AT Command Set

for

GTM-201-3GWA

Contents

1 Introduction

1.1 Scope

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).

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

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 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 General Commands

3.1 ATI Display product identification information

Description

The command requests the product information, which consists of manufacturer identification, model identification, revision identification, QCN type, 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> QCN: [<qcn_type>] 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.
<qcn_type>
The identification of QCN. QCN is used to save non-volatile values for software.
<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

Examples

```
ATI
Manufacturer: SIMCOM INCORPORATED
Model: SIMCOM_SIM5218
Revision: M6290A SIM5218_QCT6290_2400_090206_V1.07    1    [Feb 06 2009 09:41:25]
QCN:
IMEI: 351602000330570
+GCAP: +CGSM,+FCLASS,+DS
OK
```

3.2 AT+CGMI Request manufacturer identification

Description

The command requests the manufacturer identification text, which is intended to permit the user of the Module to identify the manufacturer.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGMI=?	OK
Execution Command	**Responses**
AT+CGMI	<manufacturer> OK

Defined values

<manufacturer>
The identification of manufacturer.

Examples

```
AT+CGMI
SIMCOM INCORPORATED
OK
```

3.3 AT+CGMM Request model identification

Description

The command 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_SIM5218
OK
```

3.4 AT+CGMR Request revision identification

Description

The command requests product firmware revision identification text, which is intended to permit the user of the Module to identify the version, revision level, date, and other pertinent information.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<revision>
The revision identification of firmware.

Examples

AT+CGMR
+CGMR: M6290A SIM5218_QCT6290_2400_090206_V1.07 1 [Feb 06 2009 09:41:25] *OK*

3.5 AT+CGSN Request product serial number identification

Description

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

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGSN=?	OK
Execution Command	Responses
AT+CGSN	<sn> OK

Defined values

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

Examples

AT+CGSN
351602000330570 *OK*

3.6 AT+CSCS Select TE character set

Description

Write command informs TA which character set <chest> is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets.
Read command shows current setting and test command displays conversion schemes implemented in the TA.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<chest>
Character set, the definition as following: "IRA" International reference alphabet. "GSM" GSM default alphabet; this setting causes easily software flow control (XON /XOFF) problems. "UCS2" 16-bit universal multiple-octet coded character set; UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF.

Examples

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

3.7 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

3.8 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

Examples

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

3.9 AT+CATR Configure URC destination interface

Description

The command is used to configure the interface which will be used to output URCs.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<port>
0 – all ports 1 – use UART port to output URCs 2 – use MODEM port to output URCs 3 – use ATCOM port to output URCs
<save>
0 – set temporarily 1 – set permanently

Examples

```
AT+CATR=1,0
OK
AT+CATR?
+CATR: 1
OK
```

3.10 A/ Repeat last command

Description

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

References
V.25ter

Syntax

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

Examples

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

4 Call Control Commands and Methods

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
Execution Command	Responses
AT+CSTA	OK

Defined values

<type>
Type of address octet in integer format: 145 – when dialling string includes international access code character "+" 129 – otherwise **NOTE** Because the type of address is automatically detected on the dial string of dialling command, command AT+CSTA has really no effect.

Examples

AT+CSTA?
+CSTA: 129 *OK*
AT+CSTA=145

OK

4.2 AT+CMOD Call mode

Description

Write command selects the call mode of further dialing commands (ATD) or for next answering command (ATA). Mode can be either single or alternating.

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

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<mode>
0 – single mode(only supported)

NOTE The value of <mode> shall be set to zero after a successfully completed alternating mode call. It shall be set to zero also after a failed answering. The power-on, factory and user resets shall also set the value to zero. This reduces the possibility that alternating mode calls are originated or answered accidentally.

Examples

AT+CMOD?

+CMOD: 0

OK

AT+CMOD=0

OK

4.3 ATD Dial command

Description

The dial command lists characters that may be used in a dialling string for making a call or controlling supplementary services.

SIM PIN	References
YES	V25.ter

Syntax

Execution Commands	Responses
ATD<n>[<mgsm>][;]	OK VOICE CALL: BEGIN
	Originate a call unsuccessfully: NO CARRIER

Defined values

<n>
String of dialing digits and optionally V.25ter modifiers dialing digits: 0 1 2 3 4 5 6 7 8 9 * # + A B C Following V.25ter modifiers are ignored: , T P ! W @
<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.

Examples

ATD10086;
OK *VOICE CALL:BEGIN*

4.4 ATD><mem><n> Originate call from specified memory

Description

Originate a call using specified memory and index number.

SIM PIN	References
YES	V.25ter

Syntax

Execution Commands	Responses
ATD><mem><n>[;]	OK VOICE CALL: BEGIN
	Originate a call unsuccessfully: NO CARRIER

Defined values

<mem>
Phonebook storage: (For detailed description of storages see AT+CPBS) "DC" ME dialed calls list "MC" ME missed (unanswered received) calls list "RC" ME received calls list "SM" SIM phonebook "ME" UE phonebook "FD" SIM fixed dialing phonebook "ON" MSISDN list "LD" Last number dialed phonebook "EN" Emergency numbers
<n>
Integer type memory location in the range of locations available in the selected memory, i.e. the index returned by AT+CPBR**.**
<;>
The termination character ";" is mandatory to set up voice calls. It must not be used for data and fax calls.

Examples

ATD>SM3; *OK* *VOICE CALL: BEGIN*

4.5 ATD><n> Originate call from active memory (1)

Description

Originate a call to specified number.

SIM PIN	References
YES	V.25ter

Syntax

Execution Commands	Responses
ATD><n>[;]	OK VOICE CALL: BEGIN
	Originate a call unsuccessfully: NO CARRIER

Defined values

<n>
Integer type memory location in the range of locations available in the selected memory, i.e. the index number returned by AT+CPBR.
<;>
The termination character ";" is mandatory to set up voice calls. It must not be used for data and fax calls.

Examples

ATD>2;
OK *VOICE CALL: BEGIN*

4.6 ATD><str> Originate call from active memory (2)

Description

Originate a call to specified number.

SIM PIN	References
YES	V.25ter

Syntax

Execution Commands	Responses
ATD><str>[;]	OK VOICE CALL: BEGIN
	Originate a call unsuccessfully: NO CARRIER

Defined values

<str>
String type value, which should equal to an alphanumeric field in at least one phone book entry in the searched memories. <str> formatted as current TE character set specified by AT+CSCS.
<;>
The termination character ";" is mandatory to set up voice calls. It must not be used for data and fax calls.

Examples

ATD>Kobe;
OK *VOICE CALL: BEGIN*

4.7 ATA Call answer

Description

The 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 VOICE CALL: BEGIN
	For data call, and TA switchs to data mode: CONNECT
	No connection or no incoming call: NO CARRIER

Examples

ATA
VOICE CALL: BEGIN *OK*

4.8 +++ Switch from data mode to command mode

Description

The command is only available during a connecting CSD call. The +++ character sequence causes the TA to cancel the data flow over the AT interface and switch to Command Mode. This allows to enter AT commands while maintaining the data connection to the remote device.

NOTE To prevent the +++ escape sequence from being misinterpreted as data, it must be preceded and followed by a pause of at least 1000 milliseconds, and the interval between two '+' character can't exceed 900 milliseconds.

SIM PIN	References
YES	V.25ter

Syntax

Execution Command	Responses
+++	OK

Examples

+++
OK

4.9 ATO Switch from command mode to data mode

Description

ATO is the corresponding command to the +++ escape sequence. When there is a CSD 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 switchs to Data Mode from Command Mode:* CONNECT
	If connection is not successfully resumed or there is not a connected CSD call: NO CARRIER

Examples

ATO

CONNECT

4.10 AT+CVHU Voice hang up control

Description

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

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<mode>
0 – "Drop DTR" ignored but OK response given. ATH disconnects.
1 – "Drop DTR" and ATH ignored but OK response given.

Examples

```
AT+CVHU=0
OK
AT+CVHU?
+CVHU: 0
OK
```

4.11 ATH Disconnect existing call

Description

The command is used to disconnect existing voice 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.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
ATH	*If AT+CVHU=0:* VOICE CALL: END: <time> OK
	If AT+CVHU=1 or no call: OK

Defined values

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

Examples

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

4.12 AT+CHUP Hang up call

Description

The command is used to cancel all 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	VOICE CALL: END: <time> OK
	No call: OK

Defined values

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

Examples

AT+CHUP
VOICE CALL:END: 000017 *OK*

4.13 AT+CBST Select bearer service type

Description

Write command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated. Values may also be used during mobile terminated data call setup, especially in case of single numbering scheme calls.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CBST=?	+CBST: (list of supported <speed>s), (list of supported <name>s), (list of supported <ce>s) OK
Read Command	Responses
AT+CBST?	+CBST: <speed>,<name>,<ce> OK
Write Command	Responses
AT+CBST= <speed>[,<name>[,<ce>]]	OK
	ERROR
Execution Command	Responses

AT+CBST	*Set default value:* OK

Defined values

<speed>		
0	–	autobauding(automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service)
7	–	9600 bps (V.32)
12	–	9600 bps (V.34)
14	–	14400 bps(V.34)
16	–	28800 bps(V.34)
17	–	33600 bps(V.34)
39	–	9600 bps(V.120)
43	–	14400 bps(V.120)
48	–	28800 bps(V.120)
51	–	56000 bps(V.120)
71	–	9600 bps(V.110)
75	–	14400 bps(V.110)
80	–	28800 bps(V.110 or X.31 flag stuffing)
81	–	38400 bps(V.110 or X.31 flag stuffing)
83	–	56000 bps(V.110 or X.31 flag stuffing)
84	–	64000 bps(X.31 flag stuffing)
116	–	64000 bps(bit transparent)
134	–	64000 bps(multimedia)
<name>		
0	–	Asynchronous modem
1	–	Synchronous modem
4	–	data circuit asynchronous (RDI)
<ce>		
0	–	transparent
1	–	non-transparent

NOTE If <speed> is set to 116 or 134, it is necessary that <name> is equal to 1 and <ce> is equal to 0.

Examples

```
AT+CBST=0,0,1
OK
AT+CBST?
+CBST:0,0,1
OK
```

4.14 AT+CRLP Radio link protocol

Description

Radio Link Protocol(RLP) parameters used when non-transparent data calls are originated may be altered with write command.

Read command returns current settings for each supported RLP version <verX>. Only RLP parameters applicable to the corresponding <verX> are returned.

Test command returns values supported by the TA as a compound value. If ME/TA supports several RLP versions <verX>, the RLP parameter value ranges for each <verX> are returned in a separate line.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CRLP=?	+CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s) [,<ver1> [,(list of supported <T4>s)]][<CR><LF> +CRLP: (list of supported <iws>s), (list of supported <mws>s), (list of supported <T1>s), (list of supported <N2>s) [,<ver2> [,(list of supported <T4>s)]] [...]] OK
Read Command	Responses
AT+CRLP?	+CRLP: <iws>, <mws>, <T1>, <N2> [,<ver1> [, <T4>]][<CR><LF> +CRLP:<iws>,<mws>,<T1>,<N2>[,<ver2>[,<T4>]] [...]] OK
Write Command	Responses
AT+CRLP=<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]	OK
	ERROR
Execution Command	Responses
AT+CRLP	OK

Defined values

<ver>, <verX>
RLP version number in integer format, and it can be 0, 1 or 2; when version indication is not

present it shall equal 1.
<iws>
IWF to MS window size.
<mws>
MS to IWF window size.
<T1>
Acknowledgement timer.
<N2>
Retransmission attempts.
<T4>
Re-sequencing period in integer format.
NOTE <T1> and <T4> are in units of 10 ms.

Examples

AT+CRLP?
+CRLP:61,61,48,6,0
+CRLP:61,61,48,6,1
+CRLP:240,240,52,6,2
OK

4.15 AT+CR Service reporting control

Description

Write command controls whether or not intermediate result code "*+CR: <serv>*" is returned from the TA to the TE. If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

AT+CR=<mode>	OK
Execution Command	Responses
AT+CR	*Set default value:* OK

Defined values

<mode>	
0 – disables reporting 1 – enables reporting	
<serv>	
ASYNC	asynchronous transparent
SYNC	synchronous transparent
REL ASYNC	asynchronous non-transparent
REL sync	synchronous non-transparent
GPRS [<L2P>]	GPRS
The optional <L2P> proposes a layer 2 protocol to use between the MT and the TE.	

Examples

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

4.16 AT+CEER Extended error report

Description

Execution command causes the TA to return the information text <report>, which should offer the user of the TA an extended report of the reason for:

1 the failure in the last unsuccessful call setup(originating or answering) or in-call modification.
2 the last call release.
3 the last unsuccessful GPRS attach or unsuccessful PDP context activation.
4 the last GPRS detach or PDP context deactivation.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses

AT+CEER=?	OK
Execution Command	Responses
AT+CEER	+CEER:<report> OK

Defined values

<report>
Wrong information which is possibly occurred.

Examples

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

4.17 AT+CRC Cellular result codes

Description

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

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<mode>	
0 – disable extended format	
1 – enable extended format	
<type>	
ASYNC	asynchronous transparent
SYNC	synchronous transparent
REL ASYNC	asynchronous non-transparent
REL SYNC	synchronous non-transparent
FAX	facsimile
VOICE	normal voice
VOICE/*XXX*	voice followed by data(*XXX* is ASYNC, SYNC, REL ASYNC or REL SYNC)
ALT VOICE/*XXX*	alternating voice/data, voice first
ALT *XXX*/VOICE	alternating voice/data, data first
ALT FAX/VOICE	alternating voice/fax, fax first
GPRS	GPRS network request for PDP context activation

Examples

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

4.18 AT+VTS DTMF tone generation

Description

The command is used to send a DTMF tone to network during a voice call which is connected.

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>	OK
	ERROR

Defined values

<dtmf>	
0 – 9	dial from 0 to 9 numbers
*	dial “*” key
#	dial “#” key

Examples

```
AT+VTS=1
OK
AT+VTS=?
+VTS:(0-9,*,#)
OK
```

4.19 AT+CLVL Loudspeaker volume level

Description

Write command is used to select the volume of the internal loudspeaker audio output of the device.

Test command returns supported values as compound value.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<level>
Integer type value which represents loudspeaker volume level. The range is from 0 to 4, and 0 represents the lowest loudspeaker volume level, 2 is default factory value. **NOTE** <level> is nonvolatile, and it is stored when restart.

Examples

```
AT+CLVL?
+CLVL:2
OK
AT+CLVL=3
OK
```

4.20 AT+VMUTE Speaker mute control

Description

The command is used to control the loudspeaker to mute and unmute during a voice call or a video call which is connected. If there is not a connected call, write command can't be used.

When all calls are disconnected, the Module sets the subparameter as 0 automatically.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<mode>	
0	– mute off
1	– mute on

Examples

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

4.21 AT+CMIC Microphone volume control

Description

The command is used to control the microphone gain level. When the Module restarts, the gain level will resume as default values. The setting will be saved to nonvolatile memory after write command is executed.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<gainlevel>
Range from 0 to 15, and 0 is the lowest gain level. When the audio output of device is handset, 7 is default value; when headset, 7 is default value; when speaker, 4 is default value.

Examples

AT+CMIC=5
OK
AT+CMIC ?
+CMIC:5 *OK*

4.22 AT+CMUT Microphone mute control

Description

The command is used to enable and disable the uplink voice muting during a voice call or a video call which is connected. If there is not a connected call, write command can't be used.
When all calls are disconnected, the Module sets the subparameter as 0 automatically.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<mode>
0 – mute off
1 – mute on

Examples

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

4.23 AT+AUTOANSWER Automatic answer quickly

Description

The command causes the Module to enable and disable automatic answer. If enabled, the Module will answer automatically after the Module receives a call from network and 3 seconds lapse.

NOTE 1 .The command is effective on voice call and video call.

2 .The setting will be effective after restart.

SIM PIN	References
YES	Vendor

Syntax

Read Command	Responses
AT+AUTOANSWER?	+AUTOANSWER: <arg> OK
Write Command	**Responses**
AT+AUTOANSWER=<arg>	OK

Defined values

<arg>
0 – disable auto answer 1 – enable auto answer

Examples

AT+AUTOANSWER=1
OK
AT+AUTOANSWER?
+AUTOANSWER: 1 *OK*

4.24 ATS0 Automatic answer

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>	
000	Automatic answering mode is disable. (default value when power-on)
001–255	Enable automatic answering on the ring number specified.
NOTE	1.The S-parameter command is effective on voice call and data call. 2.If <n> is set too high, the remote party may hang up before the call can be answered automatically. 3.For voice call and video call, AT+AUTOANSWER is prior to ATS0.

Examples

ATS0?
000
OK
ATS0=003
OK

4.25 AT+CALM Alert sound mode

Description

The command is used to select the general alert sound mode of the device. If silent mode is selected then incoming calls will not generate alerting sounds but only the unsolicited indications RING or +CRING. The value of <mode> will be saved to nonvolatile memory after write command is executed.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<mode>		
0	–	normal mode (factory value)
1	–	silent mode; no sound will be generated by the device

Examples

AT+CALM=0
OK
AT+CALM?
+CALM: 0
OK

4.26 AT+CRSL Ringer sound level

Description

The command is used to select the incoming call ringer sound level of the device. The value of <level> will be saved to nonvolatile memory after write command is executed.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CRSL=?	+CRSL: (list of supported <level>s) OK
Read Command	**Responses**
AT+CRSL?	+CRSL: <level> OK
Write Command	**Responses**
AT+CRSL=<level>	OK

Defined values

<level>
Integer type value which represents the incoming call ringer sound level. The range is from 0 to 4, and 0 represents the lowest level, 2 is default factory value. **NOTE** <level> is nonvolatile, and it is stored when restart.

Examples

AT+CRSL=2
OK
AT+CRSL?
+CRSL:2
OK

4.27 AT+CSDVC Switch voice channel device

Description

The command is used to switch voice channel device. After changing current voice channel device and if there is a connecting voice call, it will use the settings of previous device (loudspeaker volume level, mute state of loudspeaker and microphone, refer to AT+CLVL, AT+VMUTE, and AT+CMUT), except microphone level (refer to AT+CMIC).

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CSDVC=?	+CSDVC: (list of supported <dev>s) OK
Read Command	**Responses**
AT+CSDVC?	+CSDVC: <dev> OK
Write Command	**Responses**
AT+CSDVC= <dev>[,<save>]	OK

Defined values

<dev>
1 – handset 2 – headset 3 – speaker phone
<save>
0 – temporary voice device setting, after reboot it will be resumed. 1 – permanent voice device setting. **NOTE** If subparameter <save> is omitted, voice device setting is temporary.

Examples

AT+CSDVC=2
OK
AT+CSDVC?
+CSDVC:2 *OK* *AT+CSDVC=1,1* *OK*

4.28 AT+CPTONE Play tone

Description

The command is used to play a DTMF tone or complex tone on local voice channel device which is selected by AT+CSDVC.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CPTONE=?	+CPTONE: (list of supported <tone>s) OK
Write Command	**Responses**
AT+CPTONE=<tone>	OK

Defined values

<tone>	
0	– Stop the sound tone
1	– DTMF tone for 1 key, duration 100ms
2	– DTMF tone for 2 key, duration 100ms
3	– DTMF tone for 3 key, duration 100ms
4	– DTMF tone for 4 key, duration 100ms
5	– DTMF tone for 5 key, duration 100ms
6	– DTMF tone for 6 key, duration 100ms
7	– DTMF tone for 7 key, duration 100ms
8	– DTMF tone for 8 key, duration 100ms
9	– DTMF tone for 9 key, duration 100ms
10	– DTMF tone for 0 key, duration 100ms
11	– DTMF tone for A key, duration 100ms
12	– DTMF tone for B key, duration 100ms
13	– DTMF tone for C key, duration 100ms
14	– DTMF tone for D key, duration 100ms
15	– DTMF tone for # key, duration 100ms
16	– DTMF tone for * key, duration 100ms
17	– Subscriber busy sound, duration always
18	– Congestion sound, duration always
19	– Error information sound, duration 1330*3ms
20	– Number unobtainable sound, duration 1330*3ms
21	– Authentication failure sound, duration 1330*3ms
22	– Radio path acknowledgement sound, duration 700*1ms

23 – Radio path not available sound, duration 400*4ms
24 – CEPT call waiting sound, duration 4000*2ms
25 – CEPT ringing sound, duration always
26 – CEPT dial tone, duration always

Examples

```
AT+CPTONE= ?
+CPTONE:(0-26)
OK
AT+CPTONE=17
OK
```

5 Video Call Related Commands

5.1 AT+VPMAKE Originate video call

Description

The command is used to originate a video call. Before issue the command, user can select video call TX source by AT+VPSOURCE, and select whether record video after video call is connected or not by AT+VPRECORD.

SIM PIN	References
YES	Vendor

Syntax

Write Command	Responses
AT+VPMAKE=<num>	*If connecting:* VPACCEPT OK VPRINGBACK VPSETUP VPCONNECTED
	If not connecting: VPACCEPT OK VPEND

Defined values

<num>
Dialing number.

Examples

AT+VPMAKE=123456789
VPACCEPT *OK* *VPRINGBACK* *VPSETUP* *VPCONNECTED*

5.2 AT+VPANSWER Answer video call

Description

The command is used to answer an incoming video call. If there is no incoming video call, OK response is given only.

SIM PIN	References
YES	Vendor

Syntax

Execution Command	Responses
AT+VPANSWER	*VPINCOM is reported:* OK VPSETUP VPCONNECTED
	No incoming video call: OK

Examples

