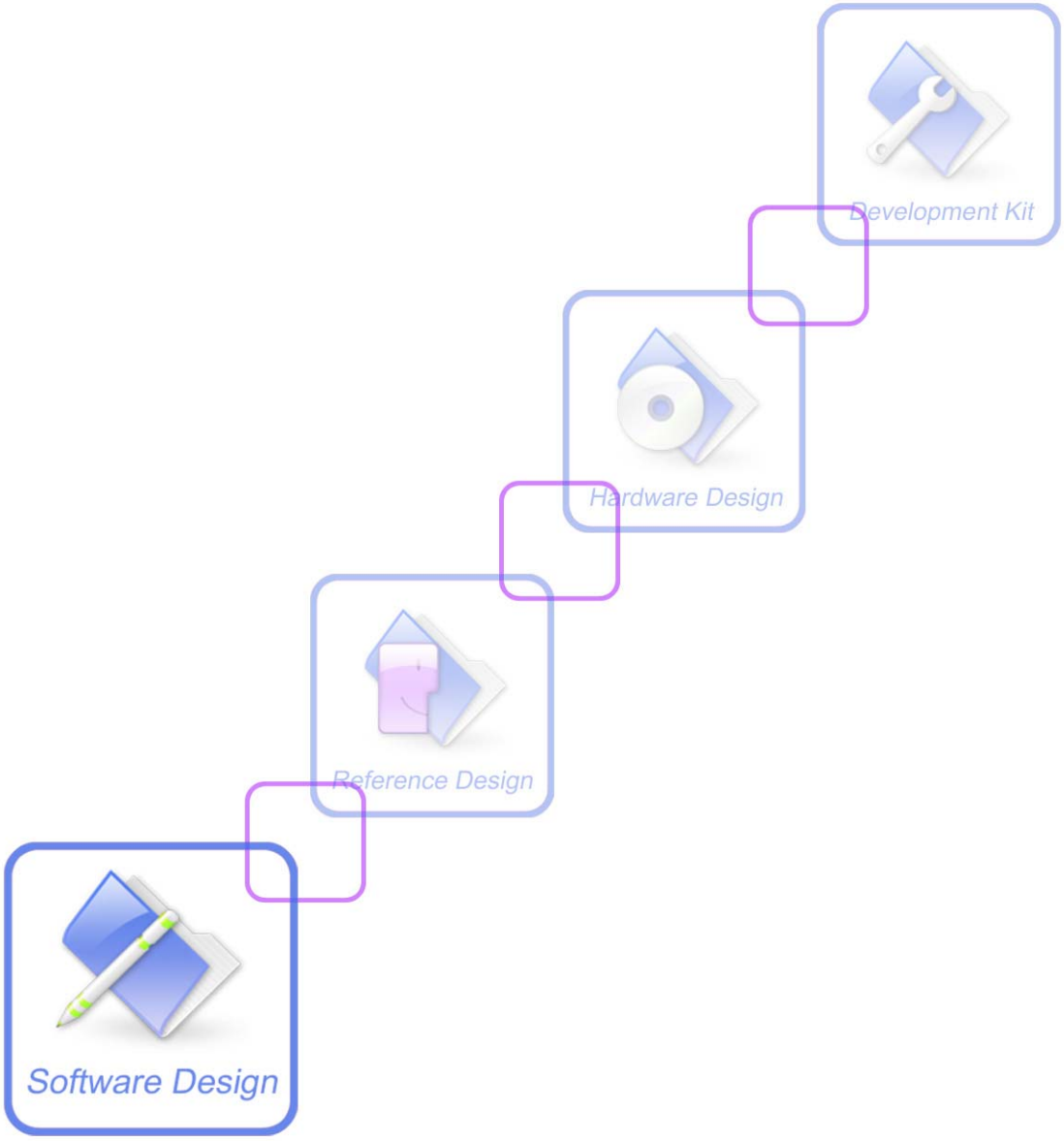
AT Command Set

SIM5350 _ATC_V1.02



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Version History

Version	Chapter	Comments
V1.00	New Version	New Version
V1.01	4.7 AT+CVHU	MKBUG00003364
	5.1 AT+CREG	MKBUG00003378/3379
	7.3 AT+CPMS	MKBUG00003531
	7.4 AT+CMGF	MKBUG00003534
	7.5 AT+CSCA	MKBUG00003537
	8.10 AT+CGREG	MKBUG00003970
	8.11 AT+CGSMS	Modify the description
	9 AT Commands for Hardware	Add chapter9
V1.02	3.2 ATD	MKBUG00005055
	3.3 ATE	MKBUG00003308
	3.9 ATS0	MKBUG00003317
	3.18 ATV	MKBUG00003336
	3.25 AT+IPR	MKBUG00003339
	4.1 AT+CSTA	MKBUG00003349
	4.4 AT+CLCC	MKBUG00003355
	4.7 AT+CVHU	MKBUG00005098
	5.3 AT+CLCK	MKBUG00003392
	5.5 AT+CAOC	MKBUG00003429
	6.5 AT+CMEE	MKBUG00003483
	6.7 AT+CRSM	MKBUG00003490
	6.11 AT+CGMI	Modify the response format of execution command
	6.18 AT+ICCID	MKBUG00003508
	9.8 AT+CGFUNC	Modify the description about parameters
	9.14 AT+CPCM	Add this command
	11 AT commands for STK	Delete chapter 11
	Voice call related commands	Delete VOICE CALL: <state> URC
	Deprecated commands	Delete some deprecated commands
		Delete some execution command

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1 Introduction

1.1 Scope

The present document describes the AT Command Set for the SIMCom Module:

SIM5350

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] ETSI GSM 01.04: Abbreviations and acronyms.

[2] 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).

[3] 3GPP TS 27.007: AT command set for User Equipment (UE).

[4] WAP-224-WTP-20010710-a

[5] WAP-230-WSP-20010705-a

[6] 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
- CSD Circuit Switched Data
- DCE Data Communication Equipment; Data Circuit terminating Equipment
- DCS Digital Cellular Network
- DTE Data Terminal Equipment
- DTMF Dual Tone Multi–Frequency
- EDGE Enhanced Data GSM Environment

- 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
- POP3 Post Office Protocol Version 3
- POP3 client An client that can receive e-mail from POP3 server over TCP session
- RTC Real Time Clock
- SMTP Simple Mail Transfer Protocol
- SMTP client An client that can transfer text-based e-mail to SMTP server over TCP session
- URC Unsolicited Result Code
- MMS Multimedia message system

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 – The command is supported by SIMCom.

2 AT Commands 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 ATA Call answer

Description

This command is used to make remote station to go off-hook, e.g. answer an incoming call. If there is no an incoming call and entering this command to TA, it will be return "NO CARRIER" to TA.

SIM PIN	References
YES	V.25ter

Syntax

Execution Commands	Responses
ATA	*For voice call:* OK
	For data call, and TA switches to data mode: CONNECT
	No connection or no incoming call: NO CARRIER

Examples

ATA
OK

3.2 ATD Dial command

Description

This command is used to list characters that may be used in a dialing string for making a call or controlling supplementary services.

NOTE:

1. Support several "P" or "p" in the DTMF string but the valid auto-sending DTMF after characters "P" or "p" should not be more than 29.
2. Auto-sending DTMF after character "P" or "p" should be ASCII character in the set 0-9, *, #.

