command is used to requests model identification text, which is intended to permit the user of the Module to identify the specific model.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGMM=?	OK
Execution Command	Responses
AT+CGMM	<model> OK

Defined values

<model>
The identification of model.

Examples

AT+CGMM
SIMCOM_SIM7600C *OK*

3.16 AT+CGMR Request revision identification

Description

This command is used to request product firmware revision identification text, which is intended to permit the user of the Module to identify the version.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGMR=?	OK
Execution Command	Responses
AT+CGMR	+CGMR: <revision> OK

Defined values

<revision>
The revision identification of firmware.

Examples

```
AT+CGMR
+CGMR: LE11B01SIM7906
OK
```

3.17 AT+CGSN Request product serial number identification

Description

This command requests product serial number identification text, which is intended to permit the user of the Module to identify the individual ME to which it is connected to.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGSN=?	OK
Execution Command	Responses

AT+CGSN	<sn> OK

Defined values

<sn>
Serial number identification, which consists of a single line containing the IMEI (International Mobile station Equipment Identity) number of the MT.

Examples

AT+CGSN
351602000330570 *OK*

3.18 AT+CSCS Select TE character set

Description

Write command informs TA which character set <chest> is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets.

Read command shows current setting and test command displays conversion schemes implemented in the TA.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CSCS=?	+CSCS: (list of supported <chset>s) OK
Read Command	Responses
AT+CSCS?	+CSCS: <chset> OK
Write Command	Responses
AT+CSCS=<chset>	OK
	ERROR
Execution Command	Responses
AT+CSCS	*Set subparameters as default value:* OK

Defined values

<chest>
Character set, the definition as following: "IRA" International reference alphabet. "UCS2" 16-bit universal multiple-octet coded character set; UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF.

Examples

AT+CSCS="IRA"
OK
AT+CSCS?
+CSCS: "IRA"
OK

3.19 AT+CIMI Request international mobile subscriber identity

Description

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

NOTE: If USIM card contains two apps, like China Telecom 4G card, one RUIM/CSIM app, and another USIM app; so there are two IMSI in it; AT+CIMI will return the RUIM/CSIM IMSI; AT+CIMIM will return the USIM IMSI;

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CIMI=?	OK
	ERROR
Execution Command	Responses
AT+CIMI	<IMSI> OK
	ERROR

Defined values

<IMSI>
International Mobile Subscriber Identity (string, without double quotes).

Examples

```
AT+CIMI
460010222028133
OK
```

3.20 AT+CIMIM Request another international mobile subscriber identity

Description

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

NOTE: If USIM card contains two apps, like China Telecom 4G card, one RUIM/CSIM app, and another USIM app; so there are two IMSI in it; AT+CIMIM will return the USIM IMSI; AT+CIMI will return the RUIM/CSIM IMSI;

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CIMIM=?	OK
	ERROR
Execution Command	Responses
AT+CIMIM	<IMSI> OK
	ERROR

Defined values

<IMSI>
International Mobile Subscriber Identity (string, without double quotes).

Examples

```
AT+CIMIM
460110222028133
OK
```

3.21 AT+GCAP Request overall capabilities

Description

Execution command causes the TA reports a list of additional capabilities.

SIM PIN	References
YES	V.25ter

Syntax

Test Command	Responses
AT+GCAP=?	OK
	ERROR
Execution Command	**Responses**
AT+GCAP	+GCAP: (list of <name>s) OK
	ERROR

Defined values

<name>
List of additional capabilities. +CGSM GSM function is supported +FCLASS FAX function is supported +DS Data compression is supported +ES Synchronous data mode is supported. +MS Mobile Specific command set

Examples

```
AT+GCAP
+GCAP:+CGSM,+FCLASS,+DS
OK
```

4 AT Commands for Status Control

4.1 AT+CFUN Set phone functionality

Description

This command is used to select the level of functionality <fun> in the ME. Level "full functionality" is where the highest level of power is drawn. "Minimum functionality" is where minimum power is drawn. Level of functionality between these may also be specified by manufacturers. When supported by manufacturers, ME resetting with <rst> parameter may be utilized.

NOTE: AT+CFUN=6 must be used after setting AT+CFUN=7. If module in offline mode, must execute AT+CFUN=6 or restart module to online mode.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s) OK
	ERROR
	+CME ERROR: <err>
Read Command	**Responses**
AT+CFUN?	+CFUN: <fun> OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CFUN=<fun>[,<rst>]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<fun>		
0	–	minimum functionality
1	–	full functionality, online mode
4	–	disable phone both transmit and receive RF circuits

5 – Factory Test Mode
6 – Reset
7 – Offline Mode

<rst>

0 – do not reset the ME before setting it to <fun> power level
1 – reset the ME before setting it to <fun> power level. This value only takes effect when <fun> equals 1.

Examples

```
AT+CFUN?
+CFUN: 1
OK
AT+CFUN=0
OK
```

4.2 AT+CPIN Enter PIN

Description

This command is used to send the ME 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.

If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the SIM.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPIN=?	OK
Read Command	Responses
AT+CPIN?	+CPIN: <code> OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CPIN=<pin>[,<newpin>]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<pin>
String type values.
<newpin>
String type values.
<code>
Values reserved by the present document: READY – ME is not pending for any password SIM PIN – ME is waiting SIM PIN to be given SIM PUK – ME is waiting SIM PUK to be given PH-SIM PIN – ME is waiting phone-to-SIM card password to be given SIM PIN2 – ME is waiting SIM PIN2 to be given SIM PUK2 – ME is waiting SIM PUK2 to be given PH-NET PIN – ME is waiting network personalization password to be given

Examples

AT+CPIN?
+CPIN: SIM PUK2 *OK*

4.3 AT+CICCID Read ICCID from SIM card

Description

This command is used to Read the ICCID from SIM card

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CICCID=?	OK
Execution Command	Responses
AT+CICCID	+ICCID: <ICCID> OK
	ERROR
	+CME ERROR: <err>

Defined values

<ICCID>

Integrate circuit card identity, a standard ICCID is a 20-digit serial number of the SIM card, it presents the publish state, network code, publish area, publish date, publish manufacture and press serial number of the SIM card.

Examples

```
AT+CICCID
+ICCID: 898600700907A6019125
OK
```

4.4 AT+CSIM Generic SIM access

Description

This command is used to control the SIM card directly.

Compared to restricted SIM access command AT+CRSM, AT+CSIM allows the ME to take more control over the SIM interface.

For SIM–ME interface please refer 3GPP TS 11.11.

NOTE： The SIM Application Toolkit functionality is not supported by AT+CSIM. Therefore the following SIM commands can not be used: TERMINAL PROFILE, ENVELOPE, FETCH and TEMINAL RESPONSE.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CSIM=?	OK
Write Command	Responses
AT+CSIM=<length>,<command>	+CSIM: <length>, <response> OK
	ERROR
	+CME ERROR: <err>

Defined values

<length>
Interger type; length of characters that are sent to TE in <command> or <response>
<command>
Command passed from MT to SIM card.
<response>
Response to the command passed from SIM card to MT.

Examples

```
AT+CSIM=?
OK
```

4.5 AT+CRSM Restricted SIM access

Description

By using AT+CRSM instead of Generic SIM Access AT+CSIM, TE application has easier but more limited access to the SIM database.

Write command transmits to the MT the SIM <command> and its required parameters. MT handles internally all SIM-MT interface locking and file selection routines. As response to the command, MT sends the actual SIM information parameters and response data. MT error result code +CME ERROR may be returned when the command cannot be passed to the SIM, but failure in the execution of the command in the SIM is reported in <sw1> and <sw2> parameters.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CRSM=?	OK
Write Command	**Responses**
AT+CRSM=<command>[,<fileID>[,<p1>,<p2>, <p3>[,<data>]]]	+CRSM: <sw1>,<sw2>[,<response>] OK
	ERROR
	+CME ERROR: <err>

Defined values

<command>
Command passed on by the MT to the SIM: 176 – READ BINARY 178 – READ RECORD 192 – GET RESPONSE 214 – UPDATE BINARY 220 – UPDATE RECORD 242 – STATUS 203 – RETRIEVE DATA 219 – SET DATA
<fileID>
Identifier for an elementary data file on SIM, if used by <command>.

The following list the fileID hex value, user needs to convet them to decimal.

EFs under MF

0x2FE2	ICCID
0x2F05	Extended Language Preferences
0x2F00	EF DIR
0x2F06	Access Rule Reference

EFs under USIM ADF

0x6F05	Language Indication
0x6F07	IMSI
0x6F08	Ciphering and Integrity keys
0x6F09	C and I keys for pkt switched domain
0x6F60	User controlled PLMN selector w/Acc Tech
0x6F30	User controlled PLMN selector
0x6F31	HPLMN search period
0x6F37	ACM maximum value
0x6F38	USIM Service table
0x6F39	Accumulated Call meter
0x6F3E	Group Identifier Level
0x6F3F	Group Identifier Level 2
0x6F46	Service Provider Name
0x6F41	Price Per Unit and Currency table
0x6F45	Cell Bcast Msg identifier selection
0x6F78	Access control class
0x6F7B	Forbidden PLMNs
0x6F7E	Location information
0x6FAD	Administrative data
0x6F48	Cell Bcast msg id for data download
0x6FB7	Emergency call codes
0x6F50	Cell bcast msg id range selection
0x6F73	Packet switched location information
0x6F3B	Fixed dialling numbers
0x6F3C	Short messages
0x6F40	MSISDN
0x6F42	SMS parameters
0x6F43	SMS Status
0x6F49	Service dialling numbers
0x6F4B	Extension 2
0x6F4C	Extension 3
0x6F47	SMS reports
0x6F80	Incoming call information
0x6F81	Outgoing call information
0x6F82	Incoming call timer
0x6F83	Outgoing call timer

0x6F4E	Extension 5
0x6F4F	Capability Config Parameters 2
0x6FB5	Enh Multi Level Precedence and Pri
0x6FB6	Automatic answer for eMLPP service
0x6FC2	Group identity
0x6FC3	Key for hidden phonebook entries
0x6F4D	Barred dialling numbers
0x6F55	Extension 4
0x6F58	Comparison Method information
0x6F56	Enabled services table
0x6F57	Access Point Name Control List
0x6F2C	De-personalization Control Keys
0x6F32	Co-operative network list
0x6F5B	Hyperframe number
0x6F5C	Maximum value of Hyperframe number
0x6F61	OPLMN selector with access tech
0x6F5D	OPLMN selector
0x6F62	HPLMN selector with access technology
0x6F06	Access Rule reference
0x6F65	RPLMN last used access tech
0x6FC4	Network Parameters
0x6F11	CPHS: Voice Mail Waiting Indicator
0x6F12,	CPHS: Service String Table
0x6F13	CPHS: Call Forwarding Flag
0x6F14	CPHS: Operator Name String
0x6F15	CPHS: Customer Service Profile
0x6F16	CPHS: CPHS Information
0x6F17	CPHS: Mailbox Number
0x6FC5	PLMN Network Name
0x6FC6	Operator PLMN List
0x6F9F	Dynamic Flags Status
0x6F92	Dynamic2 Flag Setting
0x6F98	Customer Service Profile Line2
0x6F9B	EF PARAMS - Welcome Message
0x4F30	Phone book reference file
0x4F22	Phone book synchronization center
0x4F23	Change counter
0x4F24	Previous Unique Identifier
0x4F52	GPRS ciphering key
0x4F63	CPBCCH information
0x4F64	Investigation scan
0x4F40	MExE Service table
0x4F41	Operator Root Public Key

0x4F42	Administrator Root Public Key
0x4F43	Third party Root public key
0x6FC7	Mail Box Dialing Number
0x6FC8	Extension 6
0x6FC9	Mailbox Identifier
0x6FCA	Message Waiting Indication Status
0x6FCD	Service Provider Display Information
0x6FD2	UIM_USIM_SPT_TABLE
0x6FD9	Equivalent HPLMN
0x6FCB	Call Forwarding Indicator Status
0x6FD6	GBA Bootstrapping parameters
0x6FDA	GBA NAF List
0x6FD7	MBMS Service Key
0x6FD8	MBMS User Key
0x6FCE	MMS Notification
0x6FD0	MMS Issuer connectivity parameters
0x6FD1	MMS User Preferences
0x6FD2	MMS User connectivity parameters
0x6FCF	Extension 8
0x5031	Object Directory File
0x5032	Token Information File
0x5033	Unused space Information File

EFs under Telecom DF

0x6F3A	Abbreviated Dialing Numbers
0x6F3B	Fixed dialling numbers
0x6F3C	Short messages
0x6F3D	Capability Configuration Parameters
0x6F4F	Extended CCP
0x6F40	MSISDN
0x6F42	SMS parameters
0x6F43	SMS Status
0x6F44	Last number dialled
0x6F49	Service Dialling numbers
0x6F4A	Extension 1
0x6F4B	Extension 2
0x6F4C	Extension 3
0x6F4D	Barred Dialing Numbers
0x6F4E	Extension 4
0x6F47	SMS reports
0x6F58	Comparison Method Information
0x6F54	Setup Menu elements
0x6F06	Access Rule reference
0x4F20	Image

0x4F30	Phone book reference file
0x4F22	Phone book synchronization center
0x4F23	Change counter
0x4F24	Previous Unique Identifier

<p1> <p2> <p3>

Integer type; parameters to be passed on by the Module to the SIM.

<data>

Information which shall be written to the SIM (hexadecimal character format, refer AT+CSCS).

<sw1> <sw2>

Status information from the SIM about the execution of the actual command. It is returned in both cases, on successful or failed execution of the command.

<response>

Response data in case of a successful completion of the previously issued command.
"STATUS" and "GET RESPONSE" commands return data, which gives information about the currently selected elementary data field. This information includes the type of file and its size.
After "READ BINARY" or "READ RECORD" commands the requested data will be returned.
<response> is empty after "UPDATE BINARY" or "UPDATE RECORD" commands.

Examples

```
AT+CRSM=?
OK
```

4.6 AT+SPIC Times remain to input SIM PIN/PUK

Description

This command is used to inquire times remain to input SIM PIN/PUK.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+SPIC=?	OK
Execution Command	**Responses**
AT+SPIC	+SPIC: <pin1>,<puk1>,<pin2>,<puk2> OK

Defined values

<pin1>

Times remain to input PIN1 code.

<puk1>
Times remain to input PUK1 code.
<pin2>
Times remain to input PIN2 code.
<puk2>
Times remain to input PUK2 code.

Examples

AT+SPIC=?
OK
AT+SPIC
+SPIC: 3,10,0,10
OK

4.7 AT+CSPN Get service provider name from SIM

Description

This command is used to get service provider name from SIM card.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CSPN=?	OK
	ERROR
Read Command	**Responses**
AT+CSPN?	+CSPN: <spn>,<display mode> OK
	OK
	ERROR
	+CME ERROR: <err>

Defined values

<spn>
String type; service provider name on SIM
<display mode>
0 – doesn't display PLMN. Already registered on PLMN.

1 – display PLMN

Examples

```
AT+CSPN=?
OK
AT+CSPN?
+CSPN: “CMCC”,0
OK
```

4.8 AT+CSQ Query signal quality

Description

This command is used to return received signal strength indication <rssi> and channel bit error rate <ber> from the ME. Test command returns values supported by the TA as compound values.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CSQ=?	+CSQ: (list of supported <rssi>s),(list of supported <ber>s) OK
Execution Command	**Responses**
AT+CSQ	+CSQ: <rssi>,<ber> OK
	ERROR

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
100	–	-116 dBm or less
101	–	-115 dBm
102…191	–	-114... -26dBm
191	–	-25 dBm or greater
199	–	not known or not detectable
<ber>		

(in percent)

0 – <0.01%
1 – 0.01% --- 0.1%
2 – 0.1% --- 0.5%
3 – 0.5% --- 1.0%
4 – 1.0% --- 2.0%
5 – 2.0% --- 4.0%
6 – 4.0% --- 8.0%
7 – >=8.0%
99 – not known or not detectable

Examples

```
AT+CSQ
+CSQ: 22,0
OK
```

4.9 AT+AUTOCSQ Set CSQ report

Description

This command is used to enable or disable automatic report CSQ information, when automatic report enabled, the module reports CSQ information every five seconds or only after <rssi> or <ber> is changed, the format of automatic report is "+CSQ: <rssi>,<ber>".

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+AUTOCSQ=?	+AUTOCSQ: (list of supported<auto>s),(list of supported<mode>s) OK
Read Command	**Responses**
AT+AUTOCSQ?	+AUTOCSQ: <auto>,<mode> OK
Write Command	**Responses**
AT+AUTOCSQ=<auto>[,<mode>]	OK
	ERROR

Defined values

<auto>

0 – disable automatic report
1 – enable automatic report

<mode>

0 – CSQ automatic report every five seconds
1 – CSQ automatic report only after <rssi> or <ber> is changed_

NOTE: If the parameter of <mode> is omitted when executing write command, <mode> will be set to default value.

Examples

```
AT+AUTOCSQ=?
+AUTOCSQ: (0-1),(0-1)
OK
AT+AUTOCSQ?
+AUTOCSQ: 1,1
OK
AT+AUTOCSQ=1,1
OK
+CSQ: 23,0 (when <rssi> or <ber> changing)
```

4.10 AT+CSQDELTA Set RSSI delta change threshold

Description

This command is used to set RSSI delta threshold for signal strength reporting.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CSQDELTA=?	+CSQDELTA: (list of supported <delta>s) OK
Read Command	Responses
AT+CSQDELTA?	+CSQDELTA: <delta> OK
	ERROR
Write Command	Responses
AT+CSQDELTA=<delta>	OK
	ERROR
Execution Command	Responses

AT+CSQDELTA	*Set default value（<delta>=5）:* OK

Defined values

<delta>
Range: from 0 to 5.

Examples

AT+CSQDELTA?
+CSQDELTA: 5 *OK*

4.11 AT+CPOF Power down the module

Description

This command is used to power off the module. Once the AT+CPOF command is executed, The module will store user data and deactivate from network, and then shutdown.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CPOF=?	OK
Execution Command	**Responses**
AT+CPOF	OK

Examples

AT+CPOF
OK

4.12 AT+CRESET Reset the module

Description

This command is used to reset the module.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CRESET=?	OK
Execution Command	Responses
AT+CRESET	OK

Examples

```
AT+CRESET=?
OK
AT+CRESET
OK
```

4.13 AT+CACM Accumulated call meter

Description

This command is used to reset the Advice of Charge related accumulated call meter value in SIM file EF_{ACM}.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CACM=?	OK
	ERROR
Read Command	Responses
AT+CACM?	+CACM: <acm> OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CACM=<passwd>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CACM	OK
	ERROR

	+CME ERROR: <err>

Defined values

<passwd>
String type, SIM PIN2.
<acm>
String type, accumulated call meter value similarly coded as <ccm> under +CAOC.

Examples

AT+CACM?
+CACM: "000000"
OK

4.14 AT+CAMM Accumulated call meter maximum

Description

This command is used to set the Advice of Charge related accumulated call meter maximum value in SIM file EF_{ACMmax}.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CAMM=?	OK
	ERROR
Read Command	Responses
AT+CAMM?	+CAMM: <acmmax> OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CAMM=<acmmax>[,<passwd>]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CAMM	OK
	ERROR

	+CME ERROR: <err>

Defined values

<acmmax>
String type, accumulated call meter maximum value similarly coded as <ccm> under AT+CAOC, value zero disables ACMmax feature.
<passwd>
String type, SIM PIN2.

Examples

AT+CAMM?
+CAMM: "000000"
OK

4.15 AT+CPUC Price per unit and currency table

Description

This command is used to set the parameters of Advice of Charge related price per unit and currency table in SIM file EF_{PUCT}..

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPUC=?	OK
	ERROR
Read Command	Responses
AT+CPUC?	+CPUC: [<currency>,<ppu>] OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CPUC=<currency>,<ppu>[,<passwd>]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<currency>
String type, three-character currency code (e.g. "GBP", "DEM"), character set as specified by command Select TE Character Set AT+CSCS.
<ppu>
String type, price per unit, dot is used as a decimal separator. (e.g. "2.66").
<passwd>
String type, SIM PIN2.

Examples

AT+CPUC?
+CPUC: "GBP" , "2.66"
OK

4.16 AT+CCLK Real time clock management

Description

This command is used to manage Real Time Clock of the module.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CCLK=?	OK
Read Command	Responses
AT+CCLK?	+CCLK: <time> OK
Write Command	Responses
AT+CCLK=<time>	OK
	ERROR

Defined values

<time>
String type value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; three last digits are mandatory, range -47…+48). E.g. 6th of May 2008, 14:28:10 GMT+8 equals to "08/05/06,14:28:10+32". **NOTE:** 1. Time zone is nonvolatile, and the factory value is invalid time zone. 2. Command +CCLK? will return time zone when time zone is valid, and if time zone is

00, command +CCLK? will return “+00”, but not “-00”.

Examples

```
AT+CCLK=“08/11/28,12:30:33+32”
OK
AT+CCLK?
+CCLK: “08/11/28,12:30:35+32”
OK
AT+CCLK=“08/11/26,10:15:00”
OK
AT+CCLK?
+CCLK: “08/11/26,10:15:02+32”
OK
```

4.17 AT+CMEE Report mobile equipment error

Description

This command is used to disable or enable the use of result code “+CME ERROR: <err>” or “+CMS ERROR: <err>” as an indication of an error relating to the functionality of ME; when enabled, the format of <err> can be set to numeric or verbose string.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CMEE=?	+CMEE: (list of supported <n>s) OK
Read Command	Responses
AT+CMEE?	+CMEE: <n> OK
Write Command	Responses
AT+CMEE=<n>	OK
	ERROR
Execution Command	Responses
AT+CMEE	*Set default value:* OK

Defined values

<n>
0 – Disable result code,i.e. only “ERROR” will be displayed. 1 – Enable error result code with numeric values. 2 – Enable error result code with string values.

Examples

AT+CMEE?
+CMEE: 2
OK
AT+CPIN="1234","1234"
+CME ERROR: incorrect password
AT+CMEE=0
OK
AT+CPIN="1234","1234"
ERROR
AT+CMEE=1
OK
AT+CPIN="1234","1234"
+CME ERROR: 16

4.18 AT+CPAS Phone activity status

Description

This command is used to return the activity status <pas> of the ME. It can be used to interrogate the ME before requesting action from the phone.

NOTE: This command is same as AT+CLCC, but AT+CLCC is more commonly used. So AT+CLCC is recommended to use.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPAS=?	+CPAS: (list of supported <pas>s) OK
Execution Command	Responses
AT+CPAS	+CPAS: <pas> OK

Defined values

<pas>
0 – ready (ME allows commands from TA/TE) 3 – ringing (ME is ready for commands from TA/TE, but the ringer is active) 4 – call in progress (ME is ready for commands from TA/TE, but a call is in progress)

Examples

RING (with incoming call)
AT+CPAS
+CPAS: 3 *OK*
AT+CPAS=?
+CPAS: (0,3,4) *OK*

4.19 AT+SIMEI Set IMEI for the module

Description

This command is used to set the module's IMEI value.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+SIMEI=?	OK
Read Command	**Responses**
AT+SIMEI?	+SIMEI: <imei> OK
	ERROR
Write Command	**Responses**
AT+SIMEI=<imei>	OK
	ERROR

Defined values

<imei>
The 15-digit IMEI value.

Examples

AT+SIMEI=357396012183170
OK
AT+SIMEI?
+SIMEI: 357396012183170
OK
AT+SIMEI=?
OK

4.20 AT+CUSBPIDSWITCH Change module's PID

Description

Execution command change the module's PID. This command will reset the module if change to other PID (not current used PID).

