

M5312 AT Command Interface Specification

NB-IoT Series

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China Mobile IoT Company Limited

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1 INTRODUCTION

This document will describe all AT commands implemented in SDK. Due to the SDK will support various chips of RDA Microelectronics, and the SDK will support various product types. Not all AT commands will and can be supported in any one target.

1.1 AT Command Syntax

The AT, at, aT or At prefix must be set at the beginning of each command line. To terminate a command line enter <CR>.

A/ is a special case. When A/ is received, the previous command line will be handled immediately. Neither AT prefix nor <CR> are needed.

+++ is another special case. Strictly speaking, it is not an AT command. Rather, it is escape input sequence to indicate DCE switch from data mode or PPP online mode to command mode.

AT commands can be split into three categories syntactically: *basic*, *S parameter* and *extended*.

Basic Syntax

These AT commands have the format of AT<x><n>, or AT&<x><n>, where <x> is the Command, and <n> is the argument for that Command. An example of this is ATE<n>, which tells the DCE whether received characters should be echoed back to the DTE according to the value of <n>. <n> is optional and a default will be used if missing.

S Parameter Syntax

These AT commands have the format of ATS<n>=<m>, where <n> is the index of the S register to set, and <m> is the value to assign to it. <m> is optional; if it is missing, then a default value is assigned.

Extended Syntax

These commands can operate in several modes, as in the following table:

Execution	AT+<x>
Write Command	AT+<x>=<...>
Read Command	AT+<x>?
Test Command	AT+<x>=?

1.2 AT Command Line

Several AT commands can be combined into one command line. AT command line if started with *AT* prefix, and terminated with <CR>. Extended commands should be separated by semicolon (;). And semicolon can't be inserted between basic commands or S parameter commands.

Empty AT command line (AT<CR>) is valid. DCE will return *OK*.

Before <CR> is encountered, AT command line is buffered, and no AT commands will be processed. The maximum size of AT command line buffer can be configured in SDK. When the maximum size is exceeded, buffered data will be dropped silently, and AT prefix will be searched again.

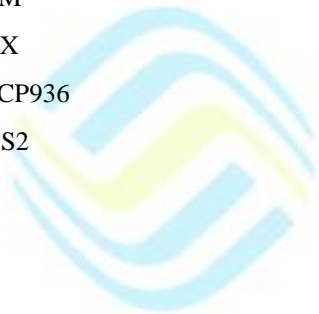
When all commands can be handled successfully, *OK* will be responded. When any command in the command line is failed, *ERROR* will be responded, and following commands in the command line will be dropped.

When a series of AT commands will be send to DCE in separated lines, DTE **MUST** wait final response of the previous command line before send next command line.

1.3 Character Set

The default character set of AT command interface is IRA character set. The following character sets are supported:

- GSM
- HEX
- PCCP936
- UCS2



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2 GENERAL COMMANDS

2.1 A/ Repeat last command

Comman	Possible response(s)
A/	

Reference: V.25ter

Description

If the prefix "A/" or "a/" is received, the DCE shall immediately execute once again the body of the preceding command line. No editing is possible, and no termination character is necessary. A command line may be repeated multiple times through this mechanism, if desired. Responses to the repeated command line shall be issued using the parity and format of the original command line, and the rate of the "A". If "A/" is received before any command line has been executed, the preceding command line is assumed to have been empty (that results in an OK result code).

2.2 AT+CPOF Switch Off Mobile Station

Switch off mobile station.

Command	Possible response
Test Command	AT+CPOF=?
Read Command	AT+CPOF?
Exec Command	AT+CPOF

Description

Device will be switched off (power down mode) Do not send any command after this command.

Response

+CPOF: MS OFF

OK

+CME ERROR.

Test this command will lead to the dev board switch off. But as soon as the board switches off, it will automatically power on.

Example

AT+CPOF

+CPOF: MS OFF

OK

[Device will be switched off (power down mode)]

2.3 ATSO Automatic Answering

Description

This S-parameter controls the automatic answering feature of the DCE. If set to 0, automatic answering is disabled. If set to a non-zero value, the DCE shall cause the DCE to answer when the incoming call ringing has occurred the number of times indicated by the value.

Comman	Possible response
ATSO=?	0-255
ATSO?	<n>
ATSO=[n]	OK

Parameter

<n>:

The auto answering times, range from 0~255.

Remark

If set to 0, auto answering is disabled. This command is specially used on data service in GPRS mode.

Example

ATSO=2
OK

ATSO=?
0-255
OK

ATSO?
2
OK

2.4 ATS3 Response Formatting Character

Description

This S-parameter represents the decimal IA5 value of the character recognized by the DCE from the DTE to terminate

an incoming command line. It is also generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S4 parameter.

Comman	Possible response
ATS3?	<n>

Parameter

<n>:

Command line termination character 0~13(default)~31

Remark

Using other value than 13 may cause problems when entering commands. If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

Example

2.5 ATS4 Response Formatting Character

Description

This S-parameter represents the decimal IA5 value of the character generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.

Comman	Possible response
ATS4?	<n>

Parameter

<n>:

Command line termination character 0~10(default)~31

Remark

If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

Example

2.6 ATS5 Command Line Editing Character

Description

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

Comman	Possible response
ATS5?	<n>

Parameter

<n>:

Command line termination character 0~8(default)~31

Remark

If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

Example

2.7 +++ Switch From Online Data Or Ppp Mode To Online Cmd Mode

Description

Return to online command state from online data state.

Comman	Possible response
+++	OK

Response

OK If value is valid.

ERROR If value is not recognized or not supported.

Example

2.8 ATO Switch From Command Mode To Data Mode/ppp Online Mode

Description

Causes the DCE to return to online data state and issue a CONNECT or CONNECT text result code.

Command	Possible response
ATO[<value>]	CONNECT<text>

Parameter

<value>:

[0] Switch from command mode to data mode.

Remark

If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

Example

ATO0

CONNECT

2.9 AT&F Set All Current Parameters To Manufacturer Defaults

Description

This command instructs the DCE to set all parameters to default values specified by the manufacture, which may take hardware configuration switches and other manufacture-defined criteria into consideration.

Command	Possible response
AT&F[<value>]	OK

Parameter

<value>

[0] Set all TA parameters to manufacturer defaults. (other) Reserved for manufacture proprietary use.

Remark

- List of parameters reset to manufacturer default can be found in Section.
- In addition to the default profile, you can store an individual one with AT&W. To alternate between the two profiles enter either ATZ (loads user profile) or AT&F (restores factory profile).

Example

AT&F

OK

2.10 ATV Set Result Code Format Mode

Description

The setting of this parameter determines the contents of the header and trailer transmitted with result codes and information responses. It also determines whether result codes are transmitted in a numeric form or an alphabetic (or "verbose") form. The text portion of information responses is not affected by this setting.

Command	Possible response
ATV[<value>]	0

Parameter

<value>:

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

code><CR><LF>

Remark

Following table shows the effect of the setting of this parameter on the format of information text and result codes. All references to cr mean "the character with the ordinal value specified in parameter S3"; all references to lf likewise mean "the character with the ordinal value specified in parameter S4"

V0	V1
<text><cr><lf>	<cr><lf> <text><cr><lf>
<numeric code><cr>	<cr><lf><verbose code><cr><lf>

Example

ATV1

<CR><LF><text><CR><LF>

<CR><LF><verbose code><CR><LF>

2.11 ATE Enable Command Echo

Description

This setting determines whether or not the TA echoes characters received from TE during command state.

Command	Possible response
ATE[<value>]	OK

Parameter

<value>:

- 0 Echo mode off
- 1 Echo mode on

Remark

In case of using the command without parameter, <value> is set to 0.

Example

ATE

OK

2.12 AT&W Stores Current Configuration To User Defined Profile

Description

This command stores the currently set parameters to a user defined profile in the non-volatile memory.

Command	Possible response
AT&W[<value>]	OK

Parameter

<value>:

0 Profile number

Remark

- The user defined profile will be restored automatically after power-up. Use ATZ to restore user profile and AT&F to restore factory settings. Until the first use of AT&W, ATZ works as AT&F.
- A list of parameters stored to the user profile can be found in Section chapter 29, appendix B, AT Command Settings storable with AT&W.

Example

ATE
OK

2.13 ATQ Set Result Code Presentation Mode

Description

This parameter setting determines whether or not the DCE transmits result codes to the DTE.

Command	Possible response
ATQ[<value>]	OK

Parameter

<value>:

0 DCE transmits result code 1 Result codes are suppressed and not transmitted

Example

ATQ0
OK
ATQ1

ATQ

OK

2.14 ATX Set Connect Result Code Format And Call Monitoring

Description

This parameter setting determines whether or not the DCE detects the presence of dial tone and busy signal and whether or not DCE transmits particular result codes.

Command	Possible response
ATX[value]	<value> = 0, 1, 2, 3, 4;

Parameter

<value>:

- 0 CONNECT result code only returned; dial tone and busy detection are both disable.
- 1 CONNECT <text> result code only returned; dial tone and busy detection are both disable.
- 2 CONNECT <text> result code returned; dial tone detection is enabled, busy detection is disabled.
- 3 CONNECT <text> result code returned, dial tone detection is disabled, busy detection is enabled.
- 4 CONNECT <text> result code returned; dial tone and busy detection are both enabled.

2.15 ATZ Set All Current Parameters To User Defined Profile

Description

This command instructs the DCE to set all parameters to their factory defaults as specified by the manufacturer.

Command	Possible response
ATZ[<value>]	OK

Parameter

<value>:

- 0 The default configure of the manufacturer. (other) Not be used.

Remark

- First the profile will be set to factory default (see AT&F). If there is a valid user profile (stored with AT&W), this profile will be loaded afterwards.
- Any additional commands on the same command line may be ignored. A delay of 300 ms is required before next command is sent; otherwise "OK" response may be corrupted.

2.16 AT+CFUN Set Phone Functionality

Description

Set command currently can only be used to switch off and on the CSW platform.

Command	Possible response
AT+CFUN=?	+CFUN : (list of supported <fun>s), (list of supported <rst>s)
AT+CFUN?	+CFUN:<fun>
AT+CFUN=<fun>[,<rst>]	OK

Parameter

<value>:

<fun>:

- 0 Minimum functionality
- 1 Full functionality
- 4 Disable phone both transmit and receive RF circuits

<rst>

- 0 Do not reset the MT before setting it to <fun> power level.
- 1 Reset the MT before setting it to <fun> power level.

NOTE: this shall be always default when <rst> is not given.

Remark

Current, only Parameter 0 and 1 is support. When <fun> equals to 0 and 1, the second parameter <rst> is ignored. For CSW only do the de-registering when switch off, when parameter is set by 0 or 1, CSW will operate the network job independent. If AT modem can't register the network when parameter is set to 5, please check pin1 status.

Example

```
AT+CFUN=0
```

```
OK
```

```
AT+CFUN?
```

```
+CFUN:0
```

```
OK
```

2.17 AT+CMEE Report Mobile Equipment Error

Description

This command controls the presentation of the result code +CME ERROR: <err> that indicates errors relating to ME functionality.

Command	Possible response
AT+CMEE=?	OK
AT+CMEE?	+CMEE : <n>
AT+CMEE=<n>	+CMEE : <n>

Parameter

<n>:

- 0 Disable +CME ERROR: <err> code and use ERROR instead
- 1 Enable +CME ERROR: <err> code and use numeric <err> values (refer next sub clause)
- 2 Enable +CME ERROR: <err> result code and use verbose <err> values refer next sub clause)

Remark

When enable the result code, MT related errors cause +CME ERROR: <err> final result code instead of the regular ERROR final result code. ERROR is returned normally when error is related to syntax, invalid parameters, or TA functionality.

Example

AT+CMEE=1

OK

AT+CMEE=5

+CME ERROR:53

at+cmee=?

+CMEE: (0-2)

OK

at+cmee?

+CMEE: 1

OK

2.18 AT+CSCS Select TE Character Set

Description

Write command informs DCE which character set <chset> is used by the TE. DCE is then able to convert character strings correctly between TE and ME character sets.

Command	Possible response
AT+CSCS=?	+CSCS: (list of supported < chset >s)
AT+CSCS?	+CSCS: (list of supported < chset>s)
AT+CSCS=[<chset>]	OK

Parameter

<chset>:

- "GSM" GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems.
- "UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646 [32]); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99.
- "HEX" Hexadecimal mode. No character set used ; the user read or write directly hexadecimal values.
- "PCCP936" PC Set Chinese character.

Remark

This command is used to read and write phonebook entries. SMS doesn't effected by this command.

Example

```
AT+CSCS="UCS2"
```

```
OK
```

```
AT+CSCS?
```

```
+CSCS: "UCS2"
```

```
OK
```

```
AT+CSCS=?
```

```
+CSCS: ("GSM","HEX","PCCP936","UCS2")
```

```
OK
```

2.19 AT+CMUX Multiplexing Mode

Description

This command is used to enable the multiplexing protocol control channel.

Command	Possible response
AT+CMUX=?	+CMUX: (list of supported <transparency>s)
AT+CMUX?	+CMUX: <transparency>
AT+CMUX=<transparency>	OK

Parameter

<transparency>: 0 Basic option

Remark

At present we only support basic mode, if you want use this command, please contact CMIOT software engineer

Example

AT+CMUX=0

OK

AT+CMUX=?

+CMUX: (0)

OK

AT+CMUX?