SIM PIN	References
NO	V25.ter

Syntax

Execution Commands	Responses
ATD<n>[<mgsm>][;]	*Originate a voice call successfully:* OK
	Originate a data call successfully: CONNECT<text>
	Originate a call unsuccessfully during command execution: ERROR
	Originate a call unsuccessfully for failed connection recovery: NO CARRIER
	Originate a call unsuccessfully for error related to the MT: +CME ERROR: <err>

Defined values

<n>
.0 1 2 3 4 5 6 7 8 9 +. Valid characters for origination W The W modifier is ignored but is included for compatibility reasons only, The comma modifier is ignored but is included for compatibility reasons only ; Informs the Infrared Modem that the number is a voice number rather than a data number T The T modifier is ignored but is included only for compatibility purposes P The P modifier is handled (pulse DTMF dialing functionality)
<mgsm>
String of GSM modifiers: I Activates CLIR (disables presentation of own phone number to called party) i Deactivates CLIR (enables presentation of own phone number to called party) G Activate Closed User Group explicit invocation for this call only g Deactivate Closed User Group explicit invocation for this call only
<;>
The termination character ";" is mandatory to set up voice calls. It must not be used for data and fax calls.
<text>
Wireless connection speed in integer format, such as 42000000.
<err>
Service failure result code string; the string formats please refer +CME ERROR result code and AT+CMEE command.

Examples

ATD10086;
OK

3.3 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 DCE does not echo characters during command state and online command state.
1 DCE echoes characters during command state and online command state.

Examples

ATE1
OK

3.4 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 CSD or 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	OK

Examples

AT+CVHU=0
OK
ATH
OK

3.5 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: +CGSM GSM function is supported +FCLASS FAX function is supported +DS Data compression is supported +ES Synchronous data mode is supported.

Examples

```
ATI
Manufacturer: SIMCOM INCORPORATED
Model: SIMCOM_SIM5350L
Revision: SIM5350L_V12.31
IMEI: 351602000330570
+GCAP: +FCLASS, +CGSM
OK
```

3.6 ATL Set Monitor speaker loudness

Description

Set volume of the monitor speaker.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
ATL[<value>]	OK

Defined values

<value>	
0	Low speaker volume
1	Low speaker volume
2	Medium speaker volume
3	High speaker volume

Examples

```
ATL
OK
```

3.7 ATO Switch from command mode to data mode

Description

ATO is the corresponding command to the +++ escape sequence. When there is a CSD call or a PS data call connected and the TA is in Command Mode, ATO causes the TA to resume the data and takes back to Data Mode.

SIM PIN	References

YES	V.25ter

Syntax

Execution Command	Responses
ATO	*TA/DCE switches to Data Mode from Command Mode:* CONNECT [<baud rate>]
	If connection is not successfully resumed or there is not a connected CSD call: NO CARRIER

Defined values

<baud rate>	
28800	Connected with data bit rate of 28800 bits/s (HSCSD)
19200	Connected with data bit rate of 19200 bits/s (HSCSD)
14400	Connected with data bit rate of 14400 bits/s (HSCSD)
9600	Connected with data bit rate of 9600 bits/s
4800	Connected with data bit rate of 4800 bits/s
2400	Connected with data bit rate of 2400 bits/s

Examples

ATO
CONNECT 115200

3.8 ATP Select Pulse Dialling

Description

Select pulse dialing. (This setting is ignored.)

3.9 ATS0 Set Number of Rings before Automatically Answering the Call

Description

The S-parameter command controls the automatic answering feature of the Module. If set to 000, automatic answering is disabled, otherwise it causes the Module to answer when the incoming call indication (RING) has occurred the number of times indicated by the specified value; and the setting will not be stored upon power-off, i.e. the default value will be restored after restart.

SIM PIN	References
YES	V.25ter

Syntax

Read Command	Responses
ATS0?	<n> OK
Write Command	**Responses**
ATS0=<n>	OK

Defined values

<n>
0 Automatic answering is disabled.

Examples

ATS0?
000
OK
ATS0=0
OK

3.10 ATS3 Set Command Line Termination Character

Description

Command line termination character This S-parameter represents the decimal IA5 value of the character recognized by the DCE from the DTE to terminate an incoming command line. It is also generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S4 parameter (see the description of the V parameter for usage).

SIM PIN	References
YES	V.25ter

Syntax

Write Command	Responses
ATS3=<value>	OK ERROR

Defined values

<value>	
13	Carriage return character (CR, IA5 0/13).
0 to 127	Set command line termination character to this value.

Examples

ATS3=13
OK

3.11 ATS4 Set Response Formatting Charactor

Description

Response formatting character This S-parameter represents the decimal IA5 value of the character generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter (see the description of the V parameter for usage).

SIM PIN	References
YES	V.25ter

Syntax

Write Command	Responses
ATS4=<value>	OK
	ERROR

Defined values

<value>	
10	Line feed character (LF, IA5 0/10).
0 to 127	Set response formatting character to this value.

Examples

ATS4=10
OK

3.12 ATS5 Set Command Line Editing Charcater

Description

Command line editing character.

This S-parameter represents the decimal IA5 value of the character recognized by the DCE as a request to delete from the command line the immediately preceding character.

SIM PIN	References

YES	V.25ter

Syntax

Write Command	Responses
ATS5=<value>	OK
	ERROR

Defined values

<value>	
8	Backspace character (BS, IA5 0/8).
0 to 127	Set command line editing character to this value.

Examples

```
ATS5=8
OK
```

3.13 ATS6 Pause Bufore Blind Dialling

Description

Pause before blind dialing.

The command is ignored.

3.14 ATS7 Set Number of Seconds to Wait for Connection Completion

Description

Connection completion timeout.

This parameter specifies the amount of time, in seconds, that the DCE shall allow between either answering a call (automatically or by the A command) or completion of signaling of call addressing information to network (dialing), and establishment of a connection with the remote DCE. If no connection is established during this time, the DCE disconnects from the line and returns a result code indicating the cause of the disconnection.

SIM PIN	References
YES	V.25ter

Syntax

Execute Command	Responses
ATS7=<value>	OK

	ERROR

Defined values

<value>
1 to 255 Number of seconds in which connection must be established or call will be disconnected.

Examples

ATS7=1
OK

3.15 ATS8 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String

Description

Comma dial modifier time.

This parameter specifies the amount of time, in seconds, that the DCE shall pause, during signaling of call addressing information to the network (dialing), when a "," (comma) dial modifier is encountered in a dial string.

SIM PIN	References
YES	V.25ter

Syntax

Execute Command	Responses
ATS8=<value>	OK
	ERROR

Defined values

<value>
0 DCE does not pause when "," encountered in dial string.
1 to 255 Number of seconds to pause. Recommended default setting
2 DCE pauses two seconds when "," is encountered.

Examples

ATS8=0
OK

3.16 ATS10 Set Disconnect Delay after Indicating the Absence of Data Carrier

Description

Automatic disconnect delay.

This parameter specifies the amount of time, in tenths of a second that the DCE will remain connected to the line (off-hook) after the DCE has indicated the absence of received line signal. If the received line signal is once again detected before the time specified in S10 expires, the DCE remains connected to the line and the call continues.

SIM PIN	References
YES	V.25ter

Syntax

Execute Command	Responses
ATS10=<value>	OK
	ERROR

Defined values

<value>	
1 to 254	Number of tenths of a second of delay.

Examples

ATS10=1

OK

3.17 ATT Select Tone Dialing

Description

We do not support.

This setting is ignored.

3.18 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 1.

SIM PIN	References
NO	V.25ter

Syntax

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

Defined values

<value>	
0	DCE transmits limited headers and trailers and numeric text.
1	DCE transmits full headers and trailers and verbose response text.

Examples

ATV1
OK

3.19 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

Defined values

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

Examples

ATX1
OK

3.20 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

Defined values

<value>
0 Set parameters to factory defaults.

Examples

ATZ0
OK

3.21 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>].

SIM PIN	References
NO	V.250

Syntax

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

Defined values

<value>
0 Set parameters to factory defaults.