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CUSBPIDSWITCH=?	+CUSBPIDSWITCH: (9000,9001,9002,9003,9004,9005,9006,9007,9011,9016,9018,9019,901A,901B,9020,9021,9022,9023,9024,9025,9026,9027,9028,9029,902A),(0-1),(0-1) OK
	ERROR
Read Command	Responses
AT+CUSBPIDSWITCH?	+CUSBPIDSWITCH: <pid> OK
	ERROR
Write Command	Responses
AT+CUSBPIDSWITCH=<pid>, < reserve1>,< reserve2>	OK
	ERROR

Defined values

<pid>
This command support pids, 9001 is the default value. 9000,9001,9002,9003,9004,9005,9006,9007,9011,9016,9018,9019,901A,901B,9020,9021,9022,9023,9024,9025,9026,9027,9028,9029,902A
< reserve1>

0 or 1, this value is for the reserve
< reserve2>
0 or 1, this value is for the reserve

Examples

```
AT+CUSBPIDSWITCH?
+CUSBPIDSWITCH: 9001
OK
AT+CUSBPIDSWITCH=9001,1,1
OK
```

PID configuration:
9000:Diag, NMEA, At, Modem, Audio, Rmnet
9001:Diag, NMEA, At, Modem, Audio, Rmnet
9002:Diag, NMEA, At, Modem, Audio, Rmnet
9003:Diag, NMEA, At, Modem, Audio, MBIM
9004:Diag, NMEA, At, Modem, Audio, GNSS, Rmnet
9005:Diag, NMEA, At, Modem, Audio, GNSS, MBIM
9006:Diag, NMEA, At,Modem
9007:Diag, NMEA, At, Modem, Audio, Rmnet,mass_storage
9011:RNDIS,Diag, NMEA, At, Modem, Audio
9016:Diag, Rmnet
9018:Diag, NMEA, At, Modem, Audio, Ecm
9019:RNDIS
901A: Diag, NMEA, At, Rmnet
901B:NMEA, At, Rmnet
9020: Diag, At, Modem
9021: Diag, Modem
9022: Diag, Modem, Rmnet
9023: Modem
9024: At, Modem
9025: Modem,rmnet
9026: Modem,Audio
9027: Modem,Audio, Rmnet
9028:Diag, Modem,Audio, Rmnet
9029:Diag, Modem,Audio
902A: At

5 AT Commands for Network

5.1 AT+CREG Network registration

Description

This command is used to control the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the ME network registration status, or code +CREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

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 ME. Location information elements <lac> and <ci> are returned only when <n>=2 and ME is registered in the network.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CREG=?	+CREG: (list of supported <n>s) OK
Read Command	**Responses**
AT+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>] OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CREG=<n>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CREG	*Set default value（<n>=0）:* OK

Defined values

<n>		
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>]

<stat>

0 – not registered, ME is not currently searching a new operator to register to
1 – registered, home network
2 – not registered, but ME is currently searching a new operator to register to
3 – registration denied
4 – unknown
5 – registered, roaming
6 – Internal use only

<lac>

Two byte location area code in hexadecimal format (e.g."00C3" equals 193 in decimal).

NOTE: The <lac> not supported in CDMA/HDR mode

<ci>

Cell Identify in hexadecimal format.
GSM : Maximum is two byte
WCDMA : Maximum is four byte
TDS-CDMA : Maximum is four byte

NOTE: The <ci> not supported in CDMA/HDR mode

Examples

```
AT+CREG?
+CREG: 0,1
OK
```

5.2 AT+COPS Operator selection

Description

Write command forces an attempt to select and register the UMTS network operator. <mode> is used to select whether the selection is done automatically by the ME or is forced by this command to operator <oper> (it shall be given in format <format>). If the selected operator is not available, no other operator shall be selected (except <mode>=4). The selected operator name format shall apply to further read commands (AT+COPS?) also. <mode>=2 forces an attempt to deregister from the network. The selected mode affects to all further network registration (e.g. after <mode>=2, ME shall be unregistered until <mode>=0 or 1 is selected).

Read command returns the current mode and the currently selected operator. If no operator is selected, <format> and <oper> are omitted.

Test command returns a list of quadruplets, each representing an operator present in the network. Quadruplet consists of an integer indicating the availability of the operator <stat>, long and short alphanumeric format of the name of the operator, and numeric format representation of the operator. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM, and other networks.

It is recommended (although optional) that after the operator list TA returns lists of supported <mode>s and <format>s. These lists shall be delimited from the operator list by two commas. When executing AT+COPS=? , any input from serial port will stop this command.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+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
	ERROR
	+CME ERROR: <err>
Read Command	Responses
AT+COPS?	+COPS: <mode>[,<format>,<oper>[,< AcT>]] OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+COPS=<mode>[,<format>[,<oper>[,< AcT>]]]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+COPS	OK

Defined values

<mode>

0 – automatic
1 – manual
2 – force deregister
3 – set only <format>
4 – manual/automatic
5 – manual,but do not modify the network selection mode(e.g WCDMA) after module resets.

NOTE: if <mode> is set to 1, 4, 5 in write command, the <oper> is needed.

<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.

<stat>

0 – unknown
1 – available
2 – current
3 – forbidden

<AcT>

Access technology selected
2 – UTRAN
7 – EUTRAN

Examples

```
AT+COPS?
+COPS: 0,0,"China Mobile Com",0
OK
AT+COPS=?
+COPS: (2,"China Unicom","Unicom","46001",0),(3,"China Mobile Com","DGTMPT",
"46000",0),,(0,1,2,3,4,5),(0,1,2)
OK
```

5.3 AT+CLCK Facility lock

Description

This command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CLCK=?	+CLCK: (list of supported <fac>s) OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	OK
	When <mode>=2 and command successful: +CLCK:<status>[,<class1>[<CR><LF> +CLCK: <status>,<class2> [...]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<fac>	
"PF"	lock Phone to the very First inserted SIM card or USIM card
"SC"	lock SIM card or USIM card
"AO"	Barr All Outgoing Calls
"OI"	Barr Outgoing International Calls
"OX"	Barr Outgoing International Calls except to Home Country
"AI"	Barr All Incoming Calls
"IR"	Barr Incoming Calls when roaming outside the home country
"AB"	All Barring services (only for <mode>=0)
"AG"	All outGoing barring services (only for <mode>=0)
"AC"	All inComing barring services (only for <mode>=0)
"FD"	SIM fixed dialing memory feature
"PN"	Network Personalization
"PU"	network subset Personalization
"PP"	service Provider Personalization

"PC" Corporate Personalization

<mode>

0 – unlock

1 – lock

2 – query status

<status>

0 – not active

1 – active

<passwd>

Password.

string type; shall be the same as password specified for the facility from the ME user interface or with command Change Password +CPWD

<classX>

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

1 – voice (telephony)

2 – data (refers to all bearer services)

4 – fax (facsimile services)

8 – short message service

16 – data circuit sync

32 – data circuit async

64 – dedicated packet access

128 – dedicated PAD access

255 – The value 255 covers all classes

Examples

```
AT+CLCK="SC",2
+CLCK: 0
OK
```

5.4 AT+CPWD Change password

Description

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

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPWD=?	+CPWD: (list of supported (<fac>,<pwdlength>)s) OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CPWD= <fac>,<oldpwd>,<newpwd>	OK
	ERROR
	+CME ERROR: <err>

Defined values

<fac>
Refer Facility Lock +CLCK for other values: "SC" SIM or USIM PIN1 "P2" SIM or USIM PIN2 "AB" All Barring services "AC" All inComing barring services (only for <mode>=0) "AG" All outGoing barring services (only for <mode>=0) "AI" Barr All Incoming Calls "AO" Barr All Outgoing Calls "IR" Barr Incoming Calls when roaming outside the home country "OI" Barr Outgoing International Calls "OX" Barr Outgoing International Calls except to Home Country
<oldpwd>
String type, it shall be the same as password specified for the facility from the ME user interface or with command Change Password AT+CPWD.
<newpwd>
String type, it is the new password; maximum length of password can be determined with <pwdlength>.
<pwdlength>
Integer type, max length of password.

Examples

AT+CPWD=?

+CPWD: ("AB",4),("AC",4),("AG",4),("AI",4),("AO",4),("IR",4),("OI",4),("OX",4),("SC",8),("P2",8)

OK

5.5 AT+CCUG Closed user group

Description

This command allows control of the Closed User Group supplementary service. Set command enables the served subscriber to select a CUG index, to suppress the Outgoing Access (OA), and to suppress the preferential CUG.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CCUG=?	OK
	ERROR
Read Command	Responses
AT+CCUG?	+CCUG: <n>,<index>,<info> OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CCUG= <n>[,<index>[,<info>]]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CCUG	*Set default value:* OK

Defined values

<n>	
0	– disable CUG temporary mode
1	– enable CUG temporary mode
<index>	
0...9	– CUG index
10	– no index (preferred CUG taken from subscriber data)
<info>	
0	– no information
1	– suppress OA
2	– suppress preferential CUG
3	– suppress OA and preferential CUG

Examples

```
AT+CCUG?
+CCUG: 0,0,0
OK
```

5.6 AT+CUSD Unstructured supplementary service data

Description

This command allows control of the Unstructured Supplementary Service Data (USSD). Both network and mobile initiated operations are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code (USSD response from the network, or network initiated operation) +CUSD: <m>[,<str>,<dcs>] to the TE. In addition, value <n>=2 is used to cancel an ongoing USSD session.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CUSD=?	+CUSD: (list of supported <n>s) OK
Read Command	**Responses**
AT+CUSD?	+CUSD: <n> OK
Write Command	**Responses**
AT+CUSD= <n>[,<str>[,<dcs>]]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CUSD	*Set default value (<n>=0):* OK

Defined values

<n>	
0	– disable the result code presentation in the TA
1	– enable the result code presentation in the TA
2	– cancel session (not applicable to read command response)
<str>	
String type USSD-string.	

<dcs>
Cell Broadcast Data Coding Scheme in integer format (default 0).
<m>
0 – no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation) 1 – further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation) 2 – USSD terminated by network 4 – operation not supported 5 – network time out

Examples

AT+CUSD?
+CUSD: 1 *OK*
AT+CUSD=0
OK

5.7 AT+CAOC Advice of charge

Description

This command refers to Advice of Charge supplementary service that enables subscriber to get information about the cost of calls. With <mode>=0, the execute command returns the current call meter value from the ME.

This command also includes the possibility to 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. Deactivation of the unsolicited event reporting is made with the same command.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CAOC=?	+CAOC: (list of supported <mode>s) OK
	ERROR
Read Command	**Responses**
AT+CAOC?	+CAOC: <mode> OK

	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CAOC=<mode>	+CAOC: <ccm> OK
	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CAOC	*Set default value (<mode>=1):* OK ERROR

Defined values

<mode>
0 – query CCM value 1 – deactivate the unsolicited reporting of CCM value 2 – activate the unsolicited reporting of CCM value
<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.

Examples

```
AT+CAOC=0
+CAOC: "000000"
OK
```

5.8 AT+CSSN Supplementary service notifications

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.

When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: <code1>[,<index>] is sent to TE before any other MO call setup result codes presented in the present document. When several different <code1>s are received from the network, each of them shall have its own +CSSI result code.

When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received, unsolicited result code +CSSU: <code2>[,<index>[,<number>,<type>[,<subaddr>,<satype>]]] is sent to TE. In case of MT call setup, result code is sent after every +CLIP result code (refer command "Calling line identification presentation +CLIP") and when several different <code2>s are received from the network, each of them shall have its own +CSSU result code.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CSSN=?	+CSSN: (list of supported <n>s),(list of supported <m>s) OK
	ERROR
Read Command	**Responses**
AT+CSSN?	+CSSN: <n>,<m> OK
	ERROR
Write Command	**Responses**
AT+CSSN=<n>[,<m>]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<n>
Parameter sets/shows the +CSSI result code presentation status in the TA: 0 – disable 1 – enable
<m>
Parameter sets/shows the +CSSU result code presentation status in the TA: 0 – disable 1 – enable
<code1>

0 – unconditional call forwarding is active 1 – some of the conditional call forwarding are active 2 – call has been forwarded 3 – call is waiting 5 – outgoing calls are barred
<index>
Refer "Closed user group +CCUG".
<code2>
0 – this is a forwarded call (MT call setup) 2 – call has been put on hold (during a voice call) 3 – call has been retrieved (during a voice call) 5 – call on hold has been released (this is not a SS notification) (during a voice call)
<number>
String type phone number of format specified by <type>.
<type>
Type of address octet in integer format; default 145 when dialing string includes international access code character "+", otherwise 129.
<subaddr>
String type sub address of format specified by <satype>.
<satype>
Type of sub address octet in integer format, default 128.

Examples

AT+CSSN=1,1
OK
AT+CSSN?
+CSSN: 1,1
OK

5.9 AT+CPOL Preferred operator list

Description

This command is used to edit the SIM preferred list of networks.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPOL=?	+CPOL: (list of supported <index>s), (list of supported <format>s) OK

	ERROR
Read Command	Responses
AT+CPOL?	[+CPOL:<index1>,<format>,<oper1>[<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>,<LTE_AcT1>][<CR><LF> +CPOL: <index2>,<format>,<oper2>[,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>,<LTE_AcT1>] [...]]] OK
	ERROR
Write Command	Responses
AT+CPOL=<index>[,<format>[,<oper>][,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>,<LTE_AcT1>]] **NOTE:** If using USIM card, the last four parameters must set.	OK
	ERROR
	+CME ERROR: <err>

Defined values

<index>
Integer type, the order number of operator in the SIM preferred operator list. If only input <index>, command will delete the value indicate by <index>.
<format>
0 – long format alphanumeric <oper> 1 – short format alphanumeric <oper> 2 – numeric <oper>
<operX>
String type.
<GSM_AcT*n*>
GSM access technology: 0 – access technology not selected 1 – access technology selected
<GSM_Compact_AcT*n*>
GSM compact access technology: 0 – access technology not selected 1 – access technology selected
<UTRA_AcT*n*>
UTRA access technology: 0 – access technology not selected

1 – access technology selected
<LTE_AcT*n*>
LTE access technology: 0 – access technology not selected 1 – access technology selected

Examples

AT+CPOL?
+CPOL: 1,2,"46001",0,0,1,0
OK
AT+CPOL=?
+CPOL: (1-8),(0-2)
OK

5.10 AT+COPN Read operator names

Description

This command is used to return the list of operator names from the ME. Each operator code <numericX> that has an alphanumeric equivalent <alphaX> in the ME memory shall be returned.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+COPN=?	OK
	ERROR
Write Command	**Responses**
AT+COPN	+COPN:<numeric1>,<alpha1>[<CR><LF> +COPN: <numeric2>,<alpha2> [...]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<numericX>
String type, operator in numeric format (see AT+COPS).
<alphaX>

String type, operator in long alphanumeric format (see AT+COPS).

Examples

```
AT+COPN
+COPN: "46000","China Mobile Com"
+COPN: "46001"," China Unicom"
……
OK
```

5.11 AT+CNMP Preferred mode selection

Description

This command is used to select or set the state of the mode preference.

NOTE: The set value in Write Command will take efficient immediately; The set value will retain after module reset;

NOTE: The response will be returned immediately for Test Command and Read Command; The maximum response time for Write Command is 10 seconds.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CNMP=?	+CNMP: (list of supported <mode>s) OK
Read Command	Responses
AT+CNMP?	+CNMP: <mode> OK
Write Command	Responses
AT+CNMP=<mode>	OK
	If <mode> not supported by module, this command will return ERROR. ERROR

Defined values

<mode>		
2	–	Automatic
14	–	WCDMA Only
38	–	LTE Only
54	–	WCDMA+LTE Only

Examples

```
AT+CNMP=2
OK
AT+CNMP?
+CNMP: 2
OK
```

5.12 AT+CNBP Preferred band selection

Description

This command is used to select or set the state of the band preference.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CNBP?	+CNBP: <mode>[,<lte_mode>][,<tds_mode>] OK
Write Command	Responses
AT+CNBP=<mode>[,<lte_mode>][,<tds_mode>]	OK
	ERROR

Defined values

<mode>

64bit number, the value is "1" << "<pos>", then or by bit.

Some special mode value declared below:

0x40000000	BAND_PREF_NO_CHANGE

<pos>

Value:

0xFFFFFFFF7FFFFFFF	Any (any value)
7	GSM_DCS_1800
8	GSM_EGSM_900
9	GSM_PGSM_900
16	GSM_450
17	GSM_480
18	GSM_750
19	GSM_850
20	GSM_RGSM_900

21	GSM_PCS_1900
22	WCDMA_IMT_2000
23	WCDMA_PCS_1900
24	WCDMA_III_1700
25	WCDMA_IV_1700
26	WCDMA_850
27	WCDMA_800
48	WCDMA_VII_2600
49	WCDMA_VIII_900
50	WCDMA_IX_1700

<lte_mode>

64/256 bit number, the value is “1” << “<lte_pos>”, then or by bit.

NOTE: FDD(band1 ~ band32, band66, band252 and band255), TDD(band33 ~ band42)

<lte_pos>

Value:

0x480000000000000000000000000000000000000000000002000007FF3FDF3FFF

	Any (any value)
0	EUTRAN_BAND1(UL:1920-1980; DL:2110-2170)
1	EUTRAN_BAND2(UL:1850-1910; DL:1930-1990)
2	EUTRAN_BAND3(UL:1710-1785; DL:1805-1880)
3	EUTRAN_BAND4(UL:1710-1755; DL:2110-2155)
4	EUTRAN_BAND5(UL: 824-849; DL: 869-894)
5	EUTRAN_BAND6(UL: 830-840; DL: 875-885)
6	EUTRAN_BAND7(UL:2500-2570; DL:2620-2690)
7	EUTRAN_BAND8(UL: 880-915; DL: 925-960)
8	EUTRAN_BAND9(UL:1749.9-1784.9; DL:1844.9-1879.9)
9	EUTRAN_BAND10(UL:1710-1770; DL:2110-2170)
10	EUTRAN_BAND11(UL:1427.9-1452.9; DL:1475.9-1500.9)
11	EUTRAN_BAND12(UL:698-716; DL:728-746)
12	EUTRAN_BAND13(UL: 777-787; DL: 746-756)
13	EUTRAN_BAND14(UL: 788-798; DL: 758-768)
16	EUTRAN_BAND17(UL: 704-716; DL: 734-746)
17	EUTRAN_BAND18(UL: 815-830; DL: 860-875)
18	EUTRAN_BAND19(UL: 830-845; DL: 875-890)
19	EUTRAN_BAND20(UL: 832-862; DL: 791-821)
20	EUTRAN_BAND21(UL: 1447.9-1462.9; DL: 1495.9-1510.9)
22	EUTRAN_BAND23(UL: 2000-2020; DL: 2180-2200)
23	EUTRAN_BAND24(UL: 1626.5-1660.5; DL: 1525 -1559)
24	EUTRAN_BAND25(UL: 1850-1915; DL: 1930 -1995)
25	EUTRAN_BAND26(UL: 814-849; DL: 859 -894)
26	EUTRAN_BAND27(UL: 807.5-824; DL: 852 -869)
27	EUTRAN_BAND28(703-748; DL: 758-803)
28	EUTRAN_BAND29(UL:1850-1910 or 1710-1755;

DL:716-728)

29	EUTRAN_BAND30(UL: 2305-2315 ; DL: 2350 - 2360)
32	EUTRAN_BAND33(UL: 1900-1920; DL: 1900-1920)
33	EUTRAN_BAND34(UL: 2010-2025; DL: 2010-2025)
34	EUTRAN_BAND35(UL: 1850-1910; DL: 1850-1910)
35	EUTRAN_BAND36(UL: 1930-1990; DL: 1930-1990)
36	EUTRAN_BAND37(UL: 1910-1930; DL: 1910-1930)
37	EUTRAN_BAND38(UL: 2570-2620; DL: 2570-2620)
38	EUTRAN_BAND39(UL: 1880-1920; DL: 1880-1920)
39	EUTRAN_BAND40(UL: 2300-2400; DL: 2300-2400)
40	EUTRAN_BAND41(UL: 2496-2690; DL: 2496-2690)
41	EUTRAN_BAND42(UL: 3400-3600; DL: 3400-3600)
42	EUTRAN_BAND43(UL: 3600-3800; DL: 3600-3800)
65	EUTRAN_BAND66(UL: 1710-1780; DL: 2110-2200)
251	EUTRAN_BAND252(DL: 5150-5250)
254	EUTRAN_BAND255(DL: 5725-5850)

<tds_mode>

64bit number, the value is “1” << “<tds_pos>”, then or by bit.

<tds_pos>

Value:

0x000000000000003F	Any (any value)
0	TDS Band A (1900-1920 MHz, 2010-2020 MHz)
1	TDS Band B (1850-1910 MHz, 1930-1990 MHz)
2	TDS Band C (1910-1930 MHz)
3	TDS Band D (2570-2620 MHz)
4	TDS Band E (2300-2400 MHz)
5	TDS Band F (1880-1920 MHz)

Examples

```
AT+CNBP=,0x0000000000000095
OK
AT+CNBP?
+CNBP:
0x0x0000000000400000,0x00000000000000000000000000000000000000000000000000000000000000000000095,0x000000000000003F
AT+CNBP=,0x480000000000000000000000000000000000000000000020000000000000095
OK
AT+CNBP?
+CNBP:
0x0x0000000000400000,0x480000000000000000000000000000000000000000000020000000000000095,0x000000000000003F
```

5.13 AT+CNAOP Acquisitions order preference

Description

This command is used to reset the state of acquisitions order preference.

SIM PIN	References
NO	Vendor

Syntax

Read Command	Responses
AT+CNAOP?	+CNAOP: <mode>[,<sys_mode1>,[<sys_mode2>[,<sys_mode3>[,<sys_mode4>[,<sys_mode5>[,<sys_mode6>]]]]]] OK
Write Command	**Responses**
AT+CNAOP=<mode>[,<sys_mode1>[,<sys_mode2>[,<sys_mode3>[,<sys_mode4>[,<sys_mode5>[,<sys_mode6>]]]]]]	OK
	ERROR

Defined values

<mode>
7 – Acquistion by priority order list <sys_moden>s.
<sys_moden>
sys_mode values: 2 – CDMA 3 – GSM 4 – HDR 5 – WCDMA 9 – LTE 11 – TDSCDMA

Examples

AT+CNAOP=7,9,5,3,11,2,4
OK
AT+CNAOP?
+CNAOP: 7,9,5,3,11,2,4
OK

5.14 AT+CPSI Inquiring UE system information

Description

This command is used to return the UE system information.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CPSI=?	+CPSI: (scope of <time>) OK
Read Command	**Responses**
	If camping on a wcdma cell: +CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Frequency Band>,<PSC>,<Freq>,<SSC>,<EC/IO>,<RSCP>,<Qual>,<RxLev>,<TXPWR> OK
	If camping on a lte cell: +CPSI: <System Mode>,<Operation Mode>[,<MCC>-<MNC>,<TAC>,<SCellID>,<PCellID>,<Frequency Band>,<earfcn>,<dlbw>,<ulbw>,<RSRQ>,<RSRP>,<RSSI>,<RSSNR>] OK
	If no service: +CPSI: NO SERVICE, Online OK *If power-off mode:* +CPSI: NO SERVICE, Powering off OK
	ERROR
Write Command	**Responses**
AT+CPSI=<time>	OK
	ERROR

Defined values

<time>
The range is 0-255, unit is second, after set <time> will report the system information every the

seconds.
<System Mode>
System mode, values: “NO SERVICE”, “WCDMA”, “LTE” If module in LIMITED SERVICE state and +CNLSA command is set to 1, the system mode will display as “LTE-LIMITED”, “WCDMA-LIMITED”…
<Operation Mode>
UE operation mode, values: “Unknown”, “Online”, “Offline”, “Factory Test Mode”, “Reset”, “Low Power Mode”.
<MCC>
Mobile Country Code (first part of the PLMN code)
<MNC>
Mobile Network Code (second part of the PLMN code)
<LAC>
Location Area Code (hexadecimal digits)
<Cell ID>
Service-cell Identify.
<Absolute RF Ch Num>
AFRCN for service-cell.
<Track LO Adjust>
Track LO Adjust
<C1>
Coefficient for base station selection
<C2>
Coefficient for Cell re-selection
<Frequency Band>
Frequency Band of active set
<PSC>
Primary synchronization code of active set.
<Freq>
Downlink frequency of active set.
<SSC>
Secondary synchronization code of active set
<EC/IO>
Ec/Io value
<RSCP>
Received Signal Code Power
<Qual>
Quality value for base station selection
<RxLev>
RX level value for base station selection
<TXPWR>
UE TX power in dBm. If no TX, the value is 500.
<Cpid>

Cell Parameter ID
<TAC>
Tracing Area Code
<PCellID>
Physical Cell ID
<earfcn>
E-UTRA absolute radio frequency channel number for searching LTE cells
<dlbw>
Transmission bandwidth configuration of the serving cell on the downlink
<ulbw>
Transmission bandwidth configuration of the serving cell on the uplink
<RSRP>
Current reference signal received power in -1/10 dBm. Available for LTE
<RSRQ>
Current reference signal receive quality as measured by L1.
<RSSNR>
Average reference signal signal-to-noise ratio of the serving cell
<BID>
Base ID

Examples

AT+CPSI?
+CPSI: WCDMA,Online,460-01,0xA809,11122855,WCDMA IMT 2000,279,10663,0,1.5,62,33, 52,500
OK
AT+CPSI=?
+CPSI: (0-255)
OK

5.15 AT+CNSMOD Show network system mode

Description

This command is used to return the current network system mode.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CNSMOD=?	+CNSMOD: (list of supported <n>s) OK
Read Command	Responses
AT+CNSMOD?	+CNSMOD: <n>,<stat> OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CNSMOD=<n>	OK
	ERROR
	+CME ERROR: <err>

Defined values

<n>		
0	–	disable auto report the network system mode information
1	–	auto report the network system mode information, command: +CNSMOD:<stat>
<stat>		
0	–	no service
4	–	WCDMA
5	–	HSDPA only(WCDMA)
6	–	HSUPA only(WCDMA)
7	–	HSPA (HSDPA and HSUPA, WCDMA)
8	–	LTE

Examples

```
AT+CNSMOD?
+CNSMOD: 0,8
OK
```

5.16 AT+CEREG EPS network registration status

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; in this latest case <AcT>, <tac> and <ci> are sent only if available.