+CMUX: 0

OK

2.20 AT+ICF DTE DCE Character Framing

Command	Possible response(s)
+ICF=[<format>[,<parity>]]	
+ICF?	+ICF: <format>,<parity>
+ICF=?	+ICF:(list of supported <format> values) ,(list of supported <parity> values)

Reference: V.25ter

Description

This extended-format compound parameter is used to determine the local serial port start-stop (asynchronous) character framing that the DCE shall use while accepting DTE commands and while transmitting information text and result code, if this is not automatically determined.

Parameters

<format> determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame.

0	auto detect
1	8 data, 2 stop
2	8 data, 1 parity, 1 stop
3	8 data, 1 stop
4	7 Data 2 Stop
5	7 Data 1 Parity 1 Stop
6	7 Data 1 Stop

<parity> determines how the parity bit is generated and checked, if present (when format is 2 or 5).

0	Odd
1	Even
2	Mark
3	Space

Note: chracter framing auto detect is not supported.

2.21 AT+IPR Set Fixed Local Rate

Command	Possible response(s)
+IPR=<rate>	
+IPR?	+IPR: <rate>
+IPR=?	+IPR: (list of supported autodetectable <rate> values)[,(list of fixed only <rate> values)]

Reference: V.25ter

Description

This numeric extended-format parameter specifies the data rate at which the DCE will accept commands, in addition to 1200 bit/s or 9600 bit/s

Parameters

<rate> The <rate> value specified shall be the rate in bits per second at which the DTE-DCE interface should operate, e.g. "19 200" or "115 200". The rates supported by a particular DCE are manufacturer-specific; however, the IPR parameter should permit the setting of any rate supported by the DCE during online operation. Rates which include a non-integral number of bits per second should be truncated to the next lower integer (e.g. 134.5 bit/s should be specified as 134; 45.45 bit/s should be specified as 45). If unspecified or set to 0, automatic detection is selected for the range determined by the DCE manufacturer.

2.22 AT+GMM Request TA Model Identification

Description

This command request TA model identification (may equal to +CGMM)

Command	Possible response
AT+GMM=?	OK
AT+GMM	<model>

Parameter

<model>:

the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Example

AT+GMM

GSM Ultimate Data Device

OK

2.23 AT+CGMM Request Model Identification

Description

This command causes the TA to return one or more lines of information text <model>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the specific model of the MT to which it is connected to. Typically, the text will consist of a single line containing the name of the product, but manufacturers may choose to provide more information if desired. Refer to subclause 9.2 for possible <err> values.

Command	Possible response
AT+CGMM=?	OK
AT+CGMM	<model>

Parameter

<model>:

the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Example

```
AT+CGMM
GSM Ultimate Data Device
OK
```

2.24 AT+GMR Request Revision Identification

Description

This command request TA revision identification (may equal to +CGMR)

Command	Possible response
AT+GMR=?	OK
AT+GMR	<revision>

Parameter

<revision>:

the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Example

```
AT+GMR
M5312-PBRH0S00
```

OK

2.25 AT+ CGMR Request Revision Identification

Description

This command causes the TA to return one or more lines of information text <revision>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the version, revision level or date, or other pertinent information of the MT to which it is connected to. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide more information if desired. Refer subclause 9.2 for possible <err> values.

Command	Possible response
AT+CGMR=?	OK
AT+CGMR	<revision>

Parameter

<revision>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Example

```
AT+CGMR
M5312-PBRH0S00
OK
```

2.26 AT+GMI Request TA Manufacturer Identification

Description

Request TA manufacturer identification (may equal to +CGMI).

Command	Possible response
AT+GMI=?	OK
AT+GMI	<manufacturer>

Parameter

<manufacturer>:

the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Remark

- The user defined profile will be restored automatically after power-up. Use ATZ to restore user profile and AT&F to restore factory settings. Until the first use of AT&W, ATZ works as AT&F.
- A list of parameters stored to the user profile can be found in Section chapter 29, appendix B, AT Command Settings storable with AT&W.

Example

```
AT+GMI
Manufacturer ABC
OK
```

2.27 AT+CGMI Request Manufacturer Identification

Description

This command causes the TA to return one or more lines of information text <manufacturer>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the manufacturer of the MT to which it is connected to. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired. Refer subclause 9.2 for possible <err> values.

Command	Possible response
AT+CGMI=?	OK
AT+CGMI	<manufacturer>

Parameter

<manufacturer>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Example

```
AT+CGMI
Manufacturer ABC
OK
```

2.28 ATI Request Manufacturer Specific Information About The TA

Description

Request manufacturer specific information about the TA (software cannot use this command to determine the capabilities of a TA)

Comman	Possible response
ATI	<module name> <module version>

Parameter

<value>:

may optionally be used to select from among multiple types of identifying information, specified by the manufacturer.. 0 return manufacturer identification, model identification and revision identification of software. (1-255) Reserved for manufacturer proprietary use

Example

```
ATI
CMCC
M5312
M5312-PBRH0S00
OK
```

2.29 AT+CIMI Request International Mobile Subscriber Identity

Description

This command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual active application in the UICC (GSM or USIM) or SIM card which is attached to MT. Refer subclause 9.2 for possible <err> values.

Command	Possible response
AT+CIMI=?	OK
AT+CIMI	<IMSI>

Parameter

<IMSI>:

International Mobile Subscriber Identity (string without double quotes)

Example

```
AT+CIMI
460001033113523
OK
```

2.30 AT+EGMR Read And Write IMEI

Description

This command read IMEI from factory partition,also can write IMEI to factory patition.

Command	Possible response
---------	-------------------

+EGMR=?	+EGMR:
+EGMR=<mode>,<format>,<data>	<IMEI>

Parameter

<mode>: 1 write mode,2 read mode

<format>: 7 only can set this value,to match ap.:

<data>: IMEI number.

Example

```
AT+EGMR=1,7,"1111111111111111"
```

```
+EGMR
```

```
OK
```

```
AT+EGMR=2,7;
```

```
+EGMR:111111111111
```

```
OK
```

2.31 AT+VGR Receive Gain Selection

Description

This refers to the amplification by the TA of audio samples sent from the TA to the computer.

Command	Possible response
AT+VGR=?	+ VGR: (list of supported <n>s)
AT+VGR?	+ VGR:<n>
AT+VGR= <n>	OK

Parameter

<n>: range 5...8. if value equal to 8, then receiver is mute..

Remark

Values larger than 128 indicate a larger gain than nominal. Values less than 128 indicate a smaller gain than nominal. The entire range of 0...255 does not have to be provided. A value of zero implies the use of automatic gain control by the TA

Example

```
AT+ VGR =8
```

```
OK AT+VGR?
```

```
+VGR: 7
```

```
OK
```

AT+VGR=?
+VGR: (5-8)
OK

2.32 AT+CCLK Real Time Clock

Description

This command stores the currently set parameters to a user defined profile in the non-volatile memory.

Command	Possible response
AT+CCLK?	+CCLK: <time>
AT+CCLK=<time>	OK

Parameter

<time>:

string type value, the format is "yy/mm/dd,hh:mm:ss+zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -12...+13). E.g. 6th of May 2005, 22:10:00 GMT+2 hours equals to "05/05/06,22:10:00+08" Note: if <time> equals current date and time or is set to an earlier date, returns +CME ERROR: 21.

Remark

If MT does not support time zone information then the three last characters of <time> are not returned by +CCLK? The format of <time> is specified by use of the +CSDF command The range of the year is from 2000 to 2070

Example

```
AT+CCLK="07/10/25,11:33:40+8"  
OK  
AT+CCLK?  
+CCLK: "07/10/25,11:33:44+8"  
OK  
AT+CCLK=?  
OK
```

2.33 AT+CMER Mobile Termination Event Reporting

Description

This command set or query the sending mode of unsolicited result codes from TA to TE.

Command	Possible response
AT+CMER=?	+CMER: (list of supported <mode>s), (list of supported <key>s), (list of supported <disp>s), (list of supported <ind>s), (list of supported <bfr>s)
AT+CMER?	+CMER: <mode>, <key>, <disp>, <ind>, <bfr>
AT+CMER=[<mode>[,<key>[,<disp>[,<ind>[,<bfr>]]]]]	OK

Parameter

<mode>: 0 buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded 1 discard unsolicited result codes when TA TE link is reserved (e.g. in on line data mode); otherwise forward them directly to the TE 2 buffer unsolicited result codes in the TA when TA TE link is reserved (e.g. in on line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE 3 forward unsolicited result codes directly to the TE; TA TE link specific inband technique used to embed result codes and data when TA is in on line data mode

<key>: 0 no keypad event reporting 1 keypad event reporting using result code +CKEV: <key>,<press>. <key> indicates the key (refer IRA values defined in table in subclause "Keypad control +CKPD") and <press> if the key is pressed or released (1 for pressing and 0 for releasing). Only those key pressings, which are not caused by +CKPD shall be indicated by the TA to the TE. NOTE 1: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting. 2 keypad event reporting using result code +CKEV: <key>,<press>. All key pressings shall be directed from TA to TE. NOTE 2: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.

<disp>: 0 no display event reporting 1 display event reporting using result code +CDEV: <elem>,<text>. <elem> indicates the element order number (as specified for +CDIS) and <text> is the new value of text element. Only those display events, which are not caused by +CDIS shall be indicated by the TA to the TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS 2 display event reporting using result code +CDEV: <elem>,<text>. All display events shall be directed from TA to TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS

<ind>: 0 no indicator event reporting 1 indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to the TE 2 indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE

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

Example

```
AT+CMER=3,0,0,2
OK
+CIEV:battchg,5
+CIEV:signal,99
AT+CMER=?
+CMER:(3),(0),(0),(0,2)
```

```
OK
AT+CMER?
+CMER:3,0,0,2
OK
```

2.34 AT+CEER Extended Error Report

Description

This command causes the TA to return one or more lines of information text <report>, determined by the MT manufacturer, which should offer the user of the TA an extended report of the reason for - the failure in the last unsuccessful call setup (originating or answering) or in call modification; - the last call release; - the last unsuccessful GPRS attach or unsuccessful PDP context activation; - the last GPRS detach or PDP context deactivation. Typically, the text will consist of a single line containing the cause information given by GSM/UMTS network in textual format.

Command	Possible response
AT+CEER=?	OK
AT+CEER	+CEER: <report>

Parameter

<report>: the total number of characters, including line terminators, in the information text shall not exceed 2041 characters. Text shall not contain the sequence 0<CR> or OK<CR>

Example

```
AT+CEER = ?
OK
ATD13501275915;
OK
BUSY
AT+CEER
+CEER: CALL RELEASED, NETWORK SENT UDUB TO ME
OK
```

2.35 AT+CPAS Phone Activity Status

Description

This command returns the activity status <pas> of the MT. It can be used to interrogate the MT before requesting action from the phone. Refer subclause 9.2 for possible <err> values.

Command	Possible response
AT+CPAS=?	+CPAS: (list of supported <pas>s)
AT+CPAS	+CPAS: <pas>

Parameter

<pas>: 0 ready (MT allows commands from TA/TE) 1 unavailable (MT does not allow commands from TA/TE) 2 unknown (MT is not guaranteed to respond to instructions) 3 ringing (MT is ready for commands from TA/TE, but the ringer is active) 4 call in progress (MT is ready for commands from TA/TE, but a call is in progress) 5 asleep (MT is unable to process commands from TA/TE because it is in a low functionality state) also all other values below 128 are reserved by the present document.

Example

```
at+cpas=?
+cpas:0,1,3,4

Ok

At+cpas
+cpas:0

ok
```

2.36 AT+CSCLK Set Low Clock Mode

Description

This command is used to set low clock mode.

Command	Possible response
AT+CSCLK=?	CSCLK: (list of supported
AT+CSCLK=<n>	CSCLK: <CSCLK>

Parameter

<pas>: 0 Disable slow clock 1 Enable slow clock mode, use DTR to control slow clock, when DTR is set high, enable slow clock, otherwise disable slow clock. 2 Set slow clock mode automatically, disable slow clock when uart receive or send data, otherwise enable slow clock.

Example

```
AT+CSCLK=?
CSCLK:(0,1,2)

OK

At+CSCLK=1
```

OK

2.37 FA Default command handler for return error

Description

This command is used to return an error for default command

Comman	Possible response
FA	+CME ERROR

Parameter None

Example

FA

+CME ERROR

2.38 AT+IFC DTE-DCE local flow control

Description

This comomand is used to control DTE_DCE local flow

Command	Possible response
AT+IFC?	+IFC: <rxfc>,<txfc> OK
AT+IFC=<rxfc>,<txfc>	OK
AT+IFC=?	+IFC: 0,2) ,(0,2) OK

Parameter

<rxfc>:

- 0:disable rx flow control
- 2:enable rx flow control

<txfc>:

- 0:disable tx flow control
- 2:enable tx flow control

Example

```
AT+IFC=2,2
AT+IFC=0,0
Ok
AT+IFC?
+IFC: (0,2),(0,2)
Ok
```

2.39 AT+CIND Set if the indication event send to ate

Description

Set if the indication event send to ate

Command	Possible response
AT+CIND=?	+CIND: (\ "battchg\" , (0-5)) , (\ "signal\" , (0-5)) , (\ "service\" , (0-1)) , (\ "sounder\" , \ " , (0-1)) , (\ "message\" , (0-1)) , (\ "call\" , (0- 1)) ,
AT+CIND?	+CIND: BatteryCharge, Signal, Service, Sounder, Message, Call,
AT+CIND=[<ind>[,<ind>[,...]]]	OK ERROR

Parameter

<value>:

<ind>:if the indication event send to ate

Remark**Example**

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

2.40 AT+NVSETRSRPOFFSET Set rsrpoffset

Description

Command	Possible response
AT+NVSETRSRPOFFSET=<x>	OK

Parameter

<x>:

- x value range 0~100, the true value is x-50

Remark

AT+NVSETRSRPOFFSET=0 sets rsrpoffset to -50 AT+NVSETRSRPOFFSET=50 set rsrpoffset to 0
AT+NVSETRSRPOFFSET=100 set rsrpoffset to 50

Example

2.41 AT+GPIO Set GPIO

Description

Command	Possible response
AT+GPIO=<gpio_id>[,s_dir[,di_val]]	OK

Parameter

<gpio_id>: Integer, gpio id number, now only gpio 0 and 1 supported

<s_dir>: integer, direction value, 0 input, 1 output

<di_val>: Integer, output direction value, 0 low, 1 high

Remark

Example

1) display GP0 input value

AT+GPIO=0,0

+GPIO: gpi 0, input 0

OK

2) display GP1 input value

AT+GPIO=1,0

+GPIO: gpi 1, input 1

OK

3) GP0 output low value

AT+GPIO=0,1,1

+GPIO: gpo 0, output 1

OK

4) GP1 output high value

AT+GPIO=1,1,1

+GPIO: gpo 1, output 1

OK

2.42 AT+CMADC Set ADC

Description

Command	Possible response
AT+CMADC=?	+CMADC: <Apt>
AT+CMADC	+ CMADC: <Voltage>,<Apt>
AT+CMADC=<Apt>	OK ERROR

Parameter

<Voltage>: Integer, value of voltage.