Examples

```
AT&F
OK
```

3.22 AT+GMI Request Manufacturer Identification

Description

Same as AT+CGMI

3.23 AT+GMM Request Model Identification

Description

Same as AT+CGMM

3.24 AT+GMR Request Revision Identification of Software Release

Description

Same as AT+CGMR

3.25 AT+IPR Set local baud rate temporarily

Description

This command sets the baud rate of module's serial interface temporarily, after reboot the baud rate is set to default value. The default value is 115200.

SIM PIN	References
NO	V.25ter

Syntax

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

Defined values

<speed>
The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 0,75,150,300,600,1200,2400,4800,7200,9600,14400,19200,28800,38400,57600,115200,230400,460800,921600. If unspecified, or set to zero, automatic detection is selected, and the character format is forced to auto detect.

Examples

```
AT+IPR?
+IPR: 115200
OK
AT+IPR=?
+IPR:(0,75,150,300,600,1200,2400,4800,7200,9600,14400,19200,28800,38400,57600,115200,230400,460800,921600)
OK
AT+IPR=115200
OK
```

3.26 AT+IFC Set local data flow control

Description

This command sets the flow control of the module.

SIM PIN	References
NO	V.25ter

Syntax

Test Command	Responses
AT+IFC=?	+IFC: (list of supported<DCE>s), (list of supported<DTE>s) OK
Read Command	Responses
AT+IFC?	+IFC: <DCE>,<DTE> OK
Write Command	Responses
AT+IFC=<DCE>[,<DTE>]	OK
	ERROR

Defined values

<DCE>
0 – none (default)
2 – RTS hardware flow control
<DTE>
0 – none (default)
2 – CTS hardware flow control

Examples

AT+IFC?
+IFC: 0,0
OK
AT+IFC=?
+IFC: (0,2),(0,2)
OK
AT+IFC=2,2
OK

3.27 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
Execution Command	**Responses**
AT+GCAP	+GCAP: (list of <name>s) OK

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.

Examples

AT+GCAP
+GCAP: +FCLASS, +CGSM *OK*

4 AT Commands for Call Control

4.1 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

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 Others – reserved **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

4.2 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.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Examples

AT+CHUP
OK

4.3 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

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

Examples

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

4.4 AT+CLCC List current calls

Description

This command is used 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=?	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)
<mode>	
bearer/teleservice:	
0	– voice
1	– data
3	– voice followed by data, voice mode
4	– alternating voice/data, voice mode
6	– voice followed by data, data mode
7	– alternating voice/data, data mode
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
```

4.5 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

Defined values

<report>
Wrong information which is possibly occurred. String type describes cause value. **NOTE:** The string refer to appendixes section “Response string of AT+CEER” of this document

Examples

AT+CEER
+CEER: Invalid/incomplete number *OK*

4.6 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

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
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
GPRS	GPRS network request for PDP context activation

Examples

```
AT+CRC=1
OK
AT+CRC?
+CRC: 1
OK
```

4.7 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

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
```

4.8 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
YES	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

4.9 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>

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;
<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*

4.10 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>
(parameter sets the adjustment for outgoing calls): 0 presentation indicator is used according to the subscription of the CLIR service 1 CLIR invocation 2 CLIR suppression
<m>
(parameter shows the subscriber CLIR service status in the network): 0 CLIR not provisioned 1 CLIR provisioned in permanent mode 2 unknown (e.g. no network, etc.) 3 CLIR temporary mode presentation restricted 4 CLIR temporary mode presentation allowed

Examples

```
AT+CLIR=?
+CLIR:(0-2)
OK
```

4.11 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>

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;

+COLP: "10086",129,,,

OK
```

4.12 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:
<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
<time>
1...30 – when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded.
<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

4.13 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>

Defined values

<n>
sets/shows the result code presentation status to the TE: 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
<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; (refer TS 24.008 [8] subclause 10.5.4.7)

Examples

AT+CCWA=?
+CCWA:(0-1)
OK
AT+CCWA?
+CCWA: 0
OK

4.14 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>

Defined values

<n>
(sets/shows the result code presentation status to the TE): 0 Releases all held calls, or sets User-Determined User Busy for a waiting call 1 Releases all active calls and accepts the other (waiting or held) call 1x Releases the specific active call X 2 Places all active calls on hold and accepts the other (held or waiting) call' 2x Places all active calls, except call X, on hold 3 Adds a held call to the conversation 4 Connects two calls and disconnects the subscriber from both calls 5 Activate the Completion of Calls to Busy Subscriber Request. (CCBS)

Examples

```
AT+CHLD=?
+CHLD: (0,1,1x,2,2x,3,4,5)
OK
```

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>,<Act>] 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>,<Act>] OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CREG =<n>	OK
	ERROR
	+CME ERROR: <err>

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>,<Act>]
<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
<lac>
Two byte location area code in hexadecimal format(e.g.”00C3” equals 195 in decimal).
<ci>

Cell ID in hexadecimal format. GSM : Maximum is two byte WCDMA : Maximum is four byte
<Act>
0 GSM 2 UTRAN 3 GSM EGPRS 4 UTRAN HSDPA 5 UTRAN HSUPA 6 UTRAN HSDPA and HSUPA

Examples

AT+CREG?
+CREG: 0,1
OK

5.2 AT+COPS Operator selection

Description

Write command forces an attempt to select and register the GSM/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
NO	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>

Defined values

<mode>
0 automatic (<oper> field is ignored)
1 manual (<oper> field shall be present)
2 deregister from network (disable form 05.48)
3 set only <format> (for read command +COPS?), do not attempt registration/deregistration
<format>
0 long format alphanumeric <oper>
1 short format alphanumeric <oper>
2 numeric <oper>
3 repot PLMN list result with LAC in <lac>
<oper>
String type, <format> indicates if the format is alphanumeric or numeric.
<stat>
0 unknown
1 available
2 current
3 forbidden
<AcT>
0 GSM
2 UTRAN

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
	+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
	+CME ERROR: <err>

Defined values

<fac>
"PF","SC","AO","OI","OX","AI","IR","AB","AG","AC","FN","PN","PU","PP","PC" "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

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
	+CME ERROR: <err>
Write Command	**Responses**
AT+CPWD= <fac>,<oldpwd>,<newpwd>	OK
	+CME ERROR: <err>

Defined values

<fac>
"P2" SIM PIN2 refer Facility Lock +CLCK for other values
<oldpwd>
String type.
<newpwd>
String type.
<pwdlength>
Integer type, max length of password for the facility.

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+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
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

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
```

5.6 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
Read Command	**Responses**
AT+CSSN?	+CSSN: <n>,<m> OK
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>

(it is manufacturer specific, which of these codes are supported):
0 – unconditional call forwarding is active
1 – some of the conditional call forwardings are active
2 – call has been forwarded
3 – call is waiting
4 – this is a CUG call (also <index> present)
5 – outgoing calls are barred
6 – incoming calls are barred
7 – CLIR suppression rejected
8 – call has been deflected

<index>

Refer "Closed user group +CCUG".

<code2>

(it is manufacturer specific, which of these codes are supported):
0 – this is a forwarded call (MT call setup)
1 – this is a CUG call (also <index> present) (MT call setup)
2 – call has been put on hold (during a voice call)
3 – call has been retrieved (during a voice call)
4 – multiparty call entered (during a voice call)
5 – call on hold has been released (this is not a SS notification) (during a voice call)
6 – forward check SS message received (can be received whenever)
7 – call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)
8 – call has been connected with the other remote party in explicit call transfer operation (also number and subaddress parameters may be present) (during a voice call or MT call setup)
9 – this is a deflected call (MT call setup)
10 – sdditional incoming call forwarded

<number>

String type phone number of format specified by <type>.

<type>

Type of address octet in integer format;

<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

5.7 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
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

5.8 AT+EPBSE Band Selection

Description

To set MS preferred band.