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.

SIM PIN	References
NO	3GPP TS 24.008 [8]

Syntax

Test Command	Responses
AT+CEREG=?	+CEREG: (list of supported <n>s) OK
	ERROR
Read Command	**Responses**
AT+CEREG?	+CEREG: <n>,<stat>[,<tac>,<ci>[,<AcT>]] OK
	ERROR
Write Command	**Responses**
AT+CEREG=[<n>]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CEREG	*Set default value（<n>=0）:* OK ERROR

Defined values

<n>

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>]]

<stat>

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)

<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 identify in hexadecimal format

<AcT>

A numberic parameter that indicates the access technology of serving cell

2 UTRAN (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

Examples

```
AT+CEREG?
+CEREG: 0,4
OK
```

5.17 AT+CTZU Automatic time and time zone update

Description

This command is used to enable and disable automatic time and time zone update via NITZ

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CTZU=?	+CTZU: (list of supported <on/off>s) OK
Read Command	Responses
AT+CTZU?	+CTZU: < on/off > OK
Write Command	Responses

AT+CTZU=< on/off >	OK
	ERROR

Defined values

<on/off>
Integer type value indicating: 0 – Disable automatic time zone update via NITZ (default). 1 – Enable automatic time zone update via NITZ. **NOTE:** 1. The value of < on/off > is nonvolatile, and factory value is 0. 2. For automatic time and time zone update is enabled (+CTZU=1): If time zone is only received from network and it isn't equal to local time zone (AT+CCLK), time zone is updated automatically, and real time clock is updated based on local time and the difference between time zone from network and local time zone (Local time zone must be valid). If Universal Time and time zone are received from network, both time zone and real time clock is updated automatically, and real time clock is based on Universal Time and time zone from network.

Examples

AT+CTZU?
+CTZU: 0
OK
AT+CTZU=1
OK

5.18 AT+CTZR Time and time zone reporting

Description

This command is used to enable and disable the time zone change event reporting. If the reporting is enabled the MT returns the unsolicited result code +CTZV: <tz>[,<time>][,<dst>]whenever the time zone is changed.

NOTE: The time zone reporting is not affected by the Automatic Time and Time Zone command AT+CTZU.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CTZR=?	+CTZR: (list of supported < on/off >s) OK
Read Command	Responses
AT+CTZR?	+CTZR: < on/off > OK
Write Command	Responses
AT+CTZR=< on/off >	OK
	ERROR
Execution Command	Responses
AT+CTZR	*Set default value:* OK

Defined values

<on/off>

Integer type value indicating:

0 – Disable time zone change event reporting (default).

1 – Enable time zone change event reporting.

+CTZV: <tz>[,<time>][,<dst>]

Unsolicited result code when time zone received from network isn't equal to local time zone, and if the informations from network don't include date and time, time zone will be only reported, and if network daylight saving time is present, it is also reported. For example:

+CTZV: 32 *(Only report time zone)*

+CTZV: 32,1 *(Report time zone and network daylight saving time)*

+CTZV: 32,08/12/09,17:00:00 *(Report time and time zone)*

+CTZV: 32,08/12/09,17:00:00,1 *(Report time, time zone and daylight saving time)*

For more detailed informations about time and time zone, please refer 3GPP TS 24.008.

<tz> Local time zone received from network.

<time> Universal time received from network, and the format is "yy/MM/dd,hh:mm:ss", where characters indicate year (two last digits), month, day, hour, minutes and seconds.

<dst> Network daylight saving time, and if it is received from network, it indicates the value that has been used to adjust the local time zone. The values as following:

0 – No adjustment for Daylight Saving Time.

1 – +1 hour adjustment for Daylight Saving Time.

2 – +2 hours adjustment for Daylight Saving Time.

NOTE: Herein, <time> is Universal Time or NITZ time, but not local time.

Examples

AT+CTZR?
+CTZR: 0
OK
AT+CTZR=1
OK

6 AT Commands for SMS

6.1 AT+CSMS Select message service

Description

This command is used to select messaging service <service>.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CSMS=?	+CSMS: (list of supported <service>s) OK
Read Command	Responses
AT+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm> OK
Write Command	Responses
AT+CSMS=<service>	+CSMS: <mt>,<mo>,<bm> OK
	ERROR
	+CMS ERROR: <err>

Defined values

<service>
0 – SMS at command is compatible with GSM phase 2.
1 – SMS at command is compatible with GSM phase 2+.
<mt>
Mobile terminated messages:
0 – type not supported.
1 – type supported.
<mo>
Mobile originated messages:
0 – type not supported.
1 – type supported.
<bm>
Broadcast type messages:

0 – type not supported.
1 – type supported.

Examples

```
AT+CSMS=0
+CSMS:1,1,1
OK
AT+CSMS?
+CSMS:0,1,1,1
OK
AT+CSMS=?
+CSMS:(0-1)
OK
```

6.2 AT+CPMS Preferred message storage

Description

This command is used to select memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CPMS=?	+CPMS: (list of supported <mem1>s), (list of supported <mem2>s), (list of supported <mem3>s) OK
Read Command	**Responses**
AT+CPMS?	+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK
	ERROR
	+CMS ERROR: <err>
Write Command	**Responses**
AT+CPMS=<mem1>[,<mem2>[,<mem3>]]	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK

	ERROR
	+CMS ERROR: <err>
Execution Command	Responses
AT+CPMS	Set default value (<mem1>="SM", <mem2>="SM", <mem3>="SM"): +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK
	ERROR

Defined values

<mem1>

String type, memory from which messages are read and deleted (commands List Messages AT+CMGL, Read Message AT+CMGR and Delete Message AT+CMGD).

"ME" and "MT" FLASH message storage

"SM" SIM message storage

"SR" Status report storage

<mem2>

String type, memory to which writing and sending operations are made (commands Send Message from Storage AT+CMSS and Write Message to Memory AT+CMGW).

"ME" and "MT" FLASH message storage

"SM" SIM message storage

"SR" Status report storage

<mem3>

String type, memory to which received SMS is preferred to be stored (unless forwarded directly to TE; refer command New Message Indications AT+CNMI).

"ME" FLASH message storage

"SM" SIM message storage

<usedX>

Integer type, number of messages currently in <memX>.

<totalX>

Integer type, total number of message locations in <memX>.

Examples

```
AT+CPMS=?
+CPMS: ("ME","MT","SM","SR"),("ME","MT","SM","SR"),("ME","SM")
OK
AT+CPMS?
+CPMS:"ME", 0, 23,"ME", 0, 23,"ME", 0, 23
OK
AT+CPMS="SM","SM","SM"
+CPMS:3,50,3,50,3,50
```

OK

6.3 AT+CMGF Select SMS message format

Description

This command is used to specify the input and output format of the short messages.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMGF=?	+CMGF: (list of supported <mode>s) OK
	ERROR
Read Command	Responses
AT+CMGF?	+CMGF: <mode> OK
	ERROR
Write Command	Responses
AT+CMGF=<mode>	OK
	ERROR
Execution Command	Responses
AT+CMGF	*Set default value (<mode>=0):* OK
	ERROR

Defined values

<mode>
0 – PDU mode
1 – Text mode

Examples

```
AT+CMGF?
+CMGF: 0
OK
AT+CMGF=?
+CMGF: (0-1)
```

OK

AT+CMGF=1

OK

6.4 AT+CSCA SMS service centre address

Description

This command is used to update the SMSC address, through which mobile originated SMS are transmitted.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CSCA=?	OK
Read Command	Responses
AT+CSCA?	+CSCA: <sca>,<tosca> OK
Write Command	Responses
AT+CSCA=<sca>[,<tosca>]	OK

Defined values

<sca>
Service Centre 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 (refer to command AT+CSCS), type of address given by <tosca>.
<tosca>
SC address Type-of-Address octet in integer format, when first character of <sca> is + (IRA 43) default is 145, otherwise default is 129.

Examples

AT+CSCA="+8613012345678"

OK

AT+CSCA?

+CSCA: "+8613010314500", 145

OK

6.5 AT+CSCB Select cell broadcast message indication

Description

The test command returns the supported <mode>s as a compound value.

The read command displays the accepted message types.

Depending on the <mode> parameter, the write command adds or deletes the message types accepted.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CSCB=?	+CSCB: (list of supported <mode>s) OK
	ERROR
Read Command	Responses
AT+CSCB?	+CSCB: <mode>,<mids>,<dcss> OK
	ERROR
Write Command	Responses
AT+CSCB=<mode>[,<mids>[,<dcss>]]	OK
	ERROR
	+CMS ERROR: <err>

Defined values

<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.
<dcss>
String type; all different possible combinations of CBM data coding schemes(default is empty string)

Examples

```
AT+CSCB=?
+CSCB: (0-1)
OK
```

```
AT+CSCB=0,”15-17,50,86”,””
OK
```

6.6 AT+CSMP Set text mode parameters

Description

This command is used to select values for additional parameters needed when SM is sent to the network or placed in storage when text format message mode is selected.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CSMP=?	OK
Read Command	Responses
AT+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs> OK
Write Command	Responses
AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]	OK

Defined values

<fo>
Depending on the Command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if <fo> is set to 49.
<vp>
Depending on SMS-SUBMIT <fo> setting: GSM 03.40,TP-Validity-Period either in integer format (default 167), in time-string format, or if is supported, in enhanced format (hexadecimal coded string with quotes), (<vp> is in range 0... 255).
<pid>
GSM 03.40 TP-Protocol-Identifier in integer format (default 0).
<dcs>
GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format depending on the command or result code.

Examples

```
AT+CSMP=17,23,64,244
OK
```

6.7 AT+CSDH Show text mode parameters

Description

This command is used to control whether detailed header information is shown in text mode result codes.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CSDH=?	+CSDH: (list of supported <show>s) OK
	ERROR
Read Command	Responses
AT+CSDH?	+CSDH: <show> OK
Write Command	Responses
AT+CSDH=<show>	OK
	ERROR
Execution Command	Responses
AT+CSDH	*Set default value (<show>=0):* OK
	ERROR

Defined values

<show>	
0	– do not show header values defined in commands AT+CSCA and AT+CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in +CMT, AT+CMGL, AT+CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode; for SMS-COMMANDs in AT+CMGR result code, do not show <pid>, <mn>, <da>, <toda>, <length> or <data>
1	– show the values in result codes

Examples

```
AT+CSDH?
+CSDH: 0
OK
```

AT+CSDH=1
OK

6.8 AT+CNMA New message acknowledgement to ME/TA

Description

This command is used to confirm successful receipt of a new message (SMS-DELIVER or SMS-STATUSREPORT) routed directly to the TE. If ME does not receive acknowledgement within required time (network timeout), it will send RP-ERROR to the network.

NOTE: The execute / write command shall only be used when AT+CSMS parameter <service> equals 1 (= phase 2+) and appropriate URC has been issued by the module, i.e.:

<+CMT> for <mt>=2 incoming message classes 0, 1, 3 and none;

<+CMT> for <mt>=3 incoming message classes 0 and 3;

<+CDS> for <ds>=1.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CNMA=?	*if text mode(AT+CMGF=1):* OK *if PDU mode (AT+CMGF=0):* +CNMA: (list of supported <n>s) OK
Write Command	**Responses**
AT+CNMA=<n>	OK
	ERROR
	+CMS ERROR: <err>
Execution Command	**Responses**
AT+CNMA	OK
	ERROR
	+CMS ERROR: <err>

Defined values

<n>
Parameter required only for PDU mode. 0 – Command operates similarly as execution command in text mode. 1 – Send positive (RP-ACK) acknowledgement to the network. Accepted only in PDU mode.

2 –	Send negative (RP-ERROR) acknowledgement to the network. Accepted only in PDU mode.

Examples

AT+CNMI=1,2,0,0,0
OK *+CMT:"1380022xxxx","","02/04/03,11 :06 :38+32"<CR><LF>* *Testing* *(receive new short message)*
AT+CNMA(send ACK to the network)
OK
AT+CNMA
+CMS ERROR：340 *(the second time return error, it needs ACK only once)*

6.9 AT+CNMI New message indications to TE

Description

This command is used to select 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. If TE is inactive (e.g. DTR signal is OFF). If set <mt>＝3 or <ds>＝1, make sure <mode>＝1, If set <mt>=2,make sure <mode>=1 or 2, otherwise it will return error.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CNMI=?	+CNMI: (list of supported <mode>s),(list of supported <mt>s),(list of supported <bm>s),(list of supported <ds>s),(list of supported <bfr>s) OK
Read Command	Responses
AT+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> OK
Write Command	Responses
AT+CNMI=<mode>[,<mt>[,<bm>[,<ds> [,<bfr>]]]]	OK
	ERROR
	+CMS ERROR: <err>
Execution Command	Responses

AT+CNMI	*Set default value:* OK

Defined values

<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.

<mt>

The rules for storing received SMS depend on its data coding scheme, preferred memory storage (AT+CPMS) setting and this value:

0 – No SMS-DELIVER indications are routed to the TE.

1 – If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem3>,<index>.

2 – SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code:
+CMT:[<alpha>],<length><CR><LF><pdu> (PDU mode enabled); or
+CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]
<CR> <LF><data>
(text mode enabled, about parameters in italics, refer command Show Text Mode Parameters AT+CSDH).

3 – Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.

<bm>

The rules for storing received CBMs depend on its data coding scheme, the setting of Select CBM Types (AT+CSCB) and this value:

0 – No CBM indications are routed to the TE.

2 – New CBMs are routed directly to the TE using unsolicited result code:
+CBM: <length><CR><LF><pdu> (PDU mode enabled); or
+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)

<ds>

0 – No SMS-STATUS-REPORTs are routed to the TE.

1 – SMS-STATUS-REPORTs are routed to the TE using unsolicited result code:
+CDS: <length><CR><LF><pdu> (PDU mode enabled); or

+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)

2 – If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem3>,<index>.

<bfr>

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

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

Examples

```
AT+CNMI?
+CNMI: 0,0,0,0,0
OK
AT+CNMI=?
+CNMI: (0,1,2),(0,1,2,3),(0,2),(0,1,2),(0,1)
OK
AT+CNMI=2,1 (unsolicited result codes after received messages.)
OK
```

6.10 AT+CGSMS Select service for MO SMS messages

Description

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

The test command is used for requesting information on which services and service preferences can be set by using the AT+CGSMS write command

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGSMS=?	+CGSMS: (list of supported <service>s) OK
Read Command	Responses
AT+CGSMS?	+CGSMS: <service> OK
Write Command	Responses
AT+CGSMS=<service>	OK

	ERROR
	+CME ERROR: <err>

Defined values

<service>
A numeric parameter which indicates the service or service preference to be used 0 – GPRS(value is not really supported and is internally mapped to 2) 1 – circuit switched(value is not really supported and is internally mapped to 3) 2 – GPRS preferred (use circuit switched if GPRS not available) 3 – circuit switched preferred (use GPRS if circuit switched not available)

Examples

AT+CGSMS?
+CGSMS: 3
OK
AT+CGSMS=?
+CGSMS: (0-3)
OK

6.11 AT+CMGL List SMS messages from preferred storeDescription

This command is used to return messages with status value <stat> from message storage <mem1> to the TE.

If the status of the message is 'received unread', the status in the storage changes to 'received read'.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMGL=?	+CMGL: (list of supported <stat>s) OK
Write Command	**Responses**
AT+CMGL=<stat>	*If text mode (AT+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERs:* +CMGL:<index>,<stat>,<oa>/<da>,[<alpha>],[<scts>][,<tooa>/<toda>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>[<CR><LF> +CMGL:<index>,<stat>,<oa>/<da>,[<alpha>],[<scts>][,<tooa>/<toda>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data

	>[...]] OK
	If text mode (AT+CMGF=1), command successful and SMS-STATUS-REPORTs: +CMGL:<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF> +CMGL:<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]] OK
	If text mode (AT+CMGF=1), command successful and SMS-COMMANDs: +CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF> +CMGL: <index>,<stat>,<fo>,<ct>[...]] OK
	If text mode (AT+CMGF=1), command successful and CBM storage: +CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages> <CR><LF><data>[<CR><LF> +CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages> <CR><LF><data>[...]] OK
	If PDU mode (AT+CMGF=0) and Command successful: +CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu>[<CR><LF> +CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu> […]] OK
	+CMS ERROR: <err>

Defined values

<stat>

1. Text Mode:

"REC UNREAD"	received unread message (i.e. new message)
"REC READ"	received read message
"STO UNSENT"	stored unsent message
"STO SENT"	stored sent message
"ALL"	all messages

2. PDU Mode:

0 – received unread message (i.e. new message)
1 – received read message
2 – stored unsent message

3 – stored sent message
4 – all messages

<index>

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

<oa>

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, type of address given by <tooa>.

<da>

Destination-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, type of address given by <toda>.

<alpha>

String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS.

<scts>

TP-Service-Centre-Time-Stamp in time-string format (refer <dt>).

<tooa>

TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>).

<toda>

TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.

<length>

Integer type value indicating in the text mode (AT+CMGF=1) the length of the message body <data> in characters; or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)

<data>

In the case of SMS: TP-User-Data in text mode responses; format:

1. If <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
   a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
   b. If TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal numbers. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))
2. If <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
3. If <dcs> indicates that GSM 7 bit default alphabet is used:
   a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE

character set.

b. If TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal numbers.

4. If <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers.

<fo>

Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if <fo> is set to 49.

<mr>

Message Reference

GSM 03.40 TP-Message-Reference in integer format.

<ra>

Recipient Address

GSM 03.40 TP-Recipient-Address Address-Value field in string format;BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set(refer to command AT+CSCS);type of address given by <tora>

<tora>

Type of Recipient Address

GSM 04.11 TP-Recipient-Address Type-of-Address octet in integer format (default refer <toda>)

<dt>

Discharge Time

GSM 03.40 TP-Discharge-Time in time-string format:"yy/MM/dd,hh:mm:ss+zz",where characters indicate year (two last digits),month,day,hour,minutes,seconds and time zone.

<st>

Status

GSM 03.40 TP-Status in integer format

0…255

<ct>

Command Type

GSM 03.40 TP-Command-Type in integer format

0…255

<sn>

Serial Number

GSM 03.41 CBM Serial Number in integer format

<mid>

Message Identifier

GSM 03.41 CBM Message Identifier in integer format

<page>

Page Parameter

GSM 03.41 CBM Page Parameter bits 4-7 in integer format

<pages>

Page Parameter

GSM 03.41 CBM Page Parameter bits 0-3 in integer format
<pdu>
In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal numbers. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

Examples

AT+CMGL=?
+CMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")
OK
AT+CMGL="ALL"
+CMGL: 1,"STO UNSENT","+10011",,,145,4
Hello World
OK

6.12 AT+CMGR Read message

Description

This command is used to return message with location value <index> from message storage <mem1> to the TE.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMGR=?	OK
Write Command	**Responses**
AT+CMGR=<index>	*If text mode (AT+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 (AT+CMGF=1), command successful and SMS-SUBMIT: +CMGR:<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>, <tosca>,<length>]<CR><LF><data> OK
	If text mode (AT+CMGF=1), command successful and SMS-STATUS-REPORT:

	+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> OK
	If text mode (AT+CMGF=1), command successful and SMS-COMMAND: +CMGR:<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length>]<CR><LF><data> OK
	If text mode (AT+CMGF=1), command successful and CBM storage: +CMGR:<stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> OK
	If PDU mode (AT+CMGF=0) and Command successful: +CMGR:<stat>,[<alpha>],<length><CR><LF><pdu> OK
	+CMS ERROR: <err>

Defined values

<index>

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

<stat>

1.Text Mode：

"REC UNREAD" received unread message (i.e. new message)

"REC READ" received read message

"STO UNSENT" stored unsent message

"STO SENT" stored sent message

2. PDU Mode：

0 – received unread message (i.e. new message)

1 – received read message.

2 – stored unsent message.

3 – stored sent message

<oa>

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, type of address given by <tooa>.

<alpha>

String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS.

<scts>

TP-Service-Centre-Time-Stamp in time-string format (refer <dt>).

<tooa>

TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>).

<fo>

Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if <fo> is set to 49.

<pid>

Protocol Identifier
GSM 03.40 TP-Protocol-Identifier in integer format
0…255

<dcs>

Depending on the command or result code: SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format.

<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, type of address given by <tosca>.

<tosca>

RP SC address Type-of-Address octet in integer format (default refer <toda>).

<length>

Integer type value indicating in the text mode (AT+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length).

<data>

In the case of SMS: TP-User-Data in text mode responses; format:

1 – If <dcs> indicates that GSM 7 bit default alphabet is used and <fo> indicates that TP-User-Data-Header-Indication is not set:
   a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
   b. If TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal numbers. (e.g. character Π (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55)).

2 – If <dcs> indicates that 8-bit or UCS2 data coding scheme is used, or <fo> indicates that TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal numbers. (eg. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

3 – If <dcs> indicates that GSM 7 bit default alphabet is used:
   a. If TE character set other than "HEX": ME/TA converts GSM alphabet into current TE character set.
   b. If TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default alphabet into two IRA character long hexadecimal numbers.

4 – If <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts

each 8-bit octet into two IRA character long hexadecimal numbers.
<da>
Destination-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, type of address given by <toda>.
<toda>
TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
<vp>
Depending on SMS-SUBMIT <fo> setting: TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>).
<mr>
Message Reference GSM 03.40 TP-Message-Reference in integer format.
<ra>
Recipient Address GSM 03.40 TP-Recipient-Address Address-Value field in string format;BCD numbers(or GSM default alphabet characters) are converted to characters of the currently selected TE character set(refer to command AT+CSCS);type of address given by <tora>
<tora>
Type of Recipient Address GSM 04.11 TP-Recipient-Address Type-of-Address octet in integer format (default refer <toda>)
<dt>
Discharge Time GSM 03.40 TP-Discharge-Time in time-string format:”yy/MM/dd,hh:mm:ss+zz”,where characters indicate year (two last digits),month,day,hour,minutes,seconds and time zone.
<st>
Status GSM 03.40 TP-Status in integer format 0…255
<ct>
Command Type GSM 03.40 TP-Command-Type in integer format 0…255
<mn>
Message Number GSM 03.40 TP-Message-Number in integer format
<sn>
Serial Number GSM 03.41 CBM Serial Number in integer format
<mid>
Message Identifier GSM 03.41 CBM Message Identifier in integer format

<page>
Page Parameter GSM 03.41 CBM Page Parameter bits 4-7 in integer format
<pages>
Page parameter GSM 03.41 CBM Page Parameter bits 0-3 in integer format
<pdu>
In the case of SMS: SC address followed by TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal numbers. (eg. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

Examples

AT+CMGR=1
+CMGR: "STO UNSENT","+10011",,145,17,0,0,167,"+8613800100500",145,11 *Hello World* *OK*

6.13 AT+CMGS Send message

Description

This command is used to send message from a TE to the network (SMS-SUBMIT).