<Apt>: integer, Sampling period 0-7: 122us,1ms,10ms,100,250ms,500ms,1s,2s. The default value is 0(122us).

Remark

Example

2.43 AT+FACTPSN Read And Write SN

Description

This command read SN from factory partition,also can write SN to factory patition.

Command	Possible response
+FACTPSN?	+FACTPSN: <SN>
+FACTPSN=<SN>	OK ERROR

Parameter

<SN>:

the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

Example

AT+FACTPSN="12345678

901234567890"

OK

AT+ FACTPSN?

+FACTPSN:

12345678901234567890

OK

2.44 AT+SELFREGISTER Set DM Functionality

Description

This command is used to switch off and on the DM functionality.

Command	Possible response
AT+CFUN= <OPERATOR>,<FLAG>	OK

Parameter

< OPERATOR>:

< FLAG>:

- 0 close functionality
- 1 open functionality

Remark**Example**

AT+SELFREGISTER=0, 0

OK

AT+SELFREGISTER=0, 1

OK

Note: reset the MT after setting this command .



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3 SIM/PBK COMMANDS

3.1 AT+SIM SIM status checking

Description

Set command to check and return the type and status of SIM specify by user.

Command	Possible response
AT+SIM=?	+SIM: (0-n)
AT+SIM?	ERROR
AT+SIM=<slot id>	+<type>:<status> OK

Parameter

<n>:

integer type, maximum slot identification.

<slot id>:

integer type, slot identification.

<type>:

string type, it should be "SIM" or "USIM" according to the SIM type.

<status>:

ABSENT there is no SIM card in the slot.

NORMAL the SIM in the slot is normal SIM card.

TEST the SIM in the slot is test SIM card.

ABNORMAL the SIM in the slot is abnormal SIM card.

Example

AT+SIM=?

+SIM = (0 - 1)

OK

AT+SIM=0

+USIM: NORMAL

OK

AT+SIM=1

+SIM: ABSENT

OK

AT+SIM?

+CME ERROR: 53

3.2 AT+SIMIF Request SIM type

Description

Execution command return the type of SIM.

Command	Possible response
AT^SIMIF=?	^SIMIF:<1>,<0,1>
AT^SIMIF?	^SIMIF:1,<value>
AT^SIMIF=1,<mode>	^SIMIF: <type> OK

Parameter

<value>:

0: SIM.

1: UICC.

<mode>:

0 value mod.

1 text mode.

<type>:

if mode == 0, SIM card return 0, USIM card return 1.

if mode == 1, SIM card return "SIM", USIM card return "UICC".

Example

AT^SIMIF=?

^SIMIF: (1), (0,1)

OK

AT^SIMIF?

^SIMIF: 1,0

OK

AT^SIMIF=1,0

^SIMIF: SIM

OK

3.3 AT+CCID Request ICC Identification

Description

Execution command causes the TA to return <CCID> in the SIM card.

Command	Possible response
AT+CCID=?	ERROR
AT+CCID?	ERROR
AT+CCID	+CCID:<ccid> OK

Parameter

<ccid>:

string type, the ccid read from SIM card.

Example

AT+CCID

+CCID: 898601061401xxxxxxx

OK

AT+CCID=?

+CME ERROR: 53

AT+CCID?

+CME ERROR: 53

3.4 AT+CPIN Pin Authentication

Description

Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH SIM PIN, etc.).

Command	Possible
AT+CPIN=?	OK
AT+CPIN?	+CPIN:
AT+CPIN=<pin>[,<newpin>]	OK

Parameter

<pin>, <newpin>:

string type values

<code>:

values reserved by the present document:

- READY MT is not pending for any password
- SIM PIN MT is waiting UICC/SIM PIN to be given
- SIM PUK MT is waiting UICC/SIM PUK to be given
- SIM PIN2 MT is waiting active application in the UICC (GSM or USIM) or SIM card PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that MT does not block its operation)
- SIM PUK2 MT is waiting active application in the UICC (GSM or USIM) or SIM card PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that MT does not block its operation)

Remark

Commands which interact with MT that are accepted when MT is pending SIM PIN, SIM PUK, or PH SIM are: +CGMI, +CGMM, +CGMR, D112; (emergency call), +CPAS, +CFUN, +CPIN, +CDIS (read and test command only), and +CIND (read and test command only). Notes: After input three times wrong PIN, SIM card will be locked!

Example

```
AT+CPIN="1234"
```

```
Ok
```

```
AT+CPIN="5678"
```

```
+CME ERROR: 3
```

AT+CPIN="00000000","2134"

+CME ERROR: 16

AT+CPIN="123456578","1234"

OK

AT+CPIN?

+CPIN: READY

3.5 AT^CPINC Total Times Of Access The Sim Card

Description

Remaining times of access the sim card

Command	Possible response
AT^CPINC=?	^CPINC: PIN1&PIN2: (1-3), PUK1&PUK2: (1-10)
AT^CPINC	^CPINC: <rest time>

Example

AT^CPINC

^CPINC:3,10,3,10

OK

3.6 AT+CPIN2 Pin2 Authentication(for Sim)

Description

+CPIN2 controls network authentication of the MT.

Command	Possible
AT+CPIN2=?	OK
AT+CPIN2?	+CPIN2 :
AT+CPIN2=<pin>[,<newpin>]	OK

Parameter

<pin>:

Password (string type), usually SIM PIN2 or, if requested, SIM PUK2

<new pin>:

If the requested code was SIM PUK2: new password (PIN2).

Example

AT+CPIN2=?

OK

AT+CPIN2?

+CPIN2: READY

OK

AT+CPIN2="2345"

OK

3.7 AT+CLCK Facility Lock

Description

This command be used to lock or unlock some functions of the list that be supported by this ME.

Command	Possible response
AT+CLCK=?	+CLCK: (list of supported <fac>s)
AT+CLCK=<fac>,<mode>[,<passwd>[,<classx>]]	+CLCK: <status>[,<class1>[<CR><LF> +CLCK:<status>,<class2>[...]]

Parameter

<fac>:

Type: string type Meaning: values reserved by the present document: * "CS" CNTRL (lock Control surface (e.g. phone keyboard)) * "AO" BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 [6] clause 1) * "OI" BOIC (Barr Outgoing International Calls) (refer 3GPP TS 22.088 [6] clause 1) * "OX" BOIC exHC (Barr Outgoing International Calls except to Home Country) (refer 3GPP TS 22.088 [6] clause 1) * "FD" SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2

<status>:

Type: integer type Meaning: 0 not active 1 active

<passwd>:

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

<classx>:

Type: integer type Meaning: is a sum of integers each representing a class of information (default 7): 1

voice (telephony) 2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) 4 fax (facsimile services) 8 short message service 16 data circuit sync 32 data circuit async 64 dedicated packet access 128 dedicated PAD access

Example

AT+CLCK="SC",1,"1234"

OK

Require lock status

AT+CLCK="SC",2

+CLCK: 1

OK

<Restart system>

AT+CPIN?

+CPIN: SIM PIN

OK

AT+CPIN="1234"

OK

AT+CLCK="SC",0,"1234"

OK

< Restart system >

AT+CPIN?

+CPIN: READY

OK

<.FD: SIM fixed dialing memory, NO support for the moment > <Call barring>

AT+CLCK="OI",1,"0000",255

OK

ATD13560243602;

NO CARRIER

AT+CLCK="OI",2,"0000"

+CLCK: 1,1

+CLCK: 1,2

+CLCK: 1,4

OK

AT+CLCK="AC",0,"0000",3

OK

3.8 AT+CPWD Change Password

Description

This command is used to change password [pin/pin2]

Command	Possible response
AT+CPWD=?	+CPWD: list of supported
AT+CPWD=<fac>,<oldpwd>,<newpwd>	+CPIN: <code>
AT+CPIN=<pin>[,<newpin>]	OK

Parameter

<fac>:

Type: string type Meaning: "P2" SIM PIN2 refer Facility Lock +CLCK for other values

<oldpwd>, <newpwd>:

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

<pwdlength>:

Type: integer type Meaning: maximum length of the password for the facility

Example

AT+CPWD="SC","3333","1234"

Ok

AT+CPIN="5678"

+CME ERROR: 3

AT+CPINC

+CPINC: 2

OK

AT+CPWD="SC","1234","0000"

OK

AT+CPWD="P2","1111","1234"

+CME ERROR: 16

AT+CPINC

+CPINC: 2

OK

AT+CPWD="P2","0000","1234"

OK



中国移动
China Mobile

4 NETWORK SERVICE COMMANDS

4.1 AT+COPN Read Operator Names

Description

The AT Commands described in this chapter are related to various network services. More commands related to this area can be found in Chapter 10, Supplementary Service Commands.

Syntax

Command	Possible response
Test Command AT+COPN=?	OK
Exec Command AT+COPN	<code>'+COPN: <numeric1>,<alpha1>" </code> <code>'[<CR><LF>+COPN: <numeric2>,<alpha2>" </code> <code>'[...]'</code> OK ERROR <code>+CME ERROR:<err></code>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

```
URC1
'+CALA: <text>'
'URC2'
'+SYSSTART ALARM MODE+CALA: <text>'
```

Parameter

<numeric>string type; operator in numeric format (see +COPS).
<alphan>string type; operator in long alphanumeric format (see +COPS).

Remark

“Execute command returns the list of operator names from the MT. Each operator code <numeric> that has an alphanumeric equivalent <alphan> in the MT memory shall be returned. “

Example The following examples show the typical application for this command.

Command	Possible response
AT+COPN	+COPN:+COPN: 46000,"CMCC" +COPN:+COPN: 46001,"China Unicom"
<Note:...>	OK <Note:...>

4.2 AT+COPS Operator Selects

Description

This command be used to select the vender.

Syntax

Command	Possible response
Test Command AT+COPS=?	+COPS: [list of supported (<stat>,long alphanumeric <oper> ,short alphanumeric <oper>,numeric <oper>)s] [.,(list of supported <mode>s),(list of supported <format>s)] +CME ERROR: <err>
Read Command AT+COPS?	+COPS: <mode>[,<format>,<oper>] +CME ERROR: <err>

Set Command AT+COPS=mode[,<format>[,<oper>]]	+CME ERROR: <err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

URC1 +CALA: <text> URC2 +SYSSTART ALARM MODE+CALA: <text>
--

Parameter

<mode>: 0 automatic (<oper> field is ignored) 1 manual (<oper> field shall be present) 2 deregister from network 3 set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> field is ignored); this value is not applicable in read command response 4 manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered
<format>: 0 long format alphanumeric <oper> 2 numeric <oper> <oper>: string type; <format> indicates if the format is alphanumeric or numeric; long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]); numeric format is the GSM Location Area Identification number (refer GSM 04.08 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 2)(network code digit 1)
<stat>: 0 unknown 1 available 2 current 3 forbidden

Remark

Set command forces an attempt to select and register the GSM/UMTS network <oper>. Mode is used to decide the register should be automatic or manual. If the selected mode is manual or manual first, the network should return with a list from which user can select one to register on.

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/UICC, and other networks.

Example The following examples show the typical application for this command.

Command	Possible response
AT+COPS=? <Note : ..>	+COPS: (1,"D2","26202"),(2,"E-Plus","26203"),(0-4),(0,2) OK <Note :...>
AT+COPS?	+COPS:0 OK <Note :...> Register network failed
AT+COPS=3,0 <Set oper format>	OK
AT+COPS?	+COPS: 0,0," CMCC " OK
AT+COPS=3,2	OK
AT+COPS?	+COPS: 0,0,46000 OK

4.3 AT+CREG Network Registration

Description

This command be used to query the register status.