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses
AT+EEBSE=?	List of supported bit masks of each band mode +EPBSE: <gsm_band>, <umts_band>
Read Command	Responses
AT+EEBSE?	+EPBSE: <gsm_band>, <umts_band>
Write Command	Responses
AT+EEBSE=<gsm_band>,<umts_band>	OK
	ERROR

Defined values

<gsm_band>
bit 1 EGSM900
bit 3 DCS1800
bit 4 PCS1900
bit 7 GSM850
0xff Auto selection ->select All supported bands
<umts_band>
bit 0 UMTS BAND I : WCDMA-IMT-2000
bit 1 UMTS BAND II : WCDMA-PCS-1900
bit 2 UMTS BAND III : WCDMA-DCS-1800
bit 3 UMTS BAND IV : WCDMA-AWS-1700
bit 4 UMTS BAND V : WCDMA-CLR-850
bit 5 UMTS BAND VI : WCDMA-800
bit 6 UMTS BAND VII : WCDMA-IMT-E-2600
bit 7 UMTS BAND VIII : WCDMA-GSM-900
bit 8 UMTS BAND IX : WCDMA-1800
bit 9 UMTS BAND X : WCDMA-1700
0xffff Auto selection->select All supported bands

Examples

```
AT+EPBSE=255,65535
```

```
OK
AT+EPBSE=10,1
OK
```

6 AT Commands for MT Control and Status

6.1 +CME ERROR Mobile Equipment error result code

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):

9.2.1 General errors

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
48 hidden key required (NOTE: This key is required when accessing hidden phonebook entries.)
100 unknown

9.2.2 GPRS-related errors

9.2.2.1 Errors related to a failure to perform an Attach

103 Illegal MS (#3)
106 Illegal ME (#6)
107 GPRS service not allowed (#7)
111 PLMN not allowed (#11)
112 Location area not allowed (#12)
113 Roaming not allowed in this location area (#13)
(Values in parentheses are TS 24.008 cause codes.)

9.2.2.2 Errors related to a failure to Activate a Context

132 service option not supported (#32)
133 requested service option not subscribed (#33)
134 service option temporarily out of order (#34)
149 PDP authentication failure
(Values in parentheses are TS 24.008 cause codes.)

9.2.2.3 Other GPRS errors

150 invalid mobile class
148 unspecified GPRS error
Other values in the range 101-150 are reserved for use by GPRS

6.2 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>	
1	full functionality
4	disable phone both transmit and receive RF circuits (supported only for module solution)
0	minimal functionality, turn off radio and SIM power.
<rst>	
0	do not reset the MT before setting it to <fun> power level
1	reset the MT before setting it to <fun> power level

Examples

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

6.3 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 MT is not pending for any password
SIM PIN MT is waiting SIM PIN to be given
SIM PUK MT is waiting SIM PUK to be given
PH-SIM PIN MT is waiting phone to SIM card password to be given
PH-FSIM PIN MT is waiting phone-to-very first SIM card password to be given
PH-FSIM PUK MT is waiting phone-to-very first SIM card unblocking password to be given
SIM PIN2 MT is waiting SIM PIN2 to be given
SIM PUK2 MT is waiting SIM PUK2 to be given
PH-NET PIN MT is waiting network personalization password to be given
PH-NET PUK MT is waiting network personalization unblocking password to be given
PH-NETSUB PIN MT is waiting network subset personalization password to be given
PH-NETSUB PUK MT is waiting network subset personalization unblocking password to be given
PH-SP PIN MT is waiting service provider personalization password to be given
PH-SP PUK MT is waiting service provider personalization unblocking password to be given
PH-CORP PIN MT is waiting corporate personalization password to be given
PH-CORP PUK MT is waiting corporate personalization unblocking password to be given

Examples

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

6.4 AT+CSQ 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
YES	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
<ber>
(in percent) 0...7 as RXQUAL values in the table in TS 45.008 [20] subclause 8.2.4 not known or not detectable

Examples

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

6.5 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

Defined values

<n>	
0	disable +CME ERROR: <err> result code and use ERROR instead
1	enable +CME ERROR: <err> result code and use numeric <err> values (refer next subclause)
2	enable +CME ERROR: <err> result code and use verbose <err> values (refer next subclause)

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
```

6.6 AT+CCLK Real time clock

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", where characters indicate year (two last digits), month, day, hour, minutes, seconds.

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

6.7 AT+CRSM Restricted SIM access

Description

By using AT+CRSM, 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
YES	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
<fileID>
Integer type; this is the identifier of a elementary data file on SIM.
<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. (hexadecimal character format)

Examples

AT+CRSM=?
OK

6.8 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
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
	+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

6.9 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
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
	+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

6.10 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 <onoff>s) OK
Read Command	Responses
AT+CTZR?	+CTZR: <onoff>

	OK
Write Command	Responses
AT+CTZR=<onoff>	OK
	ERROR

Defined values

<onoff>

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 doesn'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
```

6.11 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	+CGMI: <manufacturer> OK

Defined values

<manufacturer>
The identification of manufacturer.

Examples

AT+CGMI
+CGMI: SIMCOM INCORPORATED *OK*

6.12 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_SIM5350 *OK*

6.13 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: 1575B09SIM5350L *OK*

6.14 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

6.15 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

Defined values

<chest>
"GSM" GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems
"HEX" character strings consist only of hexadecimal numbers from 00 to FF; e.g. "032FE6" equals three 8-bit characters with decimal values 3, 47 and 230; no conversions to the original MT character set shall be done.
"IRA" international reference alphabet (ITU-T T.50 [13])
"PCCP437" PC character set Code Page 437
"UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646 [32]); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99
"8859-1" ISO 8859 Latin character set
“UCS2_08X1"
The supported parameters are subject to change according to different compile directives (options).

Examples

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

6.16 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

6.17 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.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<IMSI>

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

Examples

AT+CIMI
460010222028133
OK

6.18 AT+ICCID Read ICCID of SIM Card

Description

This command is used to read SIM card ICCID if SIM inserted. If SIM not inserted, return +CME ERROR: 10

SIM PIN	References
YES	Vender

Syntax

Execute Command	Responses
AT+ICCID	+ICCID: <iccid> OK
	ERROR
	+CME ERROR: 10

Defined values

<iccid>
String type

Examples

AT+ ICCID
+ICCID: 89860113831002835422 OK

6.19 AT+EPIN1 Enter PIN1

Description

This command is used to validate PUK and to define a new PIN code.

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses
AT+EPIN1=?	OK
Read Command	Responses
AT+EPIN1?	+EPIN1: <code>
	+CME ERROR: <err>
Write Command	Responses
AT+EPIN1=<puk>,<new_pin>	+CME ERROR: <err>

Defined values

<puk>
string type values
<new_pin>
string type values
<code>
values reserved by the present document: READY MT is not pending for any password SIM PIN MT is waiting SIM PIN to be given SIM PUK MT is waiting SIM PUK to be given SIM BLOCKED PIN and PUK are blocked

Examples

AT+EPIN1=?
OK

6.20 AT+EPIN2 Enter PIN2

Description

This command is used to validate the PIN2, or to validate PUK2 and to define a new PIN2 code.