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMGS=?	OK
Write Command	**Responses**
If text mode (AT+CMGF=1): AT+CMGS=<da>[,<toda>]<*CR*>*Text is entered.* <CTRL-Z/ESC> *If PDU mode(AT+CMGF=0):* AT+CMGS=<length><CR> *PDU is entered* <CTRL-Z/ESC>	*If sending successfully:* +CMGS: <mr> OK
	If cancel sending: OK
	If sending fails: ERROR
	If sending fails: +CMS ERROR: <err>

Defined values

<da>
Destination-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, type of address given by <toda>.
<toda>
TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
<length>
integer type value indicating in the text mode (AT+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)
<mr>
Message Reference GSM 03.40 TP-Message-Reference in integer format.
NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

AT+CMGS="13012832788"<CR>(TEXT MODE)
> ABCD<ctrl-Z/ESC>
+CMGS: 46
OK

6.14 AT+CMSS Send message from storage

Description

This command is used to send message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMSS=?	OK
Write Command	**Responses**
AT+CMSS= <index> [,<da>[,<toda>]]	+CMSS: <mr> OK
	ERROR
	If sending fails:

	+CMS ERROR: <err>

Defined values

<index>
Integer type; value in the range of location numbers supported by the associated memory and start with zero.
<da>
Destination-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, type of address given by <toda>.
<mr>
Message Reference GSM 03.40 TP-Message-Reference in integer format.
<toda>
TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

AT+CMSS=3
+CMSS: 0 *OK*
AT+CMSS=3,"13012345678"
+CMSS: 55 *OK*

6.15 AT+CMGW Write message to memory

Description

This command is used to store message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMGW=?	OK
Write Command	Responses

If text mode(AT+CMGF=1): AT+CMGW=<oa>/<da>[,<tooa>/<toda>[,<stat>]]<CR> *Text is entered.* <CTRL-Z/ESC> *If PDU mode(AT+CMGF=0):* AT+CMGW=<length>[,<stat>]<CR>*PDU is entered.* <CTRL-Z/ESC>	*If write successfully:* +CMGW: <index> OK *If cancel write:* OK *If write fails:* ERROR *If write fails:* +CMS ERROR: <err>

Defined values

<index>
Integer type; value in the range of location numbers supported by the associated memory and start with zero.
<oa>
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, type of address given by <tooa>.
<tooa>
TP-Originating-Address, Type-of-Address octet in integer format. (default refer <toda>).
<da>
Destination-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, type of address given by <toda>.
<toda>
TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
<length>
Integer type value indicating in the text mode (AT+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length).
<stat> 1. Text Mode: "STO UNSENT" stored unsent message "STO SENT" stored sent message 2. PDU Mode: 2 – stored unsent message 3 – stored sent message
NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

```
AT+CMGW="13012832788" <CR> (TEXT MODE)
ABCD<ctrl-Z/ESC>
+CMGW:1
OK
```

6.16 AT+CMGD Delete message

Description

This command is used to delete message from preferred message storage <mem1> location <index>. If <delflag> is present and not set to 0 then the ME shall ignore <index> and follow the rules for <delflag> shown below.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMGD=?	+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)] OK
Write Command	**Responses**
AT+CMGD= <index>[,<delflag>]	OK
	ERROR
	+CMS ERROR: <err>

Defined values

<index>

Integer type; value in the range of location numbers supported by the associated memory and start with zero.

<delflag>

0 – (or omitted) Delete the message specified in <index>.

1 – Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched.

2 – Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched.

3 – Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched.

4 – Delete all messages from preferred message storage including unread messages.

NOTE: If set <delflag>=1, 2, 3 or 4, <index> is omitted, such as AT+CMGD=,1.

Examples

```
AT+CMGD=1
OK
```

6.17 AT+CMGMT Change message status

Description

This command is used to change the message status. If the status is unread, it will be changed read. Other statuses don't change.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CMGMT=?	OK
Write Command	Responses
AT+CMGMT=<index>	OK
	ERROR
	+CMS ERROR: <err>

Defined values

<index>
Integer type; value in the range of location numbers supported by the associated memory and start with zero.

Examples

```
AT+CMGMT=1
OK
```

6.18 AT+CMVP Set message valid period

Description

This command is used to set valid period for sending short message.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CMVP=?	+CMVP: (list of supported <vp>s) OK
Read Command	Responses
AT+CMVP?	+CMVP:<vp> OK
Write Command	Responses
AT+CMVP=<vp>	OK
	ERROR
	+CMS ERROR: <err>

Defined values

<vp>	
Validity period value:	
0 to 143	(<vp>+1) x 5 minutes (up to 12 hours)
144 to 167	12 hours + (<vp>-143) x 30 minutes
168 to 196	(<vp>-166) x 1 day
197 to 255	(<vp>-192) x 1 week

Examples

```
AT+CMVP=167
OK
AT+CMVP?
+CMVP: 167
OK
```

6.19 AT+CMGRD Read and delete message

Description

This command is used to read message, and delete the message at the same time. It integrate AT+CMGR and AT+CMGD, but it doesn't change the message status.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CMGRD=?	OK
Write Command	Responses
AT+CMGRD=<index>	*If text mode(AT+CMGF=1),command successful and SMS-DELIVER:* +CMGRD:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]<CR><LF><data> OK
	If text mode(AT+CMGF=1),command successful and SMS-SUBMIT: +CMGRD:<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>], <sca>,<tosca>,<length>]<CR><LF><data> OK
	If text mode(AT+CMGF=1),command successful and SMS-STATUS- REPORT: +CMGRD: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> OK
	If text mode(AT+CMGF=1),command successful and SMS-COMMAND: +CMGRD:<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><data>] OK
	If text mode(AT+CMGF=1),command successful and CBM storage: +CMGRD:<stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> OK
	If PDU mode(AT+CMGF=0) and command successful: +CMGRD: <stat>,[<alpha>],<length><CR><LF><pdu> OK
	ERROR
	+CMS ERROR: <err>

Defined values

Refer to command AT+CMGR.

Examples

AT+CMGRD=6

+CMGRD:"REC READ","+8613917787249",,"06/07/10,12:09:38+32",145,4,0,0, "+8613800210500",145,4

How do you do
OK

6.20 AT+CMGSEX Send message

Description

This command is used to send message from a TE to the network (SMS-SUBMIT).

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMGSEX=?	OK
Write Command	**Responses**
If text mode (AT+CMGF=1): AT+CMGSEX=<da>[,<toda>][,<mr>, <msg_seg>, <msg_total>]<*CR*>*Text is entered.* <CTRL-Z/ESC>	*If sending successfully:* +CMGSEX: <mr> OK
	If cancel sending: OK
	If sending fails: ERROR
	If sending fails: +CMS ERROR: <err>

Defined values

<da>
Destination-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, type of address given by <toda>.
<toda>
TP-Destination-Address, Type-of-Address octet in integer format. (When first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
<mr>
Message Reference GSM 03.40 TP-Message-Reference in integer format.
<msg_seg>
The segment number for long sms
<msg_total>

The total number of the segments for long sms. Its range is from 2 to 255.
NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: For single SMS, it is 160 characters if the 7 bit GSM coding scheme is used; For multiple long sms, it is 153 characters if the 7 bit GSM coding scheme is used.

Examples

```
AT+CMGSEX="13012832788", 190, 1, 2<CR>(TEXT MODE)
> ABCD<ctrl-Z/ESC>
+CMGSEX: 190
OK
AT+CMGSEX="13012832788", 190, 2, 2<CR>(TEXT MODE)
> EFGH<ctrl-Z/ESC>
+CMGSEX: 190
OK
```

6.21 AT+CMSSEX Send multi messages from storage

Description

This command is used to send messages with location value <index1>,<index2>,<index3>… from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).The max count of index is 13 one time.

SIM PIN	References
YES	3GPP TS 27.005

Syntax

Test Command	Responses
AT+CMSSEX=?	OK
Write Command	**Responses**
AT+CMSSEX= <index> [,<index >[,…]]	+CMSSEX: <mr>[,<mr>[,…]] OK
	ERROR
	If sending fails: [+CMSSEX: <mr>[,<mr>[,…]]] +CMS ERROR: <err>

Defined values

<index>
Integer type; value in the range of location numbers supported by the associated memory and start

with zero.
<mr>
Message Reference GSM 03.40 TP-Message-Reference in integer format.
NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

AT+CMSSEX=0,1
+CMSSEX: 239,240 *OK*
AT+CMSSEX=0,1
+CMSSEX: 238 *+CMS ERROR: Invalid memory index*

7 AT Commands for Phonebook

7.1 AT+CPBS Select phonebook memory storage

Description

This command selects the active phonebook storage, i.e. the phonebook storage that all subsequent phonebook commands will be operating on.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPBS=?	+CPBS: (list of supported <storage>s) OK
Read Command	**Responses**
AT+CPBS?	+CPBS: <storage>[,<used>,<total>] OK
	+CME ERROR: <err>
Write Command	**Responses**
AT+CPBS=<storage>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CPBS	*Set default value "SM":* OK

Defined values

<storage>
Values reserved by the present document: "DC" ME dialed calls list Capacity: max. 100 entries AT+CPBW command is not applicable to this storage. "MC" ME missed (unanswered received) calls list Capacity: max. 100 entries AT+CPBW command is not applicable to this storage.

"RC"	ME received calls list Capacity: max. 100 entries AT+CPBW command is not applicable to this storage.
"SM"	SIM phonebook Capacity: depending on SIM card
"ME"	Mobile Equipment phonebook Capacity: max. 500 entries
"FD"	SIM fixdialling-phonebook Capacity:depending on SIM card
"ON"	MSISDN list Capacity:depending on SIM card
"LD"	Last number dialed phonebook Capacity: depending on SIM card AT+CPBW command is not applicable to this storage
"EN"	Emergency numbers Capacity: depending on SIM card AT+CPBW command is not applicable to this storage.

<used>

Integer type value indicating the number of used locations in selected memory.

<total>

Integer type value indicating the total number of locations in selected memory.

Examples

```
AT+CPBS=?
+CPBS: ("SM","DC","FD","LD","MC","ME","RC","EN","ON")
OK
AT+CPBS=”SM”
OK
AT+CPBS?
+CPBS: "SM",1,200
OK
```

7.2 AT+CPBR Read phonebook entries

Description

This command gets the record information from the selected memory storage in phonebook. If the storage is selected as “SM” then the command will return the record in SIM phonebook, the same to others.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPBR=?	+CPBR: (<minIndex>-<maxIndex>), [<nlength>], [<tlength>] OK
	+CME ERROR: <err>
Write Command	**Responses**
AT+CPBR=<index1>[,<index2>]	[+CPBR: <index1>,<number>,<type>,<text>[<CR><LF> +CPBR: <index2>,<number>,<type>,<text>[…]]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<index1>
Integer type value in the range of location numbers of phonebook memory.
<index2>
Integer type value in the range of location numbers of phonebook memory.
<index>
Integer type.the current position number of the Phonebook index.
<minIndex>
Integer type the minimum <index> number.
<maxIndex>
Integer type the maximum <index> number
<number>
String type, phone number of format <type>, the maximum length is <nlength>.
<type>
Type of phone number octet in integer format, default 145 when dialing string includes international access code character "+", otherwise 129.
<text>
String type field of maximum length <tlength>; often this value is set as name.
<nlength>
Integer type value indicating the maximum length of field <number>.
<tlength>
Integer type value indicating the maximum length of field <text>.

Examples

AT+CPBS?
+CPBS: "SM",2,200

OK
AT+CPBR=1,10
+CPBR: 1,"1234567890",129,"James"
+CPBR: 2,"0987654321",129,"Kevin"
OK

7.3 AT+CPBF Find phonebook entries

Description

This command finds the record in phonebook (from the current phonebook memory storage selected with AT+CPBS) which alphanumeric field has substring <findtext>.If <findtext> is null, it will list all the entries.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPBF=?	+CPBF: [<nlength>],[<tlength>] OK
	+CME ERROR: <err>
Write Command	**Responses**
AT+CPBF=[<findtext>]	[+CPBF: <index1>,<number>,<type>,<text>[<CR><LF> +CPBF: <indexN>,<number>,<type>,<text>[…]]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<findtext>
String type, this value is used to find the record. Character set should be the one selected with command AT+CSCS.
<index>
Integer type values in the range of location numbers of phonebook memory.
<number>
String type, phone number of format <type>, the maximum length is <nlength>.
<type>
Type of phone number octet in integer format, default 145 when dialing string includes international access code character "+", otherwise 129.

<text>
String type field of maximum length <tlength>; Often this value is set as name.
<nlength>
Integer type value indicating the maximum length of field <number>.
<tlength>
Integer type value indicating the maximum length of field <text>.

Examples

```
AT+CPBF=" James "
+CPBF: 1,"1234567890",129," James "
OK
```

7.4 AT+CPBW Write phonebook entry

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPBW=?	+CPBW:(list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>] OK
	+CME ERROR:<err>
Write Command	**Responses**
AT+CPBW=[<index>][,<number>[,<type>[,<text>]]]	OK
	ERROR
	+CME ERROR:<err>

Defined values

<index>
Integer type values in the range of location numbers of phonebook memory. If <index> is not given, the first free entry will be used. If <index> is given as the only parameter, the phonebook entry specified by <index> is deleted. If record number <index> already exists, it will be overwritten.
<number>
String type, phone number of format <type>, the maximum length is <nlength>.It must be an

non-empty string.

<type>

Type of address octet in integer format, The range of value is from 129 to 255. If <number> contains a leading "+" <type> = 145 (international) is used. Supported value are:

145 – when dialling string includes international access code character "+"

161 – national number. The network support for this type is optional

177 – network specific number, ISDN format

129 – otherwise

NOTE: Other value refer TS 24.008 [8] subclause 10.5.4.7.

<text>

String type field of maximum length <tlength>; character set as specified by command Select TE Character Set AT+CSCS.

<nlength>

Integer type value indicating the maximum length of field <number>.

<tlength>

Integer type value indicating the maximum length of field <text>.

NOTE: If the parameters of <type> and <text> are omitted and the first character of <number> is '+', it will specify <type> as 145(129 if the first character isn't '+') and <text> as NULL.

Examples

```
AT+CPBW=3,"88888888",129,"John"
OK
AT+CPBW=,"6666666",129,"mary"
OK
AT+CPBW=1
OK
```

7.5 AT+CNUM Subscriber number

Description

Execution command returns the MSISDNs related to the subscriber (this information can be stored in the SIM or in the ME). If subscriber has different MSISDN for different services, each MSISDN is returned in a separate line.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses

AT+CNUM=?	OK
Execution Command	Responses
AT+CNUM	[+CNUM: <alpha>,<number>,<type>[<CR><LF> +CNUM: <alpha>, <number>,<type> [...]]] OK
	+CME ERROR: <err>

Defined values

<alpha>
Optional alphanumeric string associated with <number>, used character set should be the one selected with command Select TE Character Set AT+CSCS.
<number>
String type phone number of format specified by <type>.
<type>
Type of address octet in integer format. see also AT+CPBR <type>

Examples

AT+CNUM
+CNUM: "","13697252277",129
OK

8 AT Commands for GPRS

8.1 AT+CGREG GPRS network registration status

Description

This command controls the presentation of an unsolicited result code "+CGREG: <stat>" when <n>=1 and there is a change in the MT's GPRS network registration status.

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.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGREG=?	+CGREG: (list of supported <n>s) OK
Read Command	Responses
AT+CGREG?	+CGREG: <n>,<stat>[,<lac>,<ci>] OK
Write Command	Responses
AT+CGREG=<n>	OK
Execution Command	Responses
AT+CGREG	*Set default value:* OK

Defined values

<n>		
0	–	disable network registration unsolicited result code
1	–	enable network registration unsolicited result code +CGREG: <stat>
2	–	there is a change in the ME network registration status or a change of the network cell: +CGREG: <stat>[,<lac>,<ci>]
<stat>		
0	–	not registered, ME is not currently searching an operator to register to
1	–	registered, home network
2	–	not registered, but ME is currently trying to attach or searching an operator to register to
3	–	registration denied

4 – unknown 5 – registered, roaming
<lac>
Two bytes location area code in hexadecimal format (e.g.”00C3” equals 193 in decimal).
<ci>
Cell ID in hexadecimal format. WCDMA : Maximum is four byte

Examples

AT+CGREG=?
+CGREG: (0-1)
OK
AT+CGREG?
+CGREG: 0,0
OK

8.2 AT+CGATT Packet domain attach or detach

Description

The write 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.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGATT=?	+CGATT: (list of supported <state>s) OK
	ERROR
Read Command	Responses
AT+CGATT?	+CGATT: <state> OK
	ERROR
Write Command	Responses
AT+CGATT=<state>	OK
	ERROR
	+CME ERROR: <err>

Defined values

<state>
Indicates the state of Packet Domain attachment: 0 – detached 1 – attached

Examples

AT+CGATT?
+CGATT: 0
OK
AT+CGATT=1
OK

8.3 AT+CGACT PDP context activate or deactivate

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGACT=?	+CGACT: (list of supported <state>s) OK
Read Command	Responses
AT+CGACT?	+CGACT: [<cid>,<state> [<CR><LF> +CGACT: <cid>,<state> [...]]] OK
Write Command	Responses
AT+CGACT=<state>[,<cid>]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<state>
Indicates the state of PDP context activation: 0 – deactivated

1 – activated
<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…24

Examples

AT+CGACT?
+CGACT: 1,1
OK
AT+CGACT=?
+CGACT: (0,1)
OK
AT+CGACT=0,1
OK

8.4 AT+CGDCONT Define PDP context

Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command. A special form of the write command (AT+CGDCONT=<cid>) causes the values for context <cid> to become undefined.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGDCONT=?	+CGDCONT: (range of supported<cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)(list of <ipv4_ctrl>s),(list of <emergency_flag>s) OK
	ERROR
Read Command	Responses
AT+CGDCONT?	+CGDCONT: [<cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>,<ipv4_ctrl>,<emergency_flag>[<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp>,< ipv4_ctrl>,<emergency_flag>[...]]] OK

	ERROR
Write Command	Responses
AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>][,<ipv4_ctrl>[,<emergency_flag>]]]]]]	OK
	ERROR
Execution Command	Responses
AT+CGDCONT	OK
	ERROR

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. 1…24
<PDP_type>
(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol. IP Internet Protocol PPP Point to Point Protocol IPV6 Internet Protocol Version 6 IPV4V6 Dual PDN Stack
<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.
<PDP_addr>
A string parameter that identifies the MT in the address space applicable to the PDP. Read 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 command AT+CGPADDR.
<d_comp>
A numeric parameter that controls PDP data compression, this value may depend on platform: 0 – off (default if value is omitted) 1 – on 2 – V.42bis 3 – V.44
<h_comp>
A numeric parameter that controls PDP header compression, this value may depend on platform: 0 – off (default if value is omitted) 1 – on 2 – RFC1144

3 – RFC2507 4 – RFC3095
<ipv4_ctrl>
Parameter that controls how the MT/TA requests to get the IPv4 address information: 0 – Address Allocation through NAS Signaling 1 – on
<emergency_flag>
emergency_flag: 0 – off (default if value is omitted) 1 – on

Examples

AT+CGDCONT?
+CGDCONT: 1,"IPV4V6","","0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,0
+CGDCONT: 2,"IPV6","ims","0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,0
+CGDCONT: 3,"IPV4V6","","0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,1
OK
AT+CGDCONT=?
+CGDCONT: (1-24),"IP",,,(0-3),(0-4),(0-1),(0-1)
+CGDCONT: (1-24),"PPP",,,(0-3),(0-4),(0-1),(0-1)
+CGDCONT: (1-24),"IPV6",,,(0-3),(0-4),(0-1),(0-1)
+CGDCONT: (1-24),"IPV4V6",,,(0-3),(0-4),(0-1),(0-1)
OK

8.5 AT+CGDSCONT Define Secondary PDP Context

Description

The set command specifies PDP context parameter values for a Secondary PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command. A special form of the set command, AT+CGDSCONT=<cid> causes the values for context number <cid> to become undefined.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses

AT+CGDSCONT=?	+CGDSCONT: (range of supported <cid>s),(list of <p_cid>s for active primary contexts), <PDP_type>, (list of supported <d_comp>s),(list of supported <h_comp>s) OK
	ERROR
Read Command	Responses
AT+CGDSCONT?	+CGDSCONT: [<cid>,<p_cid>,<d_comp>,<h_comp> [<CR><LF>+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp> [...]]] OK
	ERROR
Write Command	Responses
AT+CGDSCONT=<cid>[,<p_cid>[,<d_comp>[,<h_comp>]]]	OK
	ERROR

Defined values

<cid>
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. NOTE: The <cid>s for network-initiated PDP contexts will have values outside the ranges indicated for the <cid> in the test form of the commands +CGDCONT and +CGDSCONT.
<p_cid>
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.
<PDP_type>
(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol. IP Internet Protocol PPP Point to Point Protocol IPV6 Internet Protocol Version 6 IPV4V6 Dual PDN Stack
<d_comp>
a numeric parameter that controls PDP data compression (applicable for SNDCPonly) (refer 3GPP TS 44.065 [61]) 0 off 1 on (manufacturer preferred compression)

2 V.42bis
3 V.44
Other values are reserved.

<h_comp>
a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62])
0 off
1 on (manufacturer preferred compression)
2 RFC1144 (applicable for SNDCP only)
3 RFC2507
4 RFC3095 (applicable for PDCP only)
Other values are reserved.

Examples

```
AT+CGDSCONT?
+CGDSCONT: 2,1,0,0

OK
AT+CGDSCONT=2,1
OK
AT+CGDSCONT=?
+CGDSCONT: (1-24),(),"IP",(0-3),(0-4)
+CGDSCONT: (1-24),(),"PPP",(0-3),(0-4)
+CGDSCONT: (1-24),(),"IPV6",(0-3),(0-4)
+CGDSCONT: (1-24),(),"IPV4V6",(0-3),(0-4)
OK
```

8.6 AT+CGTFT Traffic Flow Template

Description

This command allows the TE to specify a Packet Filter - PF for a Traffic Flow Template - TFT that is used in the GGSN in UMTS/GPRS and Packet GW in EPS for routing of packets onto different QoS flows towards the TE. The concept is further described in the 3GPP TS 23.060 [47]. A TFT consists of from one and up to 16 Packet Filters, each identified by a unique <packet filter identifier>. A Packet Filter also has an <evaluation precedence index> that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGTFT=?	+CGTFT: <PDP_type>,(list of supported <packet filter identifier>s),(list of supported <evaluation precedence index>s),(list of supported <source address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s),(list of supported <destination port range>s),(list of supported <source port range>s),(list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s),(list of supported <flow label (ipv6)>s) [<CR><LF>+CGTFT: <PDP_type>,(list of supported <packet filter identifier>s),(list of supported <evaluation precedence index>s),(list of supported <source address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s),(list of supported <destination port range>s),(list of supported <source port range>s),(list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s),(list of supported <flow label (ipv6)>s) [...]] OK
	ERROR
Read Command	Responses
AT+CGTFT?	+CGTFT: [<cid>,<packet filter identifier>,<evaluation precedence index>,<source address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<destination port range>,<source port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)> [<CR><LF>+CGTFT: <cid>,<packet filter identifier>,<evaluation precedence index>,<source address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<destination port range>,<source port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)> [...]]] OK
	ERROR
Write Command	Responses

AT+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 ERROR
Execute Command	Responses
AT+CGTFT	OK ERROR

Defined values

<cid>
a numeric parameter which specifies a particular PDP context definition (see the AT+CGDCONT and AT+CGDSCONT commands).
<PDP_type>
(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol. IP Internet Protocol PPP Point to Point Protocol IPV6 Internet Protocol Version 6 IPV4V6 Dual PDN Stack
<packet filter identifier>
a numeric parameter, value range from 1 to 16.
<evaluation precedence index>
a numeric parameter. The value range is from 0 to 255.
<source 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.
<protocol number (ipv4) / next header (ipv6)>
a numeric parameter, value range from 0 to 255.
<destination port range>

string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".
<source 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.