Syntax

Command	Possible response
Test Command AT+CREG=?	+CREG: (list of supported <n>s)
Read Command AT+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>] +CME ERROR: <err>
Set Command AT+CREG=<n>	OK
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

URC1
+CALA: <text>
URC2
+SYSSTART ALARM MODE+CALA: <text>

Parameter

<p><n>:</p> <p>0 disable network registration unsolicited result code</p> <p>1 enable network registration unsolicited result code +CREG: <stat></p> <p>2 enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]</p>
<p><stat>:</p> <p>0 not registered, MT is not currently searching a new operator to register to</p> <p>1 registered, home network</p> <p>2 not registered, but MT is currently searching a new operator to register to</p> <p>3 registration denied</p> <p>4 unknown</p> <p>5 registered, roaming</p>
<p><ci>:</p> <p>string type; two byte cell ID in hexadecimal format</p>

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CREG=1 <Note : ...>	OK <reference URC: +CREG> <Note ...> 1: Enable URC +CREG:<stat> to report status change of network registration
AT+CREG?	+CREG:0,1 OK <reference URC: +CREG> <Note ...> Query the register status of the local and network

4.4 AT+CSQ Signal Quality

Description

This command be used to query the quality of the signal.s

Syntax

Command	Possible response
Test Command AT+CSQ=?	+CSQ: (list of supported <rss>s),(list of supported <ber>s)
Read Command AT+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>] +CME ERROR: <err>
Exec Command AT+CSQ	+CSQ: <rss>,<ber> +CME ERROR: <err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

URC1 +CALA: <text> URC2 +SYSSTART ALARM MODE+CALA: <text>
--

Parameter

<rss>: 0 113 dBm or less 1 111 dBm 2...30 109... 53 dBm 31 51 dBm or greater 99 not known or not detectable
<ber>(in percent): 0...7 as RXQUAL values in the table in GSM 05.08 [20] sub clause 8.2.4 99 not known or not detectable

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CSQ	+CSQ: 13, 99 OK <Note :...>
AT+CSQ=?	+CSQ: (0-31,99),(0-7,99)

4.5 AT+CPOL Preferred Operator List

Description

This command is used to edit the user preferred list of networks in the active application on the UICC (GSM or USIM) or preferred list of networks in the SIM card. Execute command writes an entry in the SIM list of preferred operators (EFPLMNsel), when the SIM card is present or when the UICC is present with an active GSM application. When UICC is present with an active USIM application, execute commands writes an entry in the User controlled PLMN selector with Access Technology list (EFPLMNwAcT), only the PLMN field could be entered, the Access Technologies for each PLMN in this list is not accesible with this command (Note: new command for accessing the Access Technologies for each PLMN in this list is FFS). If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed. Refer subclause 9.2 for possible <err> values.

Note: when adding preferred operator, <format> can only be 2.

Read command returns all used entries from the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card list of preferred operators.

Note: if <format> is 0, but there is no relevant long format alphanumeric <oper>, the numeric <oper> will be returned.

Test command returns the whole index range supported by the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card.

Syntax

Command	Possible response
Test Command AT+CPOL=?	+CPOL: (list of supported <index>s),(list of supported <format>s)+CME ERROR: <err>
Read Command AT+CPOL?	+CPOL: <index1>,<format>,<oper1> [<CR><LF>+CPOL: <index2>,<format>,<oper2>[...]] +CME ERROR: <err>
Set Command AT+CPOL=[<index>][, <format>[,<oper>]]	OK ERROR
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

URC1 +CALA: <text> URC2 +SYSSTART ALARM MODE+CALA: <text>
--

Parameter

<indexn>: integer type; the order number of operator in the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card preferred operator list
<format>: 0 long format alphanumeric <oper> 1 short format alphanumeric <oper> 2 numeric <oper>
<opern>: string type; <format> indicates if the format is alphanumeric or numeric (see +COPS)

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CPOL=?	+CPOL: (1-8),(0,2) OK
AT+CPOL?	+CPOL: 1,2,"46000" OK
AT+CPOL=2,2,"46001"	OK <Note : ..>Add a preferred operator
AT+CPOL?	+CPOL: 1,2,"46000" +CPOL: 2,2,"46001" OK
AT+CPOL=,0	OK <Note : ..>Set the display format as long format alphanumeric<oper>
AT+CPOL?	+CPOL: 1,0,"China Mobile" +CPOL: 2,0,"China Unicom" OK
AT+CPOL=1 AT+CPOL?	OK <Note : ..>Delete the preferred operator with index of 1 +CPOL: 2,0,"China Unicom"
<Note : ..>	OK

4.6 AT+QNITZ Indicate Network Time

Description

Enable or disable indicate network time.

Syntax

Command	Possible response
Test Command AT+QNITZ=?	+QNITZ(0,1) OK
Read Command AT+QNITZ?	+QNITZ<enable> OK
Set Command AT+QNITZ=<enable>Description	OK ERROR +CME ERROR:<err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

None

Parameter

<enable>:
 0 disable sync network time
 1 enable sync network time

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+QNITZ=0	OK
AT+ QNITZ=1	OK
AT+ QNITZ=?	+QNITZ:(0, 1)

4.7 AT+QLTS Query Last Time Satus

Description

Get the last time from network.

Syntax

Command	Possible response
Test Command AT+QLTS=?	OK
Read Command AT+QLTS	+QLTS:<time>,<ds> OK +CME ERROR:<err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

None

Parameter

<time>: string format, yy/MM/dd,hh:mm:ss+zz, means year, month, day, hour, minute, second and time zone(local time and GMT time difference)
<ds>: daylight saving time

Remark

None

Example The following examples show the typical application for this command.

Command	Possible response
AT+QLTS=?	OK
AT+ QLTS	+QLTS:17/5/27,8:37:52+32,0

4.8 AT+CTZU Automatic Update System Time Via Nitz

Description

Set command enables and disables automatic time zone update via NITZ. If setting fails in an MT error, **+CME ERROR: <err> is returned. Refer subclause 9.2 for possible <err> values.**

Read command returns the current settings in the MT.

Test command returns supported on- and off-values as a compound value.

Syntax

Command	Possible response
Test Command AT+ CTZU =?	+CTZU(<mode>) OK
Read Command AT+CTZU?	+CTZU<mode> OK
Set Command AT+ CTZU =<enable>Description	OK ERROR +CME ERROR:<err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

None

Parameter

<mode>:
0: NITZ not update system time
1: NITZ update local time to system
2: NITZ update GMT time to system
3: same as 1
4: same as 2

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CTZU=?	+CTZU:0 OK
AT+CTZU?	+CTZU:0 OK
AT+CTZU=0	AT+CTZU=0 OK

4.9 AT+SETBND Set phone frequency band

Description

Set phone frequency band

Syntax

Command	Possible response
Set Command AT+SETBND=<get_set>[,band]	OK ERROR +CME ERROR:<err>

Unsolicited Result Codes

None

Parameter

<get_set>: 1: get current frequency band set 2: set current frequency band
<band>: can only used when get_set is 1, the frequency band value to set

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+SETBND=1	+SETBND:<value> OK
AT+SETBND=2,<value>	+SETBND:2 OK

4.10 AT+CTEC Set user prefferd rat

Description

Set user preffered rat

Syntax

Command	Possible response
Set Command AT+CTEC=<nCurrentRat>,<nPreferRat>	OK ERROR +CME ERROR:<err>
Read Command AT+CTEC?	OK ERROR +CME ERROR:<err>

Unsolicited Result Codes

None

Parameter

<nCurrentRat>: the current rat value
<nPreferRat>: the preffered rat value

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CTEC=1,2	OK
AT+CTEC?	+CTEC: 1,1 OK

4.11 AT+QSCANF Set UE to scan

*Description

Set UE to scan

Syntax

Command	Possible response
Set Command AT+QSCANF=<band>,<freqs>	OK ERROR +CME ERROR:<err>
Test Command AT+QSCANF=?	+QSCANF:(0-3),(0-1023,9999)

Unsolicited Result Codes

None

Parameter

<band>: the band value to scan
<freqs>: the freqs value to scan

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+QSCANF=3,9999	OK
AT+QSCANF=?	+QSCANF:(0-3),(0-1023,9999) OK

4.12 AT+SDMBS Set Pseudo base station identification

*Description

Set Pseudo base station identification

Syntax

Command	Possible response
Set Command AT+SDMBS=<n>	OK ERROR +CME ERROR:<err>
Test Command AT+SDMBS=?	+SDMBS:(0,1)

Unsolicited Result Codes

None

Parameter

<n>: if enable detect mbs
 0: diable detect mbs
 1: enable detect mbs

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+SDMBS=1	OK
AT+SDMBS=?	+SDMBS:(0,1) OK

4.13 AT+SNWR Set UE rat

*Description

Set UE rat

Syntax

Command	Possible response
Set Command AT+SNWR=<mode>,<simid>[,<rat>]	OK ERROR +CME ERROR:<err>

Unsolicited Result Codes

None

Parameter

<mode>: get or set rat 0: get rat 1: set rat
<simid>: sim index
<rat>: only can set when mode is 1, rat what to set

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
---------	-------------------

AT+SNWR=0,0	+SNWR:1 OK
AT+SNWR=1,0,1	OK

4.14 AT+CEREG EPS network registration status

Description

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

If the UE wants to apply PSM for reducing its power consumption, see +CPSMS command and 3GPP TS 23.682 [149], the set command controls the presentation of an unsolicited result code +CEREG:

<stat>[,<[<tac>],<[<ci>],<[<AcT>]][,<[<cause_type>],<[<reject_cause>]] [,<[<Active-Time>],<[<Periodic-TAU>]]].

When <n>=4 the unsolicited result code will provide the UE with additional information for the Active Time value and the extended periodic TAU value if there is a change of the network cell in E-UTRAN. The value <n>=5 further enhances the unsolicited result code with <cause_type> and <reject_cause> when the value of <stat> changes. The parameters <AcT>, <tac>, <ci>, <cause_type>, <reject_cause>, <Active-Time> and <Periodic-TAU> are provided only if available.

Refer subclause 9.2 for possible <err> values.

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

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

Test command returns values supported as a compound value.

Syntax

Command	Possible response
Test Command AT+CEREG=?	+CEREG: (list of supported <n>s) OK

Read Command AT+CEREG?	when <n>=0, 1, 2 or 3 and command successful: +CEREG: <n>,<stat>[, [<tac>], [<ci>], [<AcT>[, <cause_type>, <reject_cause>]]] when <n>=4 or 5 and command successful: +CEREG: <n>,<stat>[, [<lac>], [<ci>], [<AcT>], [<rac>], [<cause_type>], [<reject_cause>], [<Active-Time>], [<Periodic-TAU>]]] OK
Set Command AT+CEREG=[<n>]	OK ERROR +CME ERROR:<err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes None

Parameter

<n>: integer type 0 disable network registration unsolicited result code 1 enable network registration unsolicited result code +CEREG: <stat> 2 enable network registration and location information unsolicited result code +CEREG: <stat>[, [<tac>], [<ci>], [<AcT>]] 3 enable network registration, location information and EMM cause value information unsolicited result code +CEREG: <stat>[, [<tac>], [<ci>], [<AcT>], [<cause_type>, <reject_cause>]] 4 For a UE that wants to apply PSM, enable network registration and location information unsolicited result code +CEREG: <stat>[, [<tac>], [<ci>], [<AcT>], [, [<Active-Time>], [<Periodic-TAU>]]] 5 For a UE that wants to apply PSM, enable network registration, location information and EMM cause value information unsolicited result code +CEREG: <stat>[, [<tac>], [<ci>], [<AcT>], [, [<cause_type>], [<reject_cause>], [, [<Active-Time>], [<Periodic-TAU>]]]
<stat>: integer type; indicates the EPS registration status 0 not registered, MT is not currently searching an operator to register to 1 registered, home network 2 not registered, but MT is currently trying to attach or searching an operator to register to 3 registration denied 4 unknown (e.g. out of E-UTRAN coverage)

5 registered, roaming 6 registered for “SMS only”, home network (not applicable) 7 registered for “SMS only”, roaming (not applicable) 8 attached for emergency bearer services only (See NOTE 2) 9 registered for “CSFB not preferred”, home network (not applicable) 10 registered for “CSFB not preferred”, roaming (not applicable) NOTE 2: 3GPP TS 24.008 [8] and 3GPP TS 24.301 [83] specify the condition when the MS is considered as attached for emergency bearer services.
<ta>: string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<ci>: string type; four byte E-UTRAN cell ID in hexadecimal format
<AcT>: integer type; indicates the access technology of the serving cell
0 GSM (not applicable) 1 GSM Compact (not applicable) 2 UTRAN (not applicable) 3 GSM w/EGPRS (see NOTE 3) (not applicable) 4 UTRAN w/HSDPA (see NOTE 4) (not applicable) 5 UTRAN w/HSUPA (see NOTE 4) (not applicable) 6 UTRAN w/HSDPA and HSUPA (see NOTE 4) (not applicable) 7 E-UTRAN NOTE 3: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS. NOTE 4: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA
<cause_type>: integer type; indicates the type of <reject_cause>.
0 Indicates that <reject_cause> contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A.

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CEREG=?	+CEREG:0 OK
AT+CEREG?	+CEREG:(0-5) OK
AT+CEREG	OK

4.15 AT+CSCON Signalling connection status

Description

The set command controls the presentation of an unsolicited result code +CSCON. If $\langle n \rangle = 1$, +CSCON: $\langle mode \rangle$ is sent from the MT when the connection mode of the MT is changed. If $\langle n \rangle = 2$ and there is a state within the current mode, +CSCON: $\langle mode \rangle$ [, $\langle state \rangle$] is sent from the MT. If $\langle n \rangle = 3$, +CSCON: $\langle mode \rangle$ [, $\langle state \rangle$ [, $\langle access \rangle$]] is sent from the MT. If setting fails, an MT error, +CME ERROR: $\langle err \rangle$ is returned. Refer subclause 9.2 for possible $\langle err \rangle$ values.

When the MT is in UTRAN or E-UTRAN, the mode of the MT refers to idle when no PS signalling connection and to connected mode when a PS signalling connection between UE and network is setup. When the UE is in GERAN, the mode refers to idle when the MT is in either the IDLE state or the STANDBY state and to connected mode when the MT is in READY state.