```
AT+VPANSWER
OK
VPSETUP
VPCONNECTED
```

5.3 AT+VPEND Cancel video call

Description

The command is used to end a video call. If recording video is on going, the command will stop recording and end video call. In addition, the command can be used to reject an incoming video call.

SIM PIN	References
YES	Vendor

Syntax

Execution Command	Responses
AT+VPEND	*Video call is connected:* OK VPEND
	Video call is not connected: OK

Examples

```
AT+VPEND
OK
VPEND
```

5.4 AT+VPDTMF Send DTMF tone during video call

Description

The command is used to send DTMF tone during a connected video call, and it is sent as an H.245 user-input indication (basic string) to the other side.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+VPDTMF=?	+VPDTMF:(list of supported <vpdtmf>s) OK
Write Command	**Responses**
AT+VPDTMF=<vpdtmf>	OK

Defined values

<vpdtmf>
DTMF string consisted of (0–9, *, #).

Examples

```
AT+VPDTMF=”12345”
OK
AT+VPDTMF=”*”
OK
```

5.5 AT+VPSOURCE Select video TX source

Description

The command is used to select video TX source which provides video frames to transmit to remote party. If select video TX source before video call is connected, the Module will get video frames from specified TX source when video call is connected.

The command is only effective on current or next video call.

SIM PIN	References

YES	Vendor

Syntax

Test Command	Responses
AT+VPSOURCE=?	OK
Write Command	**Responses**
AT+VPSOURCE= <src>[, <fname>]	OK

Defined values

<src>
The Module supports three TX sources – CAMERA, STATIC IMAGE, and FILE SOURCE. In spite of which TX source is used, the size of video frames must be 176* 144(pixel). 1 – Capture video from camera. (default value) 2 – Send a static image, support JPEG and BMP format. 3 – Send video frames from file, support MP4 and 3GP format.
<fname>
Image or video file which is existed in current directory [refer to AT+FSCD], and it includes extension name.
NOTE 1. If <src>=1, <fname> must be ignored, otherwise <fname> must be specified. 2. If the TX source is CAMERA, please make sure the camera is OK, otherwise, video call may not be connected successfully.

Examples

AT+VPSOURCE=1
OK
AT+VPSOURCE=2, "image_0.jpg"
OK
AT+VPSOURCE=3, "video_0.mp4"
OK

5.6 AT+VPRECORD Record video during video call

Description

Both far-end and near-end video can be recorded in MP4 format during a video call. File name will be generated automatically based on system time of the Module, and the format is *YYYYMMDD_HHMMSS_f.mp4* and *YYYYMMDD_HHMMSS_n.mp4*.

YYYYMMDD_HHMMSS_f.mp4 denotes that video recorded is from other side.

YYYYMMDD_HH MMSS_n.mp4 denotes that video recorded is transmitted to remote party.

The storage location of files refers to AT+FSLOCA.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+VPRECORD=?	+VPRECORD:(list of supported <side>s) OK
Write Command	**Responses**
AT+VPRECORD=<side>	OK

Defined values

<side>	
0	– not record video.
1	– only record far-end video.
2	– only record near-end video.
3	– record both far-end and near-end.

Examples

```
AT+VPRECORD=1
OK
AT+VPRECORD=0
OK
```

5.7 AT+VPLOOP Loopback far-end video frame during video call

Description

The command is used to loopback video frame from far-end during a connected video call

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses

AT+VPLOOP=?	+VPLOOP: (list of supported <num>s) OK
Read Command	Responses
AT+VPLOOP?	+VPLOOP: <num> OK
Write Command	Responses
AT+VPLOOP=<num>	+VPLOOP: <num> OK
	No connected video call: ERROR

Defined values

<num>
Integer type value indicating that it will loopback a video frame after receiving <num> video frames from remote party. 255 – Not loopback far-end video frame. 1~254 – Interval of video frame; if <num> is too small, it will release video frame from far-end before previous video frame is looped back.

Examples

AT+VPLOOP=?
+VPLOOP: (1-255) *OK*
AT+VPLOOP?
+VPLOOP: 255 *OK*

5.8 AT+VPSM Switch video call to CSD mode

Description

The command is used to switch video call to CSD mode. In CSD mode, it will report RING, but not VPINCOM when remote party originated a video call, and then use command ATA to answer the incoming call. After call is connected, data stream from network is flowed over the AT interface, and command +++ is used to switch from Data Mode to Command Mode, however, the data flow is not cancelled and command ATO is forbidden. In CSD mode, command +VPMAKE can't originate a video call.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+VPSM=?	+VPSM: (list of supported <mode>s) OK
Read Command	Responses
AT+VPSM	+VPSM: <mode> OK
Write Command	Responses
AT+VPSM=<mode>	+VPSM: <mode> OK
	The state of video call is not idle: ERROR

Defined values

<num>
Integer type value indicating video call mode or CSD mode. 0 – Normal mode of video call application. 1 – CSD mode.

Examples

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

6 SMS Related Commands

6.1 +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
---	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
500	unknown error

Examples

```
AT+CMGS=02112345678
+CMS ERROR: 304
```

6.2 AT+CSMS Select message service

Description

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

SIM PIN	References
YES	3GPP TS 27.005

Syntax

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

Defined values

<service>		
0	–	SMS AT command is compatible with GSM Phase 2.
1	–	SMS AT command is compatible with GSM Phase 2+.
<mt>		
Mobile Terminated Messages:		
0	–	Type not supported.
1	–	Type supported.
<mo>		
Mobile Originated Messages:		
0	–	Type not supported.

1 – Type supported.
<bm>
Broadcast Type Messages: 0 – Type not supported. 1 – Type supported.

Examples

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

6.3 AT+CPMS Preferred message storage

Description

The 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). "ME" and "MT" FLASH message storage "SM" SIM message storage "SR" Status report storage
<mem2>
String type, memory to which writing and sending operations are made (commands Send Message from Storage AT+CMSS and Write Message to Memory AT+CMGW). "ME" and "MT" FLASH message storage "SM" SIM message storage "SR" Status report storage
<mem3>
String type, memory to which received SMS is preferred to be stored (unless forwarded directly to TE; refer command New Message Indications AT+CNMI). "ME" FLASH message storage "SM" SIM message storage
<usedX>
Integer type, number of messages currently in <memX>.
<totalX>
Integer type, total number of message locations in <memX>.

Examples

AT+CPMS=?
+CPMS: ("ME","MT","SM","SR"),("ME","MT","SM","SR"),("ME",,"SM")
OK
AT+CPMS?
+CPMS:"ME", 0, 23,"ME", 0, 23,"ME", 0, 23
OK
AT+CPMS="SM","SM","SM"
+CPMS:3,40,3,40,3,40
OK

6.4 AT+CMGF Select SMS message format

Description

The 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
Read Command	**Responses**
AT+CMGF?	+CMGF: <mode> OK
Write Command	**Responses**
AT+CMGF=<mode>	OK
Execution Command	**Responses**
AT+CMGF	*Set default value (<mode>=0):* OK

Defined values

<mode>	
0	– PDU mode
1	– Text mode

Examples

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

6.5 AT+CSCA SMS service centre address

Description

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

SIM PIN	References

YES	3GPP TS 27.005

Syntax

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

Defined values

<sca>
Service 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*

6.6 AT+CSCB Select cell broadcast message indication

Description

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

The read command displays the accepted message types.

Depending on the <operation> 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>
String type; all different possible combinations of CBM message identifiers.
<dcss>
String type; all different possible combinations of CBM data coding schemes(default is empty string)

Examples

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

6.7 AT+CSDH Show text mode parameters

Description

The 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
Execution Command	**Responses**
AT+CSDH	*Set default value (<show>=0):* 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

6.8 AT+CNMA New message acknowledgement to ME/TA

Description

The command confirms 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=?	+CNMA: (list of supported <n>s) OK
Write Command	**Responses**
AT+CNMA=<n>	*if text mode(AT+CMGF=1):* OK *if PDU mode (AT+CMGF=0):* +CNMA: (list of supported <n>s) 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 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)

6.9 AT+CNMI New message indications to TE

Description

The 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>
Execution Command	**Responses**
AT+CNMI	*Set default value:* OK

Defined values

<mode>

0 – Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.

1 – Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.

2 – Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

<mt>

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

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

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

2 – SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code:

+CMT:[<alpha>],<length><CR><LF><pdu> (PDU mode enabled); or

+CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]

<CR> <LF><data>

(text mode enabled, about parameters in italics, refer command Show Text Mode Parameters AT+CSDH).

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

<bm>

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

0 – No CBM indications are routed to the TE.

2 – New CBMs are routed directly to the TE using unsolicited result code:

+CBM: <length><CR><LF><pdu> (PDU mode enabled); or

+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)

<ds>

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

1 – SMS-STATUS-REPORTs are routed to the TE using unsolicited result code:

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

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

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

<bfr>

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

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

Examples

AT+CNMI?

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

6.10 AT+CMGL List SMS messages from preferred store

Description

The command returns 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.

<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).

<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 number. (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 number. (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 number.
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 number.

<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 number. (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)).

Examples

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

6.11 AT+CMGR Read message

Description

The command returns 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.

<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 number. (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 number. (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 number.

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 number.

<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).

<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 number. (e.g. 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

6.12 AT+CMGS Send message

Description

The 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).
<length>
integer type value indicating in the text mode (AT+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets. (i.e. the RP layer SMSC address octets are not counted in the length)
<mr>
Message Reference GSM 03.40 TP-Message-Reference in integer format.
NOTE In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

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

6.13 AT+CMSS Send message from storage

Description

The 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.
<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).
NOTE In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

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

6.14 AT+CMGW Write message to memory

Description

The 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>	+CMGW: <index> OK
	ERROR
If PDU mode(AT+CMGF=0): AT+CMGW=<length>,[,<stat>]<CR>*PDU is entered.* <CTRL-Z/ESC>	+CMS ERROR: <err>

Defined values

<index>
Integer type, value in the range of location numbers supported by the associated memory.
<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).

<length>

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

<stat>

1. Text Mode:
   "STO UNSENT" stored unsent message
   "STO SENT" stored sent message
2. PDU Mode:
   2 – stored unsent message
   3 – stored sent message

NOTE In text mode, the maximum length of an SMS depends on the used coding scheme: It is 160 characters if the 7 bit GSM coding scheme is used.

Examples

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

6.15 AT+CMGD Delete message

Description

The command is used to delete message from preferred message storage <mem1> location <index>.

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, the index of the message in storage<mem1>.
<delflag>
0 – (or omitted) Delete the message specified in <index>. 1 – Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched. 2 – Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched. 3 – Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched. 4 – Delete all messages from preferred message storage including unread messages.
NOTE If set <delflag>=1, 2, 3 or 4, <index> is omitted, such as AT+CMGD=,1.

Examples

AT+CMGD=1
OK

6.16 AT+CSMP Set text mode parameters

Description

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

SIM PIN	References
YES	3GPP TS 27.005

Syntax

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

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

Defined values

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

Examples

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

6.17 AT+CMGRO Read message only

Description

The command returns message with location value <index> from message storage <mem1> to the TE, but the message's status don't change.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CMGRO=?	OK
Write Command	**Responses**
AT+CMGRO=<index>	*If text mode(AT+CMGF=1),command successful and SMS-DELIVER:* +CMGRO:<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: +CMGRO:<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: +CMGRO: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> OK
	If text mode (AT+CMGF=1),command successful and SMS-COMMAND: +CMGRO:<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><data>] OK
	If text mode(AT+CMGF=1), command successful and CBM storage: +CMGRO:<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
	Otherwise: +CMS ERROR: <err>

Defined values

Refer to command AT+CMGR.

Examples

```
AT+CMGRO=6
+CMGRO:"REC  READ","+8613917787249",,"06/07/10,12:09:38+32",145,4,0,0,"+8613800210500",145,4
abcd
OK
```

6.18 AT+CMGMT Change message status

Description

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

SIM PIN	References
YES	Vendor

Syntax

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

Defined values

<index>
Integer type, value in the range of location numbers supported by the associated memory.

Examples

AT+CMGMT=1
OK

6.19 AT+CMVP Set message valid period

Description

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

SIM PIN	References
YES	Vendor

Syntax

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

Write Command	Responses
AT+CMVP=<vp>	OK
	ERROR
	+CMS ERROR: <err>

Defined values

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

Examples

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

6.20 AT+CMGRD Read and delete message

Description

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

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CMGRD=?	OK
Write Command	**Responses**
AT+CMGRD=<index>	*If text mode(AT+CMGF=1),command successfuL and SMS-DELIVER:* +CMGRD:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]<CR><LF><data> OK
	If text mode(AT+CMGF=1),command successful and SMS-SU-

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

Defined values

Refer to command AT+CMGR.

Examples

```
AT+CMGRD=6
+CMGRD:"REC READ","+8613917787249",,"06/07/10,12:09:38+32",145,4,0,0, "+8613800210500",145,4
How do you do
OK
```

6.21 AT+CMGSO Send message quickly

Description

The command is used to send message from a TE to the network (SMS-SUBMIT). But it's different from AT+CMGS. This command only need one time input, and wait for ">" needless.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CMGSO=?	OK
Write Command	**Responses**
If text mode (AT+CMGF=1): AT+CMGSO=<da>[,<toda>], <text> *If PDU mode (AT+CMGF=0):* AT+CMGSO=<length>,<pducontent>	+CMGSO: <mr> OK
	ERROR
	+CMS ERROR: <err>

Defined values

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

Examples

AT+CMGSO="10086","YECX"
+CMGSO: 128

OK

6.22 AT+CMGWO Write message to memory quickly

Description

The command stores message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. But it's different from AT+CMGW. This command only need one time input, and wait for ">" needless.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CMGWO=?	OK
Write Command	**Responses**
If text mode (AT+CMGF=1): AT+CMGWO=<da>[,<toda>],<text> *If PDU mode (AT+CMGF=0):* AT+CMGWO=<length>,<pducontent>	+CMGWO: <index> OK
	ERROR
	+CMS ERROR: <err>

Defined values

<index>
Integer type, value in the range of location numbers supported by the associated memory.
<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).
<text>
Content of message.
<pducontent>
Content of message.

Examples

```
AT+CMGWO="13012832788","ABCD"
+CMGWO: 1
OK
```

7 Camera Related Commands

7.1 AT+CCAMS Start camera

Description

The command is used to start camera. Make sure the sensor is existent and connect well. Camera must be started before taking picture or recording video.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCAMS	OK
	If have no sensor: CAMERA NO SENSOR ERROR
	If camera has started: CAMERA INVALID STATE ERROR

Examples

```
AT+CCAMS
OK
```

7.2 AT+CCAME Stop camera

Description

The command is used to stop camera.

If AT+CCAMTP has executed to take a picture and the picture is not saved by AT+CCAMEP, the picture will not be saved after AT+CCAME execution.

If AT+CCAMRS has executed to record video and that is not ended by AT+CCAMRE, the video file will be stopped recording and saved after AT+CCAME execution.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCAME	OK
	If camera has stopped: CAMERA NOT START ERROR

Examples

AT+CCAME
OK

7.3 AT+CCAMSETD Set camera dimension

Description

The command is used to set dimension of camera.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CCAMSETD= <width>,<height>	OK
	If camera in a wrong state: CAMERA INVALID S TATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<width> * <height>		
Image mode	STAMP	80 * 48
	QQVGA	160 * 120
	QCIF	176 * 144
	QVGA	320 * 240

	CIF	352 * 288
	VGA	640 * 480
	XGA	1024 * 768
	4VGA	1280 * 960
	SXGA	1280 * 1024
	UXGA	1600 * 1200
Video mode	STAMP	80 * 48
	QCIF	176 * 144
	QVGA	320 * 240

Examples

```
AT+CCAMSETD=320,240
OK
```

7.4 AT+CCAMSETF Set camera FPS

Description

The command is used to set FPS (frame per second). It is acting when recording video.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CCAMSETF=<fps>	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<fps>

0 – 7.5 fps

1 – 10 fps

2 – 15 fps

Examples

AT+CCAMSETF=1

OK

7.5 AT+CCAMSETR Set camera rotation

Description

The command is used to set the rotation degree of camera.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CCAMSETR= <rotation_degree>	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<rotation_degree>

0 – not rotate .

90 – rotate 90 degrees clockwise.

180 – rotate 180 degrees clockwise.

270 – rotate 270 degrees clockwise.

Examples

AT+CCAMSETR=90

OK

7.6 AT+CCAMSETN Set camera night shot mode

Description

The command is used to set night shot mode of camera.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CCAMSETN= <nightsoht>	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<nightsoht>
0 – off 1 – on

Examples

AT+CCAMSETN=1
OK

7.7 AT+CCAMSETWB Set camera white balance

Description

The command is used to set white balance.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CCAMSETWB=<wb>	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<wb>		
1	–	auto
4	–	fluorescent
5	–	daylight
6	–	cloudy daylight

Examples

AT+CCAMSETWB=1
OK

7.8 AT+CCAMSETB Set camera brightness

Description

The command is used to set brightness.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CCAMSETB= <brightness>	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<brightness>
Range is 0-6 (0 is the lowest, 6 is the highest).

Examples

AT+CCAMSETB=1
OK

7.9 AT+CCAMSETZ Set camera zoom

Description

The command is used to set zoom in/out.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CCAMSETZ=?	+CCAMSETZ:(<zmin>-<zmax>),(<zcurrent>) OK
Write Command	**Responses**
AT+CCAMSETZ=<zoom>	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<zoom>
Range is 0-91 (0 is the lowest, 91 is the highest).
<zmin>
The minimum of zoom for current dimension.
<zmax>
The maximum of zoom for current dimension.
<zcurrent>
The current zoom value.
NOTE 1. Before set the zoom for camera, please check response of command (AT+CCAMSETZ=?). Current value will be set <zmax> instead of your set if <zoom> out of current range limits. 2. <zmax> is different to each image dimension.

Examples

AT+CCAMSETZ=?
+CCAMSETZ:(0-30)(0) *OK*
AT+CCAMSETZ=15
OK

7.10 AT+CCAMTP Take picture

Description

The command is used to take a picture after camera is started and setting parameters if need.

NOTE AT+CCAMTP is used to take a picture, but not save; and AT+CCAMEP is used to save the picture after AT+CCAMTP execution. If AT+CCAMTP is executed more times continuously, AT+CCAMEP will save the picture which is taken by the last AT+CCAMTP.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCAMTP	OK
	If storage space is full: CAMERA NO MEMORY ERROR
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Examples

```
AT+CCAMTP
OK
```

7.11 AT+CCAMEP Save picture

Description

The command is used to save a picture taken by last AT+CCAMTP in JPEG format. File name is generated automatically based on system time [refer AT+CCLK], and the storage location of picture refers to AT+FSLOCA.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCAMEP	<path_name>

	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<path_name>
If saved in ME: "C:/Picture/YYYYMMDD_HHMMSS.jpg" If saved in SD card: "D:/Picture/YYYYMMDD_HHMMSS. jpg".

Examples

AT+CCAMEP
C:/Picture/20080420_120303.jpg *OK*

7.12 AT+CCAMRS Start video record

Description

The command is used to start video recording and save the video file by MP4 format. The name of video file will be generated automatically based on system time [refer AT+CCLK], and the storage location of video file refers to AT+FSLOCA.

Note If storage space isn't enough during recording, the module will stop recording video and save the media file. Before AT+CCAMRS execution, please make sure the current dimension is supported for recording video.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCAMRS	<path_name> OK
	If storage space is full: CAMERA NO MEMORY

	ERROR
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera has a wrong dimension: CAMERA INVALID DIMENSION FORMAT ERROR
	If camera not starting: CAMERA NOT START ERROR

Defined values

<path_name>
If saved in ME: "C:/Video/YYYYMMDD_HHMMSS.mp4" If saved in SD card: "D:/Video/YYYYMMDD_HHMMSS. mp4".

Examples

AT+CCAMRS
C:/Video/20080420_123003.mp4 *OK*

7.13 AT+CCAMRP Pause video record

Description

The execution command pause record during recording video by camera.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCAMRP	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START

	ERROR

Examples

AT+CCAMRP
OK

7.14 AT+CCAMRR Resume video record

Description

The command is used to resume video record, and it executes after record pause by AT+CCAMRP.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCAMRR	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Examples

AT+CCAMRR
OK

7.15 AT+CCAMRE Stop video record

Description

The command is used to stop video record, and it is corresponding to AT+CCAMRS.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses

AT+CCAMRE	OK
	If camera in a wrong state: CAMERA INVALID STATE ERROR
	If camera not starting: CAMERA NOT START ERROR

Examples

AT+CCAMRE
OK

8 Audio Application Commands

8.1 AT+CQCPREC Start recording sound clips

Description

The command is used to start recording sound clip. The name of audio file will be generated automatically based on system time [refer AT+CCLK], and the storage location of audio file refers to AT+FSLOCA.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CQCPREC= <source>,<format>	<path_name> OK

Defined values

<source>
0 – local path 1 – remote path
<format>
Format of the audio file: amr – AMR format qcp – QCP format
<path_name>
If saved in ME: "C:/Audio/YYYYMMDD_HHMMSS.amr" If saved in SD card: "D:/Audio/YYYYMMDD_HHMMSS.amr".
NOTE During GSM call is only applicable to QCP file.

Examples

AT+CQCPREC= 0,amr
C:/Audio/20080520_120303.amr *OK*
AT+CQCPREC= 1,qcp
C:/Audio/20080520_120506.qcp *OK*

8.2 AT+CQCPPAUSE Pause sound record

Description

The execution command pause record sound.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CQCPPAUSE	OK

Examples

AT+CQCPPAUSE
OK

8.3 AT+CQCPRESUME Resume sound record

Description

The command is used to resume sound record.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CQCPRESUME	OK

Examples

AT+CQCPRESUME
OK

8.4 AT+CQCPSTOP Stop sound record

Description

The command is used to stop sound record. Execute the command during recording sound.

SIM PIN	References

NO	Vendor

Syntax

Execution Command	Responses
AT+CQCPSTOP	OK

Examples