Examples

```
AT+CGTFT?
+CGTFT: 2,1,0,"74.125.71.99.255.255.255.255",0,0.0,0.0,0,0.0,0

OK
AT+CGTFT=2,1,0,"74.125.71.99.255.255.255.255"
OK
AT+CGTFT=?
+CGTFT:
"IP",(1-16),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFFFFFFF),(0-255.0-255),(0-FFFFF)
+CGTFT:
"PPP",(1-16),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFFFFFFF),(0-255.0-255),(0-FFFFF)
+CGTFT:
"IPV6",(1-16),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFFFFFFF),(0-255.0-255),(0-FFFFF)
+CGTFT:
"IPV4V6",(1-16),(0-255),,(0-255),(0-65535.0-65535),(0-65535.0-65535),(0-FFFFFFFF),(0-255.0-255),(0-FFFFF)
OK
```

8.7 AT+CGQREQ Quality of service profile (requested)

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.. A special form of the set command (AT+CGQREQ=<cid>) causes the requested profile for context number <cid> to become undefined.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGQREQ=?	+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF> +CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) […]] OK
	ERROR
Read Command	Responses
AT+CGQREQ?	+CGQREQ: [<cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>[<CR><LF> +CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean>[…]]] OK
	ERROR
Write Command	Responses
AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]	OK
	ERROR
Execution Command	Responses
AT+CGQREQ	OK
	ERROR

Defined values

<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). The range is from 1 to 24.
<PDP_type>
(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol. IP Internet Protocol PPP Point to Point Protocol IPV6 Internet Protocol Version 6 IPV4V6 Dual PDN Stack
<precedence>
A numeric parameter which specifies the precedence class: 0 – network subscribed value

1 – high priority
2 – normal priority
3 – low priority

<delay>

A numeric parameter which specifies the delay class:

0 – network subscribed value
1 – delay class 1
2 – delay class 2
3 – delay class 3
4 – delay class 4

<reliability>

A numeric parameter which specifies the reliability class:

0 – network subscribed value
1 – Non real-time traffic,error-sensitive application that cannot cope with data loss
2 – Non real-time traffic,error-sensitive application that can cope with infrequent data loss
3 – Non real-time traffic,error-sensitive application that can cope with data loss, GMM/-SM,and SMS
4 – Real-time traffic,error-sensitive application that can cope with data loss
5 – Real-time traffic error non-sensitive application that can cope with data loss

<peak>

A numeric parameter which specifies the peak throughput class:

0 – network subscribed value
1 – Up to 1000 (8 kbit/s)
2 – Up to 2000 (16 kbit/s)
3 – Up to 4000 (32 kbit/s)
4 – Up to 8000 (64 kbit/s)
5 – Up to 16000 (128 kbit/s)
6 – Up to 32000 (256 kbit/s)
7 – Up to 64000 (512 kbit/s)
8 – Up to 128000 (1024 kbit/s)
9 – Up to 256000 (2048 kbit/s)

<mean>

A numeric parameter which specifies the mean throughput class:

0 – network subscribed value
1 – 100 (~0.22 bit/s)
2 – 200 (~0.44 bit/s)
3 – 500 (~1.11 bit/s)
4 – 1000 (~2.2 bit/s)
5 – 2000 (~4.4 bit/s)
6 – 5000 (~11.1 bit/s)
7 – 10000 (~22 bit/s)
8 – 20000 (~44 bit/s)
9 – 50000 (~111 bit/s)

10 – 100000 (~0.22 kbit/s)
11 – 200000 (~0.44 kbit/s)
12 – 500000 (~1.11 kbit/s)
13 – 1000000 (~2.2 kbit/s)
14 – 2000000 (~4.4 kbit/s)
15 – 5000000 (~11.1 kbit/s)
16 – 10000000 (~22 kbit/s)
17 – 20000000 (~44 kbit/s)
18 – 50000000 (~111 kbit/s)
31 – optimization

Examples

```
AT+CGQREQ?
+CGQREQ:
OK
AT+CGQREQ=?
+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQREQ: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQREQ: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQREQ: "IPV4V6",(0-3),(0-4),(0-5),(0-9),(0-18,31)

OK
```

8.8 AT+CGEQREQ 3G quality of service profile (requested)

Description

The test command returns values supported as a compound value.

The read command returns the current settings for each defined context for which a QOS was explicitly specified.

The write command allows the TE to specify a Quality of Service Profile for the context identified by the context identification parameter <cid> which is used when the MT sends an Activate PDP Context Request message to the network.

A special form of the write command, AT+CGEQREQ=<cid> causes the requested profile for context number <cid> to become undefined.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses

AT+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 <Deliv ery 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 <Signaling indication flag>s) OK
	ERROR
Read Command	Responses
AT+CGEQREQ?	+CGEQREQ: [<cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer Delay>,<Traffic handling priority>,<Source statistics descriptor>,< Signaling indication flag>][<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>,<Signaling indication flag> […]] OK
	ERROR
Write Command	Responses
AT+CGEQREQ=<cid>[,<Traffic class>[,<Maximum bit rate 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>[,<Signaling in	OK
	ERROR
	+CME ERROR: <err>

dication flag>]]]]]]]]]]]]]	
Execution Command	Responses
AT+CGEQREQ	OK
	ERROR

Defined values

<cid>
Parameter specifies a particular PDP context definition. The parameter is also used in other PDP context-related commands. The range is from 1 to 24.
<Traffic class>
0 – conversational 1 – streaming 2 – interactive 3 – background 4 – subscribed value
<Maximum bitrate UL>
This parameter 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,…). The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.
<Maximum bitrate DL>
This parameter indicates the maximum number of kbits/s delivered to 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,…). The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.
<Guaranteed bitrate UL>
This parameter indicates the guaranteed number of kbit/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,…). The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.
<Guaranteed bitrate DL>
This parameter indicates the guaranteed number of kbit/s delivered to 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,…). The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.
<Delivery order>

This parameter indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

0 – no

1 – yes

2 – subscribed value

<Maximum SDU size>

This parameter indicates the maximum allowed SDU size in octets.

The range is from 0 to 1520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<SDU error ratio>

This parameter indicates the target value for the fraction of SDUs lost or detected as erroneous.SDU error ratio is defined only for conforming traffic.As an example a target SDU error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g.AT+CGEQREQ=..,”5E3”,…).

“0E0” – subscribed value

“1E2”

“7E3”

“1E3”

“1E4”

“1E5”

“1E6”

“1E1”

<Residual bit error ratio>

This parameter 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.As an example a target residual bit error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g. AT+CGEQREQ=…,”5E3”,..).

“0E0” – subscribed value

“5E2”

“1E2”

“5E3”

“4E3”

“1E3”

“1E4”

“1E5”

“1E6”

“6E8”

<Delivery of erroneous SDUs>

This parameter indicates whether SDUs detected as erroneous shall be delivered or not.

0 – no

1 – yes

2 – no detect

3 – subscribed value

<Transfer delay>

This parameter indicates the targeted time between request to transfer an SDU at one SAP to its

delivery at the other SAP,in milliseconds.

The range is 0 and from 100 to 4000. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Traffic handling priority>

This parameter specifies the relative importance for handling of all SDUs belonging to the UMTS Bearer compared to the SDUs of the other bearers.

The range is from 0 to 3. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Source statistics descriptor>

This parameter indicates profile parameter that Source statistics descriptor for requested UMTS QoS

The range is from 0 to 1. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Signaling indication flag>

This parameter indicates Signaling flag.

The range is from 0 to 1 The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

IP Internet Protocol

PPP Point to Point Protocol

IPV6 Internet Protocol Version 6

IPV4V6 Dual PDN Stack

Examples

```
AT+CGEQREQ?
+CGEQREQ:
OK
AT+CGEQREQ=?
+CGEQREQ: "IP",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","1E
1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E
4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) ,(0-1),(0-1)
+CGEQREQ: "PPP",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","1
E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1
E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) ,(0-1),(0-1)
+CGEQREQ: "IPV6",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","
1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","
1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) ,(0-1),(0-1)
+CGEQREQ:"IPV4V6",(0-4),(0-11520),(0-42200),(0-11520),(0-42200),(0-2),(0-1520),("0E0","1E1
","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1
E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)
```

OK

8.9 AT+CGQMIN Quality of service profile (minimum acceptable)

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.A special form of the set command,AT+CGQMIN=<cid> causes the minimum acceptable profile for context number <cid> to become undefined.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGQMIN=?	+CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) [<CR><LF> +CGQMIN: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s)[…]] OK
	ERROR
Read Command	Responses
AT+CGQMIN?	+CGQMIN: [<cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>[<CR><LF> +CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> […]]] OK
	ERROR
Write Command	Responses
AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak> [,<mean>]]]]]	OK
	ERROR
Execution Command	Responses
AT+CGQMIN	OK
	ERROR

Defined values

<cid>

A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). The range is from 1 to 24.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

IP Internet Protocol
PPP Point to Point Protocol
IPV6 Internet Protocol Version 6
IPV4V6 Dual PDN Stack

<precedence>

A numeric parameter which specifies the precedence class:

0 – network subscribed value
1 – high priority
2 – normal priority
3 – low priority

<delay>

A numeric parameter which specifies the delay class:

0 – network subscribed value
1 – delay class 1
2 – delay class 2
3 – delay class 3
4 – delay class 4

<reliability>

A numeric parameter which specifies the reliability class:

0 – network subscribed value
1 – Non real-time traffic,error-sensitive application that cannot cope with data loss
2 – Non real-time traffic,error-sensitive application that can cope with infrequent data loss
3 – Non real-time traffic,error-sensitive application that can cope with data loss, GMM/-SM,and SMS
4 – Real-time traffic,error-sensitive application that can cope with data loss
5 – Real-time traffic error non-sensitive application that can cope with data loss

<peak>

A numeric parameter which specifies the peak throughput class:

0 – network subscribed value
1 – Up to 1000 (8 kbit/s)
2 – Up to 2000 (16 kbit/s)
3 – Up to 4000 (32 kbit/s)
4 – Up to 8000 (64 kbit/s)
5 – Up to 16000 (128 kbit/s)
6 – Up to 32000 (256 kbit/s)
7 – Up to 64000 (512 kbit/s)
8 – Up to 128000 (1024 kbit/s)
9 – Up to 256000 (2048 kbit/s)

<mean>

A numeric parameter which specifies the mean throughput class:

0 – network subscribed value
1 – 100 (~0.22 bit/s)
2 – 200 (~0.44 bit/s)
3 – 500 (~1.11 bit/s)
4 – 1000 (~2.2 bit/s)
5 – 2000 (~4.4 bit/s)
6 – 5000 (~11.1 bit/s)
7 – 10000 (~22 bit/s)
8 – 20000 (~44 bit/s)
9 – 50000 (~111 bit/s)
10 – 100000 (~0.22 kbit/s)
11 – 200000 (~0.44 kbit/s)
12 – 500000 (~1.11 kbit/s)
13 – 1000000 (~2.2 kbit/s)
14 – 2000000 (~4.4 kbit/s)
15 – 5000000 (~11.1 kbit/s)
16 – 10000000 (~22 kbit/s)
17 – 20000000 (~44 kbit/s)
18 – 50000000 (~111 kbit/s)
31 – optimization

Examples

```
AT+CGQMIN?
+CGQMIN:
OK
AT+CGQMIN=?
+CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQMIN: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQMIN: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31)
+CGQMIN: "IPV4V6",(0-3),(0-4),(0-5),(0-9),(0-18,31)

OK
```

8.10 AT+CGEQMIN 3G quality of service profile (minimum acceptable)

Description

The test command returns values supported as a compound value.

The read command returns the current settings for each defined context for which a QOS was explicitly specified.

The write command allow the TE to specify a Quallity of Service Profile for the context identified

by the context identification parameter <cid> which is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept message.

A special form of the write command, AT+CGEQMIN=<cid> causes the requested for context number <cid> to become undefined.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+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 <Deliv ery 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 <Signaling indication flag>s) OK
	ERROR
Read Command	Responses
AT+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>,< Signaling indication flag>][<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>,<Signaling indication flag>[…]] OK
	ERROR
Write Command	Responses

AT+CGEQMIN=<cid>[,<Traffic class>[,<Maximum bit rate 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>[,<Signaling indication flag>]]]]]]]]]]]]]]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CGEQMIN	OK
	ERROR

Defined values

<cid>
Parameter specifies a particular PDP context definition. The parameter is also used in other PDP context-related commands. The range is from 1 to 24.
<Traffic class>
0 – conversational 1 – streaming 2 – interactive 3 – background 4 – subscribed value
<Maximum bitrate UL>
This parameter 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,…). The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.
<Maximum bitrate DL>
This parameter indicates the maximum number of kbits/s delivered to 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,…). The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.
<Guaranteed bitrate UL>
This parameter indicates the guaranteed number of kbit/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,…).

The range is from 0 to 11520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate DL>

This parameter indicates the guaranteed number of kbit/s delivered to 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,…).

The range is from 0 to 42200. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Delivery order>

This parameter indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

0 – no

1 – yes

2 – subscribed value

<Maximum SDU size>

This parameter indicates the maximum allowed SDU size inoctets.

The range is from 0 to 1520. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<SDU error ratio>

This parameter indicates the target value for the fraction of SDUs lost or detected as erroneous.SDU error ratio is defined only for conforming traffic.As an example a target SDU error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g.AT+CGEQMIN=..,”5E3”,…).

“0E0” – subscribed value

“1E2”

“7E3”

“1E3”

“1E4”

“1E5”

“1E6”

“1E1”

<Residual bit error ratio>

This parameter 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.As an example a target residual bit error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g. AT+CGEQMIN=…,”5E3”,..).

“0E0” – subscribed value

“5E2”

“1E2”

“5E3”

“4E3”

“1E3”

“1E4”

“1E5”

"1E6"
"6E8"

<Delivery of erroneous SDUs>

This parameter indicates whether SDUs detected as erroneous shall be delivered or not.

0 – no
1 – yes
2 – no detect
3 – subscribed value

<Transfer delay>

This parameter indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP,in milliseconds.

The range is 0 and from 100 to 4000. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Traffic handling priority>

This parameter specifies the relative importance for handling of all SDUs belonging to the UMTS Bearer compared to the SDUs of the other bearers.

The range is from 0 to 3. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Source statistics descriptor>

This parameter indicates profile parameter that Source statistics descriptor for requested UMTS QoS

The range is from 0 to 1. The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<Signaling indication flag>

This parameter indicates Signaling flag.

The range is from 0 to 1 The default value is 0. If the parameter is set to '0' the subscribed value will be requested.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.

IP Internet Protocol
PPP Point to Point Protocol
IPV6 Internet Protocol Version 6
IPV4V6 Dual PDN Stack

Examples

AT+CGEQMIN?

+CGEQMIN:

OK

AT+CGEQMIN=?

+CGEQMIN: "IP",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","1E 1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E 4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) ,(0-1),(0-1)

+CGEQMIN: "PPP",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) ,(0-1),(0-1)
+CGEQMIN: "IPV6",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3) ,(0-1),(0-1)
+CGEQMIN:"IPV4V6",(0-4),(0-11520),(0-42200),(0-115200),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0-1),(0-1)

OK

8.11 AT+CGDATA Enter data state

Description

The 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. This may include performing a PS attach and one or more PDP context activations.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGDATA=?	+CGDATA: (list of supported <L2P>s) OK
	ERROR
Write Command	**Responses**
AT+CGDATA=[<L2P>,[<cid>]]	CONNECT [<text>]
	NO CARRIER
	OK
	ERROR
	+CME ERROR: <err>

Defined values

<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
<text>
CONNECT result code string; the string formats please refer ATX/AT\V/AT&E command.

<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…24

Examples

```
AT+CGDATA=?
+CGDATA: ("PPP")
OK
AT+CGDATA="PPP",1
CONNECT 115200
```

8.12 AT+CGPADDR Show PDP address

Description

The write command returns a list of PDP addresses for the specified context identifiers.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGPADDR=?	[+CGPADDR: (list of defined <cid>s)] OK
	ERROR
Write Command	Responses
AT+CGPADDR= <cid>[,<cid>[,…]]	[+CGPADDR:<cid>,<PDP_addr>[<CR><LF> +CGPADDR: <cid>,<PDP_addr>[...]]] OK
	SIM card supports IPV4V6 type and the PDP_type of the command “at+cgdcont” defined is ipv4v6 : [+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>] +CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]]] OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CGPADDR	[+CGPADDR: <cid>,<PDP_addr>] +CGPADDR: <cid>,<PDP_addr>[...]]] OK

	SIM card supports IPV4V6 type and the PDP_type of the command "at+cgdcont" defined is ipv4v6 : [+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>] +CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). If no <cid> is specified, the addresses for all defined contexts are returned. 1…24
<PDP_addr>
A string 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 AT+CGDCONT command 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>. <PDP_addr> is omitted if none is available.
<PDP_addr_IPV4>
A string parameter that identifies the MT in the address space applicable to the PDP.
<PDP_addr_IPV6>
A string parameter that identifies the MT in the address space applicable to the PDP when the sim_card supports ipv6. The pdp type must be set to "ipv6" or "ipv4v6" by the AT+CGDCONT command.

Examples

AT+CGPADDR =?
+CGPADDR: (1) *OK*
AT+CGPADDR=1
+CGDCONT: 1,"IPV4V6","","0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0",0,0,0,0 *OK*
AT+CGPADDR
+CGPADDR: 1,10.195.1.140,36.9.136.148.128.48.134.218.173.205.47.44.88.174.123.200 *+CGPADDR: 2,10.195.34.92,36.9.136.148.128.48.146.115.92.140.135.230.248.131.5.90* *+CGPADDR: 3,0.0.0.0,0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0* *OK*

8.13 AT+CGCLASS GPRS mobile station class

Description

This command is used to set the MT to operate according to the specified GPRS mobile class.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGCLASS=?	+CGCLASS: (list of supported <class>s) OK
	ERROR
Read Command	**Responses**
AT+CGCLASS?	+CGCLASS: <class> OK
	ERROR
Write Command	**Responses**
AT+CGCLASS=<class>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CGCLASS	*Set default value:* OK
	ERROR

Defined values

<class>
A string parameter which indicates the GPRS mobile class (in descending order of functionality) A – class A (highest)

Examples

```
AT+CGCLASS=?
+CGCLASS: ("A")
OK
AT+CGCLASS?
+CGCLASS: "A"
OK
```

8.14 AT+CGEREP GPRS event reporting

Description

The write command enables or disables sending of unsolicited result codes, "+CGEV" 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.

Read command returns the current <mode> and buffer settings.

Test command returns the modes and buffer settings supported by the MT as compound values.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGEREP=?	+CGEREP: (list of supported <mode>s),(list of supported <bfr>s) OK
	ERROR
Read Command	Responses
AT+CGEREP?	+CGEREP: <mode>,<bfr> OK
	ERROR
Write Command	Responses
AT+CGEREP= <mode>[,<bfr>]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CGEREP	OK ERROR

Defined values

<mode>

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 MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE.

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

<bfr>

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).

The following unsolicited result codes and the corresponding events are defined:

+CGEV: REJECT <PDP_type>, <PDP_addr>

A network request for PDP context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected.

+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.

+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.

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

The mobile equipment has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.

+CGEV: NW DETACH

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

+CGEV: ME DETACH

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

+CGEV: NW CLASS <class>

The network has forced a change of MS class. The highest available class is reported (see AT+CGCLASS).

+CGEV: ME CLASS <class>

The mobile equipment has forced a change of MS class. The highest available class is reported (see AT+CGCLASS).

Examples

```
AT+CGEREP=?
+CGEREP: (0-2),(0-1)
OK
AT+CGEREP?
+CGEREP: 0,0
OK
```

8.15 AT+CGAUTH Set type of authentication for PDP-IP connections of GPRS

Description

This command is used to set type of authentication for PDP-IP connections of GPRS.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CGAUTH=?	+CGAUTH:(range of supported <cid>s),(list of supported <auth_-type> s),127,127 OK
	ERROR
	+CME ERROR: <err>
Read Command	**Responses**
AT+CGAUTH?	+CGAUTH:[<cid>,<auth_type>[,<user>,<passwd>]]<CR><LF> … OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CGAUTH=<cid>[,<auth_type>[,<passwd>[,<user>]]]	OK
	ERROR
Execution Command	**Responses**
AT+CGAUTH	OK
	ERROR
	+CME ERROR: <err>

Defined values

<cid>
Parameter specifies a particular PDP context definition. This is also used in other PDP context-related commands. 1…24
<auth_type>

Indicate the type of authentication to be used for the specified context. If CHAP is selected another parameter <passwd> needs to be specified. If PAP is selected two additional parameters <passwd> and <user> need to specified.

0 – none
1 – PAP
2 – CHAP
3 – PAP or CHAP

<passwd>

Parameter specifies the password used for authentication.

<user>

Parameter specifies the user name used for authentication.

Examples

```
AT+CGAUTH=?
+CGAUTH: (1-24),(0-3),127,127

OK
AT+CGAUTH=1,1,”123”,”SIMCOM”
OK
```

9 AT Commands for SIM Application Toolkit

9.1 AT+STIN SAT Indication

Description

Every time the SIM Application issues a Proactive Command, via the ME, the TA will receive an indication. This indicates the type of Proactive Command issued.

AT+STGI must then be used by the TA to request the parameters of the Proactive Command from the ME. Upon receiving the +STGI response from the ME, the TA must send AT+STGR to confirm the execution of the Proactive Command and provide any required user response, e.g. a selected menu item.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+STIN=?	OK
Read Command	Responses
AT+STIN?	+STIN: <cmd_id> OK

Unsolicited Result Codes

+STIN: <cmd_id>
Proactive Command notification 21 – display text 22 – get inkey 23 – get input 24 – select item
+STIN: 25
Notification that SIM Application has returned to main menu. If user doesn't do any action in 2 minutes, application will return to main menu automatically.

Defined values

<cmd_id>
21 – display text 22 – get inkey

23 – get input
24 – select item
25 – set up menu
81 – session end (pdu mode only)
0 – none command

Examples

```
AT+STIN?
+STIN: 24
OK
```

9.2 AT+STGI Get SAT information

Description

Regularly this command is used upon receipt of an URC "+STIN" to request the parameters of the Proactive Command. Then the TA is expected to acknowledge the AT+STGI response with AT+STGR to confirm that the Proactive Command has been executed. AT+STGR will also provide any user information, e.g. a selected menu item. The Proactive Command type value specifies to which "+STIN" the command is related.

NOTE: Please check the format referred to AT+STKFMT

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+STGI=?	OK
Write Command	**Responses**
AT+STGI=<cmd_id>	*PDU format* +STGI: <cmd_id>,<tag>,<pdu_len>,<pdu_value> OK
AT+STGI=<cmd_id>	*NOT PDU format, listed below:* *If <cmd_id>=10:* OK
	If <cmd_id>=21: +STGI:21,<prio>,<clear_mode>,<text_len>,<text> OK
	If <cmd_id>=22: +STGI: 22,< rsp_format>,< help>,<text_len>,<text> OK

	If <cmd_id>=23: +STGI:23,<rsp_format>,<max_len>,<min_len>,<help>,<show>,<text_len>,<text> OK
	If <cmd_id>=24: +STGI:24,<help>,<softkey>,<present>,<title_len>,<title>,<item_num> +STGI:24,<item_id>,<item_len>,<item_data> […] OK
	If <cmd_id>=25: +STGI:25,<help>,<softkey>,<title_len>,<title>,<item_num> +STGI:25,<item_id>,<item_len>,<item_data> [...] OK

Defined values

<cmd_id>
21 – display text 22 – get inkey 23 – get input 24 – select item 25 – set up menu
<prio>
Priority of display text 0 – Normal priority 1 – High priority
<clear_mode>
0 – Clear after a delay 1 – Clear by user
<text_len>
Length of text
<rsp_format>
0 – SMS default alphabet 1 – YES or NO 2 – numerical only 3 – UCS2
<help>
0 – Help unavailable 1 – Help available
<max_len>
Maximum length of input

<min_len>
Minimum length of input
<show>
0 – Hide input text
1 – Display input text
<softkey>
0 – No softkey preferred
1 – Softkey preferred
<present>
Menu presentation format available for select item
0 – Presentation not specified
1 – Data value presentation
2 – Navigation presentation
<title_len>
Length of title
<item_num>
Number of items in the menu
<item_id>
Identifier of item
<item_len>
Length of item
<title>
Title in ucs2 format
<item_data>
Content of the item in ucs2 format
<text>
Text in ucs2 format.
<tag>
Not used now.
<pdu_len>
Integer type, pdu string length
<pdu_value>
String type, the pdu string.