The $\langle state \rangle$ value indicates the state of the MT when the MT is in GERAN, UTRAN connected mode or E-UTRAN.

The read command returns the status of result code presentation and an integer $\langle mode \rangle$ which shows whether the MT is currently in idle mode or connected mode. State information $\langle state \rangle$ is returned only when $\langle n \rangle = 2$.

Radio access type information $\langle access \rangle$ is returned only when $\langle n \rangle = 3$.

Test command returns supported values as a compound value.

Syntax

Command	Possible response
Test Command AT+CSCON=?	+CSCON: (list of supported $\langle n \rangle$ s) OK
Read Command AT+CSCON?	+CSCON: $\langle n \rangle$ [, $\langle mode \rangle$ [, $\langle state \rangle$] CME ERROR: $\langle err \rangle$
Set Command AT+CSCON= [$\langle n \rangle$]	OK ERROR +CME ERROR: $\langle err \rangle$
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes None

Parameter

$\langle n \rangle$: integer type
0 disable unsolicited result code
1 enable unsolicited result code +CSCON: $\langle mode \rangle$
2 enable unsolicited result code +CSCON: $\langle mode \rangle$ [, $\langle state \rangle$]
3 enable unsolicited result code +CSCON: $\langle mode \rangle$ [, $\langle state \rangle$ [, $\langle access \rangle$]]
$\langle mode \rangle$: integer type; indicates the signalling connection status

0 idle 1 connected
<state>: integer type; indicates the CS or PS state while in GERAN and the RRC state information if the MT is in connected Mode while in UTRAN and E-UTRAN.
0 UTRAN URA_PCH state 1 UTRAN Cell_PCH state 2 UTRAN Cell_FACH state 3 UTRAN Cell_DCH state 4 GERAN CS connected state 5 GERAN PS connected state 6 GERAN CS and PS connected state 7 E-UTRAN connected state
<access>: integer type; indicates the current radio access type.
0 Indicates usage of radio access of type GERAN, see 3GPP TS 45.001 [146]. 1 Indicates usage of radio access of type UTRAN TDD, see 3GPP TS 25.212 [144]. 2 Indicates usage of radio access of type UTRAN FDD, see 3GPP TS 25.212 [144]. 3 Indicates usage of radio access of type E-UTRAN TDD, see 3GPP TS 36.300 [145]. 4 Indicates usage of radio access of type E-UTRAN FDD, see 3GPP TS 36.300 [145].

Remark None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CSCON=?	+CSCON:1 OK
AT+CSCON?	+CSCON: (1-3) OK
AT+CSCON=1	OK

5 SMS COMMANDS

5.1 AT+CSDH Show Text Mode Parameters (for SMS)

Description

Set command controls whether detailed header information is shown in text mode result codes.

Command	Possible response
AT+CSDH=?	list of supported <show>s
AT+CSDH?	+CSDH: <show>
AT+CSDH=<show>	OK

Parameter

<show>: Range: 0-1 0 do not show the values in result codes 1 show the values in result codes

Remark

Example

AT+CSDH=0

<not show the message header when list message at the storage, read message in the storage, or indicate to CMTI that new message recieved.>

OK

AT+CSDH=1

< show the message header when list message at the storage, read message in the storage, or indicate to CMTI that new message recieved.>

OK

5.2 AT+CSMP Set Text Mode Parameters

Description

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

Command	Possible response
AT+CSMP=?	OK

AT+CSMP?	+CSMP:<fo>,<vp>,<pid>,<dc> OK
AT+CSMP=<fo>[,<vp>[,<pid>[,<dc>]]]	OK

Parameter

fo

depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER[mt], SMS-SUBMIT[mo] (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.

vp

depending on SMS-SUBMIT <fo> setting: 3G TS 23.040 [3] TP-Validity-Period either in integer format (default 167), in time-string format (refer <dt>), or if EVPF is supported, in enhanced format (hexadecimal coded string with double quotes)

pid

3G TS 23.040 [3] TP-Protocol-Identifier in integer format (default 0)-protocol identity [Different data storage protocol according to which services protocol used]

dc

depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format [supported there types of csw allowed, 0, 4, 8]

Remark

Parameter <fo> <vp> <pid> and <dc>, we recommend to set default value of them, but can use other values if need according to spec definite. if setting "fo" value for MO message, we must make sure the "mti" segment of "fo" (as 03.40 description) is "01", meanings that bit1 is "0" and bit0 is "1", otherwise exception would happened. 3. if setting "dc" value for MO message, we must make sure that the dc is equal to 0, or 4, or 8, other values is not allowed now.

Example

AT+CSMP=17,167,0,0

<in text mode, send message to others or write message to storage with 7bit encode>

OK

AT+CSMP=17,167,0,4

<in text mode, send message to others or write message to storage with 8bit encode>

OK

AT+CSMP=17,167,0,8

<in text mode, send message to others or write message to storage with 16bit encode, sometimes the Chinese string>

OK

5.3 AT+CMSS Send Message From Storage(for SMS)

Description

Execution command sends message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).

Command	Possible response
AT+CMSS=?	list of supported <state>s
AT+CMSS?	+CMSS: <state>
AT+CMSS=<state>	OK

Parameter

<index>:

integer type; value in the range of location numbers supported by the associated memory

Remark

1. <index> have these values: 161, 145, 129
2. At PDU mode, we can't send MT message.

Example

```
AT+CMGF=0
AT+CMGR=1
AT+CMSS=1
OK
+CMGR: 3,,21 0891683110102105F031010B813120117013F50000A707F4F29C9E769F0
+CMSS: 3
OK
AT+CMGF=0
AT+CMGR=1
AT+CMSS=1,"13466507607",129
OK
+CMGR: 3,,21 0891683110102105F031010B813120117013F50000A707F4F29C9E769F0
+CMSS: 6
OK AT+CMGF=1
AT+CSDH=1
AT+CMGR=1
AT+CMSS=1
OK
```

OK
 +CMGR: "STO SENT", "13021107315", 129, 17, 0, 0, 167, "+8613010112500", 145, 7 testing
 +CMSS: 7
 OK
 AT+CMGF=1
 AT+CSDH=1
 AT+CMGR=1
 AT+CMSS=1, "13466507607", 129
 OK
 OK
 +CMGR: "STO SENT", "13021107315", 129, 17, 0, 0, 167, "+8613010112500", 145, 7 testing
 +CMSS: 10
 OK

5.4 +CMTI/+CMT Indication New Short Message [for SMS]

Description

When receive new short message ,send +CMTI or +CMT[+CDS are message report]

Possible response
+CMTI: <mem>,<index> or +CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled) +CMT: <oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (Text mode enabled)

Parameter

<mem> string type; memory for storage new messages

<index>

integer type; value in the range of location numbers supported by the associated memory

<length>

integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> (or <cdata>) in characters; or in PDU mode (+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)

<fo>

depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format

<vp>

depending on SMS-SUBMIT is supported, in enhanced format (hexadecimal coded string with double quotes)

<pid>

3G TS 23.040 [3] TP-Protocol-Identifier in integer format (default 0)

<dc>

depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format

<sca>

3G TS 24.011 [6] RP SC address Address-Value field in string format;

<tosca>

3G TS 24.011 [6] RP SC address Type-of-Address octet in integer format

<scts>

3G TS 23.040 [3] TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)

<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

Remark

If the initial PDP context is supported, the context with <cid>=0 is automatically defined at startup, see subclause 10.1.0. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached. The read command returns the current Packet Domain service state. The test command is used for requesting information on the supported Packet Domain service states.

Example

AT+CNMI=0,1,0,0,0

+CMTI: "SM",7 OK

AT+CMGF=0

AT+CNMI=0,2,0,0,0

+CMT: ,27

0891683110102105F0240D91683120117013F500008070206193930007F4F29C9E769F01 OK

OK

AT+CMGF=1

AT+CSDH=1

AT+CNMI=0,2,0,0,0

+CMT: "+8613021107315",,"2008/07/02,16:40:24+00",145,17,0,0,"+8613010112500",145,8 Testing OK

OK

OK

AT+CMGF=1

AT+CNMI=0,0,0,1,0 (need status report)

AT+CMGS="13445555991"

+CDS: 2,12,"+8613021107315",145,"2008/07/02,16:42:22+00","2008/07/02,16:42:34+00",0 OK

OK

+CMGS: 12

OK

5.5 AT+CMGD Delete SMS Message

Description

Execution command deletes message from preferred message storage <mem1> location <index>. If <delflag> is present and not set to 0 then the ME shall ignore <index> and follow the rules for <delflag> shown below. If deleting fails, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for <err> values.

Command	Possible response
AT+CMGD=?	+CMGD: (list of supported <index>s), (list of supported <delflag>s) OK
AT+CMGD=<index>[,<del flag>]	OK

Parameter

<Index>:

Index : indicate which message will be deleted

<delflag>: an integer indicating multiple message deletion request as follows:

0 (or omitted) Delete the message specified in <index> 1 Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched 2 Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3 Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched. 4 Delete all messages from preferred message storage including unread messages.

Remark

Test command .list of supported <index>s

Example

AT+CMGD=1

<note1:delete the specific index message in the storage> <note2: if have no message we specific to delete, just return "OK" only>

OK

5.6 AT+CMGF Select SMS Message Format

Description

Set command specifies the input and output format of the short messages. The input and output format of the short messages can be either PDU mode or Text mode.

Command	Possible response
AT+CMGF=?	list of supported <mode>s
AT+CMGF?	+CMGF:<mode>
AT+CMGF=<mode>	OK

Parameter

<mode>:

0 PDU mode (default when implemented) 1 text mode

Example

AT+CMGF=0

< PDU mode>

OK

5.7 AT+CMGL List SMS Messages From Preferred Store

Description

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

Command	Possible response
AT+CMGL=?	list of supported <stat>s OK
AT+CMGL=<state>	OK

Parameter

<stat>:

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

Remark

1. <alpha> is not supported now.
2. if PDU mode, each bit meaning of DCS byte are reference in chapter 11.10.5, CMGW remark.

Example

AT+CMGL=n

<note1: n=0,1,2,3,4, meaning as description of 11.7.4 parameters definition> <note2: if have no message we specific to list, just return "OK" only> <note3: don't care about the dcs value with at+csmp setting or charset value with at+cscs setting here, the display is only depending to formats when the message store.>

OK

5.8 AT+CMGR Read SMS Message

Description

Execution command returns message with location value <index> from preferred message storage <mem1> to the TE.

Command	Possible response
AT+CMGR=?	OK
AT+CMGR=<index>	+CMGR:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> OK

Parameter

<index>:

Indicate which message will be read.

Remark

1. <alpha> and <scts> is not supported now.
2. Can't read short message report now.
3. When DTE character set is "GSM" (set by +CSCS command),the SMS content will be output by an ASCII string form if it is an pure ASCII SMS,otherwise it will be output in an UCS2 hex string form. If the DET character set is "UCS2" it will always be output in UCS2 hex string form.
4. if PDU mode, each bit meaning of DCS byte are reference in chapter 11.10,5, CMGW remark.

Example

AT+CMGR=2

(the message store in the mem with 8bit encode of dcs) +CMGR: "STO UNSENT","456" testing

OK

5.9 AT+CMGS Send SMS Message

Description

The write command transmits a short message from TE to network (SMS-SUBMIT).After invoking the write command wait for the prompt ">" and then start to write the message. To send the message simply enter <CTRL-Z>

Command	Possible response
AT+CMGS=?	OK
AT+CMGS=<da>[,<toda>]<CR> text is entered <ctrl-Z/ESC>	+CMGS:<mr> OK

Parameter

<da>

3G TS 23.040 [3] TP-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 (refer command +CSCS in 3G TS 25.007 [9]); type of address given by <toda>ring type; memory to which writing and sending operations are made

<toda>

3G TS 24.011 [6] 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 (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+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) PDU is given: we can send pdu message depending to the dcs value of oct in the pdu header. the PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; ME/TA converts this coding into the actual octets of PDU.text is entered

- we should care about the dcs of at+csmp setting, if we set 7bit encode of dcs, we can send 7bit encode message with text mode.

If we set 8bit or 16bit encode of dcs, we can send 8bit or 16bit message with text mode.the entered text should be formatted as follows: - if <dc> (set with +CSMP) indicates that 3GPP TS 23.038 [2] GSM 7 bit default alphabet is used and <fo> indicates that 3GPP TS 23.040 [3] TP-User-Data-Header-Indication is not set: - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS in 3GPP TS 27.007 [9]): ME/TA converts the entered text into the GSM 7 bit default alphabet according to rules of Annex A; backspace can be used to delete last character and carriage returns can be used (previously mentioned four character sequence shall be sent to the TE after every carriage return entered by the user); - if TE character set is "HEX": the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into the GSM 7 bit default alphabet characters. (e.g. 17 (IRA 49 and 55) will be converted to character ? (GSM 7 bit default alphabet 23)).