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses
AT+EPIN2=?	OK
Read Command	Responses
AT+EPIN2?	+EPIN2: <code>
	+CME ERROR: <err>
Write Command	Responses
AT+EPIN2=<pin2> or AT+EPIN2=<puk2>,<newpin2>	+CME ERROR: <err>

Defined values

<pin2>
string type values
<puk2>
string type values
<newpin2>
string type values
<code>
values reserved by the present document: READY PIN2 is allowed to verified SIM PUK2 PIN2 is blocked SIM BLOCKED PIN2 and PUK2 are blocked

Examples

AT+EPIN2=?
OK

6.21 AT+EPINC PIN remaining attempt number

Description

This command queries the number of remaining valid tries for PIN1, PIN2, PUK1, and PUK2

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses

AT+EPINC=?	OK
Read Command	Responses
AT+EPINC?	+EPINC:<pin1>,<pin2>,<puk1>,<puk2>
	+CME ERROR: <err>
Execute Command	Responses
AT+EPINC	+EPINC:<pin1>,<pin2>,<puk1>,<puk2>
	+CME ERROR: <err>

Defined values

<pin1>
the remaining tries of each type
<pin2>
the remaining tries of each type
<puk1>
the remaining tries of each type
<puk2>
the remaining tries of each type

Examples

AT+ESUO=?
OK

6.22 AT+EIND Indication Control Command

Description

Set command to enable +EIND unsolicited result code to indicate the readiness of SMS or PHB or AT.

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses
AT+EIND=?	+EIND: (0-4294967295)
Read Command	Responses
AT+EIND?	+EIND: <ind>
Write Command	Responses
AT+EIND=<flag>	OK
	ERROR

Defined values

<flag>
Integer. Bit 0 Any value(0~4294967295) that bit 0 is 1 e.g. 1,3,5.. Bit 1 Any value(0~4294967295) that bit 1 is 1 e.g. 2,3,6.. Bit 2 Any value(0~4294967295) that bit 2 is 1 e.g. 4,5,.. Bit 3 Any value(0~4294967295) that bit 3 is 1 e.g. 8,9.. Bit 7 Any value(0~4294967295) that bit 7 is 1 e.g. 128,129,130..
<ind>
Integer. 1 SMS_READY 2 PHB_READY 4 file change for PLMN files 8 file change for EONS files 16 Invalid SIM 128 AT_READY

6.23 AT+ECSQ received signal level indication

Description

Set command to enable +ECSQ unsolicited result code +ECSQ: <rssi>,<ber>,<raw_rssi_in_qdbm>[,<RSCP_in_qdbm>,<EcN0_in_qdbm>], which is to indicate the received signal level.

Active command is to query the current received signal level.

Read command returns the current setting of +ECSQ unsolicited result code.

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses
AT+ECSQ =?	+ECSQ: (0,1)
Execute Command	Responses
AT+ECSQ	+ECSQ: <rssi>, <ber>,<raw_rssi_in_qdbm>[,<RSCP_in_qdbm>, <EcN0_in_qdbm>]
Read Command	Responses
AT+ECSQ?	+ECSQ: <flag>
Write Command	Responses
AT+ECSQ=<flag>	OK
	ERROR

Defined values

<flag>
Integer. 0 Received signal level indication disable 1 Received signal level indication enable
<rssi>
Integer. 0-99 Received signal strength indication. This field is the same as <rssi> in +CSQ, which is translated according to TS 27.007, but not the raw dBm value measured by L1.
<ber>
Integer. 0-255 Bit error rate
<raw_rssi_in_qdbm>
Integer. Received signal strength raw data in quarter dbm
<RSCP_in_qdbm>
Integer. RSCP in quarter dbm. Only avaliabe when camp on UMTS network. only present when current RAT is UMTS
<EcN0_in_qdbm>
Integer. EcN0 in quarter dbm. Only avaliabe when camp on UMTS network. only present when current RAT is UMTS

Examples

AT+ ECSQ =?
+ECSQ: (0,1)

6.24 AT+ESCRI Send SCRI or Fast Dormancy request to network

Description

This command is used to request the network to enter the Fast Dormancy mode (e.g., Let UE in CELL_PCH state instead of IDLE state) for power saving purpose

SIM PIN	References
YES	Vender

Syntax

Execute Command	Responses
AT+ESCRI	Same as AT+ESCRI=1
Write Command	Responses
AT+ESCRI=<force_send>	OK +CMS ERROR:

Defined values

<force_send>
integer 0 RRCE send SCRI depend on NW support FD or not 1 force RRCE send SCRI

6.25 AT+EOPS Enhanced Operator Selection

Description

This command is similar to +COPS, with additional support for specified ARFCN. Set command forces an attempt to select and register the GSM/UMTS network operator. If the selected operator is not available, ERROR is returned. Read command returns the current mode, the currently selected operator. Test command returns operator list present in the network.

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses
AT+EOPS=?	+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)]
	+CME ERROR: <err>
Read Command	Responses
AT+EOPS?	+COPS:<mode>[,<format>,<oper>]
	+CME ERROR: <err>
Write Command	Responses
AT+EOPS=<mode>[,<format>,<oper>[,<Act>,<arfcn>]]	OK
	+CME ERROR: <err>

Defined values

<mode>
integer type 0 automatic (<oper> field is ignored) 1 manual (<oper> field shall be present)
<format>
integer type 0 long format alphanumeric <oper> 1 short format alphanumeric <oper> 2 numeric <oper>
<oper>
string type; <format> of +COPS indicates if the format is alphanumeric or numeric; long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]); numeric format is the GSM Location Area Identification number (refer 3GPP TS 24.008 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit3)(country code digit 2)(country code digit 1)(network code digit 3)(network code digit 2)(network code digit 1)
<stat>
0 unknown 1 available 2 current 3 forbidden
<AcT>
access technology selected 0 GSM 2 UTRAN
<arfcn>
interger type range 0~65535 Valid arfcn value GSM: band900：0～124，975～1023 band1800：512～885 band1900：512～810 band850：128～251 UTRAN TD-SCDMA: Band A: 10054~10121 Band E: 11504~11996 Band F: 9404~9596

6.26 AT+ECELCK Cell Lock

Description

This command is used to set or cancel cell lock, and get the currently locked cell if any.

SIM PIN	References
YES	Vender

Syntax

Test Command	Responses
AT+ECELCK=?	+ ECELCK: (0-1)
Read Command	Responses
AT+ECELCK?	+ECELCK: <enabled_bitmap>,<band_indicator>,<arfcn>,[<arfcn>,…] OK
Write Command	Responses
AT+ECELCK=<mode>,[<enabled_bitmap>,]<band_indicator>,<arfcn>,[<arfcn>,…]	OK
	ERROR

Defined values

<mode>
integer type 0: cancel cell lock (for the only <arfcn>) 1: set cell lock (for the only <arfcn>) 2: get extended cell lock, this will get the current locked cells' arfcn. 3: set extended cell lock, this will set lock for a group of cells by different arfcn (maximum 3). Only in this mode, more than one <arfcn> can be entered in the following parameter. 4: cancel extended cell lock, this will cancel all cell lock.
<enabled_bitmap>
integer type 0~7 Bits set to 1 indicate which <arfcn> to be locked. Ex. 00000101 => the 1st and 3rd <arfcn> is valid.
<band_indicator>
integer type 0: not 1900 band cell 1: 1900 band cell
<arfcn>

integer type: the cell's arfcn to be locked
Valid arfcn value
GSM:
band900：0～124，975～1023
band1800：512～885
band1900：512～810
band850：128～251

7 AT Commands for SMS

7.1 +CMS ERROR Message service failure result code

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
NO	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
```

7.2 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+. NOTE: 0 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4] 1 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4] the requirement of <service> setting 1 is mentioned under corresponding command descriptions)
<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

7.3 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>

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). "SM" SIM message storage "ME" Device message storage "SM_P" SM prefer, try SM first, then ME "ME_P" ME prefer, try ME first, then SM "MT" Any of storages associated with ME (SM first)
<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). "SM" SIM message storage "ME" Device message storage "SM_P" SM prefer, try SM first, then ME "ME_P" ME prefer, try ME first, then SM "MT" Any of storages associated with ME (SM first)
<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). "SM" SIM message storage "ME" Device message storage "SM_P" SM prefer, try SM first, then ME "ME_P" ME prefer, try ME first, then SM

"MT"	Any of storages associated with ME (SM first)
<usedX>	
Integer type, number of messages currently in <memX>.	
<totalX>	
Integer type, total number of message locations in <memX>.	

Examples