```
AT+CQCPSTOP
OK
```

8.5 AT+CCMXPLAY Play audio file

Description

The command is used to play an audio file.

NOTE Make sure the file path is "C:/Audio/" or "D:/Audio/" when playing sound by command AT+FSCD.

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CCMXPLAY=<file_name>[,<play_path>]	OK

Defined values

<file_name>

The name of audio file.

<play_path>

0 – local path (If <play_path> is omitted, default value is used.)

1 – local path during call

2 – remote path during call

3 – both path during call

NOTE <play_path>=1, 2 or 3 must be used during call. GSM call is only applicable to QCP file, and UMTS call is only applicable to AMR file.

Examples

```
AT+FSCD=Audio
+FSCD: C:/Audio/
```

```
OK
AT+FSCD?
+FSCD: C:/Audio/
OK
AT+CCMXPLAY=”20080520_120303.amr”,0
OK
```

8.6 AT+CCMXPAUSE Pause playing audio file

Description

The command is used to pause playing audio file.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCMXPAUSE	OK

Examples

```
AT+CCMXPAUSE
OK
```

8.7 AT+CCMXRESUME Resume playing audio file

Description

The command is used to resume playing audio file.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCMXRESUME	OK

Examples

```
AT+CCMXRESUME
OK
```

8.8 AT+CCMXSTOP Stop playing audio file

Description

The command is used to stop playing audio file. Execute this command during audio playing.

SIM PIN	References
NO	Vendor

Syntax

Execution Command	Responses
AT+CCMXSTOP	OK

Examples

AT+CCMXSTOP
OK

9 Network Service Related Commands

9.1 AT+CREG Network registration

Description

Write command controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the ME network registration status.

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.

SIM PIN	References
YES	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> OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CREG =<n>	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CREG	*Set default value（<n>=0）:* OK

Defined values

<n>		
0	–	disable network registration unsolicited result code
1	–	enable network registration unsolicited result code +CREG: <stat>
<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

Examples

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

9.2 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.

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>
Execution Command	**Responses**
AT+COPS	OK

Defined values

<mode>		
0	–	automatic
1	–	manual
2	–	force deregister
3	–	set only <format>
4	–	manual/automatic
<format>		
0	–	long format alphanumeric <oper>
1	–	short format alphanumeric <oper>
2	–	numeric <oper>
<oper>		
string type, <format> indicates if the format is alphanumeric or numeric.		
<stat>		
0	–	unknown
1	–	available
2	–	current
3	–	forbidden
<AcT>		
Access technology selected		
0	–	GSM
1	–	GSM Compact
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),(0,1,2)
OK
```

9.3 AT+CLCK Facility lock

Description

The 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"	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.

<classX>

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

1 – voice (telephony)
2 – data (refers to all bearer services)
4 – fax (facsimile services)
8 – short message service
16 – data circuit sync
32 – data circuit async
64 – dedicated packet access
128 – dedicated PAD access
255 – The value 255 covers all classes

Examples

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

9.4 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>
Refer Facility Lock +CLCK for other values: "SC" SIM or USIM PIN1 "P2" SIM or USIM PIN2 "AB" All Barring services
<oldpwd>
String type, it shall be the same as password specified for the facility from the ME user interface or with command Change Password AT+CPWD.
<newpwd>
String type, it is the new password; maximum length of password can be determined with <pwdlength>.
<pwdlength>
Integer type, max length of password.

Examples

AT+CPWD=?
+CPWD: ("AB",4),("SC",8),("P2",8) *OK*

9.5 AT+CLIP Calling line identification presentation

Description

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

Write command enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network.

When the presentation of the CLI at the TE is enabled (and calling subscriber allows), +CLIP: <number>,<type>,,[,[<alpha>][,<CLI validity>]] response is returned after every RING (or +CRING: <type>; refer sub clause "Cellular result codes +CRC") result code sent from TA to TE. It is manufacturer specific if this response is used when normal voice call is answered.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<n>
Parameter sets/shows the result code presentation status in the TA: 0 – disable 1 – enable
<m>
0 – CLIP not provisioned 1 – CLIP provisioned 2 – unknown (e.g. no network, etc.)
<number>

String type phone number of calling address in format specified by <type>.

<type>

Type of address octet in integer format;

128 – Restricted number type includes unknown type and format

145 – International number type

129 – Otherwise

<alpha>

String type alphanumeric representation of <number> corresponding to the entry found in phone book.

<CLI validity>

0 – CLI valid

1 – CLI has been withheld by the originator

2 – CLI is not available due to interworking problems or limitations of originating network

Examples

AT+CLIP=1

OK

RING (with incoming call)

+CLIP: "02152063113",128,,,"gongsi",0

9.6 AT+CLIR Calling line identification restriction

Description

The command refers to CLIR-service that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.

Write command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite command.. If this command is used by a subscriber without provision of CLIR in permanent mode the network will act.

Read command gives the default adjustment for all outgoing calls (given in <n>), and also triggers an interrogation of the provision status of the CLIR service (given in <m>).

Test command returns values supported as a compound value.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CLIR =?	+CLIR: (list of supported <n>s) OK

Read Command	Responses
AT+CLIR?	+CLIR: <n>,<m> OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CLIR =<n>	OK
	ERROR
	+CME ERROR: <err>

Defined values

<n>		
0	–	presentation indicator is used according to the subscription of the CLIR service
1	–	CLIR invocation
2	–	CLIR suppression
<m>		
0	–	CLIR not provisioned
1	–	CLIR provisioned in permanent mode
2	–	unknown (e.g. no network, etc.)
3	–	CLIR temporary mode presentation restricted
4	–	CLIR temporary mode presentation allowed

Examples

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

9.7 AT+COLP Connected line identification presentation

Description

The 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.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<n>
Parameter sets/shows the result code presentation status in the TA: 0 – disable 1 – enable
<m>
0 – COLP not provisioned 1 – COLP provisioned 2 – unknown (e.g. no network, etc.)

Examples

```
AT+COLP?
+COLP: 1,0
OK
ATD10086;
VOICE CALL: BEGIN

+COLP: "10086",129,,,

OK
```

9.8 AT+CCUG Closed user group

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

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

Examples

AT+CCUG?

+CCUG: 0,0,0
OK

9.9 AT+CCFC Call forwarding number and conditions

Description

The command allows control of the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CCFC=?	+CCFC: (list of supported <reason>s) OK
Write Command	**Responses**
AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]	*When <mode>=2 and command successful:* +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][<CR><LF>+CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][...]] OK
	ERROR
	+CME ERROR:<err>

Defined values

<reason>		
0	–	unconditional
1	–	mobile busy
2	–	no reply
3	–	not reachable
4	–	all call forwarding
5	–	all conditional call forwarding
<mode>		
0	–	disable
1	–	enable
2	–	query status
3	–	registration
4	–	erasure

<number>

String type phone number of forwarding address in format specified by <type>.

<type>

Type of address octet in integer format:

145 – dialing string <number> includes international access code character '+'

129 – otherwise

<subaddr>

String type sub address of format specified by <satype>.

<satype>

Type of sub address octet in integer format, default 128.

<classX>

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

1 – voice (telephony)

2 – data (refers to all bearer services)

4 – fax (facsimile services)

8 – short message service

16 – data circuit sync

32 – data circuit async

64 – dedicated packet access

128 – dedicated PAD access

255 – The value 255 covers all classes

<time>

1...30 – when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value 20.

<status>

0 – not active

1 – active

Examples

AT+CCFC=?

+CCFC: (0,1,2,3,4,5)

OK

AT+CCFC=0,2

+CCFC: 0,255

OK

9.10 AT+CCWA Call waiting

Description

The 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>,[<alpha>][,<CLI validity>] to the TE when call waiting service is enabled. Command should be abortable when network is interrogated.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CCWA=?	+CCWA: (list of supported <n>s) OK
Read Command	**Responses**
AT+CCWA?	+CCWA: <n> OK
Write Command	**Responses**
AT+CCWA= <n>[,<mode>[,<class>]]	*When <mode>=2 and command successful:* +CCWA:<status>,<class>[<CR><LF> +CCWA: <status>, <class>[...]] OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+CCWA	*Set default value (<n>=0):* OK

Defined values

<n>
Sets/shows the result code presentation status in the TA 0 – disable 1 – enable
<mode>
When <mode> parameter is not given, network is not interrogated: 0 – disable 1 – enable 2 – query status
<class>
It is a sum of integers each representing a class of information (default 7)

1 – voice (telephony)
2 – data (refers to all bearer services)
4 – fax (facsimile services)
7 – voice,data and fax(1+2+4)
8 – short message service
16 – data circuit sync
32 – data circuit async
64 – dedicated packet access
128 – dedicated PAD access

<status>

0 – not active
1 – active

<number>

String type phone number of calling address in format specified by <type>.

<type>

Type of address octet in integer format;

128 – Restricted number type includes unknown type and format
145 – International number type
129 – Otherwise

<alpha>

Optional 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.

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

9.11 AT+CHLD Call related supplementary services

Description

The command allows the control of 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.

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>		
0	–	Terminate all held calls; or set User Determined User Busy for a waiting call
1	–	Terminate all active calls and accept the other call (waiting call or held call)
1X	–	Terminate a specific call X
2	–	Place all active calls on hold and accept the other call (waiting call or held call) as the active call
2X	–	Place all active calls except call X on hold
3	–	Add the held call to the active calls
4	–	Connect two calls and cut off the connection between users and them simultaneously

Examples

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

9.12 AT+CUSD Unstructured supplementary service data

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<n>	
0	– disable the result code presentation in the TA
1	– enable the result code presentation in the TA
2	– cancel session (not applicable to read command response)
<str>	
String type USSD-string.	
<dcs>	
Cell Broadcast Data Coding Scheme in integer format (default 0).	
<m>	
0	– no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation)
1	– further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
2	– USSD terminated by network
4	– operation not supported

5 – network time out

Examples

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

9.13 AT+CAOC Advice of charge

Description

The 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.

The 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
	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*

9.14 AT+CSSN Supplementary service notifications

Description

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

Examples

AT+CSSN=1,1

OK

AT+CSSN?

+CSSN: 1,1

OK

9.15 AT+CLCC List current calls

Description

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:<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

<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 cal:

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 2 – fax 9 – unknown
<mpty>
0 – call is not one of multiparty (conference) call parties 1 – call is one of multiparty (conference) call parties
<number>
String type phone number in format specified by <type>.
<type>
Type of address octet in integer format; 128 – Restricted number type includes unknown type and format 145 – International number type 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

9.16 AT+CPOL Preferred operator list

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CPOL=?	+CPOL: (list of supported <index>s), (list of supported <format>s) OK
Read Command	**Responses**
AT+CPOL?	+CPOL:<index1>,<format>,<oper1>[<CR><LF> +CPOL: <index2>,<format>,<oper2> [...]] OK
Write Command	**Responses**
AT+CPOL=<index> [,<form-at>[,<oper>]]	OK
	ERROR
	+CME ERROR: <err>

Defined values

<index>
Integer type, the order number of operator in the SIM preferred operator list.
<format>
0 – long format alphanumeric <oper> 1 – short format alphanumeric <oper> 2 – numeric <oper>
<operX>
String type.

Examples

AT+CPOL?
+CPOL: 1,2,"46001" *OK*
AT+CPOL=?
+CPOL: (1-10),(0-2) *OK*

9.17 AT+COPN Read operator names

Description

Execute command returns 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

9.18 AT+CNMP Preferred mode selection

Description

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

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CNMP=?	+CNMP: (list of supported <mode>s) OK

Read Command	Responses
AT+CNMP?	+CNMP: <mode> OK
Write Command	**Responses**
AT+CNMP=<mode>	OK ERROR

Defined values

<mode>	
1	– Digital Only
2	– Automatic
3	– Emergency Call Only
13	– GSM Only
14	– WCDMA Only

Examples

AT+CNMP=13
OK
AT+CNMP?
+CNMP: 2
OK

9.19 AT+CNBP Preferred band selection

Description

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

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CNBP?	+CNBP: <mode> OK
Write Command	**Responses**
AT+CNBP=<mode>	OK ERROR

Defined values

<mode>	
64bit number, the value is “1” << “<pos>” , then or by bit.	
<pos>	
Value:	
0xFFFFFFFF7FFFFFFF	Any (any value)
7	GSM_DCS_1800
8	GSM_EGSM_900
9	GSM_PGSM_900
16	GSM_450
17	GSM_480
18	GSM_750
19	GSM_850
20	GSM_RGSM_900
21	GSM_PCS_1900
22	WCDMA_IMT_2000
23	WCDMA_PCS_1900
24	WCDMA_III_1700
25	WCDMA_IV_1700
26	WCDMA_850
27	WCDMA_800
48	WCDMA_VII_2600
49	WCDMA_VIII_900
50	WCDMA_IX_1700

Examples

AT+CNBP=0x000700000FFF0380
OK
AT+CNBP?
+CNBP: 0xFFFFFFFF3FFFFFFF
OK

9.20 AT+CNAOP Acquisitions order preference

Description

Write command resets the state of acquisitions order preference.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses

AT+CNAOP=?	+CNAOP: (list of supported <mode>s) OK
Read Command	Responses
AT+CNAOP?	+CNAOP: <mode> OK
Write Command	Responses
AT+CNAOP=<mode>	OK ERROR

Defined values

<mode>	
0	– Automatic
1	– GSM,WCDMA
2	– WCDMA,GSM

Examples

AT+CNAOP=1
OK
AT+CNAOP?
+CNAOP: 2
OK

9.21 AT+CNSDP Preferred service domain selection

Description

Write command resets the state of the service domain preference.

SIM PIN	References
YES	Vendor

Syntax

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

	ERROR

Defined values

<mode>
0 – CS Only
1 – PS Only
2 – CS + PS

Examples

AT+CNSDP=2
OK
AT+CNSDP?
+CNSDP: 0
OK

9.22 AT+CPSI Inquiring UE system information

Description

The command returns the UE system information; currently show the information of GSM only.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CPSI=?	+CPSI: (scope of <time>) OK
Read Command	Responses
AT+CPSI?	+CPSI: <System Mode>, <Operation Mode>, <Location Area ID>,<Cell ID>,<Absolute RF Ch Num>, <RX Level>, <Track LO Adjust>,<C1-C2> OK
	ERROR
Write Command	Responses
AT+CPSI=<time>	OK
	ERROR

Defined values

<time>
The range is 0-255, unit is second, after set <time> will report the system information every the seconds.
<System Mode>
System mode, values: “NO SERVICE”, “GSM” or “WCDMA”.
<Operation Mode>
UE operation mode, values: “Online”, “Factory Test Mode”, “Reset”, “Low Power Mode”.
<Location Area ID>
LAI for service-cell, using the format of Hex or empty if PLMN is undefined.
<Cell ID>
Service-cell ID of GSM.
<Absolute RF Ch Num>
AFRCN for service-cell.
<RX Level>
RX level.
<Track LO Adjust>
Track LO Adjust.

Examples

AT+CPSI?
+CPSI: GSM,Online,460-00 0x182d,12401,27 EGSM 900,-64,2110,42-42
OK
AT+CPSI=?
+CPSI: (0-255)
OK

9.23 AT+CNSMOD Show network system mode

Description

The command returns the current network system mode.

SIM PIN	References
YES	Vendor

Syntax

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

	ERROR
	+CME ERROR: <err>
Write Command	Responses
AT+CNSMOD=<n>	OK
	ERROR
	+CME ERROR: <err>

Defined values

<n>		
0	–	disable auto report the network system mode information
1	–	auto report the network system mode information, command: +CNSMOD:<stat>
<state>		
0	–	no service
1	–	GSM
2	–	GPRS
3	–	EGPRS(EDGE)
4	–	WCDMA
5	–	HSDPA

Examples

```
AT+CNSMOD?
+CNSMOD: 0,2
OK
```

9.24 AT+CTZU Automatic time and time zone update

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CTZU=?	+CTZU: (list of supported <onoff>s) OK
Read Command	Responses
AT+CTZU?	+CTZU: <onoff> OK

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

Defined values

<onoff>

Integer type value indicating:

0 – Disable automatic time zone update via NITZ (default).

1 – Enable automatic time zone update via NITZ.

NOTE 1. The value of <onoff> is nonvolatile, and factory value is 0.

2. For automatic time and time zone update is enabled (+CTZU=1):

If time zone is only received from network and it doesn't equal to local time zone (AT+CCLK), time zone is updated automatically, and real time clock is updated based on local time and the difference between time zone from network and local time zone (Local time zone must be valid).

If Universal Time and time zone are received from network, both time zone and real time clock is updated automatically, and real time clock is based on Universal Time and time zone from network.

Examples

AT+CTZU?

+CTZU: 0

OK

AT+CTZU=1

OK

9.25 AT+CTZR Time and time Zone Reporting

Description

The 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
Execution Command	Responses
AT+CTZR	*Set default value:* OK

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

9.26 AT+CCINFO Show cell system information

Description

The command is used to inquire serving cell and neighbour cell system information in GSM.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CCINFO=?	OK
Execution Command	**Responses**
AT+CCINFO	*When ME in idle mode:* +CCINFO:[<SCELL>],ARFCN:<arfcn>,MCC:<mcc>,MNC:<mnc>,LAC:<lac>,ID:<id>,BSIC:<bsic>,RXLev:<rxlev>,C1:<c1>,C2:<c2> +CCINFO:[<NCELLn>],ARFCN:<arfcn>,MCC:<mcc>,MNC:<mnc>,LAC:<lac>,ID:<id>,BSIC:<bsic>,RXLev:<rxlev>,C1:<c1>,C2:<c2> […] *When ME in dedicated mode:* +CCINFO:[<SCELL>],ARFCN:<arfcn>,MCC:<mcc>,MNC:<mnc>,LAC:<lac>,ID:<id>,BSIC:<bsic>,RXLev:<rxlev>,C1:<c1>,C2:<c2> +CCINFO:[<NCELLn>],ARFCN:<arfcn>,BSIC:<bsic>,RXLev:<rxlev> […]

Defined values

<SCELL>
indicate serving cell
<NCELLn>
available neighbour cell index
<arfcn>
assigned radio channel
<mcc>
mobile country code

<mnc>
mobile network code
<lac>
localization area code
<id>
cell identifier
<bsic>
base station identification code
<rxlev>
received signal strength in dBm

Examples

AT+CCINFO (idle mode)
+CCINFO:[SCELL],ARFCN:11,MCC:460,MNC:00,LAC:6360,ID:12402,BSIC:52,RXLev:-68dbm, C1:35,C2:35
+CCINFO:[NCell1],ARFCN:29,MCC:460,MNC:00,LAC:6360,ID:12625,BSIC:55,RXLev:-81dbm, C1:21,C2:21
+CCINFO:[NCell2],ARFCN:28,MCC:460,MNC:00,LAC:6360,ID:8466,BSIC:49,RXLev:-81dbm,C 1:21,C2:21
+CCINFO:[NCell3],ARFCN:25,MCC:460,MNC:00,LAC:6360,ID:8498,BSIC:40,RXLev:-81dbm,C 1:21,C2:21
+CCINFO:[NCell4],ARFCN:2,MCC:460,MNC:00,LAC:6362,ID:24644,BSIC:48,RXLev:-87dbm,C 1:15,C2:15
+CCINFO:[NCell5],ARFCN:14,MCC:460,MNC:00,LAC:6360,ID:12403,BSIC:54,RXLev:-86dbm, C1:16,C2:16
+CCINFO:[NCell6],ARFCN:13,MCC:460,MNC:00,LAC:6362,ID:24705,BSIC:51,RXLev:-89dbm, C1:13,C2:13
OK
AT+CCINFO (dedicated mode)
+CCINFO:[SCELL],ARFCN:11,MCC:460,MNC:00,LAC:6360,ID:12402,BSIC:52,RXLev:-61dbm, C1:42,C2:42
+CCINFO:[NCell1],ARFCN:25,BSIC:40,RXLev:-81dbm
+CCINFO:[NCell2],ARFCN:28,BSIC:49,RXLev:-82dbm
+CCINFO:[NCell3],ARFCN:29,BSIC:55,RXLev:-82dbm
+CCINFO:[NCell4],ARFCN:14,BSIC:54,RXLev:-87dbm
+CCINFO:[NCell5],ARFCN:2,BSIC:48,RXLev:-89dbm
+CCINFO:[NCell6],ARFCN:13,BSIC:51,RXLev:-89dbm
OK