<mr>

Type: integer type Meaning: 3GPP TS 23.040 [3] TP-Message-Reference in integer format

Remark

1. Not support long short message.
2. <toda>have there values: 161,145,129
3. At PDU mode,wen can't send MT message.

Example

AT+CMGF=0

OK

AT+CMGS=17

(value of "dcs" is getting from dcs oct in the pdu header)

>0011000B813170862334F20000A70361F118<CTRL Z> +CMGS: 1

OK

AT+CMGF=1

OK

AT+CSMP=17,167,0,0

(7bit encode of message to store or send in text mode)

OK

AT+CMGS="13560243602"

>abc<CTRL Z> +CMGS: 5

OK

AT+CSMP=17,167,0,4 (8bit encode of message to store or send in text mode)

OK

AT+CMGS="13560243602",129

>abc<CTRL Z> +CMGS:3

OK

AT+CSMP=17,167,0,8

(16bit encode of message to store or send in text mode)

OK

AT+CMGS="+13560243602",145

>XXX<CTRL Z> (Chinese string) +CMGS:4

OK

5.10 AT+CMGW Write SMS Message To Memory

Description

Execution command stores message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. Memory location <index> of the stored message is returned.

Command	Possible response
AT+CMGW =?	OK
AT+CMGW =<oa/da>[,<tooa/toda>[,<stat>]]	OK

Parameter

<index>

integer type; value in the range of location numbers supported by the associated memory

<da>

3G TS 23.040 [3] TP-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 (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <toda>ring type; memory to which writing and sending operations are made

<toda>

3G TS 24.011 [6] 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 (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

<stat>

Integer type in PDU mode (default 2 for +CMGW), or string type in text mode (default .STO UNSENT. for +CMGW). Indicates the status of message in memory.

Remark

1. not support long message. 2. <toda> have three values: 161, 145 and 129. 3. if pdu mode, each bit meaning of the dcs byte are following: Dcs byte: bit7..bit0

bit7..bit4 - encode group

bit7 - reserved bit6 - reserved bit5 - 0: text uncompress 1: GSM default compress bit4 - 0: bit0 and bit1 no use 1: bit0 and bit1 useful

bit0: bit1: 0 0 class1 0 1 class2 1 0 class3 1 1 class4

bit2: bit3: 0 0 GSM default 7 bit encode 0 1 8 bit encode 1 0 16bit(UCS2) encode 1 1 reserved

4. At PDU mode, if we want to write MT message at storage, we must specify the status of UNREAD or READ. And at PDU mode, we can't write MT message which have status of UNSENT or SENT.

Example

AT+CMGF=0

OK

AT+CMGW=17 (value of "dcs" is getting from dcs oct in the pdu header)

>0011000B813170862334F20000A70361F118<CTRL Z>+CMGW: 1

OK

AT+CMGF=1

OK

AT+CSMP=17,167,0,0 (7bit encode of message to store or send in text mode)

OK

```

AT+CMGW="13560243602"
>abc<CTRL Z> +CMGW: 5 OK
AT+CSMP=17,167,0,4
OK
AT+CMGW="13560243602",129
>abc<CTRL Z> +CMGW:3
OK
AT+CSMP=17,167,0,8 (16bit encode of message to store or send in text mode)
OK
AT+CMGW="13560243602"
>XXX<CTRL Z> (Chinese string) +CMGW:4
OK
  
```

5.11 AT+CNMI New SMS Message Indications

Description

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

Command	Possible response
AT+CNMI=?	+CNMI:(list of supported <mode>s), (list of supported <mt>s) OK
AT+CNMI?	+CNMI:<mode>,<mt>,<bm>,<ds>,<bfr> OK
AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]	OK

Parameter

<mode>

support one value now : 0 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE. 2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE. 3 Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.

<mt>

support three values now: 0,1,2,and have no CLASS type.

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 us-

ing unsolicited result code: +CMTI: <mem>,<index> 2 SMS DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code: +CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled) or +CMT: <oa>,<alpha>,<scts>,<tooa>,<fo>,<pid>,<dc>,<sca>,<tosca>,<length>]<CR><LF><data> 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>

Broadcast-csw not supported 0 No CBM indications are routed to the TE. 1 If CBM is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CBMI: <mem>,<index> 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>,<dc>,<page>,<pages><CR><LF><data> (text mode enabled) If ME supports data coding groups which define special routing also for messages other than class 3 (e.g. (U)SIM specific messages), ME may choose not to route messages of such data coding schemes into TE (indication of a stored CBM may be given as defined in <bm>=1). 3 Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. If CBM storage is supported, messages of other classes result in indication as defined in <bm>=1.

<ds>:

message report can't be stored, the value 2 is not supported now.

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: <mem>,<index>

<bfr>:

not supported

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

Remark

1. if PDU mode, each bit meaning of DCS byte are reference in chapter 11.10.5, CMGW remark.

Example

AT+CNMI=0,1,0,0,0

+CMTI: "SM",7

OK

AT+CMGF=0

OK

AT+CNMI=0,2,0,0,0

+CMT: ,27 0891683110102105F0240D91683120117013F500008070206193930007F4F29C9E769F01

OK

AT+CMGF=1

OK

AT+CSDH=1

OK

AT+CNMI=0,2,0,0,0

+CMT: "+8613021107315",,"2008/07/02,16:40:24+00",145,17,0,0,"+8613010112500",145,8 testing

OK

AT+CMGF=1

OK

AT+CNMI=0,0,0,1,0

OK

AT+CMGS="13445555991"

+CMGS: 12

OK

+CDS: 2,12,"+8613021107315",145,"2008/07/02,16:42:22+00","2008/07/02,16:42:34+00",0



中国移动
China Mobile

5.12 AT+CPMS Preferred SMS Message Storag

Description

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

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

Parameter

<mem1> string type; mmory from which messages are read and deleted <mem2> string type; memory to which writing and sending operations are made <mem3> string type; memory to which received SMs are preferred to be stored <used1> integer type; number of messages currently in <mem1> <used2> integer type; number of messages currently in <mem2> <used3> integer type; number of messages currently in <mem3> <total1> integer type; number of messages storable in <mem1> <total2> integer type; number of messages storable in <mem2> <total3> integer type; number of messages storable in <mem3>

Remark

Parameters <mem1>, <mem2> and <mem3> have two kinds fo values: "SM", "ME"

Example

```
AT+CPMS="SM","ME","SM"
```

```
<"SM" [SMS message storage in SIM, default]> +CPMS: 11,40,0,200,11,40
```

```
OK
```

```
AT+CPMS?
```

```
+CPMS: 11,40,0,200,11,40
```

```
OK
```

```
AT+CPMS="ME","ME","ME"
```

```
+CPMS: 0,200,0,200,0,200
```

```
OK
```

```
AT+CPMS?
```

```
+CPMS: 0,200,0,200,0,200
```

```
OK
```

```
AT+CPMS="SM","SM","SM"
```

```
+CPMS: 11,40,11,40,11,40
```

```
OK
```

AT+CPMS?
+CPMS: 11,40,11,40,11,40
OK

5.13 AT+CSCA SMS Service Center Address

Description

Set command updates the SMSC address.

Command	Possible response
AT+CSCA=?	OK
AT+CSCA?	+CSCA:<sca>,<tosca> OK
AT+CSCA==<sca>[,<tosca>]	OK

Parameter

<sca>

GSM 04.11 RP SC address Address-Value field in string format

<tosca>

GSM 04.11 RP SC address Type-of-Address octet in integer format

Remark

If the initial PDP context is supported, the context with <cid>=0 is automatically defined at startup, see subclause 10.1.0. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached. The read command returns the current Packet Domain service state. The test command is used for requesting information on the supported Packet Domain service states.

Example

```
AT+CSCA="+8613800100500"  
OK  
AT+CSCA?  
+CSCA: "+8613800100500",145  
OK
```

5.14 AT+CDS Indicates SMS Status Report Has Been Received

Description

Indicates that SMS status report has been received

Possible response

+CD	<length><CR><LF><pdu> (PDU mode enabled)
+CD	<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode)

Parameter

<pdu>

In the case of SMS: 3G TS 24.011 [6] SC address followed by 3G TS 23.040 [3] 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))

<length>

integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+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)

<fo>

depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER, SMS-SUBMIT SMS-STATUS-REPORT, or SMS-COMMAND in integer format is supported, in enhanced format (hexadecimal coded string with double quotes)

<scts>

3G TS 23.040 [3] TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)

<st>

3G TS 23.040 [3] TP-Status in integer format

<mr>

3G TS 23.040 [3] TP-Message-Reference in integer format

<ra>

3G TS 23.040 [3] TP-Recipient-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 (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <tora>

<dt>

3G TS 23.040 [3] 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. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"

<tora>

3G TS 24.011 [6] TP-Recipient-Address Type-of-Address octet in integer format (default refer <toda>)

Remark

Please refer to +CNMI

Example

AT+CMGF=0

OK

AT+CNMI=0,0,0,1,0

+CDS: 34 91683110102105F006110D91683120117013F5807020812014008070208120740000

OK

AT+CMGF=1

OK

AT+CNMI=0,0,0,1,0

OK

AT+CMGS="13466507607"

+CMGS: 12

OK

+CDS: 2,14,"+8613021107315",145,"2008/07/02,17:30:50+00","2008/07/02,17:30:55+00",0

Note:

- NULL
-

5.15 AT+CMMS Set SMS Concat

Description Set SMS Concat include "long sms"(ture) and "common sms"(false)

Command	Possible response
Test Command AT+CMMS=?	+CMMS: (0,1) OK
Read Command AT+CMMS?	+CMMS<nConcat> OK
Set Command AT+CMMS=<nConcat>	OK

Unsolicited Result Codes None

Parameter

<nConcat>: integer type; indicates the concat value
0 command sms 1 long sms

Example The following examples show the typical application for this command.

Command	Possible response
AT+CMMS=?	+CMMS :0 OK
AT+CMMS?	+CMMS:(0,1) OK
AT+CMMS=0	OK

Note:

- NULL

5.16 AT+CSCB Set Cell Broadcast function

Description Set Cell Broadcast function related paramter

Command	Possible response
Test Command AT+CSCB=?	+CSCB:(0,1),(0,1,5,320-478,922), (0-3,5) OK
Read Command AT+CSCB?	+CSCB:<mode>,<mids>,<dcss> > OK
Set Command AT+CSCB=<mode>,<mids>,<dcss>	OK

Unsolicited Result Codes None

Parameter

<mode>: integer type; indicates the mode
 0 deactive cell broadcast
 function 1 active cell broadcast
 function

<mids>: integer type; indicates the channel want to receive cell broadcast
<dcss>: integer type; indicates the dcss want to receive cell broadcast

Example The following examples show the typical application for this command

Command	Possible response
AT+CSCB=?	+CSCB:(0,1),(0,1,5,320-478,922),(0-3,5) OK
AT+CSCB?	+CSCB:1,5,3 OK
AT+CSCB=1,5,3	OK

Note:

- NULL



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6 GPRS COMMANDS

6.1 AT+CGATT PS Attach Or Detach

Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.250 command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

Command	Possible response
AT+CGATT=?	list of supported <state>s OK
AT+CGATT?	+CGATT: <state>
AT+CGATT=<state>	OK

Parameter

<state>:

<state>: integer type; indicates the state of PS attachment 0 detached 1 attached

Remark

If the initial PDP context is supported, the context with <cid>=0 is automatically defined at startup, see subclause 10.1.0. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached. The read command returns the current Packet Domain service state. The test command is used for requesting information on the supported Packet Domain service states.

Example

AT+CGATT=1

OK

AT+CGATT=?

+CGATT:(0,1)

OK

6.2 AT+CGDCONT Define PDP Context

Description

This command be used to defined PDP context.

Command	Possible response
AT+CGDCONT=?	[+CGDCONT: (range of supported <cid>s), <PDP_type>, (list of supported <d_comp>s), (list of supported <h_comp>s)] OK
AT+CGDCONT?	+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp> OK
AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]	OK

Parameter

<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, maximum value =7) is returned by the test form of the command.

<PDP_type>

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol IP Internet Protocol (IETF STD 5) IPV6 Internet Protocol, version 6 (IETF RFC 2460) PPP Point to Point Protocol (IETF STD 51)

<APN>

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

<PDP_address>

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

<d_comp>

a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 04.65 [59]) 0 off (default if value is omitted) 1 on (manufacturer preferred compression) 2 V.42bis 3 V.44bis Other values

are reserved.

<h_comp>

a numeric parameter that controls PDP header compression (refer 3GPP TS 04.65 [59]) 0 off (default if value is omitted) 1 on (manufacturer preferred compression) 2 RFC1144 3 RFC2507 4 RFC3095 Other values are reserved.

Example

```
AT+CGDCONT=?
+CGDCONT: (1..7), (IP,IPV6,PPP),(0..3),(0..4)
OK
AT+CGDCONT=1, "IP", "CMIIOT"
OK
AT+CGDCONT? +CGDCONT:1, "IP", "CMIIOT", ,0,0
OK
```

6.3 AT+CGACT PDP Context Activate Or Deactivate

Description

This command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and then attempts to activate the specified contexts. If no <cid>s are specified the activation form of the command activates all defined contexts or deactivates all active contexts

Command	Possible response
AT+CGACT=?	+CGACT: (list of supported <state>s) OK
AT+CGACT?	+CGACT: <state> OK
AT+CGACT=<state> [,<cid>[,<cid>]]	OK

Parameter

<state>

State indicates the state of PS attachment 0 deactivated 1 activated

Other values are reserved and will result in an ERROR response to the execution command.

<cid>

A numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and

+CGDSCONT commands). Range from 1 to 7.

Remark

1. Before activating, use command AT+CGATT=1 first to attach to the network.
2. Currently, only 3 active PDP contexts are allowed to exist simultaneously.

So the number of cid in this command is limited to 3. And if you have defined more than 3 cids with command AT+CGDSCONT, only the first 3 will be acted on when you use AT+CGACT=1 to activate all cids.