Examples

```
AT+STGI=25 (NOT PDU format)
+STGI:25,0,0,10,"795E5DDE884C59295730",15
+STGI:25,1,8,"8F7B677E95EE5019"
+STGI:25,2,8,"77ED4FE17FA453D1"
+STGI:25,3,8,"4F1860E05FEB8BAF"
+STGI:25,4,8,"4E1A52A17CBE9009"
+STGI:25,5,8,"8D448D3963A88350"
```

```
+STGI:25,6,8,"81EA52A9670D52A1"
+STGI:25,7,8,"8F7B677E5F6994C3"
+STGI:25,8,8,"8BED97F367425FD7"
+STGI:25,9,10,"97F34E506392884C699C"
+STGI:25,10,8,"65B095FB59296C14"
+STGI:25,11,8,"94C358F056FE7247"
+STGI:25,12,8,"804A59294EA453CB"
+STGI:25,13,8,"5F005FC34F1195F2"
+STGI:25,14,8,"751F6D3B5E388BC6"
+STGI:25,21,12,"00530049004D53614FE1606F"
OK
AT+STGI=24 (PDU format)
+STGI:24,0,48,"D02E810301240082028185098070ED70B963A883508F0A018053057F574E0
78C618F0C02809177917777ED6D88606F"
OK
```

9.3 AT+STGR SAT respond

Description

The TA is expected to acknowledge the AT+STGI response with AT+STGR to confirm that the Proactive Command has been executed. AT+STGR will also provide any user information, e.g. a selected menu item.

NOTE: Please check the format referred to AT+STKFMT

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+STGR=?	OK
Write Command	**Responses**
AT+STGR=<cmd_id>[,<data>]	*NOT PDU format* OK
AT+STGR=<pdu_len>,<pdu_value>	*PDU format* OK

Defined values

<cmd_id>

22 – get inkey

23 – get input

24 – select item
25 – set up menu
81 – session end
83 – session end by user
84 – go backward

<data>

If <cmd_id>=22:

Input a character

If <cmd_id>=23:

Input a string.

If <rsp_format> is YES or NO, input of a character in case of ANSI character set requests one byte, e.g. “Y”.

If <rsp_format> is numerical only, input the characters in decimal number, e.g. “123”

If <rsp_faomat> is UCS2, requests a 4 byte string, e.g. “0031”

<rsp_faomat> refer to the response by AT+STGI=23

If <cmd_id>=24:

Input the identifier of the item selected by user

If <cmd_id>=25:

Input the identifier of the item selected by user

If <cmd_id>=83:

<data> ignore

Note: It could return main menu during Proactive Command id is not 22 or 23

If <cmd_id>= 84:

<data> ignore

<pdu_len>

Integer type, pdu string length

<pdu_value>

String type, the pdu string.

Examples

```
AT+STGR=25,1     (NOT PDU format)
OK
+STIN: 24
AT+STGR=30,"810301240002028281830100900101"    (PDU format)
OK
```

9.4 AT+STK STK switch

Description

This command is used to disable or enable the STK function. If the argument is 1, it is enabled. While if the argument is 0, it is disabled.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+STK=?	+STK: (list of supported <value>s) OK
Read Command	Responses
AT+STK?	+STK: <value> OK
Write Command	Responses
AT+STK=<value>	OK
	ERROR
Execution Command	Responses
AT+STK	*Set default value (<value>=0):* OK

Defined values

<value>	
0	– Disable STK
1	– Enable STK

Examples

```
AT+STK=1
OK
```

9.5 AT+STKFMT Set STK pdu format

Description

This command is used to disable or enable the STK pdu mode. If the argument is 1, it is enabled. While if the argument is 0, it is disabled.

NOTE: Module should reboot to take effective.

SIM PIN	References
YES	Vendor

Syntax

Read Command	Responses

AT+STKFMT?	+STKFMT: <value> OK
Write Command	Responses
AT+STKFMT=<value>	OK
	ERROR

Defined values

<value>
0 – Disable STK pdu format, decoded command mode.
1 – Enable STK pdu format

Examples

AT+STKFMT=1
OK

9.6 AT+STENV Original STK PDU Envelope Command

Description

This command is used to original stk pdu envelope command.

NOTE: PDU format supported only.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+STENV=?	OK
Write Command	Responses
AT+STENV=<len>,<pdu>	OK
	ERROR

Defined values

<len>
Integer type, pdu string length
<pdu>
String type, pdu value

Examples

```
AT+STENV=18,"D30782020181900101"
OK
```

9.7 AT+STSM Get STK Setup Menu List with PDU Mode

Description

This command is used to get the stk setup menu list with pdu mode

NOTE: PDU format supported only.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+STSM=?	OK
Read Command	Responses
AT+STSM?	+STSM: <cmd_id>,<tag>,<pdu_len>, <pdu_value> OK
	ERROR

Defined values

<cmd_id>
Integer type, please refer to AT+STIN
<tag>
Not used now.
<pdu_len>
Integer type, pdu string length
<pdu_value>
String type, the pdu string.

Examples

```
AT+STSM?
+STSM:25,0,120,"D07681030125008202818285078065B052BF529B8F0A018070ED70B963A883
508F06028070AB94C38F0A03806D41884C77ED4FE18F0A048081EA52A9670D52A18F0A0580
624B673A97F34E508F0606808D854FE18F0A07805A314E50753162118F0A0880767E53D8751F
6D3B8F0A09806D596C5F98919053"
OK
```

10 AT Commands for File Transmission

10.1 AT+CFTRANRX Transfer a file to EFS

Description

This command is used to transfer a file to EFS. Support SD card.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CFTRANRX=?	+CFTRANRX: [{non-ascii}]"FILEPATH" OK
Write Command	Responses
AT+CFTRANRX="<filepath>",<len>	> OK
	> ERROR
	ERROR

Defined values

<filepath>
The path of the file on EFS.
<len>
The length of the file data to send.
NOTE
The <filepath> must be a full path with the directory path.

Examples

AT+CFTRANRX="c:/MyDir/t1.txt",10
>testcontent
OK
AT+CFTRANRX="d:/MyDir/t1.txt",10
>testcontent
OK

10.2 AT+CFTRANTX Transfer a file from EFS to host

Description

This command is used to transfer a file from EFS to host. Before using this command, the AT+CATR must be used to set the correct port used. Support SD card.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CFTRANTX=?	+CFTRANTX: [{non-ascii}]"FILEPATH" OK
Write Command	Responses
AT+CFTRANTX="<filepath>"[,<location>,<size>]	[+CFTRANTX: DATA,<len> … +CFTRANTX: DATA,<len>] +CFTRANTX: 0 OK
	ERROR

Defined values

<filepath>
The path of the file on EFS.
<len>
The length of the following file data to output.
<location>
The beginning of the file data to output.
<size>
The length of the file data to output.
NOTE
1. The <filepath> must be a full path with the directory path. 2. When the number of digits in <len> is less than three digits, 0 will be padded in front of <len> to form three digits. 3. When <len> is greater than 512, the data will be output in 512 bytes per packet.

Examples

AT+CFTRANTX="c:/MyDir/t1.txt"
+CFTRANTX: DATA, 011 *Testcontent*

```
+CFTRANTX: 0
OK
AT+CFTRANTX=”d:/MyDir/t1.txt”
+CFTRANTX: DATA, 011
Testcontent
+CFTRANTX: 0
OK
AT+CFTRANTX=”d:/MyDir/t1.txt”,1,4
+CFTRANTX: DATA, 004
estc
+CFTRANTX: 0
OK
```

11 AT Commands for Open/Close Network

11.1 AT+CNETSTART Open network

Description

This command opens packet network.

SIM PIN	References
YES	Vendor

Syntax

Read Command	Responses
AT+CNETSTART?	+CNETSTART: <net_state> OK
	ERROR
Execution Command	**Responses**
AT+CNETSTART	OK +CNETSTART: <err>
	+CNETSTART: <err> OK
	+CNETSTART: <err> ERROR
	ERROR

Defined values

<net_state>
a numeric parameter that indicates the state of PDP context activation: 0 network close (deactivated) 1 network is opening 2 network open(activated) 3 network is closing
<err >

The result of operation, 0 is success, other value is failure.

Examples

```
AT+CNETSTART
OK

+CNETSTART: 0
AT+CNETSTART?
+CNETSTART: 2

OK
```

11.2 AT+CNETSTOP Close network

Description

This command closes network. Before calling this command, all opened sockets must be closed first.

SIM PIN	References
YES	Vendor

Syntax

Execution Command	Responses
AT+CNETSTOP	OK +CNETSTOP: <err>
	+CNETSTOP: <err> OK
	+CNETSTOP: <err> ERROR
	ERROR

Defined values

<err>
The result of operation, 0 is success, other value is failure.

Examples

```
AT+CNETSTOP
OK

+CNETSTOP: 0
```

11.3 AT+CNETIPADDR Inquire PDP address

Description

This command inquires the IP address of current active PDP.

SIM PIN	References
YES	Vendor

Syntax

Read Command	Responses
AT+CNETIPADDR?	+CNETIPADDR: < ip_address> OK
	+CNETIPADDR: <err_info> ERROR
	ERROR

Defined values

<ip_address>
A string parameter that identifies the IP address of current active socket PDP.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

```
AT+CNETIPADDR?
+CNETIPADDR: 10.71.155.118

OK
```

11.4 Unsolicited Open/Close network command <err> Codes

Code of <err>	Description
0	Operation succeeded

1	Unknown error
2	Open network failed
3	Close network failed
4	Network not opened
5	Operation not support
6	Busy
7	Network has been opened
8	Network is also in use

12 AT Commands for GPS

12.1 AT+CGPS Start/Stop GPS session

Description

This command is used to start or stop GPS session.

NOTE:

1. Output of NMEA sentences is automatic; no control via AT commands is provided. At present the module only supports standalone mode. If executing AT+CGPS=1, the GPS session will choose cold or hot start automatically.
2. UE-based and UE-assisted mode depend on URL (AT+CGPSURL). When UE-based mode fails, it will switch standalone mode.
3. UE-assisted mode is singly fixed. Standalone and UE-based mode is consecutively fixed.
4. After the GPS closed, it should to wait about 2s~30s for start again. Reason：If the signal conditions are right (strong enough signals to allow ephemeris demodulation) or ephemeris demodulation is on going, sometimes MGP will stay on longer in order to demodulate more ephemeris. This will help the engine provide faster TTFF and possibly better yield later (up to 2 hours), because it has the benefit of more ephemeris available.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPS=?	+CGPS: (list of supported <on/off>s),(list of supported <mode>s) OK
Read Command	**Responses**
AT+CGPS?	+CGPS: <on/off>,<mode> OK
Write Command	**Responses**
AT+CGPS=<on/off>[,<mode>]	OK *If UE-assisted mode, when fixed will report indication:* +CAGPSINFO:<lat>,<lon>,<alt>,<date>,<time> *If <off>, it will report indication:* +CGPS: 0
	ERROR

Defined values

<on/off>
0 – stop GPS session
1 – start GPS session
<mode>
Ignore - standalone mode
1 – standalone mode
2 – UE-based mode
3 – UE-assisted mode
<lat>
Latitude of current position. Unit is in 10^8 degree
<log>
Longitude of current position. Unit is in 10^8 degree
<alt>
MSL Altitude. Unit is meters.
<date>
UTC Date. Output format is ddmmyyyy
<time>
UTC Time. Output format is hhmmss.s
< unconfidence >
Unconfidence of the location, GPS fixed report 39, cell fixed report 100.
< uncertainty_meter >
Uncertainty meters.

Examples

AT+CGPS?
OK
AT+CGPS=1,1
OK

12.2 AT+CGPSINFO Get GPS fixed position information

Description

This command is used to get current position information.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSINFO=?	+CCGPSINFO: (scope of <time>)

	OK
Read Command	Responses
AT+CGPSINFO?	+CCGPSINFO: <time> OK
Write Command	Responses
AT+CGPSINFO=<time>	OK +CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>]
	OK *(if <time>=0)*
Execution Command	Responses
AT+CGPSINFO	+CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>] OK

Defined values

<lat>
Latitude of current position. Output format is ddmm.mmmmmm
<N/S>
N/S Indicator, N=north or S=south
<log>
Longitude of current position. Output format is dddmm.mmmmmm
<E/W>
E/W Indicator, E=east or W=west
<date>
Date. Output format is ddmmyy
<UTC time>
UTC Time. Output format is hhmmss.s
<alt>
MSL Altitude. Unit is meters.
<speed>
Speed Over Ground. Unit is knots.
<course>
Course. Degrees.
<time>
The range is 0-255, unit is second, after set <time> will report the GPS information every the seconds.

Examples

AT+CGPSINFO=?
+CGPSINFO: (0-255)

```
OK
AT+CGPSINFO?
+CGPSINFO: 0
OK
AT+CGPSINFO
+CGPSINFO:3113.343286,N,12121.234064,E,250311,072809.3,44.1,0.0,0
OK
```

12.3 AT+CGPSCOLD Cold start GPS

Description

This command is used to cold start GPS session.

NOTE: Before using this command,it must use AT+CGPS=0 to stop GPS session.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSCOLD=?	OK
Execution Command	Responses
AT+CGPSCOLD	OK

Examples

```
AT+CGPSCOLD=?
OK
AT+CGPSCOLD
OK
```

12.4 AT+CGPSHOT Hot start GPS

Description

This command is used to hot start GPS session

NOTE: Before using this command, AT+CGPS=0 must be used to stop GPS session.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSHOT=?	OK

Execution Command	Responses
AT+CGPSHOT	OK

Examples

```
AT+CGPSHOT=?
OK
AT+CGPSHOT
OK
```

12.5 AT+CGPSURL Set AGPS default server URL

Description

This command is used to set AGPS default server URL. It will take effect only after restarting.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSURL=?	OK
Read Command	Responses
AT+CGPSURL?	+CGPSURL: <URL> OK
Write Command	Responses
AT+CGPSURL=<URL>	OK
	ERROR

Defined values

<URL>
AGPS default server URL. It needs double quotation marks.

Examples

```
AT+CGPSURL="123.123.123.123:8888"
OK
AT+CGPSURL?
+CGPSURL: "123.123.123.123:8888"
OK
```

12.6 AT+CGPSSSL Set AGPS transport security

Description

This command is used to select transport security, used certificate or not. The certificate gets from local carrier. If the AGPS server doesn't need certificate, execute AT+CGPSSSL=0.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSSSL=?	+CGPSSSL: (list of supported <SSL>s) OK
Read Command	Responses
AT+CGPSSSL?	+CGPSSSL: <SSL> OK
Write Command	Responses
AT+CGPSSSL=<SSL>	OK
	ERROR

Defined values

<SSL>		
0	–	don't use certificate
1	–	use certificate

Examples

```
AT+CGPSSSL=0
OK
```

12.7 AT+CGPSAUTO Start GPS automatic

Description

This command is used to start GPS automaticly when module powers on, GPS is closed defaultly.

NOTE: If GPS start automatically, its operation mode is standalone mode.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSAUTO=?	+CGPSAUTO:(list of supported <auto>s) OK
Read Command	Responses
AT+CGPSAUTO?	+CGPSAUTO:<auto> OK
Write Command	Responses
AT+CGPSAUTO=<auto>	OK
	ERROR

Defined values

<auto>		
0	–	Non-automatic
1	–	automatic

Examples

```
AT+CGPSAUTO=1
OK
```

12.8 AT+CGPSNMEA Configure NMEA sentence type

Description

This command is used to configure NMEA output sentences which are generated by the gpsOne engine when position data is available.

NOTE: If nmea bit 2 GPGSV doesn't configure, GPGSV sentence also doesn't output on AT/modem port even set AT+CGPSFTM=1.

Module should reboot to take effect.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSNMEA=?	+CGPSNMEA: (scope of <nmea>) OK
Read Command	Responses
AT+CGPSNMEA?	+CGPSNMEA: <nmea> OK
Write Command	Responses

AT+CGPSNMEA=<nmea>	OK
	If GPS engine is running: ERROR

Defined values

<nmea>

Range – 0 to 262143

Each bit enables an NMEA sentence output as follows:

Bit 0 – GPGGA (global positioning system fix data)

Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data)

Bit 2 – GPGSV (GPS satellites in view)

Bit 3 – GPGSA (GPS DOP and active satellites)

Bit 4 – GPVTG (track made good and ground speed)

Bit 5 – PQXFI (Global Positioning System Extended Fix Data.)

Bit 6 – GLGSV (GLONASS satellites in view GLONASS fixes only)

Bit 7 – GNGSA (1. GPS/2. Glonass/3. GALILE DOP and Active Satellites.)

Bit 8 – GNGNS (fix data for GNSS receivers;output for GPS,GLONASS,GALILEO)

Bit 9 – Reserved

Bit 10 – GAGSV (GALILEO satellites in view)

Bit 11 –Reserved

Bit 12 –Reserved

Bit 13 –Reserved

Bit 14 –Reserved

Bit 15 –Reserved,

Bit 16 –BDGSA/PQGSA (BEIDOU/QZSS DOP and active satellites)

Bit 17 –BDGSV/PQGSV (BEIDOUQZSS satellites in view)

Set the desired NMEA sentence bit(s). If multiple NMEA sentence formats are desired, “OR” the desired bits together.

NOTE: Reserved default 0, set invalid.

Examples

```
AT+CGPSNMEA=200191
OK
```

12.9 AT+CGPSNEMARATE Set NMEA output rate

Description

This command is used to set nmea output rate

NOTE: send the command before open gps

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSNMEARATE=?	+CGPSNMEARATE: (scope of < rate >) OK
Read Command	Responses
AT+CGPSNMEARATE?	+CGPSNMEARATE: <rate> OK
Write Command	Responses
AT+CGPSNMEARATE=<rate>	OK
	ERROR

Defined values

<rate>	
0	output rate 1HZ
1	output rate 10HZ

Examples

```
AT+CGPSNMEARATE =1
OK
```

12.10 AT+CGPSMD Configure AGPS MO method

Description

This command specifies if the Mobile-Originated (MO) GPS session should use the control plane session or user plane session.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSMD=?	+CGPSMD: (scope of <method>) OK
Read Command	Responses
AT+CGPSMD?	+CGPSMD: <method>

	OK
Write Command	Responses
AT+CGPSMD=<method>	OK
	If GPS engine is running: ERROR

Defined values

<method>
0 – Control plane 1 – User plane

Examples

```
AT+CGPSMD=1
OK
```

12.11 AT+CGPSFTM Start GPS test mode

Description

This command is used to start GPS test mode.

NOTE:

1. If test mode starts, the URC will report on AT port, Modem port and UART port.
2. If testing on actual signal, <SV> should be ignored, and GPS must be started by AT+CGPS, AT+CGPSCOLD or AT+CGPSHOT.
3. If testing on GPS signal simulate equipment, <SV> must be choiced, and GPS will start automatically.
4. URC sentence will report every 1 second.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSFTM=?	OK
Read Command	Responses
AT+CGPSFTM?	+CGPSFTM: <on/off> OK
Write Command	Responses
AT+CGPSFTM=<on/off>	OK
	ERROR

Defined values

<on/off>
0 – Close test mode 1 – Start test mode
<CNo>
Satellite CNo value. Floating value.
URC format
$GPGSV[,<SV>,<CNo>][...] $GLGSV[,<SV>,<CNo>][...] $BDGSV[,<SV>,<CNo>][...] $GAGSV[,<SV>,<CNo>][...] $PQGSV[,<SV>,<CNo>][...]

Examples

```
AT+CGPSFTM=1
OK
$GLGSV,78,20.6,66,25.6,77,21.6,79,21.9,67,26.2,68,23.6

$GPGSV,10,36.3,12,33.5,14,26.5,15,27.0,18,30.6,20,29.4,21,14.9,24,32.8,25,30.6,31,29.1,32,27.0

$BDGSV,201,28.7,204,29.0,206,27.3,207,25.9,209,25.0,210,18.5
```

12.12 AT+CGPSDEL Delete the GPS information

Description

This command is used to delete the GPS information. After executing the command, GPS start is cold start.

NOTE: This command must be executed after GPS stopped.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSDEL=?	OK
Execution Command	**Responses**
AT+CGPSDEL	OK
	ERROR

Examples

```
AT+CGPSDEL=?
OK
AT+CGPSDEL
OK
```

12.13 AT+CGPSXE Enable/Disable GPS XTRA function

Description

This command is used to enable/disable the GPS XTRA function.

NOTE: XTRA function must download the assistant file from network by HTTP, so the APN must be set by AT+CGDCONT command.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSXE=?	+CGPSXE: (list of supported <on/off>s) OK
Read Command	Responses
AT+CGPSXE?	+CGPSXE: <on/off> OK
Write Command	Responses
AT+CGPSXE=<on/off>	OK
	ERROR

Defined values

<on/off>	
0	– Disable GPS XTRA
1	– Enable GPS XTRA

Examples

```
AT+CGPSXE=?
+CGPSXE: (0,1)
OK
AT+CGPSXE=0
OK
```

12.14 AT+CGPSXD Download XTRA assistant file

Description

This command is used to download the GPS XTRA assistant file from network through http protocol. Module will download the latest assistant file form server and write the file into module.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSXD=?	+CGPSXD: (list of supported <server>s) OK
Read Command	**Responses**
AT+CGPSXD?	+CGPSXD: <server> OK
Write Command	**Responses**
AT+CGPSXD=<server>	OK +CGPSXD: <resp>
	+CGPSXD: <resp> ERROR

Defined values

<server>
0 – XTRA primary server (precedence)
1 – XTRA secondary server
2 – XTRA tertiary server
<resp>
refer to Unsolicited XTRA download Codes

Examples

AT+CGPSXD=*?*
+CGPSXD: (0-2)
OK
AT+CGPSXD=0
OK
+CGPSXD: 0

12.15 AT+CGPSXDAUTO Download XTRA assistant file automatically

Description

This command is used to control download assistant file automatically or not when GPS start.

XTRA function must enable for using this command. If assistant file doesn't exist or check error, the module will download and inject the assistant file automatically.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSXDAUTO=?	+CGPSXDAUTO: (list of supported <on/off>s) OK
Read Command	Responses
AT+CGPSXDAUTO?	+CGPSXDAUTO: <on/off> OK
Write Command	Responses
AT+CGPSXDAUTO=<on/off>	OK
	ERROR

Defined values

<on/off>
0 – disable download automatically
1 – enable download automatically
NOTE: Some URCs will report when downloading, it's same as AT+CGPSXD command.

Examples

```
AT+CGPSXDAUTO=?
+CGPSXDAUTO: (0,1)
OK
AT+CGPSXDAUTO=0
OK
```

12.16 AT+CGPSINFOCFG Report GPS NMEA-0183 sentence

Description

This command is used to report NMEA-0183 sentence.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSINFOCFG=?	+CGPSINFOCFG: (scope of <time>),(scope of <config>) OK
Read Command	**Responses**
AT+CGPSINFOCFG?	+CGPSINFOCFG: <time>,<config> OK
Write Command	**Responses**
AT+CGPSINFOCFG=<time>[,<config>]	OK (NMEA-0183 Sentence) ……
	OK *(if <time>=0)*

Defined values

<time>
The range is 0-255, unit is second, after set <time> will report the GPS NMEA sentence every the seconds. If <time>=0, module stop reporting the NMEA sentence.
<config>
Range – 0 to 262143 Each bit enables an NMEA sentence output as follows: Bit 0 – GPGGA (global positioning system fix data) Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data) Bit 2 – GPGSV (GPS satellites in view) Bit 3 – GPGSA (GPS DOP and active satellites) Bit 4 – GPVTG (track made good and ground speed) Bit 5 – PQXFI (Global Positioning System Extended Fix Data.) Bit 6 – GLGSV (GLONASS satellites in view GLONASS fixes only) Bit 7 – GNGSA (1. GPS/2. Glonass/3. GALILE DOP and Active Satellites.) Bit 8 – GNGNS (fix data for GNSS receivers;output for GPS,GLONASS,GALILEO) Bit 9 – Reserved Bit 10 – GAGSV (GALILEO satellites in view) Bit 11 –Reserved Bit 12 –Reserved Bit 13 –Reserved Bit 14 –Reserved Bit 15 –Reserved,

Bit 16 –BDGSA/PQGSA (BEIDOU/QZSS DOP and active satellites)
Bit 17 –BDGSV/PQGSV (BEIDOUQZSS satellites in view)
Set the desired NMEA sentence bit(s). If multiple NMEA sentence formats are desired, “OR” the desired bits together.

NOTE: Reserved default 0, set invalid.