9.27 AT+CSCHN Show cell channel information

Description

The command is used to inquire serving cell channel information in GSM.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CSCHN=?	OK
Execution Command	**Responses**
AT+CSCHN	*When during a call:* +CSCHN:ARFCN:<arfcn>,BISC:<bsic>,HSN:<hsn>,MAIO:<maio>, TN:<tn>,HF:<hf>,TSC:<tsc>,TCH:<tch> OK

Defined values

<arfcn>
assigned radio channel
<bsic>
base station identification code
<hsn>
HSN
<maio>
MAIO
<tn>
timeslot number
<hf>
hopping flag
<tsc>
TSC
<tch>
channel type

Examples

AT+CSCHN
+CSCHN: ARFCN:11, BISC: 52, HSN: 41, MAIO: 6, TN: 1, HF: 1, TSC: 4, TCH: 3
OK

9.28 AT+CSRP Show serving cell radio parameter

Description

The command is used to inquire serving cell radio parameter in GSM.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CSRP=?	OK
Execution Command	**Responses**
AT+CSRP	*When during a call:* +CSRP:ARFCN:<arfcn>,RXLevFull:<rxlevfull>,RXLevSub:<rxlevsub>,RXQualFull:<rxqualfull>,RXQualSub:<rxqualsub>,PWRC:<pwrc>,DTX:<dtx>,RLT:<rlt> OK

Defined values

<arfcn>
assigned radio channel
<rxlevfull>
received full signal strength in dBm
<rxlevsub>
received sub signal strength in dBm
<rxqualfull>
full quality of reception
<rxqualsub>
sub quality of reception
<pwrc>
PWRC
<dtx>
DTX
<rlt>
radio link timeout

Examples

AT+CSRP
+CSRP:ARFCN:11,RXLevFull:-88dbm,RXLevSub:-89dbm,RXQualFull:7,RXQualSub:7,PWRC:1,DTX:0,RLT:32
OK

9.29 AT+CRUS Show cell set system information

Description

The execution command returns the mobile phone system information in WCDMA.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CRUS=?	OK
Execution Command	**Responses**
AT+CRUS	+CRUS: Active SET, <ActiveSET Cells Num>[, <ActiveSET Cell1 PSC>, <ActiveSET Cell1 Freq>, <ActiveSET Cell1 SSC> , <ActiveSET Cell1 Sttd> , <ActiveSET Cell1 TotEcio> , <ActiveSET Cell1 Ecio> , <ActiveSET Cell1 Rscp> , <ActiveSET Cell1 WinSize> […]] +CRUS: Sync Neighbor SET, <SyncSET Cells Num>[, <SyncSET Cell1 PSC>, <SyncSET Cell1 Freq>, < SyncSET Cell1 SSC> , < SyncSET Cell1 Sttd> , < SyncSET Cell1 TotEcio> , < SyncSET Cell1 Ecio> , < SyncSET Cell1 Rscp> , < SyncSET Cell1 WinSize> […]] +CRUS: Async Neighbor SET, <AsyncSET Cells Num>[, < AsyncSET Cell1 PSC>, < AsyncSET Cell1 Freq>, < AsyncSET Cell1 SSC> , < AsyncSET Cell1 Sttd> , < AsyncSET Cell1 TotEcio> , < AsyncSET Cell1 Ecio> , < AsyncSET Cell1 Rscp> , < AsyncSET Cell1 WinSize> […]] OK

Defined values

<UTMS_SETS Cells Num>
cells number
<UTMS_SETS Cell 1-n PSC>
primary synchronization code of the cell
<UTMS_SETS Cell 1-n Freq>
downlink frequency of the cell
<UTMS_SETS Cell 1-n SSC>
secondary synchronization code
<UTMS_SETS Cell 1-n Sttd>
if the CPICH of this cell uses STTD
<UTMS_SETS Cell 1-n TotEcio>
the total Ec/Io in the best paths found in a sweep
<UTMS_SETS Cell 1-n 1 Ecio>

Ec/Io
<UTMS_SETS Cell 1-n Rscp>
CPICH RSCP
<UTMS_SETS Cell 1-n WinSize>
search window size for this cell
UTMS_SETS contains:
ActiveSET active set
SyncSET neighbor (monitored) set for neighbors whose timing is known
AsyncSET neighbor (monitored) set for neighbors whose timing is unknown

Examples

AT+CRUS
+CRUS: Active SET,1,2,10663,0,0,16,16,101,1536
+CRUS: Sync Neighbor SET,2,42,10663,0,0,34,33,109,1536,35,10663,0,0,26,26,106,1536
+CRUS: Async Neighbor SET,10,11,10663,0,0,0,49,121,0,6,10663,0,0,0,49,121,0,28, 10663, 0, 0,0, 49,121,0,247,10663,0,0,0,49,121,0,193,10663,0,0,0,49,121,0,493,10663,0,0,0,49,121,0,485,10663, 0,0,0,49,121,0,258,10663,0,0,0,49,121,0,109,10663,0,0,0,49,121,0,226,10663,0,0,38,49,121,1536
OK

10 Mobile Equipment Control and Status Commands

10.1 +CME ERROR Mobile Equipment error result code

Description

The operation of +CME ERROR:<err> result code is similar to the regular ERROR result code: if +CME ERROR: <err> is the result code for any of the commands in a command line, none of the following commands in the same command line is executed (neither ERROR nor OK result code shall be returned as a result of a completed command line execution). The format of <err> can be either numeric or verbose. This is set with command AT+CMEE.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

```
+CME ERROR: <err>
```

Defined values

<err>

Values (numeric format followed by verbose format):

0	phone failure
1	no connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index

22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
100	unknown
103	Illegal MS (#3)
106	Illegal ME (#6)
107	GPRS services not allowed (#7)
111	PLMN not allowed (#11)
112	Location area not allowed (#12)
113	Roaming not allowed in this location area (#13)
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
150	invalid mobile class
148	unspecified GPRS error
151	VBS/VGCS not supported by the network
152	No service subscription on SIM
153	No subscription for group ID
154	Group Id not activated on SIM
155	No matching notification
156	VBS/VGCS call already present
157	Congestion
158	Network failure
159	Uplink busy
160	No access rights for SIM file
161	No subscription for priority
162	operation not applicable or not possible

Examples

```
AT+CPIN="1234","1234"
+CME ERROR: incorrect password
```

10.2 AT+CMEE Report Mobile Equipment error

Description

The command controls the format of the error result codes that indicates errors related to Sim5218 Functionality.Format can be selected between plain “ERROR” output,error numbers or verbose “+CME ERROR: <err>” and “+CMS ERROR: <err>” messages.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<n>

0 – Disable result code,i.e. only “ERROR” will be displayed.

1 – Enable error result code with numeric values.

2 – Enable error result code with string values.

Examples

```
AT+CMEE?
+CMEE: 2
OK
AT+CPIN="1234","1234"
```

+CME ERROR: incorrect password

AT+CMEE=0

OK

AT+CPIN="1234","1234"

ERROR

AT+CMEE=1

OK

AT+CPIN="1234","1234"

+CME ERROR: 16

10.3 AT+CPAS Phone activity status

Description

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

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<pas>

0 – ready (ME allows commands from TA/TE)

3 – ringing (ME is ready for commands from TA/TE, but the ringer is active)

4 – call in progress (ME is ready for commands from TA/TE, but a call is in progress)

Examples

RING (with incoming call)

AT+CPAS

+CPAS: 3

OK

AT+CPAS=?

+CPAS: (0,3,4)

OK

10.4 AT+CFUN Set phone functionality

Description

The command selects 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.

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<fun>		
0	–	minimum functionality
1	–	full functionality, online mode
4	–	disable phone both transmit and receive RF circuits
5	–	Factory Test Mode
6	–	Reset
7	–	Offline Mode
<rst>		

0	–	do not reset the ME before setting it to <fun> power level
1	–	reset the ME before setting it to <fun> power level

Examples

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

10.5 AT+CPIN Enter PIN

Description

The command sends to 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 b is returned to TE.

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

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<pin>
String type values.

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

Examples

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

10.6 AT+CSQ Signal quality

Description

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

Examples

AT+CSQ

+CSQ: 22,0

OK

10.7 AT+AUTOCSQ Set CSQ report

Description

The command causes the module to disable and enable auto report CSQ information, if we enable auto report, the module reports CSQ information every five seconds, the format of report is +CSQ: <rssi>,<ber>.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+AUTOCSQ=?	+AUTOCSQ: (list of supported <arg>s) OK
Read Command	**Responses**
AT+AUTOCSQ?	+AUTOCSQ: <arg> OK
Write Command	**Responses**
AT+AUTOCSQ=<arg>	OK

Defined values

<arg>
0 – disable auto report
1 – enable auto report

Examples

AT+AUTOCSQ=1
+CSQ: 23,0
OK

10.8 AT+CACM Accumulated call meter

Description

The command resets the Advice of Charge related accumulated call meter value in SIM file EFACM.

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

10.9 AT+CAMM Accumulated call meter maximum

Description

The command sets the Advice of Charge related accumulated call meter maximum value in SIM file EFACMmax.

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

10.10 AT+CPUC Price per unit and currency table

Description

The command sets the parameters of Advice of Charge related price per unit and currency table in SIM file EFPUCT.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

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

Examples

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

10.11 AT+CPOF Control phone to power down

Description

The command controls the phone to power off.

SIM PIN	References
YES	Vendor

Syntax

Execution Command	Responses
AT+CPOF	OK

Examples

AT+CPOF
OK

10.12 AT+CCLK Real time clock

Description

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

SIM PIN	References
NO	3GPP TS 27.007

Syntax

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

Defined values

<time>
String type value; format is “yy/MM/dd,hh:mm:ss±zz”, where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; three last digits are mandatory, range

-47…+48). E.g. 6th of May 2008, 14:28:10 GMT+8 equals to “08/05/06,14:28:10+32”.

NOTE 1. Time zone is nonvolatile, and the factory value is invalid time zone.

2. Command +CCLK? will return time zone when time zone is valid, and if time zone is 00, command +CCLK? will return “+00”, but not “-00”.

Examples

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

10.13 AT+CRFEN RF check at initialization

Description

The command will enable or disable RF check at the initialization, you can disable the RF control status check at the initialization if do not want to check the RF pin status. This status will be saved the check function on reboot.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<value>

0 – disable RF check at initialization
1 – enable RF check at initialization

Examples

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

11 SIM Related Commands

11.1 AT+CICCID Read ICCID in SIM card

Description

The command is used to Read the ICCID in SIM card

SIM PIN	References
YES	Vendor

Syntax

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

Defined values

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

Examples

AT+CICCID
+ICCID: 898600700907A6019125 *OK*

11.2 AT+CSIM Generic SIM access

Description

The command allows to control the SIM card directly.

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

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

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

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

Examples

AT+CSIM=?
OK

11.3 AT+CRSM Restricted SIM access

Description

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

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

SIM PIN	References
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 203 – RETRIEVE DATA 219 – SET DATA
<fileID>
Identifier for an elementary data file on SIM, if used by <command>.
<p1> <p2> <p3>
Integer type; parameters to be passed on by the Module to the SIM.
<data>
Information which shall be written to the SIM(hexadecimal character format, refer AT+CSCS).
<sw1> <sw2>
Status information from the SIM about the execution of the actual command. It is returned in both cases, on successful or failed execution of the command.
<response>

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

Examples

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

12 Hardware Related Commands

12.1 AT+CTXGAIN Set TX gain

Description

The command is used to set audio path parameter – TX gain, and refer to related hardware design document to get more information.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<tx_gain>
TX gain level which is from 0 to 65535.

Examples

AT+CTXGAIN=1234
OK

12.2 AT+CRXGAIN Set RX gain

Description

The command is used to set audio path parameter – RX gain, and refer to related hardware design document to get more information.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<rx_gain>
RX gain level which is from 0 to 65535.

Examples

AT+CRXGAIN=1234
OK

12.3 AT+CTXVOL Set TX volume

Description

The command is used to set audio path parameter – TX volume, and refer to related hardware design document to get more information.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<tx_vol>
TX volume level which is from 0 to 65535.

Examples

AT+CTXVOL=1234
OK

12.4 AT+CRXVOL Set RX volume

Description

The command is used to set audio path parameter – RX volume, and refer to related hardware design document to get more information.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<rx_vol>
RX volume level which is from -100 to 100.

Examples

AT+CRXVOL=12
OK

12.5 AT+CTXFTR Set TX filter

Description

The command is used to set audio path parameter – TX filter, and refer to related hardware design document to get more information.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CTXFTR=?	+CTXFTR: (list of supported <tx_ftr_*N*>s) OK
Read Command	**Responses**
AT+CTXFTR?	+CTXFTR: <tx_ftr_*1*>,<…>,<tx_ftr_*7*> OK
Write Command	**Responses**
AT+CTXFTR= <tx_ftr_*1*>,<…>,<tx_ftr_*7*>	OK

Defined values

<tx_ftr_*X*>
TX filter level which is from 0 to 65535. (*N* is from 0 to 7)

Examples

AT+CTXFTR=1111,2222,3333,4444,5555,6666,7777
OK

12.6 AT+CRXFTR Set RX filter

Description

The command is used to set audio path parameter – RX filter, and refer to related hardware design document to get more information.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CRXFTR=?	+CRXFTR: (list of supported <rx_ftr_*N*>s) OK
Read Command	**Responses**

AT+CRXFTR?	+CRXFTR: <rx_ftr_*1*>,<…>,<rx_ftr_*7*> OK
Write Command	Responses
AT+CRXFTR= <rx_ftr_*1*>,<…>,<rx_ftr_*7*>	OK

Defined values

<rx_ftr_*X*>
RX filter level which is from 0 to 65535. (*N* is from 0 to 7)

Examples

AT+CRXFTR=1111,2222,3333,4444,5555,6666,7777
OK

12.7 AT+CVALARM Low voltage Alarm

Description

Open or close the low voltage alarm function.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<enable>

0 – Close

1 – Open. If voltage < 3.45V, every 20 seconds will report a string: “warning! Voltage is low:<voltage value>”.

Examples

AT+ CVALARM=1

OK

AT+ CVALARM=?

+CVALARM:(0,1)

OK

12.8 AT+CRIIC Read values from register of IIC device

Description

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>,<len>	+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.
<len>
Read length. Range:1-4; unit:byte.
<data>
Data read. Input format must be hex, such as 0xFF – 0xFFFFFFFF.

Examples

AT+CRIIC=0x0F, 0x0F, 2

+CRIIC: 0xFFFF

OK

12.9 AT+CWIIC Write values to register of IIC device

Description

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>,<len>	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.
<len>
Read length. Range: 1-4; unit: byte.
<data>
Data written. Input format must be hex, such as 0xFF – 0xFFFFFFFF.

Examples

AT+CWIIC=0x0F, 0x0F, 0x1234, 2
+CWIIC: 0x1234
OK

12.10 AT+CVAUXS Set state of the pin named VREG_AUX1

Description

The command is used to set state of the pin which is named VREG_AUX1.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CVAUXS=?	+CVAUXS: (list of supported <state>s) OK

Read Command	Responses
AT+CVAUXS?	+CVAUXS: <state> OK
Write Command	Responses
AT+CVAUXS=<state>	OK
	ERROR

Defined values

<state>	
0	– the pin is closed.
1	– the pin is opend(namely, open the pin)

Examples

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

12.11 AT+ CVAUXV Set voltage value of the pin named VREG_AUX1

Description

The command is used to set the voltage value of the pin which is named VREG_AUX1.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<voltage>
Voltage value of the pin which is named VREG_AUX1. The unit is in 50*mV.

Examples

AT+CVAUXV=?
+CVAUXV: (30-61)
OK
AT+CVAUXV=40
OK
AT+CVAUXV?
+CVAUXV: 40
OK

12.12 AT+CGPIO Set Trigger mode of interrupt GPIO

Description

Set GPIO interrupt trigger mode(GPIO0 is used for interrupt).

SIM PIN	References
NO	Vendor

Syntax

Write Command	Responses
AT+CGPIO=<detect>, <polarity>[,<save>]	OK
	ERROR

Defined values

<detect>
0 – LEVEL trigger mode
1 – EDGE trigger mode
<polarity>
0 – trigger when low level
1 – trigger when high level
<save>
0 – not save the setting
1 – save the setting
NOTE If the parameter of <save> is omitted, it will save the setting.

Examples

AT+ CGPIO =1,1,0

OK

12.13 AT+CGDRT Set the direction of specified GPIO

Description

The command is used to set the specified GPIO to in or out state. If setting the specified GPIO to in state, then it can not set the value of the GPIO to high or low.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<gpio_num>
2 – GPIO2
3 – GPIO3
5 – GPIO5
<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.

Examples

AT+CGDRT=3,0,0
OK

12.14 AT+CGSETV Set the value of specified GPIO

Description

The 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 – GPIO2
3 – GPIO3
5 – GPIO5
<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.

Examples

AT+CGSETV=3,0,0
OK

12.15 AT+CGGETV Get the value of specified GPIO

Description

The command is used to get the value(hight 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>

0	– GPIO0
1	– GPIO1
2	– GPIO2
3	– GPIO3
4	– GPIO4
5	– GPIO5

<gpio_hl>

0	– low
1	– high

Examples

AT+CGGETV=3
+CGGETV: 0
OK

12.16 AT+CADC Read ADC value

Description

Read the ADC value from modem. We support two type of ADC, one is raw type, the other is temperature type.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CADC=?	+CADC: (list of supported <adc>s) OK
Write Command	**Responses**
AT+CADC=<adc>	+CADC: <value> OK
	ERROR
Execution Command	**Responses**
AT+CADC	OK

Defined values

<adc>

ADC type:

0	– raw type.
1	– temperature type.

<value>
Integer type value of the ADC.

Examples

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

12.17 AT+CMICAMP1 Set value of micamp1

Description

The command is used to set audio path parameter – micamp1; this is different with AT+CMIC. With this command you can change the first stage of MIC amplify value based on your design separately and refer to related hardware design document to get more information

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CMICAMP1=?	+CMICAMP1: (list of supported <amp_val>s) OK
Read Command	**Responses**
AT+ CMICAMP1?	+CMICAMP1:<amp_val> OK
Write Command	**Responses**
AT+CMICAMP1= <amp_val>	OK ERROR

Defined values

<amp_val>
amplify value number which is from 0 to 1. 0 is 0DB and 1 is 24DB.

Examples

AT+CMICAMP1=0
+CMICAMP1: 0 *OK*
AT+CMICAMP1?
+CMICAMP1: 0

OK
AT+ CMICAMP1=?
+CMICAMP1: (0-1)
OK

12.18 AT+CVLVL Set value of sound level

Description

The command is used to set audio path parameter – RX volume; this command is different from CRXVOL, command CRXVOL will modify the values of all sound levels offset we provided together. With this command you can change the value of each sound level based on your design separately and refer to related hardware design document to get more information.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CVLVL=?	+CVLVL: (list of supported <lvl>s),(list of supported <lvl_value>s) OK
Read Command	**Responses**
AT+CVLVL?	+CVLVL: <lvl_value1>,<lvl_value2>,<lvl_value3>,<lvl_value4> OK
Write Command	**Responses**
AT+CVLVL= <lvl>, <lvl_value>	OK ERROR

Defined values

<lvl>
sound level number which is from 1 to 4.
<lvl_value>
sound level value which is from -5000 to 5000.
<lvl_value1>
sound level value that sound level number equals 1.
<lvl_value2>
sound level value that sound level number equals 2.
<lvl_value3>
sound level value that sound level number equals 3.
<lvl_value4>

sound level value that sound level number equals 4.

Examples

```
AT+CVLVL=1,-2000
+CVLVL: -2000
OK
AT+CVLVL?
+CVLVL: -2000,-200,500,1000
OK
AT+ CVLVL=?
+CVLVL: (1-4),(-5000~5000)
OK
```

12.19 AT+SIDET Digital attenuation of sidetone

Description

The command is used to set digital attenuation of sidetone. For more detailed information, please refer to relevant HD document.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<st>

Digital attenuation of sidetone, integer type in decimal format and nonvolatile.

Range: from 0 to 65535.

Factory value: HANDSET:2034, HEADSET:1024, SPEAKER PHONE: 0.