Example

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

6.4 AT+CRG Cellular Result Codes

Description

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

Command	Possible response
AT+CRG=?	+CRG: (0,1) OK
AT+CRG?	+CRG: <mode> OK
AT+CRG=<mode>	OK

Parameter

<mode>:

0 disables extended format (default) 1 enables extended format

Remark

NULL

Example

```
AT+CRG=?  
+CRG: (0,1)
```

OK

AT+CRC=1

OK AT+CRC?

+CRC: 1

OK

6.5 AT+CGQMIN Quality Of Service Profile (Minimum Acceptable)

Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message. A special form of the set command, +CGQMIN=<cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile

Command	Possible response
AT+CGQMIN=?	<ul style="list-style-type: none"> • Success: <ul style="list-style-type: none"> – +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) +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) []
AT+CGQMIN=<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]	Success: OK
AT+CGQMIN?	Success: +CGQMIN: <cid>, <precedence> , <delay>, <reliability>, <peak>, <mean>[<CR><LF> +CGQMIN: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean>[] OK

Parameter

cid

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

precedence

Specifies the precedence class 0 network subscribed value 1 High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3 2 Normal priority. Service commitments shall be maintained ahead of precedence class 3 3 Low priority. Service commitments shall be maintained ahead of precedence classes 1 and 2

delay

Specifies the delay class. 0 network subscribed value 1 < 0.5 2 < 5 3 < 50 4 Unspecified (Best Effort)

reliability

Specify 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

Specify the peak throughput class. Class Peak Throughput(in octets per second) 0 network subscribed value 1 Up to 1 000 (8 kbit/s) 2 Up to 2 000 (16 kbit/s). 3 Up to 4 000 (32 kbit/s) 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s) 8 Up to 128 000 (1 024 kbit/s) 9 Up to 256 000 (2 048 kbit/s)

mean

Class Peak Throughput(in octets per second) 0 network subscribed value 1 (in octets per hour) 100 (~0.22 bit/s) 2 200 (~0.44 bit/s) 3 500 (~1.11 bit/s) 4 1 000 (~2.2 bit/s) 5 2 000 (~4.4 bit/s) 6 5 000 (~11.1 bit/s) 7 10 000 (~22 bit/s) 8 20 000 (~44 bit/s) 9 50 000 (~111 bit/s) 10 100 000 (~22 kbit/s) 11 200 000 (~44 kbit/s) 12 500 000 (~1.11 kbit/s) 13 1 000 000 (~2.2 kbit/s) 14 2 000 000 (~4.4 kbit/s) 15 5 000 000 (~11.1 kbit/s) 16 10 000 000 (~22 kbit/s) 17 20 000 000 (~44 kbit/s) 18 50 000 000 (~111 kbit/s) 31 best effort

PDP_type

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

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

Example

AT+CGQMIN=?

+CGQMIN: (IP,PPP,IPV6), (0..3), (0..4), (0..5) , (0..9), (0..18,31)

OK

AT+CGQMIN=1,1,1,1,1,1

OK

AT+CGQMIN?

+CGQMIN: 1,1,1,1,1,1

+CGQMIN: 2,0,0,0,0,0

+CGQMIN: 3,0,0,0,0,0

OK

6.6 AT+CGPADDR Show PDP Address

Description

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

Command	Possible response
AT+CGPADDR=?	+CGPADDR: (list of defined <cid>s) OK
AT+CGPADDR=<cid>[,<PDP_address>]	Success: +CGPADDR:<cid>,<PDP_addr>[<CR><LF>+CGPA DDR:<cid>,<PDP_addr>[. . .]] OK

Parameter

<cid>

a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). If no <cid> is specified, the addresses for all defined contexts are returned.

<PDP_address>

a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT and +CGDSCONT commands when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available

Example

AT+CGPADDR=?

+CGPADDR: (1,2,3)

OK

AT+CGPADDR=1

+CGPADDR: 1,"10.14.57.241"

OK

6.7 AT+CGAUTO Automatic Response To A Network Request For PDP Context Activation

Description

The set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network. It also provides control over the use of the V.25ter basic commands 'S0', 'A' and 'H' for handling network requests for PDP context activation. The setting does not affect the issuing of the unsolicited result code RING or +CRING

Command	Possible response
AT+CGAUTO=?	Success: +CGAUTO: (list of supported <n>s) OK
AT+CGAUTO?	Success: +CGAUTO: <n> OK
AT+CGAUTO=<n>	Success: OK

Parameter

<n>

0 turn off automatic response for Packet Domain only 1 turn on automatic response for Packet Domain only 2 modem compatibility mode, Packet Domain only 3 modem compatibility mode, Packet Domain and circuit switched calls (default) For <n> = 0 Packet DomainS network requests are manually accepted or rejected by the +CGANS command. For <n> = 1 Packet Domain network requests are automatically accepted according to the description above. For <n> = 2, automatic acceptance of Packet Domain network requests is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject Packet Domain requests. (+CGANS may also be used.) Incoming circuit switched calls can be neither manually nor automatically answered. For <n> = 3, automatic acceptance of both Packet Domain network requests and incoming circuit switched calls is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject Packet Domain requests. (+CGANS may also be used.) Circuit switched calls are handled as described elsewhere in this specification.

Remark

When the +CGAUTO=0 command is received, the MT shall not perform a PS detach if it is attached. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING, the TE may manually accept or reject the request by issuing the +CGANS command or may simply ignore the network request. When the +CGAUTO=1 command is received, the MT shall attempt to perform a PS attach if it is not already attached. Failure will result in ERROR or, if enabled, +CME ERROR being returned to the TE. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the TE, this is followed by the intermediate result code CONNECT. The MT then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

Example

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

6.8 AT+CGQREQ Quality Of Service Profile (requested)

Description

This AT command be used to set the parameters of the QoS when MT send the PDP context message for activation

Command	Possible response
AT+CGQREQ=?	+CGQREQ: (list of supported) OK
AT+CGQREQ?	+CGQREQ: <cid>,<precedence>,<delay>,<peak>,<mean> OK
AT+CGQREQ=<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]	OK

Parameter

<cid>

a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and+CGDSCONT commands) < precedence > Specifies the precedence class 0 network subscribed value 1 High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3 2 Normal priority. Service commitments shall be maintained ahead of precedence class 3 3 Low priority. Service commitments shall be maintained ahead of precedence classes 1 and 2

< delay>

Specifies the delay class 0 network subscribed value 1 < 0.5 2 < 5 3 < 50 4 Unspecified (Best Effort)

<reliability>

Specify 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 infre- quent 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>

Specify the peak throughput class 0 network subscribed value 1 Up to 1 000 (8 kbit/s). 2 Up to 2 000 (16 kbit/s) 3 Up to 4 000 (32 kbit/s). 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s) 8 Up to 128 000 (1 024 kbit/s) 9 Up to 256 000 (2 048 kbit/s)

<mean>

Specify the mean throughput class. 0 network subscribed value 1 (in octets per hour) 100 (~0.22 bit/s) 2 200 (~0.44 bit/s) 3 500 (~1.11 bit/s) 4 1 000 (~2.2 bit/s) 5 2 000 (~4.4 bit/s) 6 5 000 (~11.1 bit/s) 7 10 000 (~22 bit/s) 8 20 000 (~44 bit/s) 9 50 000 (~111 bit/s) 10 100 000 (~0.22 kbit/s) 11 200 000 (~0.44 kbit/s) 12 500 000 (~1.11 kbit/s) 13 1 000 000 (~2.2 kbit/s) 14 2 000 000 (~4.4 kbit/s) 15 5 000 000 (~11.1 kbit/s) 16 10 000 000 (~22 kbit/s) 17 20 000 000 (~44 kbit/s) 18 50 000 000 (~111 kbit/s) 31 best effort

<PDP_type>

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

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

Example

AT+CGQREQ=?

+CGQREQ: IP,(0..3),(0..4), (0..5),(0..9),(0..18,31)

OK

AT+CGQREQ=1,1,1,1,1

OK

AT+CGQREQ?

+CGQREQ: 1,1,1,1,1 +CGQREQ: 2,0,0,0,0 +CGQREQ: 3,0,0,0,0

OK

6.9 AT+CGREG GPRS Network Registration Status

Description

This AT command be used to set and show the register information of MT and the position information of the MT.

Command	Possible response
AT+CGREG=?	Success: +CGREG: (list of supported <n>s) OK
AT+CGREG?	Success: +CGREG: <n>,<stat>[,<lac>,<ci>] OK

AT+CGREG=<n>	Success: OK
--------------	----------------

Parameter

<n>

0 disable network registration unsolicited result code 1 enable network registration unsolicited result code +CGREG: <stat> 2 enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]

<stat>

0 not registered, MT is not currently searching an operator to register to The UE is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED. The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user. 1 registered, home network The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on the home PLMN.

2 not registered, but MT is currently trying to attach or searching an operator to register to The UE is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. 3 registration denied The UE is in GMM state GMM-NULL. The GPRS service is disabled, the UE is not allowed to attach for GPRS if requested by the user. 4 unknown 5 registered, roaming The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on a visited PLMN.

<lac>

string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)

<ci>

string type; two byte cell ID in hexadecimal format

Example

AT+CGREG=?

+CGREG: (0-2)

OK

AT+CGREG=2

OK

AT+CGREG?

+CGREG: 2,1,"10DC","0D2B"

OK

6.10 ATD*99***1# Request GPRS Service

Description

Login the server, the IP of it be provided by DHCP of GGSN. This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN. The V.25ter 'D' (Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the specified layer 2 protocols. The MT shall return CONNECT to confirm acceptance of the command prior to entering the V.25ter online data state. No further commands may follow on the AT command line.

Command	Possible response
D* <code><GPRS_SC_IP></code> [* <code><cid></code> [, <code><cid></code> [,]]]#	<ul style="list-style-type: none">• Success:• CONNECT• OK

Parameter

`< called_address >`

It's a string that identifies the called party in the address space applicable to the PDP. For communications software that does not support arbitrary characters in the dial string, a numeric equivalent may be used. Also, the character comma ',' may be used as a substitute for the character period '.'.

`< L2P >`

It's a string which indicates the layer 2 protocol to be used (see +CGDATA command). For communications software that does not support arbitrary characters in the dial string, the following numeric equivalents shall be used: "PPP"

`< cid >`

It's a digit string which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

Example

```
ATD*99***1#
```

```
CONNECT
```

```
dial GPRS service code and start up connecting.>
```

6.11 AT+CGSMS Select Service For MO SMS Messages

Description

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

Command	Possible response
AT+CGSMS=?	Success: +CGSMS: (list of supported <code><service></code> s) OK

AT+CGSMS?	Success: +CGSMS: <service> OK
AT+CGSMS=<service>	Success: OK

Parameter

< service >

a numeric parameter which indicates the service or service preference to be used 0 Packet Domain 1 circuit switched 2 Packet Domain preferred (use circuit switched if GPRS not available) 3 circuit switched preferred (use Packet Domain if circuit switched not available)

Remark

This command is NOT available now

Example

AT+CGSMS=?

+CGSMS: (0-3)

OK

AT+CGSMS=0

OK

AT+CGSMS?

+CGSMS: 0

OK

6.12 AT+CGANS PDP Manual Response To A Nw Req For PDP

Context Activation

Description

The execution command requests the MT to respond to a network request for Packet Domain PDP context activation which has been signaled to the TE by the RING or +CRING: unsolicited result code. The <response> parameter allows the TE to accept or reject the request. Commands following the +CGANS command in the AT command line shall not be processed by the MT

Command	Possible response
---------	-------------------

AT+CGANS=?	<ul style="list-style-type: none"> • Success: • +CGANS: (list of supported <response>s), (list of supported <L2P>s) • OK
AT+CGANS=[<response>, [<L2P>],[<cid>]]	<ul style="list-style-type: none"> • Success: • CONNECT ... (data transfer) • OK

Parameter

< response >

Response is a numeric parameter which specifies how the request should be responded to. 0 reject the request (default value) 1 accept and request that the PDP context be activated

< L2P >

a string parameter which indicates the layer 2 protocol to be used (see +CGDATA command).

< cid >

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

Example

AT+CGANS=?

+CGANS: (0-1)

OK

6.13 AT+CGEREP Packet Domain Event Reporting

Description

This command is to enables or disables sending of unsolicited result codes, +CGEV: XXX from MT to TE in the case of certain events occurring in the Packet Domain MT or the network

Command	Possible response
AT+CGEREP=?	Success: +CGEREP: (list of supported <mode>s),(list of supported <bfr>)
AT+CGEREP?	Success: +CGEREP: <mode>,<bfr> OK
AT+CGEREP=[<mode>[,<bfr>]]	Success: OK

Parameter

< 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 forwa

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)

Unsolicited Result Codes

URC1

+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 automati- cally rejected...

URC2

+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>] The network has requested a context reactiva- tion. The <cid> that was used to reactivate the context is provided if known to the MT...

URC3

+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.

URC4

+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>] The mobile termination has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT...

URC5

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

URC6

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

URC7

+CGEV: NW CLASS <class> The network has forced a change of UE class. The highest available class is reported (see +CGCLASS)...

URC8

+CGEV: ME CLASS <class> The mobile termination has forced a change of UE class. The highest available class is reported (see +CGCLASS)...

Example

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

6.14 AT+CGDATA Enter Data State

Description

The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types. This may include performing a PS attach and one or more PDP context activations. If the <L2P> parameter value is unacceptable to the MT, the MT shall return an ERROR or +CME ERROR response. Otherwise, the MT issues the intermediate result code CONNECT and enters V.25ter online data state.

Commands following +CGDATA command in the AT command line shall not be processed by the MT.

The context shall be activated using the matched value for PDP type and a static PDP address if available, together with the other information found in the PDP context definition. If a static PDP address is not available then a dynamic address is requested.