For example:
If want to report GPRMC sentence by 10 seconds, should execute AT+CGPSINFOCFG=10,2

Examples

```
AT+CGPSINFOCFG=?
+CGPSINFO: (0-255),(0-262143)
OK
AT+CGPSINFOCFG=10,31
OK
$GPGSV,4,1,16,04,53,057,44,02,55,334,44,10,61,023,44,05,45,253,43*7D
$GPGSV,4,2,16,25,10,300,40,17,25,147,40,12,22,271,38,13,28,053,38*77
$GPGSV,4,3,16,26,09,187,35,23,06,036,34,24,,,,27,,,*7A
$GPGSV,4,4,16,09,,,,31,,,,30,,,,29,,,*7D
$GPGGA,051147.0,3113.320991,N,12121.248076,E,1,10,0.8,47.5,M,0,M,,*45
$GPVTG,NaN,T,,M,0.0,N,0.0,K,A*42
$GPRMC,051147.0,A,3113.320991,N,12121.248076,E,0.0,0.0,211211,,,A*66
$GPGSA,A,3,02,04,05,10,12,13,17,23,25,26,,,1.4,0.8,1.2*3B
```

12.17 AT+CGPSPMD Configure positioning mode

Description

This command is used to configure the positioning modes support.

NOTE: Need to restart the module after setting the mode.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSPMD=?	+CGPSPMD: (scope of <mode>) OK
Read Command	**Responses**
AT+CGPSPMD?	+CGPSPMD: <mode> OK

Write Command	Responses
AT+CGPSPMD=<mode>	OK
	ERROR

Defined values

<mode>
Default - 127 Range - 1 to 65407 Each bit enables a supported positioning mode as follows: Bit 0 – Standalone Bit 1 – UP MS-based Bit 2 – UP MS-assisted Bit 3 – CP MS-based (2G) Bit 4 – CP MS-assisted (2G) Bit 5 – CP UE-based (3G) Bit 6 – CP UE-assisted (3G) Bit 7 – NOT USED Bit 8 – UP MS-based (4G) Bit 9 – UP MS-assisted(4G) Bit 10 – CP MS-based (4G) Bit 11 – CP MS-assisted (4G) Set the desired mode sentence bit(s). If multiple modes are desired, “OR” the desired bits together. Example, support standalone, UP MS-based and UP MS-assisted, set Binary value 0000 0111, is 7.

Examples

AT+CGPSPMD=127
OK

12.18 AT+CGPSMSB Configure based mode switch to standalone

Description

This command is used to configure AGPS based mode switching to standalone mode automatically or not.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses

AT+CGPSMSB=?	+CGPSMSB: (scope of <mode>) OK
Read Command	Responses
AT+CGPSMSB?	+CGPSMSB: <mode> OK
Write Command	Responses
AT+CGPSMSB=<mode>	OK
	ERROR

Defined values

<mode>	
0	– Don't switch to standalone mode automatically
1	– Switch to standalone mode automatically

Examples

```
AT+CGPSMSB=0
OK
```

12.19 AT+CGPSHOR Configure positioning desired accuracy

Description

The command is used to configure the positioning desired accuracy threshold in meters.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSHOR=?	+CGPSHOR: (scope of <acc>), (scope of < acc_f >) OK
Read Command	Responses
AT+CGPSHOR?	+CGPSHOR: <acc>,<acc_f> OK
Write Command	Responses
AT+CGPSHOR=<acc>[,<acc_f>]	OK
	ERROR

Defined values

<acc>
Range – 0 to 1800000 Default value is 50
<acc_f>
Reserved

Examples

AT+CGPSHOR=50
OK

12.20 AT+CGPSNOTIFY LCS respond positioning request

Description

This command is used to respond to the incoming request for positioning request message.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPSNOTIFY=?	+CGPSNOTIFY: (list of supported <resp>s) OK
Write Command	Responses
AT+CGPSNOTIFY=<resp>	OK
	ERROR

Defined values

<resp>
0 – LCS notify verify accept 1 – LCS notify verify deny 2 – LCS notify verify no response

Examples

AT+CGPSNOTIFY=?
+CGPSNOTIFY: (0-2) *OK*
AT+CGPSNOTIFY=0
OK

12.21 AT+CGNSSINFO Get GNSS fixed position information

Description

This command is used to get current position related information.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGNSSINFO=?	+CGNSSINFO: (scope of <time>) OK
Read Command	**Responses**
AT+CGNSSINFO?	+CGNSSINFO: <time> OK
Write Command	**Responses**
AT+CGNSSINFO=<time>	OK +CGNSSINFO: [<mode>],[<GPS-SVs>],[<GLONASS-SVs>],[BEIDOU-SVs], [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC-time>],[<alt>], [<speed>],[<course>],[<PDOP>],[HDOP],[VDOP]
	OK *(if <time>=0)*
Execution Command	**Responses**
AT+CGNSSINFO	+CGNSSINFO: [<mode>],[<GPS-SVs>],[<GLONASS-SVs>],[BEIDOU-SVs], [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC-time>],[<alt>], [<speed>],[<course>],[<PDOP>],[HDOP],[VDOP] OK

Defined values

<mode>
Fix mode 2=2D fix 3=3D fix
<GPS-SVs>
GPS satellite valid numbers scope: 00-12
< GLONASS-SVs >
GLONASS satellite valid numbers scope: 00-12
<BEIDU-SVs>
BEIDOU satellite valid numbers scope: 00-12
<lat>

Latitude of current position. Output format is ddmm.mmmmmm
<N/S>
N/S Indicator, N=north or S=south
<log>
Longitude of current position. Output format is dddmm.mmmmmm
<E/W>
E/W Indicator, E=east or W=west
<date>
Date. Output format is ddmmyy
<UTC time>
UTC Time. Output format is hhmmss.s
<alt>
MSL Altitude. Unit is meters.
<speed>
Speed Over Ground. Unit is knots.
<course>
Course. Degrees.
<time>
The range is 0-255, unit is second, after set <time> will report the GPS information every the seconds.
<PDOP>
Position Dilution Of Precision.
<HDOP>
Horizontal Dilution Of Precision.
<VDOP>
Vertical Dilution Of Precision.

Examples

AT+CGNSSINFO=?
+CGNSSINFO: (0-255)
OK
AT+CGNSSINFO?
+CGPSINFO: 0
OK
AT+CGNSSINFO
+CGNSSINFO:
2,09,05,00,3113.330650,N,12121.262554,E,131117,091918.0,32.9,0.0,255.0,1.1,0.8,0.7
OK
AT+CGNSSINFO (if not fix,will report null)
+CGNSSINFO: ,,,,,,,,,,,,,,
OK

12.22 AT+CGNSSMODE Configure GNSS support mode

Description

This command is used to configure GPS, GLONASS, BEIDOU and QZSS support mode.
And DPO(Dynamic power optimization) status
Module should reboot to take effective.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGNSSMODE=?	+CGNSSMODE: (scope of <gnss_mode>),(scope of <dpo_mode>) OK
Read Command	Responses
AT+CGNSSMODE?	+CGNSSMODE: <gnss_mode>,<dpo_mode> OK
Write Command	Responses
AT+CGNSSMODE=<mode>[,<dpo_mode>]	OK
	ERROR

Defined values

<gnss_mode>
Range – 0 to 15 Bit0: GLONASS Bit1: BEIDOU Bit2: GALILEO Bit3: QZSS 1: enable 0:disable GPS always support
<dpo_mode>
1: enable DPO 0: disable DPO

Examples

```
AT+CGNSSMODE=15,1
OK
```

12.23 Unsolicited XTRA download Codes

Code of <err>	Description
0	Assistant file download successfully
1	Assistant file doesn't exist
2	Assistant file check error
220	Unknown error for HTTP
221	HTTP task is busy
222	Failed to resolve server address
223	HTTP timeout
224	Failed to transfer data
225	Memory error
226	Invalid parameter
227	Network error
220~227 codes are same as Unsolicited HTTP codes	

12.24 AT+CLBS Base station location

Description

The write command is used to base station location.

NOTE:

1. The LBS is only support in WCDMA/LTE net mode.

2. It needs to execute AT+CNETSTART to open network before execute the AT+CLBS write command. It needs to execute AT+CNETSTOP to close network after complete the LBS operation.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CLBS=?	+CLBS: (1,2,3,4,9),(1-24),(-180.000000-180.000000),(-90.000000-90.000000),(0,1) OK
Write Command	**Responses**
AT+CLBS=<type>[,<cid>[,[<longitude>,<latitude>],[<lon_type>]]]	OK 1)type = 1,get longitude and latitude

	+CLBS: <ret_code>[,<longitude>,<latitude>,<acc>] 2)type = 2,get detail address +CLBS: <ret_code>[,<detail_addr>] 3)type = 3,get access times +CLBS: <ret_code>[,<times>] 4)type = 4,get longitude latitude and date time +CLBS: <ret_code>[,<longitude>,<latitude>,<acc>,<date>,<time>] 5)type = 9, report positioning error +CLBS: <ret_code>
	ERROR
	+CLBS: <ret_code> ERROR

Defined values

<type>
A numeric parameter which specifies the location type. 1 use 3 cell's information 2 get detail address 3 get access times 4 get longitude latitude and date time 9 report positioning error
<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…24 NOTE：This parameter takes no effect in SIM7906/SIM7912, it's only in order to keep compatible with the previous software version and other projects, support convenience for the customers.
<longitude>
Current longitude in degrees.
<latitude>
Current latitude in degrees.
<detail_addr>
Current detail address. It based the UCS2 coding. Each 4 characters in the URC is for one UCS2 character.
<acc>
Positioning accuracy.

<lon_type>

The type of longitude and latitude

0 WGS84，the default type

1 GCJ02.

<times>

access service times.

<data>

service date(UTC, the format is YYYY/MM/DD).

<time>

service time(UTC, the format is HH:MM:SS).

<ret_code>

The result code.

0 Success

1 Parameter error returned by server.

2 Service out of time returned by server.

3 Location failed returned by server.

4 Query timeout returned by server.

5 Certification failed returned by server.

6 Server LBS error success.

7 Server LBS error failed.

80 Report LBS to server success

81 Report LBS to server parameter error

82 Report LBS to server failed

110 Other Error

8 LBS is busy.

9 Open network error.

10 Close network error.

11 Operation timeout.

12 DNS error.

13 Create socket error.

14 Connect socket error.

15 Close socket error.

16 Get cell info error.

17 Get IMEI error.

18 Send data error.

19 Receive data error.

20 NONET error.

21 Net not opened.

Examples

AT+CLBS=?

+CLBS: (1,2,3,4,9),(1-24),(-180.000000-180.000000),(-90.000000-90.000000),(0,1)

OK

AT+CLBS=1 (need execute AT+CNETSTART before this command)

OK

+CLBS: 0,31.228525,121.380295,500

AT+CLBS=2 (need execute AT+CNETSTART before this command)

OK

+CLBS: 0,
4e0a6d775e020020957f5b81533a002091d1949f8def002097608fd166688baf79d162805927697c

AT+CLBS=3 (need execute AT+CNETSTART before this command)

OK

+CLBS: 0,22

AT+CLBS=4 (need execute AT+CNETSTART before this command)

OK

+CLBS: 0,31.228525,121.380295,500,2025/06/07,10:49:08

AT+CLBS=9 (need execute AT+CNETSTART before this command)

OK

+CLBS: 80

12.25 AT+CLBSCFG Base station location configure

Description

The write command is used to set and query the base station location configure.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CLBSCFG=?	+CLBSCFG: (0-1), 3,"Param Value" OK
Write Command	**Responses**
AT+CLBSCFG=<operate>,<para>[,<value>]	+CLBSCFG: 0,<para>,<value>

	OK
	OK
	ERROR
	+CLBSCFG: <ret_code> ERROR

Defined values

<operate>
A numeric parameter which specifies the operator. 0 read operator 1 write operator
<para>
A numeric parameter which specifies the operator parameter. 3 Server's address lbs-simcom.com:3002
<value>
The value of parameter. The allowed **<value>** is "lbs-simcom.com:3002". Server's address of "lbs-simcom.com:3002" is free.
<ret_code>
Please refer to the <ret_code> of AT+CLBS.

Examples

AT+CLBSCFG=?
+CLBSCFG: (0-1),3,"Param Value" *OK*
AT+CLBSCFG=0,3
+CLBSCFG: 0,3,"lbs-simcom.com:3002" *OK*
AT+CLBSCFG=1,3,"lbs-simcom.com:3002"
OK

12.26 AT+CGTP Get the IZAT location

Description

The write command is used to get IZAT location, you can get the IZAT location,data,time,accuary

SIM PIN	References

YES	3GPP TS 27.007

Syntax

Test Command **AT+CGTP=?**	Response **OK**
Read Command **AT+CGTP?**	Response **+CGTP: <feature_control>,<user_session_control>,<primary_svr_address>,<primary_svr_port>,<secondary_svr_address>,< secondary_svr_port>** **OK**
Write Command /*Set IZAT NV param*/ **AT+CGTP=<mode>**	Response a)If successfully: **OK** b)If failed: **ERROR**
Execute Command /*Start IZAT location */ **AT+CGTP**	Response **OK** **+CTPCELL:** **<latitude>,<longitude>,<date>,<time>,<accuary>**

Defined Values

< feature_control >	0: GTP disabled 1: GTP enabled If you want to use IZAT function,this value must be 1
< user_session_control >	0 – Connection to the XTS is never permitted 1 – Connection to the XTS is always permitted If you want to use IZAT function,this value must be 1
< primary_svr_address >	the IP address of the primary GTP Server. If you want to use IZAT function,this value must be gtp1.izatcloud.net
< primary_svr_port >	the port number of the primary If you want to use IZAT function,this value must be 443
< secondary_svr_address >	the IP address of the secondary GTP Server. If you want to use IZAT function,this value must be gtp2.izatcloud.net

< secondary_svr_port >	the port number of the primary If you want to use IZAT function,this value must be 443
< latitude >	Latitude (specified in WGS84 datum). Type: Floating point Units: Degrees Range: -90.0 to 90.0 Positive values indicate northern latitude Negative values indicate southern latitude
< longitude >	Longitude (specified in WGS84 datum). Type: Floating point Units: Degrees Range: -180.0 to 180.0 Positive values indicate eastern longitude Negative values indicate western longitude
< date >	Output format is yyyy-mm-dd
< time >	UTC time output format is hh:mm:ss
< accuary >	Horizontal position uncertainty (circular). Type: Floating point Units: Meters
<mode>	1:Set NV value

Examples

Before all IZAT related operations, we should ensure the following:

a) ensure network is registered

```
AT+CSQ

+CSQ: 23,0

OK

AT+CREG?

+CREG: 0,1

OK
```

Test IZAT function

//Query IZAT NV set

AT+CGTP?

+CGTP: 1,1,gtp1.izatcloud.net,443,gtp2.izatcloud.net,443

OK

//If query result is not this , need set it, then must restart module

AT+CGTP=1

OK

// Start IZAT location

AT+CGTP

OK

+GTPCELL: 35.523384,104.507509,2018-12-10 09:12:48,1633580.000000

13 AT Commands for Call Control

13.1 AT+CVHU Voice hang up control

Description

Write 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.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CVHU=?	+CVHU: (list of supported <mode>s) OK
Read Command	Responses
AT+CVHU?	+CVHU: <mode> OK
Write Command	Responses
AT+CVHU=<mode>	OK
	ERROR
Execution Command	Responses
AT+CVHU	*Set default value:* OK

Defined values

<mode>
0 – "Drop DTR" ignored but OK response given. ATH disconnects.
1 – "Drop DTR" and ATH ignored but OK response given.

Examples

```
AT+CVHU=0
OK
AT+CVHU?
+CVHU: 0
OK
```

13.2 AT+CHUP Hang up call

Description

This command is used to cancel voice calls. If there is no call, it will do nothing but OK response is given. After running AT+CHUP, multiple "VOICE CALL END: " may be reported which relies on how many calls exist before calling this command.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CHUP=?	OK
Execution Command	**Responses**
AT+CHUP	VOICE CALL: END: <time> [… VOICE CALL: END: <time>] OK
	No call: OK

Defined values

<time>
Voice call connection time. Format – HHMMSS (HH: hour, MM: minute, SS: second)

Examples

```
AT+CHUP
VOICE CALL:END: 000017
OK
```

13.3 AT+CBST Select bearer service type

Description

Write command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls.

SIM PIN	References

YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CBST=?	+CBST: (list of supported <speed>s), (list of supported <name>s), (list of supported <ce>s) OK
Read Command	Responses
AT+CBST?	+CBST: <speed>,<name>,<ce> OK
Write Command	Responses
AT+CBST= <speed>[,<name>[,<ce>]]	OK
	ERROR
Execution Command	Responses
AT+CBST	*Set default value:* OK

Defined values

<speed>		
0	–	autobauding(automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service)
7	–	9600 bps (V.32)
12	–	9600 bps (V.34)
14	–	14400 bps(V.34)
16	–	28800 bps(V.34)
17	–	33600 bps(V.34)
39	–	9600 bps(V.120)
43	–	14400 bps(V.120)
48	–	28800 bps(V.120)
51	–	56000 bps(V.120)
71	–	9600 bps(V.110)
75	–	14400 bps(V.110)
80	–	28800 bps(V.110 or X.31 flag stuffing)
81	–	38400 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)
116	–	64000 bps(bit transparent)
134	–	64000 bps(multimedia)
<name>		
0	–	Asynchronous modem
1	–	Synchronous modem

4 – data circuit asynchronous (RDI)	
<ce>	
0 – transparent	
1 – non-transparent	
NOTE: If <speed> is set to 116 or 134, it is necessary that <name> is equal to 1 and <ce> is equal to 0.	

Examples

AT+CBST=0,0,1
OK
AT+CBST?
+CBST:0,0,1
OK

13.4 AT+CRLP Radio link protocol

Description

Radio Link Protocol(RLP) parameters used when non-transparent data calls are originated may be altered with write command.

Read command returns current settings for each supported RLP version <verX>. Only RLP parameters applicable to the corresponding <verX> are returned.

Test command returns values supported by the TA as a compound value. If ME/TA supports several RLP versions <verX>, the RLP parameter value ranges for each <verX> are returned in a separate line.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CRLP=?	+CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s) [,<ver1> [,(list of supported <T4>s)]][<CR><LF> +CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s) [,<ver2> [,(list of supported <T4>s)]] [...]] OK
Read Command	Responses
AT+CRLP?	+CRLP: <iws>, <mws>, <T1>, <N2> [,<ver1> [, <T4>]][<CR><LF>

	+CRLP:<iws>,<mws>,<T1>,<N2>[,<ver2>[,<T4>]] [...]] OK
Write Command	Responses
AT+CRLP=<iws> [,<mws>[,<T1>[,<N2> [,<ver>[,<T4>]]]]]	OK
	ERROR
Execution Command	Responses
AT+CRLP	OK

Defined values

<ver>, <verX>
RLP version number in integer format, and it can be 0, 1 or 2; when version indication is not present it shall equal 1.
<iws>
IWF to MS window size.
<mws>
MS to IWF window size.
<T1>
Acknowledgement timer.
<N2>
Retransmission attempts.
<T4>
Re-sequencing period in integer format.
NOTE: <T1> and <T4> are in units of 10 ms.

Examples

AT+CRLP?
+CRLP:61,61,48,6,0
+CRLP:61,61,48,6,1
+CRLP:240,240,52,6,2
OK

13.5 AT+CR Service reporting control

Description

Write command controls whether or not intermediate result code "*+CR: <serv>*" is returned from the TA to the TE. If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CR=?	+CR: (list of supported <mode>s) OK
Read Command	Responses
AT+CR?	+CR: <mode> OK
Write Command	Responses
AT+CR=<mode>	OK
Execution Command	Responses
AT+CR	*Set default value:* OK

Defined values

<mode>	
0	– disables reporting
1	– enables reporting

<serv>	
ASYNC	asynchronous transparent
SYNC	synchronous transparent
REL ASYNC	asynchronous non-transparent
REL sync	synchronous non-transparent
GPRS [<L2P>]	GPRS

The optional <L2P> proposes a layer 2 protocol to use between the MT and the TE.

Examples

```
AT+CR?
+CR:0
OK
AT+CR=1
OK
```

13.6 AT+CRC Cellular result codes

Description

Write command controls whether or not the extended format of incoming call indication or GPRS network request for PDP context activation is used. When enabled, an incoming call is indicated to the TE with unsolicited result code "+CRING: <type>" instead of the normal RING.
Test command returns values supported by the TA as a compound value.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CRC=?	+CRC: (list of supported <mode>s) OK
Read Command	**Responses**
AT+CRC?	+CRC: <mode> OK
Write Command	**Responses**
AT+CRC=<mode>	OK
Execution Command	**Responses**
AT+CRC	*Set default value:* OK

Defined values

<mode>	
0 – disable extended format	
1 – enable extended format	
<type>	
ASYNC	asynchronous transparent
SYNC	synchronous transparent
REL ASYNC	asynchronous non-transparent
REL SYNC	synchronous non-transparent
FAX	facsimile
VOICE	normal voice
VOICE/*XXX*	voice followed by data(*XXX* is ASYNC, SYNC, REL ASYNC or REL SYNC)
ALT VOICE/*XXX*	alternating voice/data, voice first
ALT *XXX*/VOICE	alternating voice/data, data first
ALT FAX/VOICE	alternating voice/fax, fax first

GPRS	GPRS network request for PDP context activation

Examples

```
AT+CRC=1
OK
AT+CRC?
+CRC: 1
OK
```

13.7 AT+CLCC List current calls

Description

This command isused to return list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CLCC=?	+CLCC: (list of supported <n>s) OK
Read Command	**Responses**
AT+CLCC?	+CLCC: <n> OK
Write Command	**Responses**
AT+CLCC=<n>	OK
Execution Command	**Responses**
AT+CLCC	+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]][<CR><LF> +CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]] [...]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<n>

0 – Don’t report a list of current calls of ME automatically when the current call status changes.

1 – Report a list of current calls of ME automatically when the current call status changes.

<idX>

Integer type, call identification number, 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 – disconnect

<mode>

bearer/teleservice:

0 – voice

1 – data

2 – fax

9 – unknown

<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;

128 – Restricted number type includes unknown type and format

145 – International number type

161 – national number.The network support for this type is optional

177 – network specific number,ISDN format

129 – Otherwise

<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 AT+CSCS.

Examples

ATD10011;
OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10011",129,"sm"
OK
RING (with incoming call)
AT+CLCC
+CLCC: 1,1,4,0,0,"02152063113",128,"gongsi"
OK

13.8 AT+CEER Extended error report

Description

Execution command causes the TA to return the information text <report>, which should offer the user of the TA an extended report of the reason for:

1 The failure in the last unsuccessful call setup(originating or answering) or in-call modification.
2 The last call release.
3 The last unsuccessful GPRS attach or unsuccessful PDP context activation.
4 The last GPRS detach or PDP context deactivation.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CEER=?	OK
Execution Command	**Responses**
AT+CEER	+CEER:<report> OK

Defined values

<report>
Wrong information which is possibly occurred.

Examples

AT+CEER
+CEER: Invalid/incomplete number

OK

13.9 AT+CCWA Call waiting

Description

This command allows control of the Call Waiting supplementary service. Activation, deactivation and status query are supported. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. Parameter <n> is used to disable/enable the presentation of an unsolicited result code +CCWA: <number>,<type>,<class> to the TE when call waiting service is enabled. Command should be abortable when network is interrogated.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CCWA=?	+CCWA: (list of supported <n>s) OK
Read Command	**Responses**
AT+CCWA?	+CCWA: <n> OK
Write Command	**Responses**
AT+CCWA= <n>[,<mode>[,<class>]]	*When <mode>=2 and command successful:* +CCWA:<status>,<class>[<CR><LF> +CCWA: <status>, <class>[...]] OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CCWA	*Set default value (<n>=0):* OK

Defined values

<n>
Sets/shows the result code presentation status in the TA 0 – disable 1 – enable
<mode>

When <mode> parameter is not given, network is not interrogated:

0 – disable

1 – enable

2 – query status

<class>

It is a sum of integers each representing a class of information (default 7)

1 – voice (telephony)

2 – data (refers to all bearer services)

4 – fax (facsimile services)

7 – voice,data and fax(1+2+4)

8 – short message service

16 – data circuit sync

32 – data circuit async

64 – dedicated packet access

128 – dedicated PAD access

255 – The value 255 covers all classes

<status>

0 – not active

1 – active

<number>

String type phone number of calling address in format specified by <type>.