```
AT+CPMS=?
+CPMS:("SM","ME","SM_P","ME_P","MT"),("SM","ME","SM_P","ME_P","MT"),("SM","ME","
SM_P","ME_P","MT")

OK
AT+CPMS?
+CPMS:"ME", 0, 23,"ME", 0, 23,"ME", 0, 23

OK
```

7.4 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

Defined values

<mode>
0 – PDU mode (default when implemented) 1 – Text mode

Examples

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

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

Defined values

<sca>
Service Center 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

7.6 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

7.7 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
Read Command	Responses
AT+CSDH?	+CSDH: <show> OK
Write Command	Responses
AT+CSDH=<show>	OK

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
```

7.8 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>[,<mides>[,<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.
<mides>
We support 10 message identifiers at most. string type: all different possible combinations of CBM message identifiers (refer <mid>)

(default is empty string); e.g. "0,1,5,320-478,922”
<dcss>
String type; all different possible combinations of CBM data coding schemes (refer <dcs>) (default is empty string); e.g. “0-3,5”

Examples

AT+CSCB=?
+CSCB: (0-1)
OK
AT+CSCB=0,”15-17,50,86”,””
OK

7.9 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>=2, <mt>=3 or <ds>=1, make sure <mode>=1, 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>

Defined values

<mode>

0 – disable unsolicited result code
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 online data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.
3 – Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.

<mt>

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: <mem>,<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 +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>

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)
If ME supports data coding groups which define special routing also for messages other than class 3 (e.g. (U)SIM specific messages), ME may choose not to route messages of such data coding schemes into TE (indication of a stored CBM may be given as defined in <bm>=1).
3 – Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. If CBM storage is supported, messages of other classes result in indication as defined in <bm>=1.

<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)

<bfr>

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

Examples

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

7.10 AT+CMGL List SMS messages from preferred store

Description

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>,<length>] <CR><LF><data>[<CR><LF> +CMGL:<index>,<stat>,<da>/<oa>,[<alpha>],[<scts>][,<tooa>/<toda>,<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

7.11 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",145,4
Hello World
OK
```

7.12 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”,129,7,0<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)
```

7.13 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 text mode (AT+CMGF=1) and sending successfully:* +CMGS: <mr> OK *If PDU mode(AT+CMGF=0) and sending successfully:* +CMGS: <mr> 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

7.14 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*

7.15 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>	+CMGW: <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.
<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>
Integer type in PDU mode (default 0), or string type in text mode (default "REC UNREAD"); indicates the status of message in memory; defined values: 0 "REC UNREAD" received unread message (i.e. new message) 1 "REC READ" received read message 2 "STO UNSENT" stored unsent message (only applicable to SMs) 3 "STO SENT" stored sent message (only applicable to SMs) 4 "ALL" all messages (only applicable to +CMGL command) 7 "DRAFT"

Examples

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

7.16 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>
an integer indicating multiple message deletion request as follows: 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
```

8 AT Commands for GPRS

8.1 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) OK
	ERROR
Read Command	Responses
AT+CGDCONT?	+CGDCONT: [<cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[<CR><LF> +CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp>[...]]] OK
	ERROR
Write Command	Responses
AT+CGDCONT=	OK

<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]	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…16
<PDP_type>
(Packet Data Protocol type) a string parameter. IP Internet Protocol (IETF STD 5)
<APN>
(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.
<PDP_addr>
A string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.
<d_comp>
A numeric parameter that controls PDP data compression (applicable for SNDCP only) 0 - off (default if value is omitted)
<h_comp>
A numeric parameter that controls PDP header compression 0 - off (default if value is omitted)
<IPv4AddrAlloc>
A numeric parameter that controls how the MT/TA requests to get the IPv4 address information 0 IPv4 Address Allocation through NAS Signalling 1 IPv4 Address Allocated through DHCP

Examples

AT+CGDCONT?
+CGDCONT: 1,"IP","","0.0.0.0",0,0
OK
AT+CGDCONT=?
+CGDCONT: (1-16),"IP",,,(0-2),(0-4)
+CGDCONT: (1-16),"PPP",,,(0-2),(0-4)

```
+CGDCONT: (1-16),"IPV6",,,(0-2),(0-4)
OK
```

8.2 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).

1…16

<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

<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>

<mean>: a numeric parameter which specifies the mean throughput class0 – 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)
OK
```