Examples

```
AT+CSDVC=1
OK
AT+SIDET?
+SIDET: 2304
OK
```

12.20 AT+CRIRS Reset RI pin of serial port

Description

The command is used to reset RI pin of serial port(UART device).After the command executed,When a voice(csd ,video) call or a SMS is coming or URC is reported,RI pin is asserted.it can wake up host.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CRIRS=?	OK
Write Command	**Responses**
AT+CRIRS	OK
	ERROR

Defined values

None

Examples

```
AT+CRIRS
OK
```

12.21 AT+CSUART Switch UART line mode

Description

The command is used to switch UART line mode between three and seven lines mode.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CSUART=?	OK
Read Command	**Responses**
AT+CSUART?	+CSUART: <mode> OK
Write Command	**Responses**
AT+CSUART=<mode>[,<save>]	OK

Defined values

<mode>		
0	–	3 lines mode
1	–	7 lines mode
<save>		
0	–	don't save the setting
1	–	save the setting

Examples

AT+CSUART=1

OK

13 Phonebook Related Commands

13.1 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

13.2 AT+CPBS Select phonebook memory storage

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<storage>	
Values reserved by the present document:	
"DC"	ME dialed calls list Capacity: max. 10 entries AT+CPBW command is not applicable to this storage.
"MC"	ME missed (unanswered received) calls list Capacity: max. 10 entries AT+CPBW command is not applicable to this storage.
"RC"	ME received calls list Capacity: max. 10 entries AT+CPBW command is not applicable to this storage.
"SM"	SIM phonebook Capacity: depending on SIM card
"ME"	Mobile Equipment phonebook Capacity: max. 100 entries
"FD"	SIM fixdialling-phonebook Capacity: depending on SIM card

"ON"	MSISDN list Capacity: depending on SIM card
"LD"	Last number dialed phonebook Capacity: max. 10 entries AT+CPBW command is not applicable to this storage.
"EN"	Emergency numbers Capacity: max. 50 entries AT+CPBW command is not applicable to this storage.
<used>	
Integer type value indicating the number of used locations in selected memory.	
<total>	
Integer type value indicating the total number of locations in selected memory.	

Examples

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

13.3 AT+CPBR Read phonebook entries

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

<index1>[,<index2>]	+CPBR: <index2>,<number>,<type>,<text>[…]]] OK
	ERROR
	+CME ERROR: <err>

Defined values

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

Examples

AT+CPBS?
+CPBS: "SM",2,200
OK
AT+CPBR=1,10
+CPBR: 1,"1234567890",129,"James"
+CPBR: 2,"0987654321",129,"Kevin"
OK

13.4 AT+CPBF Find phonebook entries

Description

The command finds the record in phonebook(from the current phonebook memory storage selected with AT+CPBS) which alphanumeric field has substring <findtext>.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

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

Examples

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

OK

13.5 AT+CPBW Write phonebook entry

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

<index>
Integer type values in the range of location numbers of phonebook memory.If <index> is not given, the first free entry will be used. If <index> is given as the only parameter, the phonebook entry specified by <index> is deleted.If record number <index> already exists, it will be overwritten.
<number>
String type, phone number of format <type>, the maximum length is <nlength>.
<type>
Type of address octet in integer format, default 145 when dialing string includes international access code character "+", otherwise 129.
<text>
String type field of maximum length <tlength>; character set as specified by command Select TE Character Set AT+CSCS.
<nlength>
Integer type value indicating the maximum length of field <number>.
<tlength>
Integer type value indicating the maximum length of field <text>.

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

Examples

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

14 File System Related Commands

The file system is used to store files in a hierarchical (tree) structure, and there are some definitions and conventions to use the Module.

Local storage space is mapped to "*C:*", and storage space of present storage card is mapped to "*D:*". In both "*C:*" and "*D:*" directories, module creates four directories named "*Picture*", "*Audio*", "*Video*" and "*VideoCall*" automatically; "*Picture*" is used to store static image when taking picture by camera, "*Audio*" is used to store audio file, "*Video*" is used to store video file when recording by camera, and "*VideoCall*" is used to store media file which is recorded during a video call.

NOTE General rules for naming (both directories and files):

1 The length of actual fully qualified names of directories and files can not exceed 245. For example: the length of "C:/Picture/first_image.jpg" don't exceed 245.

2 Directory and file names can not include the following characters:

\ : * ? " < > |

3 Between directory name and file/directory name, use character "/" as list separator, so it can not appear in directory name or file name.

4 The first character of names must be a letter or a numeral or underline, and the lastest character can not be period "." and oblique "/".

5 Case sensitive in "C:", but not case sensitive in "D:" if storage card is present.

14.1 AT+FSCD Select directory as current directory

Description

The command is used to select a directory. The Module supports absolute path and relative path.

Read Command will return current directory without double quotation marks.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSCD=?	OK
Read Command	**Responses**
AT+FSCD?	+FSCD: <curr_path> OK
Write Command	**Responses**
AT+FSCD=<path>	+FSCD: <curr_path> OK
	ERROR

Defined values

<path>
String without double quotes, directory for selection. **NOTE** If <path> is "..", it will go back to previous level of directory. If current directory is D:/ or in D:/ and SD card is removed and unmounted, it will set current directory C:/ automatically after a moment.
<curr_path>
String without double quotes, current directory.

Examples

AT+FSCD=C:
+FSCD: C:/
OK
AT+FSCD=Picture
+FSCD: C:/Picture/
OK
AT+FSCD=C:/Vdieo
+FSCD: C:/Video/
OK
AT+FSCD?
+FSCD: C:/Video/
OK
AT+FSCD=..
+FSCD: C:/
OK

14.2 AT+FSMKDIR Make new directory in current directory

Description

The command is used to create a new directory in current directory. It is only permitted to create new directory in storage card.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSMKDIR=?	OK
Write Command	**Responses**
AT+FSMKDIR=<dir>	OK

	ERROR

Defined values

<dir>
String without double quotes, directory name which is not already existing in current directory.

Examples

```
AT+FSMKDIR= SIMTech
OK
AT+FSCD?
+FSCD: D:/
OK
AT+FSLS
+FSLS: SUBDIRECTORIES:
Audio
Picture
Video
VideoCall
SIMTech

OK
```

14.3 AT+FSRMDIR Delete directory in current directory

Description

The command is used to delete existing directory in current directory. It is only permitted to delete existing directory in storage card.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSRMDIR=?	OK
Write Command	**Responses**
AT+FSRMDIR=<dir>	OK
	ERROR

Defined values

<dir>
string without double quotes, directory name which is relative and already existing.

Examples

```
AT+FSRMDIR=SIMTech
OK
AT+FSCD?
+FSCD: D:/
OK
AT+FSLS
+FSLS: SUBDIRECTORIES:
Audio
Picture
Video
VideoCall

OK
```

14.4 AT+FSLS List directories/files in current directory

Description

The command is used to list informations of directories and/or files in current directory.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSLS=?	+FSLS: (list of supported <type>s) OK
Read Command	Responses
AT+FSLS?	+FSLS: SUBDIRECTORIES: <dir_num>, FILES: <file_num> OK
Write Command	Responses
AT+FSLS=<type>	[+FSLS: SUBDIRECTORIES: <list of subdirectories> <CR><LF>] [+FSLS: FILES: <list of files> <CR><LF>]

	OK
Execution Command	Responses
AT+FSLS	[+FSLS: SUBDIRECTORIES: <list of subdirectories> <CR><LF>] [+FSLS: FILES: <list of files> <CR><LF>] OK

Defined values

<dir_num>
Integer type, the number of subdirectories in current directory.
<file_num>
Integer type, the number of files in current directory.
<type>
0 – list both subdirectories and files 1 – list subdirectories only 2 – list files only

Examples

AT+FSLS?
+FSLS: SUBDIRECTORIES: 2, FILES: 2
OK
AT+FSLS
+FSLS: SUBDIRECTORIES: *FirstDir* *SecondDir* *+FSLS: FILES:* *image_0.jpg* *image_1.jpg* *OK*
AT+FSLS=2
+FSLS: FILES: *image_0.jpg* *image_1.jpg* *OK*

14.5 AT+FSDEL Delete file in current directory

Description

The command is used to delete a file in current directory. Before do that, it needs to use AT+FSCD select the father directory as current directory.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSDEL=?	OK
Write Command	**Responses**
AT+FSDEL=<filename>	OK
	ERROR

Defined values

<filename>
String without double quotes, file name which is relative and already existing.

Examples

```
AT+FSDEL=image_0.jpg
OK
```

14.6 AT+FSRENAME Rename file in current directory

Description

The command is used to rename a file in current directory.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSRENAME=?	OK
Write Command	**Responses**
AT+FSRENAME=	OK

<old_name>,<new_name>	ERROR

Defined values

<old_name>
String without double quotes, file name which is existed in current directory.
<new_name>
New name of specified file, string without double quotes.

Examples

AT+FSRENAME=image_0.jpg, image_1.jpg
OK

14.7 AT+FSATTRI Request file attributes

Description

The command is used to request the attributes of file which is existing in current directory.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSATTRI=?	OK
Write Command	**Responses**
AT+FSATTRI=<filename>	+FSATTRI: <file_size>, <create_date> OK

Defined values

<filename>
String without double quotes, file name which is in current directory.
<file_size>
The size of specified file, and the unit is in Byte.
<create_date>
Create date and time of specified file, the format is YYYY/MM/DD HH/MM/SS Week. Week – Mon, Tue, Wed, Thu, Fri, Sat, Sun

Examples

AT+FSATTRI=image_0.jpg

+FSATTRI: 8604, 2008/04/28 10:24:46 Tue
OK

14.8 AT+FSMEM Check the size of available memory

Description

The command is used to check the size of available memory. The response will list total size and used size of local storage space and SD card if present and mounted.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+FSMEM=?	OK
Execution Command	**Responses**
AT+FSMEM	+FSMEM: C:(<total>, <used>)[, D:(<total>,<used>)] OK

Defined values

<total>
The total size of local storage space or SD card.
<used>
The total size of local storage space or SD card.
NOTE The unit of storage space size is in Byte.

Examples

AT+FSMEM
+FSMEM: C:(11348480, 2201600), D:(255533056, 42754048)
OK

14.9 AT+FSFMT Format the storage card

Description

The command is used to format storage card which is plugged in. After fomatting and remounting, it will create four directories of "Picture", "Video", "VideoCall" and "Audio" automatically.
If current directory is in D:/ but not one of D:/Picture, D:/Video, D:/Audio and D:/VideoCall, it will set current directory D:/ after formatting.

SIM PIN	References

NO	Vendor

Syntax

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

Examples

```
AT+FSFMT
OK
```

14.10 AT+FSLOCA Select storage place

Description

The command is used to set the storage place for media files. If the storage card is not present, it can not set storage place as storage card. When the Module is power on, the value of <loca> is 0.

NOTE

1. Static image taken by camera is stored in "C:/Picture" or "D:/Picture" directory.
2. Video file recorded by camera is stored in "C:/Video" or "D:/Video" directory.
3. Media file recorded during a video call is stored in "C:/VideoCall" or "D:/Videocall" directory.
4. Audio file recorded is stored in "C:/Audio" or "D:/Audio" directory.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<loca>

0 – store media files to local storage space (namely “C:/”)

1 – store media files to storage card (namely “D:/”)

NOTE If <loca>=1 and SD card is removed and unmounted, it will set <loca>=0 automatically after a moment.

Examples

AT+FSLOCA=0

OK

AT+FSLOCA?

+FSLOCA: 0

OK

15 File Transmission Related Commands

The module supports file transmission between the Module and PC host over Xmodem protocol, and the transmission is bidirectional.

15.1 AT+CTXFILE Select file transmitted to PC host

Description

The command is used to select a file which is transmitted from the module to PC host. After selecting the file successfully, use HyperTerminal to get the file over Xmodem protocol [refer AT Commands Samples: File transmission to PC host]. If available memory is not enough, file transmission will fail.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CTXFILE=?	+CTXFILE: (list of supported <dir_type>s) OK
Write Command	**Responses**
AT+CTXFILE=<file_name>[,<dir_type>]	OK
	FILE NOT EXISTING ERROR

Defined values

<filename>
String with double quotes , file name to be transmitted to PC host which is already existing.
<dir_type>
0 – file to be transmitted is in current directory; before AT+CTXFILE execution, it needs to set current directory [refer AT+FSCD] 1 – file to be transmitted is in "*C:/Picture*" directory 2 – file to be transmitted is in "*C:/Video*" directory 3 – file to be transmitted is in "*C:/VideoCall*" directory 4 – file to be transmitted is in "*D:/Picture*" directory 5 – file to be transmitted is in "*D:/Video*" directory 6 – file to be transmitted is in "*D:/VideoCall*" directory 7 – file to be transmitted is in "C:/Audio" directory 8 – file to be transmitted is in "D:/Audio" directory
NOTE If <dir_type> is omitted, it will select a file to be transmitted which is in current directory.

AT+FSCD and AT+FSLS being used in combination can help user to check the file selected whether existing or not.

Examples

```
AT+CTXFILE=”image_0.jpg”, 1
OK
……
AT+FSCD=C:/Video
+FSCD: C:/Video/
OK
AT+FSLS
video_0.mp4        video_1.mp4
OK
AT+CTXFILE=”video_2.mp4”
OK
….
```

15.2 AT+CRXFILE Set name of file received from PC host

Description

The command is used to set file name which is received from PC host to file system of module. After setting successfully, use HyperTerminal to send the file over Xmodem protocol [refer AT Commands Samples: File received from PC host].

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CRXFILE=?	OK
Write Command	**Responses**
AT+CRXFILE=<file_name> [,<dir_type>]	OK
	FILE IS EXISTING
	ERROR

Defined values

<file_name>
String with double quotes, file name which is received from PC host.
<dir_type>
Specify storage location of file which is received from PC host. If this parameter is omitted, it will

save the file to current directory [refer AT+FSCD]

0 – save file received from PC host to current directory; before AT+CTXFILE execution, it needs to set current directory [refer AT+FSCD]

1 – save file to "*C:/Picture*" directory

2 – save file to "*C:/Video*" directory

3 – save file to "*C:/VideoCall*" directory

4 – save file to "*D:/Picture*" directory

5 – save file to "*D:/Video*" directory

6 – save file to "*D:/VideoCall*" directory

7 – save file to "C:/Audio" directory

8 – save file to "D:/Audio" directory

Examples

```
AT+CRXFILE="image_8.jpg",1
OK
……
AT+FSCD=D:/Video
+FSCD: D:/Video/
OK
AT+CRXFILE="video.mp4"
OK
....
```

16 V24-V25 Commands

16.1 AT+IPR Set local baud rate temporarily

Description

The 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
Execution Command	**Responses**
AT+IPR	*Set default value 115200:* OK

Defined values

<speed>
Baud rate per second: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800,921600, 3200000,3686400,4000000

Examples

AT+IPR?

+IPR: 115200

OK

AT+IPR=?

+IPR:(300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800,921600, 3200000, 3686400, 4000000)

OK

AT+IPR=115200
OK

16.2 AT+IPREX Set local baud rate permanently

Description

The command sets the baud rate of module's serial interface permanently, after reboot the baud rate is also valid.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+IPREX=?	+IPREX: (list of supported<speed>s) OK
Read Command	**Responses**
AT+IPREX?	+IPREX: <speed> OK
Write Command	**Responses**
AT+IPREX =<speed>	OK ERROR
Execution Command	**Responses**
AT+IPREX	*Set default value 115200:* OK

Defined values

<speed>
Baud rate per second: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800,921600, 3200000,3686400,4000000

Examples

AT+IPREX?
+IPREX: 115200 *OK*
AT+IPREX=?
+IPREX: (300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800,921600 3200000, 3686400, 4000000) *OK*

AT+IPREX=115200
OK

16.3 AT+ICF Set control character framing

Description

The command sets character framing which contain data bit, stop bit and parity bit.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+ICF=?	+ICF: (list of supported<format>s), (list of supported<parity>s) OK
Read Command	**Responses**
AT+ICF?	+ICF: <format>,<parity> OK
Write Command	**Responses**
AT+ICF= <format>[,<parity>]	OK ERROR
Execution Command	**Responses**
AT+ICF	*Set default value:* OK

Defined values

<format>
Only support value “3” at moment: 3 – data bit 8, stop bit 1
<parity>
0 – Odd 1 – Even 2 – mark 3 – none

Examples

AT+ICF?
+ICF: 3,3
OK

AT+ICF=?

+ICF: (3),(0-3)

OK

AT+ICF=3,3

OK

16.4 AT+IFC Set local data flow control

Description

The 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
Execution Command	**Responses**
AT+IFC	*Set default value:* OK

Defined values

<DCE>		
0	–	none (default)
1	–	Xon/Xoff, don't pass characters on to data stack
2	–	RTS hardware flow control
3	–	Xon/Xoff, pass characters on to data stack
<DTE>		
0	–	none (default)
1	–	Xon/Xoff flow control
2	–	CTS hardware flow control

Examples

```
AT+IFC?
+IFC: 0,0
OK
AT+IFC=?
+IFC: (0-3),(0-2)
OK
AT+IFC=2,2
OK
```

16.5 AT&C Set circuit Data Carrier Detect (DCD) function mode

Description

The command controls DCD(Data Carrier Detect) signal.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
AT&C[<value>]	OK
	ERROR

Defined values

<value>		
0	–	DCD line is always ON.
1	–	Turn on when the value incongruous with appointed value.
2	–	Always on except when channel disconnected.

Examples

```
AT&C2
OK
```

16.6 AT&D Set circuit Data Terminal Ready (DTR) function mode

Description

The command controls DTR(Data Terminal Ready) signal.

SIM PIN	References
NO	V.25ter

Syntax

Execution Command	Responses
AT&D[<value>]	OK
	ERROR

Defined values

<value>	
0	– Ignore.
1	– When the state from ON to OFF, enter ONLINE mode.
2	– When the state from ON to OFF, enter COMMAND mode. (Default value)

Examples

AT&D2
OK

16.7 ATE ATE enable command echo

Description

The 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

x	
0	– Echo mode off
1	– Echo mode on

Examples

ATE1
OK

16.8 AT&V Display current configuration

Description

The command returns some of the base configuration parameters settings.

SIM PIN	References
YES	V.25ter

Syntax

Execution Command	Responses
AT&V	<TEXT> OK

Defined values

<TEXT>
All relative configuration information.

Examples

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

17 GPS Related Commands

17.1 AT+CGPS Start/stop GPS session

Description

The command is used to start or stop GPS session.

NOTE Output of NMEA sentences is automatic; no control via AT commands is provided. You can configure NMEA or UART port for output by using AT+CGPSSWITCH. At present only support standalone mode. If executing AT+CGPS=1, the GPS session will choose cold or hot start automatically.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CGPS=?	OK
Write Command	**Responses**
AT+CGPS=<on/off>	OK
	ERROR

Defined values

<on/off>	
0	– stop GPS session
1	– start GPS session

Examples

```
AT+CGPS=?
OK
AT+CGPS=1
OK
```

17.2 AT+CGPSINFO Get GPS fixed position information

Description

The command is used to get current position information.

SIM PIN	References

NO	Vendor

Syntax

Test Command	Responses
AT+CGPSINFO=?	OK
Execution Command	Responses
AT+CGPSINFO	+CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<time>],[<alt>],[<speed>] OK

Defined values

<lat>
Latitude of current position. Output format is ddmm.mmmm
<N/S>
N/S Indicator, N=north or S=south
<log>
Longitude of current position. Output format is dddmm.mmmm
<E/W>
E/W Indicator, E=east or W=west
<date>
Date. Output format is ddmmyy
<time>
UTC Time. Output format is hhmmss.s
<alt>
MSL Altitude. Unit is meters.
<speed>
Speed Over Ground. Unit is knots.

Examples

AT+CGPSINFO=?
OK
AT+CGPSINFO
+CGPSINFO: 3113.393766,N,12121.176625,E,061108,075358.0,19.5,0
OK

17.3 AT+CGPSCOLD Cold start GPS

Description

The command is used to cold start GPS session.

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

SIM PIN	References
NO	Vendor

Syntax

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

Examples

AT+CGPSCOLD=?
OK
AT+CGPSCOLD
OK

17.4 AT+CGPSHOT Hot start GPS

Description

The command is used to hot start GPS session

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

SIM PIN	References
NO	Vendor

Syntax

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

Examples

AT+CGPSHOT=?
OK
AT+CGPSHOT
OK

17.5 AT+CGPSSWITCH Configure output port for NMEA sentence

Description

The command is used to choose the output port for NMEA sentence.

NOTE Support NMEA output over the UART or NMEA port. You can choose only one port for the NMEA sentence. If choosing UART port, Baud rate of host must be set 57600 bit/s, and can't input AT commands through UART port, and the NMEA port is disabled absolutely. If choosing NMEA port for NMEA sentence, the UART port function is integrated.It takes effect after rebooting.

SIM PIN	References
NO	Vendor

Syntax

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

Defined values

<port>	
1	– NMEA ports
2	– UART port

Examples

```
AT+CGPSSWITCH=?
+CGPSSWITCH:(1,2)
OK
AT+CGPSSWITCH=1
OK
```

18 Commands for Packet Domain

18.1 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.

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

Defined values

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

1…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

<APN>

(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.

<PDP_addr>

A string parameter that identifies the MT in the address space applicable to the PDP.

Read command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using command AT+CGPADDR.

<d_comp>

A numeric parameter that controls PDP data compression:

0 – off (default if value is omitted)

1 – on

2 – V.42bis

<h_comp>

A numeric parameter that controls PDP header compression:

0 – off (default if value is omitted)

1 – on

2 – RFC1144

3 – RFC2507

Examples

```
AT+CGDCONT?
+CGDCONT: 1,"IP","","0.0.0.0",0,0
OK
AT+CGDCONT=?
+CGDCONT: (1-16),"IP",,,(0-1),(0-1)
+CGDCONT: (1-16),"PPP",,,(0-1),(0-1)
+CGDCONT: (1-16),"IPV6",,,(0-2),(0-3)
OK
```

18.2 AT+CGQREQ Quality of Service Profile (Requested)

Description

The 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.