<type>

Type of address octet in integer format;

128 – Restricted number type includes unknown type and format

145 – International number type

129 – Otherwise

Examples

```
AT+CCWA=?
+CCWA:(0-1)
OK
AT+CCWA?
+CCWA: 0
OK
```

13.10 AT+CHLD Call related supplementary services

Description

This command allows the control the following call related services:

1. A call can be temporarily disconnected from the ME but the connection is retained by the network.
2. Multiparty conversation (conference calls).
3. 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. This is based on the GSM/UMTS supplementary services.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CHLD=?	+CHLD: (list of supported <n>s) OK
Write Command	**Responses**
AT+CHLD=<n>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CHLD *Default to <n>=2.*	OK
	ERROR
	+CME ERROR: <err>

Defined values

<n>		
0	–	Terminate all held calls; or set User Determined User Busy for a waiting call
1	–	Terminate all active calls and accept the other call (waiting call or held call)
1X	–	Terminate a specific call X
2	–	Place all active calls on hold and accept the other call (waiting call or held call) as the active call
2X	–	Place all active calls except call X on hold
3	–	Add the held call to the active calls
4	–	Connect two calls and cut off the connection between users and them simultaneously

Examples

```
AT+CHLD=?
+CHLD: (0,1,1x,2,2x,3,4)
OK
```

13.11 AT+CCFC Call forwarding number and conditions

Description

This command allows control of the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CCFC=?	+CCFC: (list of supported <reason>s) OK
Write Command	**Responses**
AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]	*When <mode>=2 and command successful:* +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][<CR><LF>+CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][...]] OK
	ERROR
	+CME ERROR:<err>

Defined values

<reason>
0 – unconditional
1 – mobile busy
2 – no reply
3 – not reachable
4 – all call forwarding
5 – all conditional call forwarding
<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: 145 – dialing string <number> includes international access code character '+' 129 – otherwise
<subaddr>
String type sub address of format specified by <satype>.
<satype>
Type of sub address octet in integer format, default 128.
<classX>
It is a sum of integers each representing a class of information (default 7): 1 – voice (telephony) 2 – data (refers to all bearer services) 4 – fax (facsimile services) 16 – data circuit sync 32 – data circuit async 64 – dedicated packet access 128 – dedicated PAD access 255 – The value 255 covers all classes
<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

Examples

AT+CCFC=?
+CCFC: (0,1,2,3,4,5)
OK
AT+CCFC=0,2
+CCFC: 0,255
OK

13.12 AT+CLIP Calling line identification presentation

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.

Write command enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network.

When the presentation of the CLI at the TE is enabled (and calling subscriber allows), +CLIP: <number>,<type>,,[,[<alpha>][,<CLI validity>]] response is returned after every RING (or +CRING: <type>; refer sub clause "Cellular result codes +CRC") result code sent from TA to TE. It is manufacturer specific if this response is used when normal voice call is answered.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CLIP=?	+CLIP: (list of supported <n>s) OK
Read Command	**Responses**
AT+CLIP?	+CLIP: <n>,<m> OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CLIP=<n>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CLIP	*Set default value(<n>=0):* OK

Defined values

<n>
Parameter sets/shows the result code presentation status in the TA: 0 – disable 1 – enable
<m>
0 – CLIP not provisioned 1 – CLIP provisioned 2 – unknown (e.g. no network, etc.)
<number>

String type phone number of calling address in format specified by <type>.

<type>

Type of address octet in integer format;

128 – Restricted number type includes unknown type and format

145 – International number type

161 – national number.The network support for this type is optional

177 – network specific number,ISDN format

129 – Otherwise

<alpha>

String type alphanumeric representation of <number> corresponding to the entry found in phone book.

<CLI validity>

0 – CLI valid

1 – CLI has been withheld by the originator

2 – CLI is not available due to interworking problems or limitations of originating network

Examples

```
AT+CLIP=1
OK
RING (with incoming call)
+CLIP: "02152063113",128,,,"gongsi",0
```

13.13 AT+CLIR Calling line identification restriction

Description

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

Write command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command.. If this command is used by a subscriber without provision of CLIR in permanent mode the network will act.

Read command gives the default adjustment for all outgoing calls (given in <n>), and also triggers an interrogation of the provision status of the CLIR service (given in <m>).

Test command returns values supported as a compound value.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses

AT+CLIR=?	+CLIR: (list of supported <n>s) OK
Read Command	Responses
AT+CLIR?	+CLIR: <n>,<m> OK
	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CLIR=<n>	OK
	ERROR
	+CME ERROR: <err>

Defined values

<n>		
0	–	presentation indicator is used according to the subscription of the CLIR service
1	–	CLIR invocation
2	–	CLIR suppression
<m>		
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

Examples

```
AT+CLIR=?
+CLIR:(0-2)
OK
```

13.14 AT+COLP Connected line identification presentation

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. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.

When enabled (and called subscriber allows), +COLP:<number>, <type> [,<subaddr>, <satype> [,<alpha>]] intermediate result code is returned from TA to TE before any +CR responses. It is

manufacturer specific if this response is used when normal voice call is established.

When the AT+COLP=1 is set, any data input immediately after the launching of “ATDXXX;” will stop the execution of the ATD command, which may cancel the establishing of the call.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+COLP=?	+COLP: (list of supported <n>s) OK
Read Command	**Responses**
AT+COLP?	+COLP: <n>,<m> OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+COLP =<n>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+COLP	*Set default value(<n>=0, <m>=0):* OK

Defined values

<n>
Parameter sets/shows the result code presentation status in the TA: 0 – disable 1 – enable
<m>
0 – COLP not provisioned 1 – COLP provisioned 2 – unknown (e.g. no network, etc.)

Examples

```
AT+COLP?
+COLP: 1,0
OK
ATD10086;
VOICE CALL: BEGIN
```

+COLP: "10086",129,,,

OK

13.15 AT+VTS DTMF and tone generation

Description

This command allows the transmission of DTMF tones and arbitrary tones which cause the Mobile Switching Center (MSC) to transmit tones to a remote subscriber. The command can only be used in voice mode of operation (active voice call).

NOTE: The END event of voice call will terminate the transmission of tones, and as an operator option, the tone may be ceased after a pre-determined time whether or not tone duration has been reached.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+VTS=?	+VTS: (list of supported<dtmf>s) OK
Write Command	**Responses**
AT+VTS=<dtmf>[,<duration>]	OK
AT+VTS=<dtmf-string>	ERROR

Defined values

<dtmf>
A single ASCII character in the set 0-9, *, #, A, B, C, D.
<duration>
Tone duration in 1/10 seconds, from 0 to 255. This is interpreted as a DTMF tone of different duration from that mandated by the AT+VTD command, otherwise, the duration which be set the AT+VTD command will be used for the tone (<duration> is omitted).
<dtmf-string>
A sequence of ASCII character in the set 0-9, *, #, A, B, C, D, and maximal length of the string is 29. The string must be enclosed in double quotes (“”), and separated by commas between the ASCII characters (e.g. “1,3,5,7,9,*”). Each of the tones with a duration which is set by the AT+VTD command.

Examples

```
AT+VTS=1
OK
AT+VTS=1,20
OK
AT+VTS=”1,3,5”
OK
AT+VTS=?
+VTS: (0-9,*,#,A,B,C,D)
OK
```

13.16 AT+VTD Tone duration

Description

This refers to an integer <n> that defines the length of tones emitted as a result of the AT+VTS command. A value different than zero causes a tone of duration <n>/10 seconds.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+VTD=?	+VTD: (list of supported <n>s) OK
Read Command	Responses
AT+VTD?	+VTD: <n> OK
Write Command	Responses
AT+VTD=<n>	OK

Defined values

<n>	
Tone duration in integer format, from 0 to 255, and 0 is factory value.	
0	Tone duration of every single tone is dependent on the network.
1…255	Tone duration of every single tone in 1/10 seconds.

Examples

```
AT+VTD=?
+VTD: (0-255)
```

OK
AT+VTD?
+VTD: 0
OK
AT+VTD=5
OK

13.17 AT+CSTA Select type of address

Description

Write command is used to select the type of number for further dialing commands (ATD) according to GSM/UMTS specifications.

Read command returns the current type of number.

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CSTA=?	+CSTA:(list of supported <type>s) OK
Read Command	Responses
AT+CSTA?	+CSTA:<type> OK
Write Command	Responses
AT+CSTA=<type>	OK
	ERROR
Execution Command	Responses
AT+CSTA	OK

Defined values

<type>
Type of address octet in integer format: 145 – when dialling string includes international access code character "+" 161 – national number.The network support for this type is optional 177 – network specific number,ISDN format 129 – otherwise **NOTE:** Because the type of address is automatically detected on the dial string of dialing command, command AT+CSTA has really no effect.

Examples

```
AT+CSTA?
+CSTA: 129
OK
AT+CSTA=145
OK
```

13.18 AT+CMOD Call mode

Description

Write command selects the call mode of further dialing commands (ATD) or for next answering command (ATA). Mode can be either single or alternating.

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

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CMOD=?	+CMOD: (list of supported <mode>s) OK
Read Command	**Responses**
AT+CMOD?	+CMOD: <mode> OK
Write Command	**Responses**
AT+CMOD=<mode>	OK
	ERROR
Execution Command	**Responses**
AT+CMOD	*Set default value:* OK

Defined values

<mode>
0 – single mode(only supported)
NOTE: The value of <mode> shall be set to zero after a successfully completed alternating mode call. It shall be set to zero also after a failed answering. The power-on, factory and user resets shall also set the value to zero. This reduces the possibility that alternating mode calls are originated or answered accidentally.

Examples

```
AT+CMOD?
+CMOD: 0
OK
AT+CMOD=0
OK
```

13.19 AT+CSDVC Switch voice channel device

Description

This command is used to switch voice channel device. After changing current voice channel device and if there is a connecting voice call, it will use the settings of previous device (loudspeaker volume level, mute state of loudspeaker and microphone, refer to AT+CLVL, AT+VMUTE, and AT+CMUT).

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CSDVC=?	+CSDVC: (list of supported <dev>s) OK
Read Command	Responses
AT+CSDVC?	+CSDVC: <dev> OK
Write Command	Responses
AT+CSDVC=<dev>	OK

Defined values

<dev>		
0	–	close voice channel device. only used after AT+CODECCTL=1
1	–	handset
3	–	speaker phone

Examples

```
AT+CSDVC=1
OK
AT+CSDVC?
+CSDVC:1
```

OK

13.20 AT+CLVL Loudspeaker volume level

Description

Write command is used to select the volume of the internal loudspeaker audio output of the device.

Test command returns supported values as compound value.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CLVL=?	+CLVL: (list of supported <level>s) OK
Read Command	Responses
AT+CLVL?	+CLVL: <level> OK
Write Command	Responses
AT+CLVL=<level>	OK
	ERROR

Defined values

<level>
Integer type value which represents loudspeaker volume level. The range is from 0 to 5, and 0 represents the lowest loudspeaker volume level, 4 is default factory value. **NOTE:** <level> is nonvolatile, and it is stored when restart.

Examples

AT+CLVL?

+CLVL:4

OK

AT+CLVL=3

OK

13.21 AT+SIDET Set sidetone

Description

This command is used to enable or disable sidetone. Please refer to related hardware design document for more information. This command is only used after call start.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+SIDET=?	+SIDET: (list of supported <en>s) OK
Read Command	**Responses**
AT+SIDET?	+SIDET: <en> OK
Write Command	**Responses**
AT+SIDET=<en>	OK
	ERROR

Defined values

<en>
0: disable sidetone
1: enable sidetone

Examples

```
AT+SIDET?
+SIDET: 0
OK
AT+SIDET=?
+SIDET: (0-1)
OK
AT+SIDET=1
OK
```

14 AT Command for Hardware

14.1 AT+CBC Read the voltage value of the power supply

Description

This command is used to read the voltage value of the power supply

SIM PIN	References
NO	Vendor

Syntax

Read Command	Responses
AT+CBC	+CBC: <vol> OK
	ERROR

Defined values

<vol>
The voltage value, such as 3.8.

Examples

```
AT+CBC
+CBC: 3.591V
OK
```

14.2 AT+CVALARM Low and high voltage Alarm

Description

This command is used to open or close the low voltage alarm function.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CVALARM=?	+CVALARM: (list of supported <enable>s), (list of supported <low voltage>s), (list of supported high < high voltage>s) OK
Read Command	Responses
AT+CVALARM?	+CVALARM: <enable>,<low voltage>, <high voltage> OK
Write Command	Responses
AT+CVALARM=<enable>[,<low voltage>],[<high voltage>]	OK ERROR

Defined values

<enable>
0 – Close 1 – Open. If voltage < < low voltage>, it will report "UNDER-VOLTAGE WARNNING" every 10s. If voltage > <high voltage>, it will report "OVER-VOLTAGE WARNNING" every 10s.
<low voltage>
Between 3200mV and 4000mV. Default value is 3200.
<high voltage>
Between 4000mV and 4350mV. Default value is 4350.
NOTE：The three parameters will be saved automatically.

Examples

```
AT+CVALARM=1,3400,4300
OK
AT+CVALARM?
+CVALARM: 1,3400,4300
OK
AT+CVALARM=?
+CVALARM: (0,1),(3200-4000),(4000-4350)
OK
```

14.3 AT+CPMVT Low and high voltage Power Off

Description

This command is used to open or close the low and high voltage power off function.

SIM PIN	References

NO	Vendor

Syntax

Test Command	Responses
AT+CPMVT=?	+CPMVT: (list of supported <enable>s), (list of supported < low voltage>s), (list of supported < high voltage>s) OK
Read Command	Responses
AT+CPMVT?	+CPMVT: <enable>,<low voltage>, <high voltage> OK
Write Command	Responses
AT+CPMVT=<enable>[,<low voltage>],[<high voltage>]	OK
	ERROR

Defined values

<enable>
0 – Close 1 – Open. If voltage < < low voltage>, it will report “UNDER-VOLTAGE WARNNING POWER DOWN” and power off the module. If voltage > <high voltage>, it will report “OVER-VOLTAGE WARNNING POWER DOWN” and power off the module
<low voltage>
Between 3100mV and 4000mV. Default value is 3100.
<high voltage>
Between 4000mV and 4300mV. Default value is 4420.

Examples

```
AT+CPMVT=1,3400,4300
OK
AT+CPMVT?
+CPMVT: 1,3400,4300
OK
AT+CPMVT=?
+CPMVT: (0-1),(3100-4000),(4000-4420)
OK
```

14.4 AT+CPMUTEMP Read the temperature of the module

Description

This command is used to read the temperature of the module

SIM PIN	References
NO	Vendor

Syntax

Read Command	Responses
AT+CPMUTEMP	+CPMUTEMP: <temp> OK
	ERROR

Defined values

<temp>
The Temperature value, such as 29.

Examples

AT+CPMUTEMP
+CPMUTEMP: 29 *OK*

14.5 AT+CADC0 Read ADC0 value

Description

This command is used to read the ADC0 value from modem. ME supports 2 types of ADC0, which are raw type and voltage type.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CADC0=?	+CADC0: (range of supported <adc>s) OK
Write Command	**Responses**
AT+CADC0=<adc>	+CADC0: <value> OK
	ERROR

Defined values

<adc>
ADC0 type: 0 – raw type. 2 – voltage type(mv)
<value>
Integer type value of the ADC0.

Examples

AT+CADC0=?
+CADC0: (0,2) *OK*
AT+CADC0=0
+CADC0: 187 *OK*

14.6 AT+CADC1 Read ADC1 value

Description

This command is used to read the ADC1 value from modem. ME supports 2 types of ADC1, which are raw type and voltage type.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CADC1=?	+CADC1: (range of supported <adc>s) OK
Write Command	**Responses**
AT+CADC1=<adc>	+CADC1: <value> OK
	ERROR

Defined values

<adc>
ADC1 type: 0 – raw type.

2 – voltage type(mv)
<value>
Integer type value of the ADC1.

Examples

AT+CADC1=?
+CADC1: (0,2)
OK
AT+CADC1=0
+CADC1: 187
OK

14.7 AT+CADC2 Read ADC2 value

Description

This command is used to read the ADC2 value from modem. ME supports 2 types of ADC2, which are raw type and voltage type.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CADC2=?	+CADC2: (range of supported <adc>s) OK
Write Command	**Responses**
AT+CADC2=<adc>	+CADC2: <value> OK
	ERROR

Defined values

<adc>
ADC2 type: 0 – raw type. 2 – voltage type(mv)
<value>
Integer type value of the ADC2.

Examples

```
AT+CADC2=?
+CADC2: (0,2)
OK
AT+CADC2=0
+CADC2: 187
OK
```

14.8 AT+CVAUS Set state of the pin named VREG_L14_SDC

Description

This command is used to set state of the pin which is named VREG_L14_SDC.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CVAUS=?	+CVAUS: (list of supported <state>s) OK
Read Command	Responses
AT+CVAUS?	+CVAUS: <state> OK
Write Command	Responses
AT+CVAUS=<state>	OK
	ERROR

Defined values

<state>	
0	– the pin is closed.
1	– the pin is opend(namely, open the pin)

Examples

```
AT+CVAUS=1
OK
AT+CVAUS?
+CVAUS: 1
OK
```

14.9 AT+CVAUV Set microvolt of the pin named VREG_L14_SDC

Description

This command is used to set the voltage value of the pin which is named VREG_L14_SDC.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CVAUV=?	+CVAUV: (list of supported <voltage>s) OK
Read Command	Responses
AT+CVAUV?	+CVAUV: <voltage> OK
Write Command	Responses
AT+CVAUV=<voltage>	OK
	ERROR

Defined values

<voltage>
Voltage value of the pin which is named VREG_L14_SDC. The unit is in mV. And the value must the multiple of 50mv.

Examples

```
AT+CVAUV=?
+CVAUV: (1800-2850)
OK
AT+CVAUV=2800
OK
AT+CVAUV?
+CVAUV: 2800
OK
```

15 Appendixes

15.1 Verbose code and numeric code

Verbose result code	Numeric (V0 set)	Description
OK	0	Command executed, no errors, Wake up after reset
CONNECT	1	Link established
RING	2	Ring detected
NO CARRIER	3	Link not established or disconnected
ERROR	4	Invalid command or command line too long
NO DIALTONE	6	No dial tone, dialing impossible, wrong mode
BUSY	7	Remote station busy
NO ANSWER	8	Connection completion timeout

15.2 Response string of AT+CEER

Number	Response string
CS internal cause	
0	Phone is offline
21	No service available
25	Network release, no reason given
27	Received incoming call
29	Client ended call
34	UIM not present
35	Access attempt already in progress
36	Access failure, unknown source
38	Concur service not supported by network
29	No response received from network
45	GPS call ended for user call
46	SMS call ended for user call
47	Data call ended for emergency call
48	Rejected during redirect or handoff
100	Lower-layer ended call
101	Call origination request failed
102	Client rejected incoming call
103	Client rejected setup indication
104	Network ended call
105	No funds available

106	No service available
108	Full service not available
109	Maximum packet calls exceeded
301	Video connection lost
302	Video call setup failure
303	Video protocol closed after setup
304	Video protocol setup failure
305	Internal error
CS network 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
26	Non selected user clearing
27	Destination out of order
28	Invalid/incomplete number
29	Facility rejected
30	Response to Status Enquiry
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred within the CUG
57	Bearer capability not authorized
58	Bearer capability not available
63	Service/option not available
65	Bearer service not implemented
68	ACM >= ACMmax
69	Requested facility not implemented
70	Only RDI bearer is available

79	Service/option not implemented
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 non-existent/not implemented
98	Message type not compatible with state
99	IE non-existent/not implemented
100	Conditional IE error
101	Message not compatible with state
102	Recovery on timer expiry
111	Protocol error, unspecified
117	Interworking, unspecified
CS network reject	
2	IMSI unknown in HLR
3	Illegal MS
4	IMSI unknown in VLR
5	IMEI not accepted
6	Illegal ME
7	GPRS services not allowed
8	GPRS & non GPRS services not allowed
9	MS identity cannot be derived
10	Implicitly detached
11	PLMN not allowed
12	Location Area not allowed
13	Roaming not allowed
14	GPRS services not allowed in PLMN
15	No Suitable Cells In Location Area
16	MSC temporarily not reachable
17	Network failure
20	MAC failure
21	Synch failure
22	Congestion
23	GSM authentication unacceptable
32	Service option not supported
33	Requested service option not subscribed
34	Service option temporarily out of orde
38	Call cannot be identified
40	No PDP context activated
95	Semantically incorrect message

96	Invalid mandatory information
97	Message type non-existent
98	Message type not compatible with state
99	Information element non-existent
101	Message not compatible with state
161	RR release indication
162	RR random access failure
163	RRC release indication
164	RRC close session indication
165	RRC open session failure
166	Low level failure
167	Low level failure no redial allowed
168	Invalid SIM
169	No service
170	Timer T3230 expired
171	No cell available
172	Wrong state
173	Access class blocked
174	Abort message received
175	Other cause
176	Timer T303 expired
177	No resources
178	Release pending
179	Invalid user data
PS internal cause lookup	
0	Invalid connection identifier
1	Invalid NSAPI
2	Invalid Primary NSAPI
3	Invalid field
4	SNDCP failure
5	RAB setup failure
6	No GPRS context
7	PDP establish timeout
8	PDP activate timeout
9	PDP modify timeout
10	PDP inactive max timeout
11	PDP lowerlayer error
12	PDP duplicate
13	Access technology change
14	PDP unknown reason
PS network cause	

25	LLC or SNDCP failure
26	Insufficient resources
27	Missing or unknown APN
28	Unknown PDP address or PDP type
29	User Authentication failed
30	Activation rejected by GGSN
31	Activation rejected, unspecified
32	Service option not supported
33	Requested service option not subscribed
34	Service option temporarily out of order
35	NSAPI already used (not sent)
36	Regular deactivation
37	QoS not accepted
38	Network failure
39	Reactivation required
40	Feature not supported
41	Semantic error in the TFT operation
42	Syntactical error in the TFT operation
43	Unknown PDP context
44	PDP context without TFT already activated
45	Semantic errors in packet filter
46	Syntactical errors in packet filter
81	Invalid transaction identifier
95	Semantically incorrect message
96	Invalid mandatory information
97	Message non-existent/not implemented
98	Message type not compatible with state
99	IE non-existent/not implemented
100	Conditional IE error
101	Message not compatible with state
111	Protocol error, unspecified

15.3 Summary of CME ERROR codes

Description

This result code is similar to the regular ERROR result code. The format of <err> can be either numeric or verbose string, by setting AT+CMEE command.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

+CME ERROR: <err>

Defined values

<err>

Values (numeric format followed by verbose format):

0	phone failure
1	no connection to phone
2	phone adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
100	Unknown

103	Illegal MESSAGE
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	service option not supported
133	requested service option not subscribed
134	service option temporarily out of order
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
257	network rejected request
258	retry operation
259	invalid deflected to number
260	deflected to own number
261	unknown subscriber
262	service not available
263	unknown class specified
264	unknown network message
273	minimum TFTS per PDP address violated
274	TFT precedence index not unique
275	invalid parameter combination

“CME ERROR” codes of MMS:

170	Unknown error for mms
171	MMS task is busy now
172	The mms data is over size
173	The operation is overtime
174	There is no mms receiver
175	The storage for address is full
176	Not find the address
177	Invalid parameter
178	Failed to read mss
179	There is not a mms push message
180	Memory error
181	Invalid file format
182	The mms storage is full
183	The box is empty
184	Failed to save mms
185	It’s busy editing mms now
186	It’s not allowed to edit now
187	No content in the buffer
188	Failed to receive mms

189	Invalid mms pdu
190	Network error
191	Failed to read file
192	None

“CME ERROR” codes of FTP:

201	Unknown error for FTP
202	FTP task is busy
203	Failed to resolve server address
204	FTP timeout
205	Failed to read file
206	Failed to write file
207	It’s not allowed in current state
208	Failed to login
209	Failed to logout
210	Failed to transfer data
211	FTP command rejected by server
212	Memory error
213	Invalid parameter
214	Network error

Examples

```
AT+CPIN="1234","1234"
+CME ERROR: incorrect password
```

15.4 Summary of CMS ERROR codes

Description

Final result code +CMS ERROR: <err> indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same command line is executed. Neither ERROR nor OK result code shall be returned. ERROR is returned normally when error is related to syntax or invalid parameters. The format of <err> can be either numeric or verbose. This is set with command AT+CMEE.

SIM PIN	References
---	3GPP TS 27.005

Syntax

```
+CMS ERROR: <err>
```

Defined values

<err>

300	ME failure
301	SMS service of ME reserved
302	Operation not allowed
303	Operation not supported
304	Invalid PDU mode parameter
305	Invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
331	no network service
332	Network timeout
340	NO +CNMA ACK EXPECTED
341	Buffer overflow
342	SMS size more than expected
500	unknown error

Examples

```
AT+CMGS=02112345678
+CMS ERROR: 304
```

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