8.3 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

Defined values

<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1...16
<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
<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)
OK
```

8.4 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
Read Command	Responses
AT+CGATT?	+CGATT: <state> OK
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

8.5 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 Other values are reserved and will result in an ERROR response to the execution command.
<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…16 If no <cid> is specified, then UE assumes it as 1. The usage of omitted <cid> to activate/deactivate all is not supported.
<cause>
indicate the PDP context activation failure cause, including: SM reject cause = 3072 + <sm cause> which <sm cause> is specified at 3GPP 24.008 clause 10.5.6.6(Annex I) TCM reject cause = 3372 + <tcm cause> Which <tcm cause> is a enum specified as: TCM_L4C_INVALID_PARAMETER = 0x00 + TCM_CAUSE_START, TCM_L4C_NSAPI_NOT_IN_USE, TCM_L4C_CID_ALREADY_IN_USE, TCM_L4C_CID_UNEXPECTED, TCM_L4C_CID_PRIMARY_IS_NOT_ACTIVATED, TCM_ACL_ACTION_NOT_ALLOWED, TCM_ACL_SIM_FILE_FULL, TCM_ACL_ADD_ENTRY_FAILED, TCM_ACL_DEL_ENTRY_FAILED, TCM_ACL_SET_ENTRY_FAILED, TCM_ACL_SIM_READ_FAILED, TCM_ACL_SIM_WRITE_FAILED, L4C_CMD_CONFLICT = 3472

Examples

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

8.6 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
Write Command	**Responses**
AT+CGPADDR= <cid>[,<cid>[,…]]	[+CGPADDR:<cid>,<PDP_addr>[<CR><LF> +CGPADDR: <cid>,<PDP_addr>[...]]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<cid>
A numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). If no <cid> is specified, an ERROR result code will be returned. Multiple <cid> field is not supported. 1…16
<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 +CGDCONT and +CGDSCONT commands when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available.

Examples

AT+CGPADDR =?
+CGPADDR: (1) *OK*
AT+CGPADDR=1
+CGPADDR: 1,"0.0.0.0" *OK*

8.7 AT+CGAUTO Automatic response to network request PDP context activation

Description

The set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network.

When the +CGAUTO=0 command is received, the MT shall not perform a PS detach if it is attached. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING, the TE may manually accept or reject the request by issuing the +CGANS command or may simply ignore the network request.

When the +CGAUTO=1 command is received, the MT shall attempt to perform a PS attach if it is not already attached. Failure will result in ERROR or, if enabled, +CME ERROR being returned to the TE. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the TE, this is followed by the intermediate result code CONNECT. The MT then enters V.250 online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

ReadCommand	Responses
AT+CGAUTO?	+CGAUTO: <n> OK
Write Command	**Responses**
AT+CGAUTO=<n>	OK
	ERROR

Defined values

<n>
0 turn off automatic response for Packet Domain only
1 turn on automatic response for Packet Domain only
For <n> = 0 Packet Domain network requests are manually accepted or rejected by the +CGANS command.
For <n> = 1 Packet Domain network requests are automatically accepted according to the description above.

Examples

AT+CGAUTO=1
OK

8.8 AT+CGANS Manual response to a network request for PDP context activation

Description

The execution command requests the MT to respond to a network request for Packet Domain PDP context activation which has been signaled to the TE by the RING or +CRING: unsolicited result code. The <response> parameter allows the TE to accept or reject the request.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGANS=?	+CGANS: (list of supported <response>s),(list of supported <L2P>s) OK
Write Command	**Responses**
AT+CGANS=[<response>,[<L2P>,[<cid>]]]	OK ERROR

Defined values

<response>
A numeric parameter which specifies how the request should be responded to. 0 reject the request 1 accept and request that the PDP context be activated
<L2P>
A string parameter which indicates the layer 2 protocol to be used (see +CGDATA command).
<cid>
A numeric parameter which specifies a particular PDP context definition 1…16

Examples

AT+CGANS=0
OK

8.9 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
Read Command	**Responses**
AT+CGEREP?	+CGEREP: <mode>,<bfr> OK
Write Command	**Responses**
AT+CGEREP= <mode>[,<bfr>]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<mode>
a numeric parameter 0 disables sending of URC, +CGEV. No codes are forwarded to the TE. 1 eables sending of URC, +CGEV. Forward them directly to the TE.
<bfr>
a numeric parameter 0 MT will not buffer any URC. 0 is default value if omitted, and it's the only supported setting.
+CGEV: For network attachment, the following unsolicited result codes and the corresponding events are defined: ▪ +CGEV: NW DETACH The network has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately.

▪ +CGEV: ME DETACH
The mobile termination has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately.

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

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

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

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

▪ +CGEV: ME PDN ACT <cid>
The mobile termination has activated a context. The <cid> for this context is provided to the TE. The format of the parameters <cid> is found in command +CGDCONT.

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

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

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

Examples

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

8.10 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, or code +CGREG: <stat>[,<lac>,<ci>,<Act>] when <n>=2 and there is a change of the network cell.
The read command returns the status of result code presentation and an integer <stat> which shows Whether the network has currently indicated the registration of the MT.

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>,<Act>] 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 enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<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
5 registered, roaming
<lac>
string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<ci>
Cell ID in hexadecimal format. GSM : Maximum is two byte WCDMA : Maximum is four byte

<Act>
0 GSM
2 UTRAN
3 GSM EGPRS
4 UTRAN HSDPA
5 UTRAN HSUPA
6 UTRAN HSDPA and HSUPA

Examples

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

8.11 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 Packet Domain 1 circuit switched （ *default value* ） 2 Packet Domain preferred (use circuit switched if GPRS not available) 3 circuit switched preferred (use Packet Domain if circuit switched not available)

Examples

AT+CGSMS?
+CGSMS: 1 *OK*
AT+CGSMS=?
+CGSMS: (0-3) *OK*

8.12 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 <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error Ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of Supported <Transfer delay>s),(list of supported <Traffic handling priority>s) OK
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>][<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>[…]] OK
Write Command	Responses
AT+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>]]]]]]]]]]]]]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<cid>
(see +CGDCONT and +CGDSCONT commands) A special form of the set command, +CGEQREQ=<cid> causes the requested profile for context number <cid> to become undefined.
<Traffic class>

A numeric parameter that indicates the type of application for which the UMTS bearer service is optimised.
0 - conversational
1 - streaming
2 - interactive
3 - background
4 - subscribed value
Other values are reserved.

<Maximum bitrate UL>

A numeric parameter that indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …).

<Maximum bitrate DL>

A numeric parameter that indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate UL>

A numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate DL>

A numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested.

<Delivery order>

A numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.
0 - no
1 - yes
2 - subscribed value.
Other values are reserved.

<Maximum SDU size>

A numeric parameter (1,2,3,…) that indicates the maximum allowed SDU size in octets.
If the parameter is set to '0' the subscribed value will be requested.

<SDU error ratio>

A string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5•10-3 would be specified as '5E3' (e.g. AT+CGEQREQ=…,'5E3',…). '0E0' means subscribed value.

<Residual bit error ratio>

A string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of 5•10-3 would be specified

as '5E3' (e.g. AT+CGEQREQ=…,'5E3',…). '0E0' means subscribed value.

<Delivery of erroneous SDUs>

A numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.

0 - no

1 - yes

2 - no detect

3 - subscribed value

Other values are reserved.

<Transfer delay>

A numeric parameter (0,1,2,…) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to '0' the subscribed value will be requested.

<Traffic handling priority>

A numeric parameter (1,2,3,…) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested.

<PDP_type>

(See +CGDCONT and +CGDSCONT commands).

Examples

```
AT+CGEQREQ?
+CGEQREQ:
OK
AT+CGEQREQ=?
+CGEQREQ: "IP",(0-4),(0-384),(0-7168),(0-384),(0-7168),(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)
+CGEQREQ: "PPP",(0-4),(0-384),(0-7168),(0-384),(0-7168),(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)
+CGEQREQ: "IPV6",(0-4),(0-384),(0-7168),(0-384),(0-7168),(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)
OK
```

9 AT Commands for Hardware

This chapter describes the AT commands related hardware, notes that all commands is base on standard SIM5350 module, SIM5350 series module hardware interface may be different, more details please refer the module hardware design document, such as SIM5350-PCIE module has no SDIO/SPI/UART/GPIO interfaces, and corresponding AT command is invalid.

9.1 AT+CLDOV Configure the LDO's output voltage

Description

This command is used to set the output voltage for the specific LDO: VDD_SD, the default output voltage is 3.0V.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CLDOV=?	OK
Read Command	Responses
AT+CLDOV?	+CLDOV: <val> OK
	ERROR
Write Command	Responses
AT+CLDOV=<val>	OK
	ERROR

Defined values

< val >
5 - 2.8V
6 - 3.0V
7 - 3.1V
8 - 3.3V

Examples