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>

A numeric parameter which specifies the mean throughput class:

0 – network subscribed value
1 – 100 (~0.22 bit/s)
2 – 200 (~0.44 bit/s)
3 – 500 (~1.11 bit/s)
4 – 1000 (~2.2 bit/s)
5 – 2000 (~4.4 bit/s)
6 – 5000 (~11.1 bit/s)

7 – 10000 (~22 bit/s)
8 – 20000 (~44 bit/s)
9 – 50000 (~111 bit/s)
10 – 100000 (~0.22 kbit/s)
11 – 200000 (~0.44 kbit/s)
12 – 500000 (~1.11 kbit/s)
13 – 1000000 (~2.2 kbit/s)
14 – 2000000 (~4.4 kbit/s)
15 – 5000000 (~11.1 kbit/s)
16 – 10000000 (~22 kbit/s)
17 – 20000000 (~44 kbit/s)
18 – 50000000 (~111 kbit/s)
31 – optimization

Examples

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

18.3 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>
Execution Command	Responses
AT+CGEQREQ	OK

Defined values

<cid>
Parameter specifies a particular PDP context definition.The parameter is also used in other PDP

context-related commands.

1…16

<Traffic class>

0 – conversational

1 – streaming

2 – interactive

3 – background

4 – subscribed value

<Maximum bitrate UL>

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

0 – subscribed value

1…512

<Maximum bitrate DL>

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

0 – subscribed value

1…16000

<Guaranteed bitrate UL>

This parameter indicates the guaranteed number of kbit/s delivered to UMTS(up-link traffic)at a SAP(provided that there is data to deliver).As an example a bitrate of 32kbit/s would be specified as 32(e.g.AT+CGEQREQ=…,32,…).

0 – subscribed value

1…512

<Guaranteed bitrate DL>

This parameter indicates the guaranteed number of kbit/s delivered to UMTS(down-link traffic)at a SAP(provided that there is data to deliver).As an example a bitrate of 32kbit/s would be specified as 32(e.g.AT+CGEQREQ=…,32,…).

0 – subscribed value

1…16000

<Delivery order>

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

0 – no

1 – yes

2 – subscribed value

<Maximum SDU size>

This parameter indicates the maximum allowed SDU size inoctets.

0 – subscribed value

10…1520 (value needs to be divisible by 10 without remainder)

<SDU error ratio>

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

“0E0” – subscribed value
“1E2”
“7E3”
“1E3”
“1E4”
“1E5”
“1E6”
“1E1”

<Residual bit error ratio>

This parameter indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested,Residual bit error ratio indicates the bit error ratio in the delivered SDUs.As an example a target residual bit error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g. AT+CGEQREQ=…,”5E3”,..).

“0E0” – subscribed value
“5E2”
“1E2”
“5E3”
“4E3”
“1E3”
“1E4”
“1E5”
“1E6”
“6E8”

<Delivery of erroneous SDUs>

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

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

<Transfer delay>

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

0 – subscribed value
10…150 – value needs to be divisible by 10 without remainder
200…950 – value needs to be divisible by 50 without remainder
1000…4000 – value needs to be divisible by 100 without remainder

<Traffic handling priority>

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

0 – subscribed value
1 –
2 –
3 –

<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

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)
OK

18.4 AT+CGQMIN Quality of Service Profile (Minimum acceptable)

Description

The 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.

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

	ERROR
Write Command	Responses
AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak> [,<mean>]]]]]	OK
	ERROR
Execution Command	Responses
AT+CGQMIN	OK

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)
OK
```

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

Description

The test command returns values supported as a compound value.

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

The write command allow the TE to specify a Quallity of Service Profile for the context identified by the context identification parameter <cid> which is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept message.

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses
AT+CGEQMIN=?	+CGEQMIN: <PDP_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s,(list of supported <Guaranteed bitrate DL>s),(list of supported <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+CGEQMIN?	+CGEQMIN: [<cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer Delay>,<Traffic handling priority>][<CR><LF> +CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer Delay>,<Traffic handling priority>[…]] OK

Write Command	Responses
AT+CGEQMIN=<cid>[,<Traffic class>[,<Maximum bit rate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>]]]]]]]]]]]]]	OK
	ERROR
	+CME ERROR: <err>
Execution Command	Responses
AT+CGEQMIN	OK

Defined values

<cid>
Parameter specifies a particular PDP context definition.The parameter is also used in other PDP context-related commands. 1…16
<Traffic class>
0 – conversational 1 – streaming 2 – interactive 3 – background 4 – subscribed value
<Maximum bitrate UL>
This parameter indicates the maximum number of kbits/s delivered to UMTS(up-link traffic)at a SAP.As an example a bitrate of 32kbit/s would be specified as 32(e.g. AT+CGEQMIN=…,32,…). 0 – subscribed value 1…512
<Maximum bitrate DL>
This parameter indicates the maximum number of kbits/s delivered to UMTS(down-link traffic)at a SAP.As an example a bitrate of 32kbit/s would be specified as 32(e.g. AT+CGEQMIN=…,32,…). 0 – subscribed value 1…16000
<Guaranteed bitrate UL>
This parameter indicates the guaranteed number of kbit/s delivered to UMTS(up-link traffic)at a SAP(provided that there is data to deliver).As an example a bitrate of 32kbit/s would be specified as 32(e.g.AT+CGEQMIN=…,32,…).

0 – subscribed value

1…512

<Guaranteed bitrate DL>

This parameter indicates the guaranteed number of kbit/s delivered to UMTS(down-link traffic)at a SAP(provided that there is data to deliver).As an example a bitrate of 32kbit/s would be specified as 32(e.g.AT+CGEQMIN=…,32,…).

0 – subscribed value

1…16000

<Delivery order>

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

0 – no

1 – yes

2 – subscribed value

<Maximum SDU size>

This parameter indicates the maximum allowed SDU size inoctets.

0 – subscribed value

10…1520 (value needs to be divisible by 10 without remainder)

<SDU error ratio>

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

“0E0” – subscribed value

“1E2”

“7E3”

“1E3”

“1E4”

“1E5”

“1E6”

“1E1”

<Residual bit error ratio>

This parameter indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested,Residual bit error ratio indicates the bit error ratio in the delivered SDUs.As an example a target residual bit error ratio of $5*10^{-3}$ would be specified as “5E3”(e.g. AT+CGEQREQ=…,”5E3”,..).

“0E0” – subscribed value

“5E2”

“1E2”

“5E3”

“4E3”

“1E3”

“1E4”

“1E5”

“1E6”

"6E8"

<Delivery of erroneous SDUs>

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

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

<Transfer delay>

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

0	–	subscribed value
10…150	–	value needs to be divisible by 10 without remainder
200…950	–	value needs to be divisible by 50 without remainder
1000…4000	–	value needs to be divisible by 100 without remainder

<Traffic handling priority>

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

0 – subscribed value
1 –
2 –
3 –

<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

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)
OK
```

18.6 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
```

18.7 AT +CGACT PDP context activate or deactivate

Description

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

Test Command	Responses

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

Defined values

<state>
Indicates the state of PDP context activation: 0 – deactivated 1 – activated
<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…16

Examples

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

18.8 AT+CGDATA Enter data state

Description

The command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types. This may include performing a PS attach and one or more PDP context activations.

SIM PIN	References

YES	3GPP TS 27.007

Syntax

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

Defined values

<L2P>
A string parameter that indicates the layer 2 protocol to be used between the TE and MT. PPP Point-to-point protocol for a PDP such as IP
<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…16

Examples

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

18.9 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>
Execution Command	Responses
AT+CGPADDR	[+CGPADDR: <cid>,<PDP_addr>] +CGPADDR: <cid>,<PDP_addr>[...]]] OK
	ERROR
	+CME ERROR: <err>

Defined values

<cid>
A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). If no <cid> is specified, the addresses for all defined contexts are returned. 1…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 AT+CGDCONT command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_addr> is omitted if none is available.

Examples

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

18.10 AT +CGCLASS GPRS mobile station class

Description

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

SIM PIN	References

YES	3GPP TS 27.007

Syntax

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

Defined values

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

Examples

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

18.11 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>
Execution Command	**Responses**
AT+CGEREP	OK

Defined values

<mode>

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

1 – discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE.

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

<bfr>

0 – MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered.

1 – MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered (OK response shall be given before flushing the codes).

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

+CGEV: REJECT <PDP_type>, <PDP_addr>

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

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

The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT.

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

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

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

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

+CGEV: NW DETACH

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

+CGEV: ME DETACH

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

+CGEV: NW CLASS <class>

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

+CGEV: ME CLASS <class>

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

Examples

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

18.12 AT+CGREG GPRS network registration status

Description

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

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

SIM PIN	References

YES	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> 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>"
<stat>		
0	–	not registered, ME is not currently searching an operator to register to
1	–	registered, home network
2	–	not registered, but ME is currently trying to attach or searching an operator to register to
3	–	registration denied
4	–	unknown
5	–	registered, roaming

Examples

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

18.13 AT+CGSMS Select service for MO SMS messages

Description

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

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

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

SIM PIN	References
YES	3GPP TS 27.007

Syntax

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

Defined values

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

Examples

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

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

Description

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

SIM PIN	References
YES	Vendor

Syntax

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

Defined values

<cid>
Parameter specifies a particular PDP context definition. This is also used in other PDP context-related commands. 1…16
<auth_type>
Indicates the types of authentication to be used for the specified context. If CHAP is selected another parameter <passwd> needs to be specified. If PAP is selected two additional parameters <passwd> and <user> need to specified. 0 – none

1 – PAP
2 – CHAP

<passwd>

Parameter specifies the password used for authentication. It is required for the authentication types PAP and CHAP.

<user>

Parameter specifies the user name used for authentication. It is required for the authentication type PAP.

Examples

```
AT+CGAUTH=?
+CGAUTH: (1-16),(0-2),
OK
AT+CGAUTH=1,1,”SIMCOM”,”123”
OK
```

19 TCP/IP Related Commands

19.1 AT+CGSOCKCONT Define socket PDP Context

Description

The command specifies socket 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.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CGSOCKCONT=?	+CGSOCKCONT: (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+CGSOCKCONT?	+CGSOCKCONT: [<cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[<CR><LF> +CGSOCKCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp>[...]]] OK
	ERROR
Write Command	**Responses**
AT+CGSOCKCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]	OK
	ERROR
Execution Command	**Responses**
AT+CGSOCKCONT	OK
	ERROR

Defined values

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

1…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

<APN>

(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.

<PDP_addr>

A string parameter that identifies the MT in the address space applicable to the PDP.

Read command will continue to return the null string even if an address has been allocated during the PDP startup procedure.

<d_comp>

A numeric parameter that controls PDP data compression:

0 – off (default if value is omitted)

1 – on

2 – V.42bis

<h_comp>

A numeric parameter that controls PDP header compression:

0 – off (default if value is omitted)

1 – on

2 – RFC1144

3 – RFC2507

Examples

```
AT+CGSOCKCONT?
+CGSOCKDCONT: 1,"IP","","0.0.0.0",0,0
OK
AT+CGSOCKCONT=?
+CGSOCKCONT: (1-16),"IP",,,(0-1),(0-1)
+CGSOCKCONT: (1-16),"PPP",,,(0-1),(0-1)
+CGSOCKCONT: (1-16),"IPV6",,,(0-2),(0-3)
OK
```

19.2 AT+CSOCKSETPN Set active PDP context's profile number

Description

The command sets default active PDP context's profile number. When we activate PDP by using AT+NETOPEN command, we need use the default profile number, and the context of this profile is set by AT+CGSOCKCONT command.

SIM PIN	References
YES	Vendor

Syntax

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

Defined values

<profile_number>
A numeric parameter that identifies default profile number, the range of permitted values is one to sixteen. 1…16

Examples

AT+CSOCKSETPN=1
OK

19.3 AT+CSOCKAUTH Set type of authentication for PDP-IP connections of socket

Description

The command is used to set type of authentication for PDP-IP connections of socket.

SIM PIN	References
YES	Vendor

Syntax

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

Defined values

<cid>	
Parameter specifies a particular PDP context definition. This is also used in other PDP context-related commands. 1…16	
<auth_type>	
Indicates the types of authentication to be used for the specified context. If CHAP is selected another parameter <passwd> needs to be specified. If PAP is selected two additional parameters <passwd> and <user> need to specified. 0 – none 1 – PAP 2 – CHAP	
<passwd>	
Parameter specifies the password used for authentication. It is required for the authentication types PAP and CHAP.	
<user>	

Parameter specifies the user name used for authentication. It is required for the authentication type PAP.

Examples

```
AT+CSOCKAUTH=?
+CSOCKAUTH: (1-16),(0-2),
OK
AT+CSOCKAUTH=1,1,"SIMCOM","123"
OK
```

19.4 AT+IPADDR Inquire socket PDP address

Description

The command inquires the IP address of current active socket PDP.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+IPADDR=?	OK
Execution Command	Responses
AT+IPADDR	+IPADDR: < ip_address> OK
	+IP ERROR:<err_info> ERROR
	ERROR

Defined values

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

Examples

```
AT+IPADDR
+IPADDR: 10.71.155.118
OK
```

19.5 AT+NETOPEN Open socket

Description

The command opens socket, and it can also activate the socket PDP context at the same time.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+NETOPEN=?	+NETOPEN: (list of supported <sock_type>s), (range of supported <port>s), (list of supported <mode>s) OK
	ERROR
	+CME ERROR: <err>
Read Command	**Responses**
AT+NETOPEN?	+NETOPEN:<net_state>, <mode> OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+NETOPEN=<sock_type>,<port>[,<mode>]	Network opened OK
	+IP ERROR: <err_info> ERROR
	+CME ERROR: <err>

Defined values

<sock_type>
a string parameter that identifies the type of transmission protocol. TCP – Transfer Control Protocol UDP – User Datagram Protocol
<port>
A numeric parameter that identifies the port of socket, the range of permitted values is 0 to 65535.
<net_state>
a numeric parameter that indicates the state of PDP context activation: 0 network close (deactivated) 1 network open(activated)
<mode>

a numeric parameter that module is used which mode.At present, it supports three mode,such as single-client, tcp-server and multi-client.if <mode> is 1,then <sock_type> and <port> are ignored.

0 single-client or tcp-server

1 multi-client

<err_info>

A string parameter that displays the cause of occurring error.

Examples