```
AT+CLDOV?
+CLDOV: 6
OK
AT+CLDOV=7
OK
```

9.2 AT+CPWM Configure the frequency and duty for the PWM

Description

This command is used to configure the output frequency and duty for the PWM pin, the default frequency and duty is zero.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CPWM=?	OK
Read Command	Responses
AT+CPWM?	+CPWM: <freq>,<duty> OK
	ERROR
Write Command	Responses
AT+CPWM=<freq>,<duty>	OK
	ERROR

Defined values

< freq >
output frequency of the PWM pin, 200Hz is recommended and also confirmed
< duty >
0 - 100 duty cycle

Examples

AT+CPWM?
+CPWM: 200,20
OK
AT+CPWM=200,40
OK

9.3 AT+CPWMCLKS Select the source clock for the PWM

Description

This command is used to select a clock as the source clock for the PWM pin, the default value is 3

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CPWMCLKS=?	OK
Read Command	Responses
AT+CPWMCLKS?	+CPWMCLKS: <src> OK
	ERROR
Write Command	Responses
AT+CPWMCLKS=<src>	OK
	ERROR

Defined values

< src >
0 - 4K
1 - 8K
2 - 16K
3 - 32K
4 - 10M
5 - 20M
6 - 40M
7 - 80M

Examples

AT+CPWMCLKS?
+CPWMCLKS: 6
OK
AT+CPWMCLKS=4
OK

9.4 AT+CGDRT Set the direction of specified GPIO

Description

This command is used to set the specified GPIO to input or output state. If setting to input state, then this GPIO can not be set to high or low value.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CGDRT=<gpio_num>,<gpio_io>[,<save>]	OK ERROR

Defined values

<gpio_num>
2,3,4,5,6,7,9,10,11,12,15,16,17,18,19,20,21,22,23,29,30,31,35,36,37,38,39,40,46,47,48,49,53
<gpio_io>
0 – in
1 – out
<save>
0 – not save the setting
1 – save the setting
NOTE: If the parameter of <save> is omitted, it will save the direction of specified GPIO; The gpio_num corresponds to pin index on SIM5350;

Examples

AT+CGDRT=47,0,0
OK

9.5 AT+CGSETV Set the value of specified GPIO

Description

This command is used to set the value of the specified GPIO to high or low.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CGSETV=<gpio_num>,<gpio_hl>[,<save>]	OK ERROR

Defined values

<gpio_num>
2,3,4,5,6,7,9,10,11,12,15,16,17,18,19,20,21,22,23,29,30,31,35,36,37,38,39,40,46,47,48,49,53
<gpio_hl>
0 – low
1 – high

<save>
0 – not save the setting 1 – save the setting
NOTE: If the parameter of <save> is omitted, it will save the value of specified GPIO; The gpio_num corresponds to pin index on SIM5350;

Examples

AT+CGSETV=47,0,0
OK

9.6 AT+CGGETV Get the value of specified GPIO

Description

This command is used to get the value (high or low) of the specified GPIO.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CGGETV=<gpio_num>	+CGGETV: <gpio_hl> OK
	ERROR

Defined values

<gpio_num>
2,3,4,5,6,7,9,10,11,12,15,16,17,18,19,20,21,22,23,29,30,31,35,36,37,38,39,40,46,47,48,49,53
<gpio_hl>
0 – low 1 – high **NOTE:** The gpio_num corresponds to pin index on SIM5350;

Examples

AT+CGGETV=3
+CGGETV: 0
OK

9.7 AT+CGISR Set GPIO interrupt trigger condition

Description

The module supplies many GPIOs, all of which can be used as General Purpose Input/Oupt pin and some of them can be used as function pin or interrupt pin.

This command is used to set one GPIO pin as an interrupt source, and then set the detect type[optional] and polarity type[optional], and enable interrupt.

SIM PIN	References
No	

Syntax

Read Command	Responses
AT+CGISR=<INT_IDX>	+CGISR: < INT_IDX >[<detect>,<polarity>] OK
Write Command	**Responses**
AT+CGISR=< INT_IDX >,<detect>,<polarity>	OK

Defined values

< INT_IDX >
37, 48, 49, 53
< detect >
0 – level detection.
1 – edge detection
< polarity >
0 – low level/edge detection
1 – high level/edge detection

Examples

AT+CGISR=1
+CGISR : 1[0,1]
OK
AT+CGISR=1,0,1
OK

NOTE:

After setting one GPIO pin as an interrupt source successfully, the setting will be saved.

9.8 AT+CGFUNC Enable/disable the function for the special GPIO.

Description

SIM5350 supplies many GPIOs, all of which can be used as General Purpose Input/Output pin, interrupt pin and some of them can be used as function pin.

This command is used to enable/disable the function for the special GPIO. Please refer to the document “SIM535x_GPIO_Application_note” for more details.

The configuration will be saved automatically.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGFUNC=?	+CGFUNC: (list of supported <function>s),(list of supported <switch>s) OK
Read Command	**Responses**
AT+CGFUNC=<function>	+CGFUNC: <switch> OK
	ERROR
Write Command	**Responses**
AT+CGFUNC=<function>,<switch>	OK ERROR

Defined values

<function>	
1	GPIO39 used for status led output.
2	GPIO37 used for wakeup SIM535x.
3	GPIO36 used for wakeup the host CPU.
6	GPIO9, GPIO10, GPIO11, GPIO12 used for external audio codec PCM interface.
7	GPIO47 used for CLOCK M0 function.
9	GPIO46 used for PWM clock output.
10	GPIO15, GPIO16 used for IIC.
11	GPIO53 used for SIM card auto detect.
<switch>	
0	disable the function, the corresponding PIN function as GPIO.
1	enable the function.

Examples

AT+CGFUNC=1,1
OK
AT+CGFUNC=1
+CGFUNC: 1
OK

NOTE: *Not all of the Modules of SIM5350 series have the whole upper functions, please refer the Module SPEC for more details.*

9.9 AT+CWIIC Write values to register of IIC device

Description

This command is used to write values to register of IIC device.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CWIIC=?	OK
Write Command	Responses
AT+CWIIC=<addr>,<reg>,<data>	OK
	ERROR

Defined values

<addr>
Device address. Input format must be hex, such as 0xFF.
<reg>
Register address. Input format must be hex, such as 0xFF.
<data>
Data written. Input format must be hex, such as 0x00 – 0xFF.

Examples

AT+CWIIC=0x1A, 0x01, 0x12
OK

9.10 AT+CRIIC Read values from register of IIC device

Description

This command is used to read values from register of IIC device.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CRIIC=?	OK
Write Command	Responses
AT+CRIIC= <addr>,<reg>	+CRIIC: <data> OK
	ERROR

Defined values

<addr>
Device address. Input format must be hex, such as 0xFF.
<reg>
Register address. Input format must be hex, such as 0xFF.
<data>
Data read. Input format must be hex, such as 0x00—0xFF.

Examples

AT+CRIIC=0x1A, 0x0F
+CRIIC: 0x12 *OK*

9.11 AT+CFGRI Indicate RI when using URC

Description

This command is used to config whether pulling down the RI pin of UART when URC reported. If <status> is 1, host may be wake up by RI pin.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CFGRI=?	+CFGRI: (range of supported <status>s), (range of supported <save>s)

	OK
Read Command	Responses
AT+CFGRI?	+CFGRI: <status>, <save> OK
Write Command	Responses
AT+CFGRI=<status>[,<save>]	OK ERROR
Execution Command	Responses
AT+CFGRI	*Set <status> = 1,<save> = 0:* OK

Defined values

<status>
0 off
1 on
<save>
0 <status> not saved in nonvolatile memory
1 <status> saved in nonvolatile memory.After it resets, <status> still takes effect.

Examples

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

9.12 AT+CRIRS Reset RI pin of serial port

Description

This command is used to reset RI pin of serial port (Null modem Mode). After This command executed, when a voice (csd, video) call or a SMS is coming or URC is reported, RI pin will be asserted. It can wake up host.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CRIRS	OK
	ERROR

Defined values

None

Examples

AT+CRIRS
OK

9.13 AT+CUARTS UART and USB AT port switch

Description

This command is used to config UART or USB as AT port.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CUARTS=?	+CUARTS: (0, 1) OK
Write Command	Responses
AT+ CUARTS =<mode>	+CUARTS: <mode> OK
	ERROR

Defined values

<mode>
0 use USB Application Port to send AT command
1 use UART Port to send AT command

Examples

AT+CUARTS=?
+CUARTSI: (0, 1)
OK

```
AT+CUARTS = 1
+CUARTS: 1
OK
```

9.14 AT+CPCM PCM audio path configuration

Description

This command used to select PCM audio path between USB Audio and external audio codec interface.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CPCM=?	+CPCM: (0,1) OK
Read Command	Responses
AT+CPCM?	+CPCM: <arg> OK
Write Command	Responses
AT+CPCM=<arg>	OK

Defined values

<arg>	
0	– USB Audio.
1	– External audio codec PCM interface.

Examples

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

9.15 AT+CCODECS Codec chips select

Description

This command is used to select codec chip. SIM5350 supports WM8974 codec and WM8960 codec. The selected codec chip will be initialized after boot up automatically. If one wants to make a call use codec must ensure that the AT+CPCM=1.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CCODECS=?	+CCODECS: (0-2) OK
Read Command	**Responses**
AT+ CCODECS?	+CCODECS: <chip> OK
Write Command	**Responses**
AT+CCODECS=<chip>	+CCODECS: <chip> OK
	ERROR

Defined values

<chip>	
0	no codec
1	WM8974 codec
2	WM8960 codec

Examples

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

10 AT Commands for Phone Book

11 Appendixes

11.1 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

11.2 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 Aauthentication 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

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