```
AT+NETOPEN=”TCP”,80
Network opened
OK
AT+NETOPEN=?
+NETOPEN: ("TCP", "UDP"), (0-65535), (0-1)
OK
AT+NETOPEN?
+NETOPEN: 1, 1
OK
```

19.6 AT+TCPCONNECT Establish TCP connection

Description

The command establishes TCP connection with TCP server.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+TCPCONNECT =?	OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+TCPCONNECT= <server_IP>, <port>	Connect ok OK
	+IP ERROR: <err_info> ERROR
	Connect fail ERROR
	ERROR

Defined values

<server_IP>
A string parameter that identifies the IP address of TCP server.
<port>
A numeric parameter that identifies the port of TCP server, the range of permitted values is 0 to 65535.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+TCPCONNECT=”192.168.0.1”,80
OK
AT+TCPCONNECT=”192.168.0.1”,80
Connect fail *ERROR*

19.7 AT+TCPWRITE Send TCP data

Description

The command sends TCP data when the TCP connection is established.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+ TCPWRITE =?	OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+TCPWRITE=<length> <CR>*data for send*	+TCPWRITE: <reqSendLength>, <cnfSendLength> OK *If sending successfully:* Send ok
	+IP ERROR: <err_info> ERROR
	ERROR

Defined values

<length>
a numeric parameter which indicates the length of sending data, it must less than 1024.
<reqSendLength>
a numeric parameter that requested number of data bytes to be transmitted.
<cnfSendLength>
a numeric parameter that confirmed number of data bytes to be transmitted. -1 the connection is disconnected. 0 own send buffer or other side's congestion window are full.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+TCPWRITE=12
>ABCDEFGHIJKL
+TCPWRITE：12, 12
OK
Send ok

19.8 AT+UDPSEND Send UDP data

Description

The command sends UDP data.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+UDPSEND =?	OK
	ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+UDPSEND=<length>,<IP_address>,<port><CR> *data for send*	+UDPSEND: <reqSendLength>, <cnfSendLength> OK
	+IP ERROR: <err_info> ERROR
	ERROR

Defined values

<length>
a numeric parameter which indicates the length of sending data, it must less than 1024
<IP_address>
A string parameter that identifies the IP address of receiver.
<port>
A numeric parameter that identifies the port of receiver, the range of permitted values is 0 to 65535.
<reqSendLength>
a numeric parameter that requested number of data bytes to be transmitted.
<cnfSendLength>
a numeric parameter that confirmed number of data bytes to be transmitted. -1 the connection is disconnected. 0 own send buffer or other side's congestion window are full.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+UDPSEND=12,"192.168.0.1",80
>ABCDEFGHIJKL
+UDPSEND: 12, 12
OK

19.9 AT+SERVERSTART Startup TCP server

Description

The command starts up TCP server, and the server can receive the request of TCP client. After the command executes successfully, an unsolicited result code is returned when a client tries to connect with module and module accepts request.The unsolicited result code is +CLIENT: <client_IP>:<port>.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+SERVERSTART=?	OK
	ERROR
	+CME ERROR: <err>
Execution Command	**Responses**
AT+SERVERSTART	OK

	+IP ERROR: <err_info> ERROR

Defined values

<client_IP>
A string parameter that identifies the IP address of client.
<port>
A numeric parameter that identifies the port of client.

Examples

AT+SERVERSTART
OK

19.10 AT+LISTCLIENT List all of clients' information

Description

The command lists all of clients' information, and these clients have already been connected with TCP server.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+LISTCLIENT=?	OK
Write Command	**Responses**
AT+LISTCLIENT	[+LISTCLIENT: <index1>, <IP_address>, <port>] … [+LISTCLIENT: <indexN>, <IP_address>, <port>] OK
	+IP ERROR: <err_info> ERROR
	ERROR

Defined values

<indexX>
A numeric parameter that identifies the index of client, the max number of client is ten, and the range of permitted values is 0 to 9.
<IP_address>

A string parameter that identifies the IP address of client.
<port>
A numeric parameter that identifies the port of client, the range of permitted values is 0 to 65535.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+LISTCLIENT
+LISTCLIENT: 0, 10.71.34.32 , 80
+LISTCLIENT: 1, 10.71.78.89, 1020
OK

19.11 AT+CLOSECLIENT Disconnect specified client

Description

The command disconnects the specified client.if the client disconnects connection, an unsolicited result code is returned.The unsolicited result code is +IPCLOSE: <client_index>, <close_reason>,<remote_IP>,<port>.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CLOSECLIENT=?	OK
Write Command	**Responses**
AT+CLOSECLIENT=<client_index>	OK
	+IP ERROR: <err_info> ERROR
	ERROR

Defined values

<client_index>
A numeric parameter that identifies the client index which will be closed, The allocated index may be read using command AT+LISTCLIENT.
<close_reason>
a numeric parameter that identifies reason that the connection closed. 1 remote side sends a request of closing first.

2 reset the connection because of timeout of sending data,or other reasons.
<remote_IP>
A string parameter that identifies the IP address of client.
<port>
A numeric parameter that identifies the port of client.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+CLOSECLIENT=0
OK

19.12 AT+ACTCLIENT Activate specified client

Description

The command activates the specified client, when the client is activated, the client is able to receive data from TCP server or send data to the TCP server.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+ACTCLIENT=?	OK
Write Command	**Responses**
AT+ACTCLIENT= <client_index>	OK
	+IP ERROR: <err_info> ERROR
	ERROR

Defined values

<client_index>
A numeric parameter that identifies the client index which will be closed. The allocated index may be read using command AT+LISTCLIENT.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+ ACTCLIENT=0

OK

19.13 AT+NETCLOSE Close socket

Description

The command closes socket, if the socket is opened for a server, then it will disconnect all of clients' connection that is connected with the server.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+NETCLOSE =?	OK
Execution Command	**Responses**
AT+NETCLOSE	OK
	+IP ERROR: <err_info> ERROR
	ERROR

Defined values

<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+NETCLOSE
Network closed *OK*

19.14 AT+CIPHEAD Add an IP head when receiving data

Description

The command is u sed to add an IP head when receiving data.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses

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

Defined values

<mode>
a numeric parameter which indicates whether adding an IP header to received data or not 0 – not add IP header 1 – add IP header, the format is "+IPD(data length)"

Examples

AT+CIPHAED=?
+CIPHEAD: (0-1)
OK
AT+CIPHEAD=0
OK

19.15 AT+CIPSRIP Set whether display IP address and port of sender when receiving data

Description

The command is used to set whether display IP address and port of sender when receiving data.

SIM PIN	References
NO	Vendor

Syntax

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

AT+CIPSRIP?	+CIPSRIP: <mode> OK
Write Command	Responses
AT+CIPSRIP=<mode>	OK
	ERROR
Execution Command	Responses
AT+CIPSRIP	*Set default value:* OK

Defined values

<mode>
a numeric parameter which indicates whether show the prompt of where the data received or not before received data. 0 – do not show the prompt 1 – show the prompt,the format is as follows: "RECV FROM:<IP ADDRESS>:<PORT>"

Examples

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

19.16 AT+CIPCCFG Configure parameters of socket

Description

The command is used to configure parameters of socket.

SIM PIN	References
NO	Vendor

Syntax

Test Command	Responses
AT+CIPCCFG=?	+CIPCCFG: (list of supported <NmRetry>s),(list of supported <DelayTm>s),(list of supported <Ack>s), (list of supported <errMode>s) OK
Read Command	Responses

AT+CIPCCFG?	+CIPCCFG: <NmRetry>,<DelayTm>,<Ack>, <errMode> OK
Write Command	Responses
AT+CIPCCFG= <NmRetry>[,<DelayTm>[,<Ack>[,<errMode>]]]	OK ERROR
Execution Command	Responses
AT+CIPCCFG	*Set default value:* OK

Defined values

<NmRetry>
a numeric parameter which is number of retransmission to be made for an IP packet.The default value is 3.
<DelayTm>
a numeric parameter which is number of milliseconds to delay to output data of Receiving.The default value is 0.
<Ack>
a numeric parameter which sets whether reporting a string “Send ok” when sending some data as a tcp connection. 0 not reporting 1 reporting
<errMode>
a numeric parameter which sets mode of reporting error result code. 0 error result code with numeric values 1 error result code with string values

Examples

AT+CIPCCFG=?
+CIPCCFG: (3-8),(0-1000),(0-1),(0-1)
OK
AT+CIPCCFG=3,500,1,1
OK

19.17 AT+CIPOPEN Establish connection in multi-client mode

Description

The command is used to establish a connection with TCP server and UDP server,The sum of all of connections are 10。

SIM PIN	References

YES	Vendor

Syntax

Test Command	Responses
AT+CIPOPEN =?	+CIPOPEN: (list of supported <link_num>s), (list of supported <type>s) OK
	ERROR
	+CME ERROR: <err>
Read Command	**Responses**
AT+CIPOPEN ?	+CIPOPEN: <link_num> [,<type>,<serverIP>,<serverPort>] +CIPOPEN: <link_num> [,<type>,<serverIP>,<serverPort>] […] OK
	+IP ERROR: <err_info> ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CIPOPEN=<link_num>,<type>,<serverIP>,<serverPort>	OK
	+IP ERROR: <err_info> ERROR
	+CME ERROR: <err>

Defined values

<link_num>
a numeric parameter that identifies a connection. the range of permitted values is 0 to 9.
<type>
a string parameter that identifies the type of transmission protocol. TCP Transfer Control Protocol UDP User Datagram Protocol
<serverIP>
a string parameter that identifies the IP address of server.
<serverPort>
a numeric parameter that identifies the port of TCP server, the range of permitted values is 0 to 65535.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+CIPOPEN=0,"TCP","116.228.221.51",100
Connect ok
OK
AT+CIPOPEN=?
+CIPOPEN: (0-9), ("TCP", "UDP")
OK
AT+CIPOPEN?
+CIPOPEN: 0, "TCP", "116.228.221.51", 100
+CIPOPEN: 1
+CIPOPEN: 2
+CIPOPEN: 3
+CIPOPEN: 4
+CIPOPEN: 5
+CIPOPEN: 6
+CIPOPEN: 7
+CIPOPEN: 8
+CIPOPEN: 9
OK

19.18 AT+CIPSEND Send data in multi-client mode

Description

The command sends some data to remote host in mult-client mode.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CIPSEND =?	+CIPSEND: (list of supported <link_num>s), (list of supported <length >s) OK
	+IP ERROR: <err_info> ERROR
	+CME ERROR: <err>
Read Command	**Responses**
AT+CIPSEND?	OK
	+CME ERROR: <err>
Write Command	**Responses**
AT+CIPSEND=<link_num>,<length><CR>*data for send*	+CIPSEND: <reqSendLength>, <cnfSendLength> OK

	If sending successfully: Send ok
	+IP ERROR: <err_info> ERROR
	+CME ERROR: <err>

Defined values

<link_num>
a numeric parameter that identifies a connection. the range of permitted values is 0 to 9.
<length>
a numeric parameter which indicates the length of sending data, it must less than 1024.
<reqSendLength>
a numeric parameter that requested number of data bytes to be transmitted.
<cnfSendLength>
a numeric parameter that confirmed number of data bytes to be transmitted. -1 the connection is disconnected. 0 own send buffer or other side's congestion window are full.
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+CIPSEND=0,1
> S
+CIPSEND: 1, 1
OK
Send ok
AT+CIPSEND=?
+CIPSEND: (0-9), (1-1024)
OK

19.19 AT+CIPCLOSE Close connection in Multi-client mode

Description

The command closes a specified connection in multi-client mode.

SIM PIN	References
YES	Vendor

Syntax

Test Command	Responses
AT+CIPCLOSE =?	+CIPCLOSE: (list of supported <link_num>s) OK
	+CME ERROR: <err>
Read Command	**Responses**
AT+CIPCLOSE ?	+CIPCLOSE:<link0_state>,<link1_state>,<link2_state>, <link3_state>,<link4_state>,<link5_state>,<link6_state>, <link7_state>,<link8_state>,<link9_state> OK
	+IP ERROR: <err_info> ERROR
	+CME ERROR: <err>
Write Command	**Responses**
AT+CIPCLOSE= <link_num>	OK
	+IP ERROR: <err_info> ERROR
	+CME ERROR: <err>

Defined values

<link_num>
a numeric parameter that identifies a connection. the range of permitted values is 0 to 9.
<linkx_state>
a numeric parameter that identifies state of <link_num>. the range of permitted values is 0 to 1. 0 disconnected 1 connected
<err_info>
A string parameter that displays the cause of occurring error.

Examples

AT+CIPCLOSE?
+CIPCLOSE: 1, 0, 0, 0, 0, 0, 0, 0, 0, 0
OK
AT+CIPCLOSE=?
+CIPOPEN: (0-9), ("TCP", "UDP")
OK
AT+CIPCLOSE=0
OK

19.20 Information elements related to TCP/IP

The following table lists information elements which may be returned.It should be noted that TCP/IP socket problems may occur or result may be executed.

Information	Description
Network opened	Indicate that the write command of AT+NETOPEN has excuted successfully.
Network not opened	Indicate that you should execute AT+NETOPEN first.
Network is already opened	Indicate that the write command of AT+NETOPEN has already excuted successfully.
Port overflow	Indicate that input port is out of range.
Create socket failed	Indicate that socket has not been created successfully.
Bind port failed	Indicate that input port is already in use.
Connect ok	Indicate that establishing a connection successfully.
Connection is already created	Indicate that a connection has been already established.
Connect fail	Indicate that establishing a connection unsuccessfully
No clients connected	Indicate that module as TCP server has no any connection.
No active client	Indicate that you should execute AT+ACTCLIENT first and select a connection.
Client index overflow	Indicate that input client's index is out of range.
Connection disconnected	Indicate that the remote end has closed the connection.
Socket closed	Indicate that socket is closed.
Network closed	Indicate that the write command of AT+NETCLOSE has excuted successfully.
Network is already closed	Indicate that netwok has been closed now.

20 AT Commands Samples

20.1 SMS Commands

Commands and Responses	Comments
AT+CMGF=1 OK	Set SMS system into text mode, as opposed to PDU mode.
AT+CPMS="SM","SM","SM" +CPMS: 0,40,0,40,0,40 OK	Select memory storages.
AT+CNMI=2,1 OK	Set new message indications to TE.
AT+CMGS="+861358888xxxx" >This is a test <*Ctrl*+*Z*> +CMGS:34 OK	Set new message indications to TE.
+CMTI:"SM",1	Unsolicited notification of the SMS arriving.
AT+CMGR=1 +CMGR: "REC UNREAD", "+86135888xxxx", ,"08/01/30, 20:40:31+00" This is a test OK	Read SMS message that has just arrived. **NOTE** The number should be the same as that given in the +CMTI notification.
AT+CMGR=1 +CMGR: "REC READ", "+861358888xxxx",,"08/01/30 , 20:40:31+00" This is a test OK	Reading the message again changes the status to "READ" from "UNREAD".
AT+CMGS="+861358888xxxx" >Test again<*Ctrl*+*Z*> +CMGS:35 OK	Send another SMS to myself.
+CMTI:"SM",2	Unsolicited notification of the SMS arriving.
AT+CMGL="ALL" +CMGL: 1, "REC READ", "+861358888xxxx", , "08/01/30,20:40:31+00" This is a test +CMGL: 2, "REC UNREAD","", "+861358888xx xx", , "08/01/30,20:45:12+00"	Listing all SMS messages.

Test again OK	
AT+CMGD=1 OK	Delete an SMS message.
AT+CMGL=“ALL” +CMGL: 2,“REC READ”,“+861358888xxxx”, “08/01/30,20:45:12+00” Test again OK	List all SMS messages to show message has been deleted.

20.2 TCP/IP Commands

20.2.1 TCP Server

Commands and Responses	Comments
AT+NETOPEN=”TCP”,80 Network opened OK	Activate the specified socket’s PDP context and Create a socket.
AT+SERVERSTART OK	For Tcp Server,it starts a Passive open for connections.
AT+LISTCLIENT NO.0 client : 10.71.34.32 80 NO.1 client : 10.71.78.89 1020 OK	List all of clients’ information.
AT+ACTCLIENT = 0 OK	Activate the specified client.
AT+TCPWRITE=8 >ABCDEFGH +TCPWRITE: 8, 8 OK Send ok	Send data to an active client.
AT+CLOSECLIENT=0 OK	Close the specified client.
AT+NETCLOSE Network closed OK	Close all of clients and Deactivate the specified socket’s PDP context.

20.2.2 TCP Client

Commands and Responses	Comments
AT+NETOPEN=”TCP”,80 Network opened OK	Activate the specified socket’s PDP context and Create a socket.
AT+TCPCONNECT=”192.168.0.1”,80 OK	Attempt to establish the TCP connection with the specified Tcp server.
AT+TCPWRITE=8 >ABCDEFGH +TCPWRITE: 8, 8 OK Send ok	Send data to server.
AT+NETCLOSE Network closed OK	Disconnect the connection with server and Deactivate the specified socket’s PDP context.

20.2.3 UDP

Commands and Responses	Comments
AT+NETOPEN=”UDP”,80 Network opened OK	Activate the specified socket’s PDP context and Create a socket.
AT+UDPSEND=8,”192.168.0.1”,80 >ABCDEFGH +UDPSEND: 8, 8 OK	Send data.
AT+NETCLOSE Network closed OK	Close the socket and Deactivate the specified socket’s PDP context.

20.2.4 Multi Client

Commands and Responses	Comments
AT+NETOPEN=,,1 Network opened OK	Activate the specified socket’s PDP context and Select in multi-client mode
AT+CIPOPEN=0,”TCP”,”116.228.221.51”,100 Connect ok OK	Establish a connection with TCP Server
AT+CIPOPEN=1,”UDP”,”116.228.221.51”	Establish a connection with UDP Server

,120 OK	
AT+CIPSEND=0,7 >SimTech +CIPSEND: 7, 7 OK Send ok	Send data in the connection of number 0
AT+CIPSEND=1,7 >SimTech +CIPSEND: 7, 7 OK	Send data in the connection of number 1
AT+CIPCLOSE=0 OK	Close the connection of number 0
AT+NETCLOSE OK	Close all of connections and Deactivate the specified socket's PDP context.

20.3 Audio Commands

20.3.1 Sound record

Commands and Responses	Comments
AT+CQCPREC=0,amr C:/Audio/20080420_120303.amr OK	Start recording sound clips
AT+CQCPPAUSE OK	Pause sound recording
AT+CQCPRESUME OK	Resume sound recording
AT+CQCPSTOP OK	Stop sound recording
ATD1381234****; OK VOICE CALL: BEGIN	Make a GSM call
AT+CQCPREC=1,qcp C:/Audio/20080420_120530.qcp OK	Start recording form remote path during GSM call **NOTE** GSM call is only applicable to QCP file
AT+CQCPSTOP	Stop sound recording

OK	
AT+CHUP VOICE CALL: END: 000117 OK	Hang up the current call.
ATD1500000****; OK VOICE CALL: BEGIN	Make a UMTS call
AT+CQCPREC=1,amr C:/Audio/20080420_120555.amr OK	Start recording form remote path during UMTS call **NOTE** UMTS call is applicable to AMR or QCP file
AT+CQCPSTOP OK	Stop sound recording
AT+CHUP VOICE CALL: END: 000117 OK	Hang up the current call.

20.3.2 Play audio file

Commands and Responses	Comments
AT+CCAMEPLAY=” 20080420_120303.amr”,0 OK	Play audio file
AT+CCMXPAUSE OK	Pause playing
AT+CCMXRESUME OK	Resume playing
AT+CCMXSTOP OK	Stop playing
ATD1381234****; OK VOICE CALL: BEGIN	Make a GSM call
AT+CCAMEPLAY=” 20080420_120407.qcp”,3 OK	Play audio file on both path **NOTE** GSM call is only applicable to QCP file
AT+CHUP VOICE CALL: END: 000100 OK	Hang up the current call.
ATD1500000****; OK VOICE CALL: BEGIN	Make a UMTS call

AT+CCAMEPLAY=” 20080420_1202407.amr”,3 OK	Play audio file on both path **NOTE** UMTS call is only applicable to AMR file
AT+CHUP VOICE CALL: END: 000100 OK	Hang up the current call.

20.4 Camera Commands

20.4.1 Take picture

Commands and Responses	Comments
AT+CCAMS OK	Start camera
AT+CCAMSETD=320,240 OK	Set camera dimension
…… ……	Set other parameters supported
AT+CCAMTP OK	Take picture
AT+CCAMEP C:/Picture/20080420_120303.jpg OK	Save picture
AT+CCAME OK	Stop camera

20.4.2 Record video

Commands and Responses	Comments
AT+CCAMS OK	Start camera
AT+CCAMSETD=176,144 OK	Set camera dimension
AT+CCAMSETF=0 OK	Set FPS
…… ……	Set other parameters supported
AT+CCAMRS C:/Video/20080420_123003.mp4	Start video record

OK	
AT+CCAMRP OK	Pause video record
AT+CCAMRR OK	Resume video record
AT+CCAMRE OK	Stop video record
AT+CCAME OK	Stop the camera

20.5 Video Call Commands

20.5.1 Unsolicited Indications of Video Call

Indications	Comments
VPINCOM <number>	Indicate an incoming video call and caller information is sent. <number> is caller's phone number of remote party, and this indication will be reported per sis seconds, and reported until answered or released. For automatic answering video call, refer to AT+AUTOANSWER and ATS0.
VPACCEPT	Indicate that video call is in the process of being set up.
VPRINGBACK	Indicate that remote party (other side) is located and ringing.
VPSETUP	Indicate that video call is set up end-to-end.
VPCONNECTED	Indicate that video protocols are set up and video call is connected.
VPEND[: <seconds>]	Indicate that video call has ended. <seconds> is the duration of video call, from VPCONNECTED to VPEND and the unit is in second.
MISSED_VIDEO_CALL: <datatime>,<number>	Indicate that an incoming video call is missed. <datatime> denotes when this indication is reproted, and the format is yy/MM/dd,hh/mm/ss, where characters indicate year (two last digits), month, day, hour, minutes, seconds. <number> is caller's phone number.

+VPRXDTMF: <user_input>	Indicate that a user input was received from remote party. <user_input> is DTMFs tone from remote party, and consisted of (0-9, *, #). **NOTE** DTMFs are sent as an H.245 User Input Indication message (basic string).

20.5.2 Call Flows – Video Call Origination

Commands and Responses	Comments
AT+VPSOURCE=2,"pic.jpg" OK	Set TX source
AT+VPRECORD=3 OK	Start recording video
AT+VPMAKE="123456789" VPACCEPT OK VPRINGBACK VPSETUP VPCONNECTED	Make video call
AT+VPRECORD=0 OK	Stop recording video
AT+VPSOURCE=1 OK	Switch TX source
AT+VPRECORD=1 OK	Start recording video
AT+VPRECORD=0 OK	Stop recording video
AT+VPEND OK VPEND	End video call

20.5.3 Call Flows – Video Call Termination

Commands and Responses	Comments
VPINCOM 987654321	Report incoming call
AT+VPSOURCE=2,"pic.jpg" OK	Set TX source
AT+VPRECORD=3 OK	Start recording video
AT+VPANSWER	Answer video call

OK VPSETUP VPCONNECTED	
AT+VPRECORD=0 OK	Stop recording video
AT+VPSOURCE=3,”vp.mp4” OK	Switch TX source
AT+VPRECORD=2 OK	Start recording video
AT+VPRECORD=0 OK	Stop recording video
AT+VPEND OK VPEND	End video call

20.6 File Transmission Flow

The Module supports to transmit files from the Module to PC host and from PC host to the Module over Xmodem protocol. During the process of transmission, it can not emit any AT commands to do other things.

20.6.1 File transmission to PC host

Step1. Select file for transmission to PC host

After HyperTerminal is OK for emitting AT commands, it must select a file by one of following methods:

①. Select directory as current directory by AT+FSCD, and then select file with parameter <dir_type> of AT+CTXFILE is 0 or omitted. [Figure 17-1]

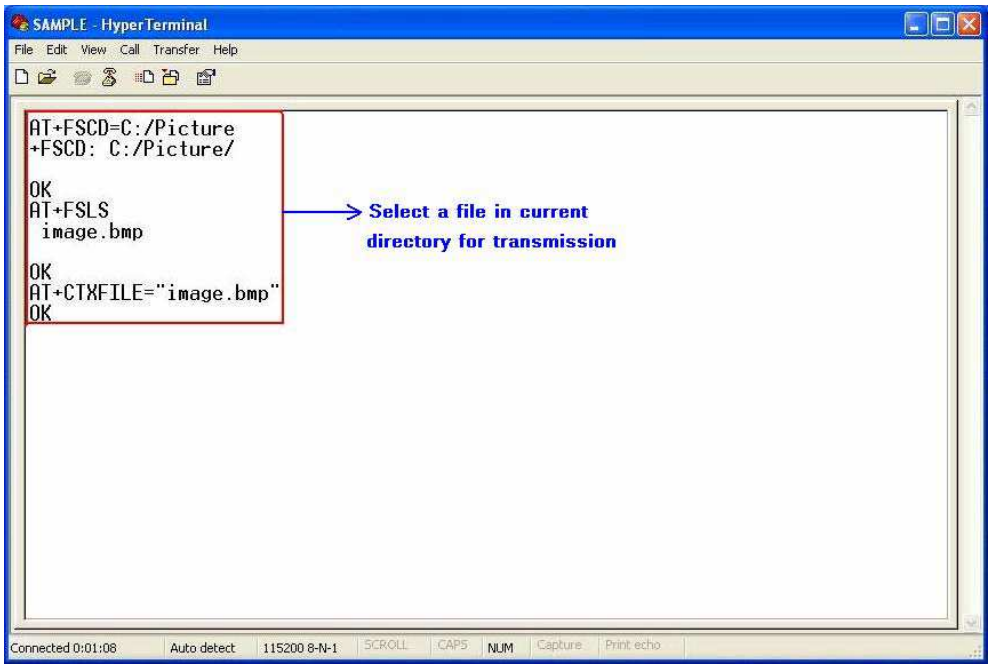

Figure 17-1 Select file for transmission

②. Select the file directly with subparameter <dir_type> of AT+CTXFILE is not 0 and not omitted; this method is a shortcut method for limited directories. [Figure 17-2]

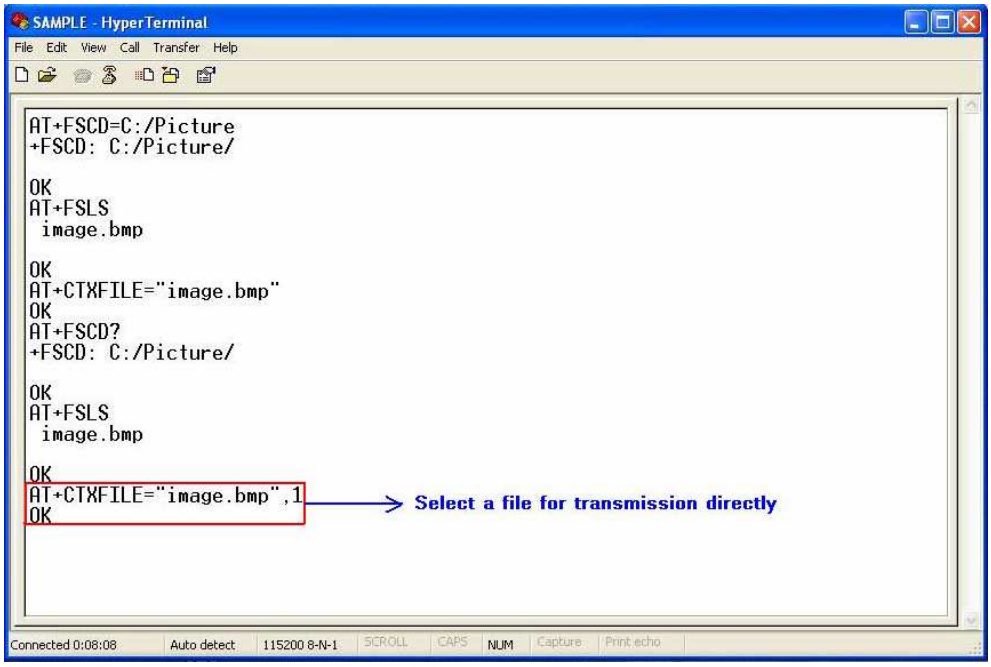

Figure 17-2 Select file directly for transmission

Step2. Open "Receive File" dialog box

After select transmitted file successfully, use "Transfer>Receive File…" menu to open "Receive File" dialog box in HyperTerminal. [Figure 17-3]

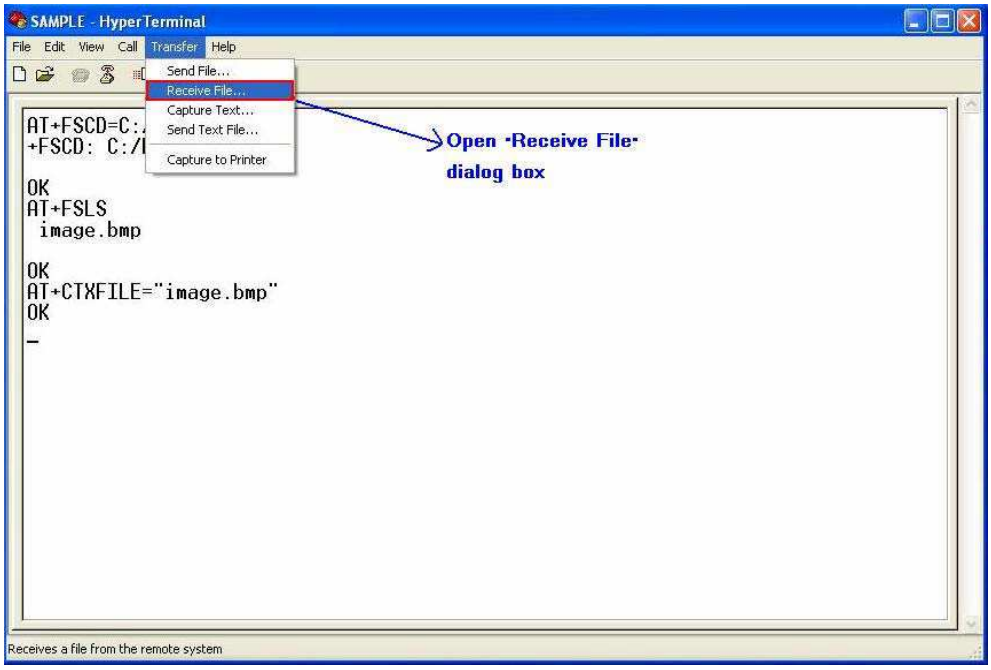

Figure 17-3 Open "Receive File" dialog box

Step3. Set storage place and receiving protocol

In "Receive File" dialog box, set the storage place in PC host where file transmitted is saved in text box, and select receiving protocol in combo box.

Then click "Receive" button to open "Receive Filename" dialog box. [Figure 17-4]

NOTE The receiving protocol must be "Xmodem" protocol.

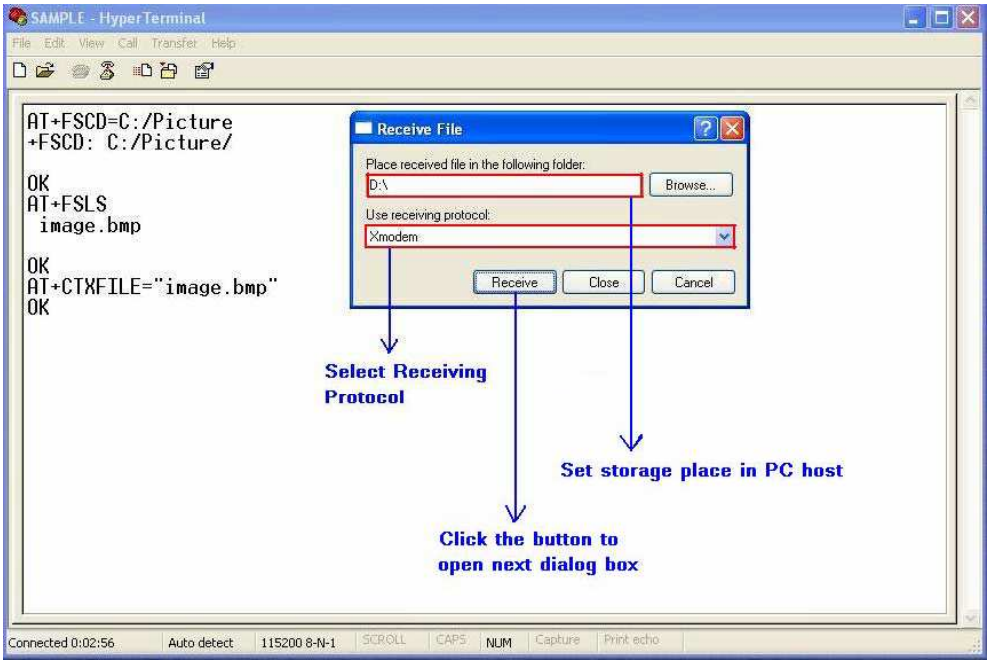

Figure 17-4 Storage place and receiving potocol

Step4. Set file name

In “Receive Filename” dialog box, input file name in “Filename” text box. And then click “OK” button to start transmitting file. [Figure 17-5]

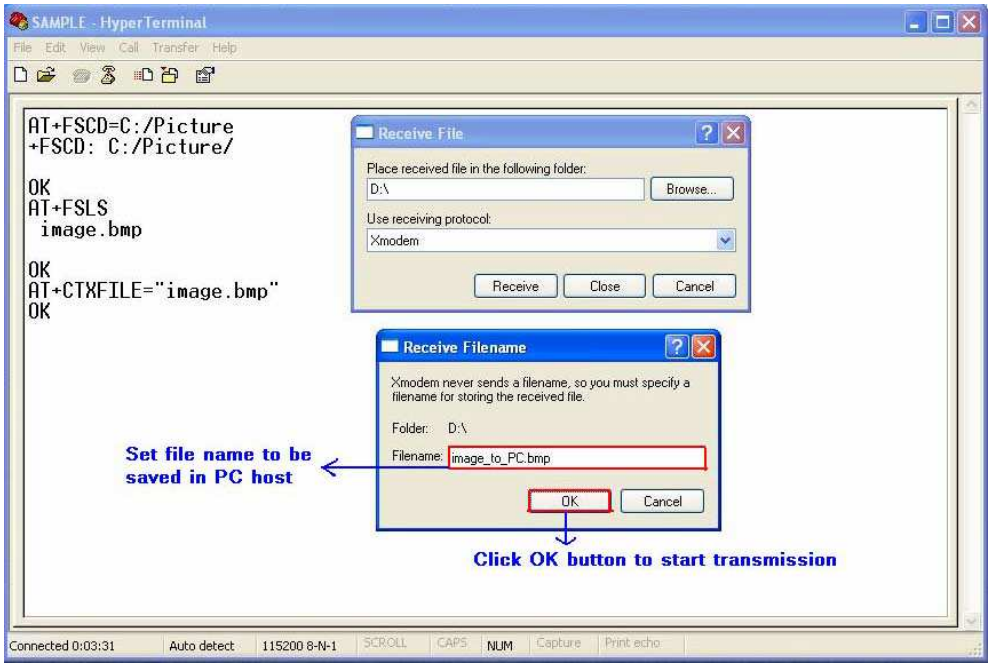

Figure 17-5 Set file name

Step5. Transmit the file

After start file transmission, it can’t emit any AT commands utill transmission stops. In “Xmodem file receive” dialog box, it will display the process of transmission. [Figure 17-6]

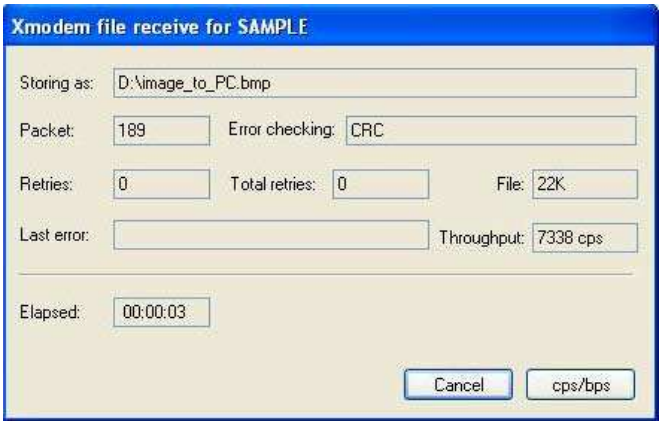

Figure 17-6 Xmodem file receive

If cannel the transmission, HyperTerminal will prompt “Transfer cancelled by user”. [Figure 17-7]

Figure 17-7 Cancel transmission

After transmission successfully, the receiving dialog box is closed and it can emit AT commands in HyperTerminal. [Figure 17-8]

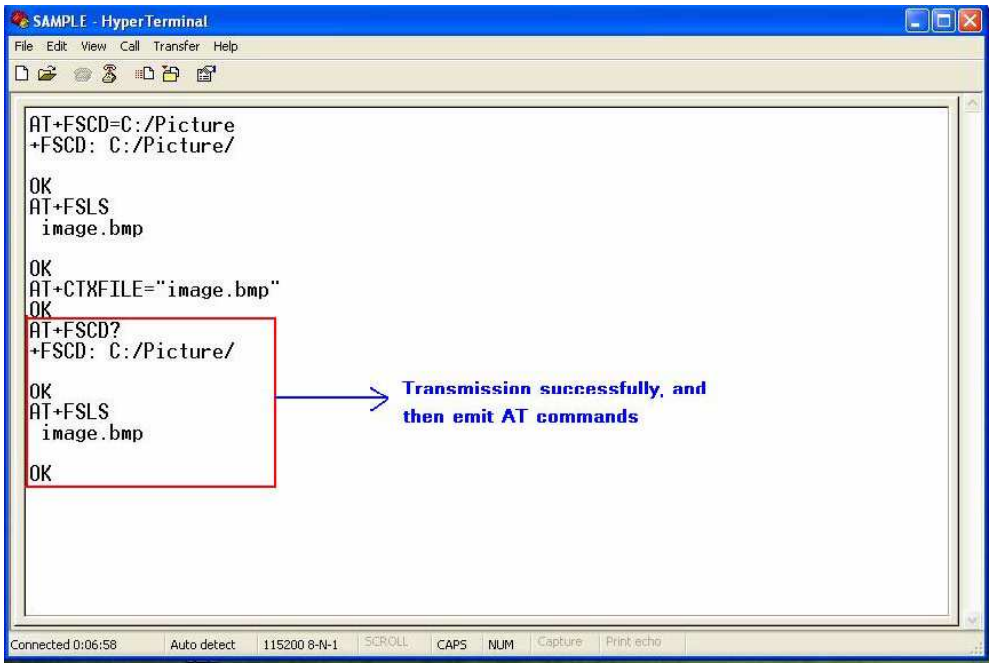

Figure 17-8 Transmission successfully

20.6.2 File received from PC host

Step1. Set file name and storage place

Firstly, it must set file name and storage place in file system of module by one of following methods:

①. Select directory as current directory by AT+FSCD, and then set file name and storage place as current directory with parameter <dir_type> of AT+CRXFILE is 0 or omitted. [Figure 17-9]

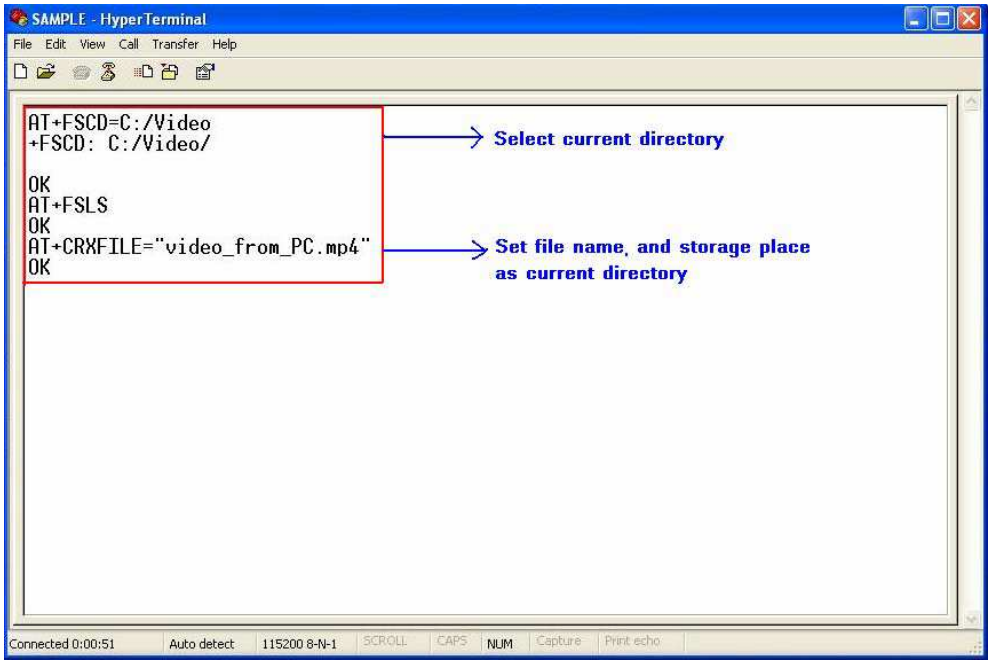

Figure 17-9　Set file name and storage place

②. Set storage place directly with parameter <dir_type> of AT+CTXFILE is not 0 and not omitted; this method is a shortcut method for limited directories.

Step2. Open "Send File" dialog box

After set file name and storage place successfully, use "Transfer>Send File…" menu to open "Send File" dialog box in HyperTerminal. [Figure 17-10]

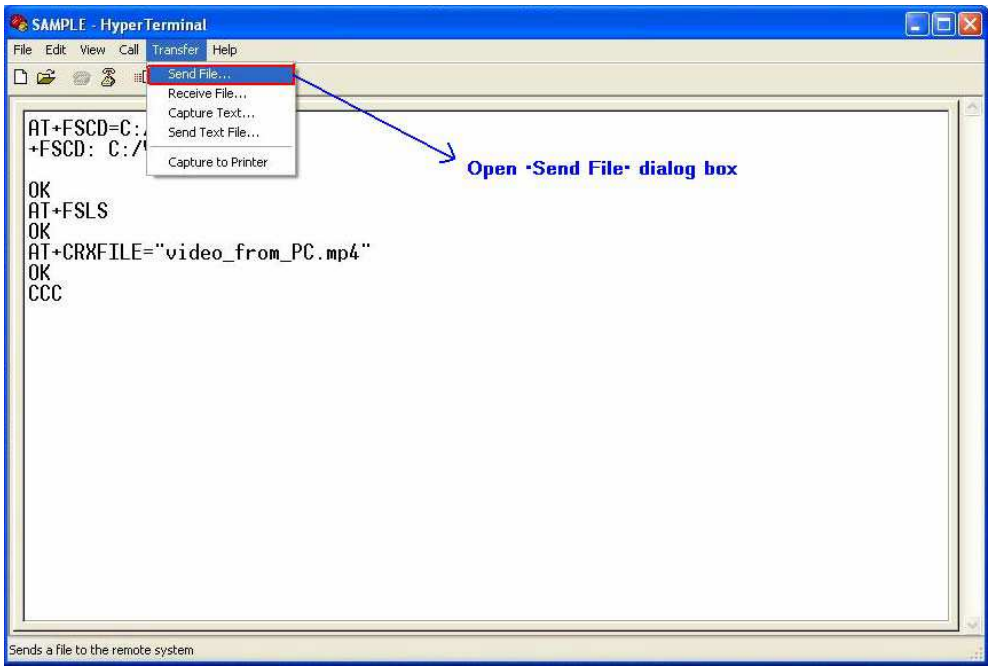

Figure 17-10　Open "Send File" dialog box

Step3. Select file and transmitting protocol

In "Send File" dialog box, select the file to be transmitted in text box, and select the transmitting protocol in combo box. Then click "Send" button to start transmission. [Figure 17-11]

NOTE　The transmitting protocol must be "Xmodem" protocol.

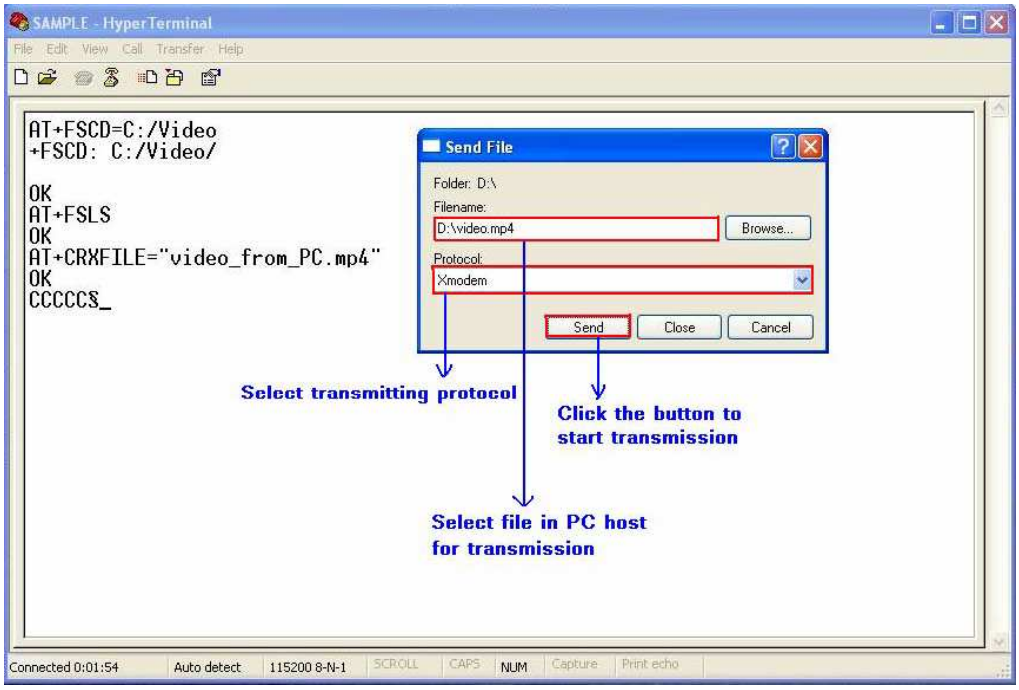

Figure 17-11 Select file and protocol

Step4. File transmission

After start file transmission, it can't emit any AT commands utill transmission stops. In "Xmodem file send" dialog box, it will display the process of transmission. [Figure 17-12]

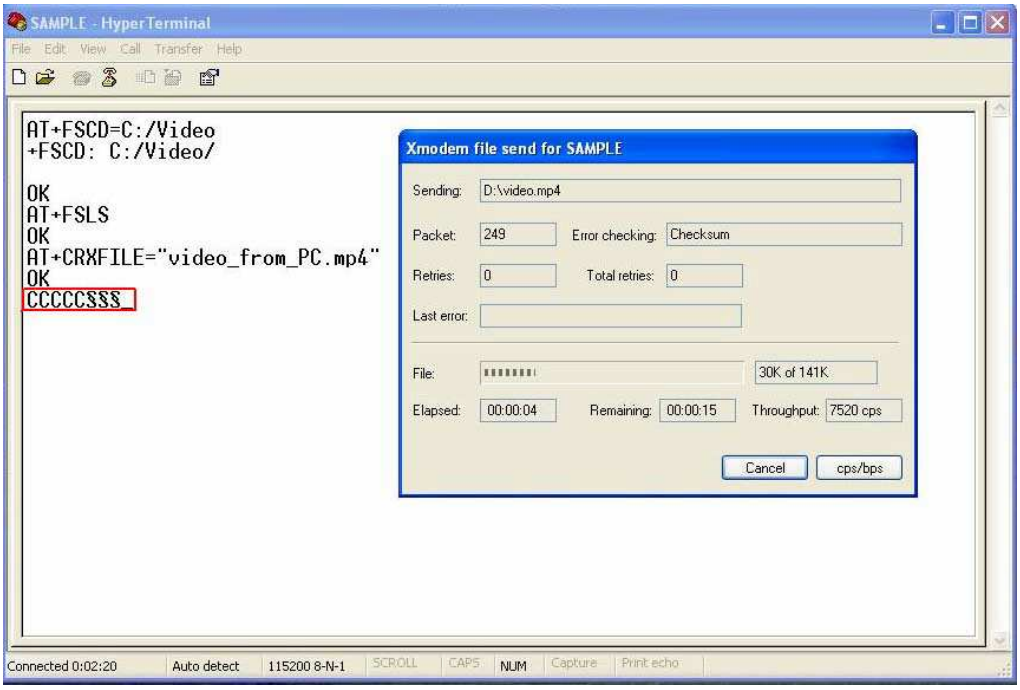

Figure 17-12 The process of file transmission

If cannel the transmission, HyperTerminal will prompt "Transfer cancelled by user".

NOTE There may be some characters reported which denote interactions between module and PC host.