If no <cid> is given or if there is no matching context definition, the MT shall attempt to activate the context with whatever information is available to the MT. The other context parameters shall be set to their default values. If the activation is successful, data transfer may proceed.

After data transfer is complete, and the layer 2 protocol termination procedure has completed successfully, the V.25ter command state is re-entered and the MT returns the final result code OK. In the event of an erroneous termination or a failure to start up, the V.25ter command state is re-entered and the MT returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported.

Command	Possible response
AT+CGDATA=?	Success: +CGDATA: (list of supported <L2P>s) OK
AT+CGDATA=<cid>[,<cid>[,]]	Success: CONNECT ... (data transfer) OK

Parameter

< L2P >

a string parameter that indicates the layer 2 protocol to be used between the TE and MT PPP Point-to-point protocol for a PDP such as IP

< cid >

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

Remark

This command may be used in both normal and modem compatibility modes. This command is NOT available now

Example

AT+CGDATA=?

+CGDATA:

OK

AT+CGDATA=1,1

CONNECT 115200

6.15 AT+CGCLASS GPRS Mobile Station Class

Description

The set command is used to set the MT to operate according to the specified mode of operation, see TS 23.060 [47]. If the requested mode of operation is not supported, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command

Command	Possible response
AT+CGCLASS=?	Success: +CGCLASS: (list of supported <class>s) OK
AT+CGCLASS?	Success: +CGCLASS: <class> OK
AT+CGCLASS=[<class>]	Success: OK

Parameter

< class >

a string parameter which indicates the mode of operation A Class-A mode of operation (A/Gb mode), or CS/PS mode of operation (Iu mode) (highest mode of operation) B Class-B mode of operation (A/Gb mode), (not applicable in Iu mode) CG Class-C mode of operation in PS only mode (A/Gb mode), or PS mode of operation (Iu mode) CC Class-C mode of operation in CS only mode (A/Gb mode), or CS (Iu

mode) (lowest mode of operation) NOTE: <class> A means that the MT would operate simultaneous PS and CS service <class> B means that the MT would operate PS and CS services but not simultaneously <class> CG means that the MT would only operate PS services <class> CC means that the MT would only operate CS services Other values are reserved and will result in an ERROR response to the set command. If the MT is attached to the PS domain when the set command is issued with a <class> = CC specified, a PS detach shall be performed by the MT.

Example

```
AT+CGCLASS=?
+CGCLASS: ("CG","CC","B")
OK
AT+CGCLASS="B"
OK
AT+CGCLASS?
+CGCLASS: "B"
OK
```

Note:

- NULL

6.16 AT+QGPCLASS Get the GPRS class of UE support

Description

Get the GPRS class of UE support

Command	Possible response
AT+QGPCLASS=?	Success: +QGPCLASS: (list of supported <class>s) OK
AT+QGPCLASS?	Success: +CGCLASS: <class> OK
AT+CGCLASS=[<class>]	ERROR

Parameter

None

Note:

- NULL

6.17 AT+CGDSCONT Define secondary PDP context

Description

The set command specifies PDP context parameter values for a Secondary PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.

In EPS the command is used to define traffic flows.

A special form of the set command, +CGDSCONT=<cid> causes the values for context number <cid> to become undefined.

NOTE: If the initial PDP context is supported, the context with <cid>=0 is automatically defined at startup, see subclause 10.1.0.

The read command returns the current settings for each defined context. The test command returns values supported as compound values.

Command	Possible response
AT+CGDSCONT=?	Success: +CGDSCONT: (range of supported <cid>s),(list of <p_cid>s for active primary contexts),(list of supported <d_comp>s),(list of supported <h_comp>s),(list of supported <IM_CN_Signalling_Flag_Ind>s) OK
+CGDSCONT?	[+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp>,<IM_CN_Signalling_Flag_Ind>] OK
+CGDSCONT=[<cid>,<p_cid>,<d_comp>,<h_comp>,<IM_CN_Signalling_Flag_Ind>]]]	Success: OK

Parameter

<p><cid>: integer type; which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.</p> <p>NOTE: The <cid>s for network-initiated PDP contexts will have values outside the ranges indicated for the <cid> in the test form of the commands +CGDCONT and +CGDSCONT.</p>
<p><p_cid>: integer type; specifies a particular PDP context definition which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. The list of</p>
<p><d_comp>: integer type; controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065 [61])</p> <p>0 off</p> <p>1 on (manufacturer preferred compression)</p> <p>2 V.42bis</p> <p>3 V.44</p>
<p><h_comp>: integer type; controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62])</p> <p>0 off</p> <p>1 on (manufacturer preferred compression)</p> <p>2 RFC 1144 [105] (applicable for SNDCP only)</p> <p>3 RFC 2507 [107]</p> <p>4 RFC 3095 [108] (applicable for PDCP only)</p>
<p><IM_CN_Signalling_Flag_Ind>: integer type; indicates to the network whether the PDP context is for IM CN subsystem-related signalling only or not.</p> <p>0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only</p> <p>1 UE indicates that the PDP context is for IM CN subsystem-related signalling only</p>

Note:

- NULL

6.18 AT+CGTFT Traffic flow template

Description

This command allows the TE to specify a Packet Filter - PF for a Traffic Flow Template - TFT that is used in the GGSN in UMTS/GPRS and Packet GW in EPS for routing of packets onto different QoS flows towards the TE. The concept is further described in the 3GPP TS 23.060 [47]. A TFT consists of

from one and up to 16 Packet Filters, each identified by a unique <packet filter identifier>. A Packet Filter also has an <evaluation precedence index> that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.

The set command specifies a Packet Filter that is to be added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, <cid>. The specified TFT will be stored in the GGSN in UMTS/GPRS and Packet GW in EPS only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGTFT command is effectively an extension to these commands. The Packet Filters consist of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGTFT=<cid> causes all of the Packet Filters in the TFT for context number <cid> to become undefined. At any time there may exist only one PDP context with no associated TFT amongst all PDP contexts associated to one PDP address. At an attempt to delete a TFT, which would violate this rule, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. Refer subclause 9.2 for possible <err> values.

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

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line. TFTs shall be used for PDP-type IP and PPP only. For PDP-type PPP a TFT is applicable only when IP traffic is carried over PPP. If PPP carries header-compressed IP packets, then a TFT cannot be used.

Command	Possible response
AT+CGTFT=?	<p>+CGTFT: <PDP_type>,(list of supported <packet filter identifier>s),(list of supported <evaluation precedence index>s),(list of supported <remote address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s),(list of supported <local port range>s),(list of supported <remote port range>s),(list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s),(list of supported <flow label (ipv6)>s),(list of supported <direction>s),(list of supported <local address and subnet mask>s)</p> <p>[<CR><LF>+CGTFT: <PDP_type>,(list of supported <packet filter identifier>s),(list of supported <evaluation precedence index>s),(list of supported <remote address and subnet mask>s),(list of supported <protocol number (ipv4) / next header (ipv6)>s),(list of supported <local port range>s),(list of supported <remote port range>s),(list of supported <ipsec security parameter index (spi)>s),(list of supported <type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>s),(list of supported <flow label (ipv6)>s),(list of supported <direction>s),(list of supported <local address and subnet mask>s)</p> <p>[...] OK</p>

+CGTFT?	[+CGTFT: <cid>,<packet filter identifier>,<evaluation precedence index>,<remote address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<local port range>,<remote port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)>,<direction>,<local address and subnet mask> [<CR><LF>+CGTFT: <cid>,<packet filter identifier>,<evaluation precedence index>,<remote address and subnet mask>,<protocol number (ipv4) / next header (ipv6)>,<local port range>,<remote port range>,<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>,<flow label (ipv6)>,<direction>,<local address and subnet mask> [...]] OK
+CGTFT=[<cid>,[<packet filter identifier>,<evaluation precedence index> [<remote address and subnet mask>],<protocol number (ipv4) / next header (ipv6)>],<local port range>,<remote port range>],<ipsec security parameter index (spi)>,<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>],<flow label (ipv6)>],<direction>],<local address and subnet mask>]]]]]]]]]]]	+CME ERROR: <err>

Parameter

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

NOTE: The <cid>s for network-initiated PDP contexts will have values outside the ranges indicated for the <cid> in the test form of the commands +CGDCONT and +CGDSCT.

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

<d_comp>: integer type; controls PDP data compression (applicable for SMDCP only) (refer 3GPP TS 44.065 [61])

0 off

1 on (manufacturer preferred compression)

2 V.42bis

3 V.44

<h_comp>: integer type; controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62])

0 off

1 on (manufacturer preferred compression)

2 RFC 1144 [105] (applicable for SND CP only)

3 RFC 2507 [107]

4 RFC 3095 [108] (applicable for PDCP only)

<IM_CN_Signalling_Flag_Ind>: integer type; indicates to the network whether the PDP context is for IM CN subsystem-related signalling only or not.

0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only

1 UE indicates that the PDP context is for IM CN subsystem-related signalling only

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

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

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

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

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

<remote address and subnet mask>: string type. The string is given as dot-separated numeric (0-255) parameters on the form:

Note:

- NULL
-

6.19 AT+CGPDNSADDR Get active pdp dns address

Description

This command allows the TE get all activated pdp dns address

Command	Possible response
AT+CGPDNSADDR=?	+CGPDNSADDR:(list cids of activated pdp) OK
+CGPDNSADDR=[<list cids>]	+CGPDNSADDR:[dns address] OK

Parameter

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

NOTE: The <cid>s for network-initiated PDP contexts will have values outside the ranges indicated for the <cid> in the test form of the commands +CGDCONT and +CGDSCONT.

Note:

- NULL

6.20 AT+DIRECTIPMODE configuration DirectIp mode

Description

Set whether to open the DirectIp mode

Command	Possible response
AT+DIRECTIPMODE=?	Success: +DIRECTIPMODE: mode=[0-1] (0, use internal Lwip; 1-direct) OK
AT+DIRECTIPMODE?	Success: +DIRECTIPMODE: 0 OK
AT+DIRECTIPMODE=<mode>	Success: OK

Parameter

< mode >

default 0 0: uses the internal TCPIP protocol stack 1: UE transfers IP packets directly with external MCU, and does not use the TCPIP stack inside of UE

Unsolicited Result Codes**Remark**

AT+CSODCP and AT+CRTDCP need to be tested in the open DirectIp mode. But for testing convenience, CSODCP can also be done without opening. Later, it will be adjusted to DirectIpMode and AT+CSODCP will fail.

Example

6.21 AT+PINGSTOP stops the ongoing AT+PING

Description

if you have an ongoing AT+PING, you can use this command to stop the existing Ping and return the statistical results of the AT+PING

Parameter**Unsolicited Result Codes****Remark****Example**

Note:

- NULL
-



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7 CMIOT_TCP/IP COMMANDS

7.1 AT+IPSTART Start Up TCP Or UDP Connection

Command	Possible response(s)
<ul style="list-style-type: none"> WRITE COMMAND - AT+IPSTART=[<index>,<mode>,<IPaddress>,<port> 	<ul style="list-style-type: none"> if connection already exist <ul style="list-style-type: none"> - OK - ALREADY CONNECT if connect success <ul style="list-style-type: none"> - OK - CONNECT OK if connect fail <ul style="list-style-type: none"> - OK - CONNECT FAIL
<ul style="list-style-type: none"> TEST COMMAND -AT+IPSTART=? 	<ul style="list-style-type: none"> CMMUX=0 <ul style="list-style-type: none"> - +IPSTART: ("TCP"/"tcp", "UDP"/"udp"), ((0-255) . (0-255) . (0-255) . (0-255)), (0-65535) CMMUX=1 <ul style="list-style-type: none"> - +IPSTART: [(0~4) ,] ("TCP"/"tcp", "UDP"/"udp"), ((0-255) . (0-255) . (0-255) . (0-255)), (0-65535)

Reference

Max Response Time:

75 seconds	When mode is multi-IP state
160 seconds	When mode is single state, and the state is IP INITIAL

Parameters

<index> 0..4 A numeric parameter which indicates the connection number

<mode> A string parameter which indicates the connection type

"TCP"	Establish a TCP connection
"UDP"	Establish a UDP connection

<IP address> A string parameter which indicates remote server IP address.

<domain name> A string parameter which indicates remote server domain name.

<port> Remote server port.

Note:

- This command allows establishment of a TCP/UDP connection only when the state is IP INITIAL or IP STATUS when it is in single state. In multi-IP state, the state is in IP STATUS only. So it is necessary to process “AT+CIPSHUT” before user establishes a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS.

7.2 AT+IPSEND Send Data Through TCP Or UDP Connection

Command	Possible response(s)
AT+IPSEND	<ul style="list-style-type: none"> • if connection exist and send success <ul style="list-style-type: none"> – SEND OK • if send fail <ul style="list-style-type: none"> – SEND FAIL • if TCP/UDP disconnect <ul style="list-style-type: none"> – CONNECTION CLOSE
CMMUX=0 <ul style="list-style-type: none"> • AT+IPSEND=[<length>[,<seq>]] CMMUX=1 <ul style="list-style-type: none"> • AT+IPSEND=<index>[,<length>[,<seq>]] 	<ul style="list-style-type: none"> • if connection exist and send success <ul style="list-style-type: none"> – SEND OK • if send fail <ul style="list-style-type: none"> – SEND FAIL • if TCP/UDP disconnect <ul style="list-style-type: none"> – CONNECTION CLOSE

Reference

- Response >, then type data for send, tap CTRL+Z to send, tap ESC to cancel the operation
- The data length which can be sent depends on network status.
- Only send data at the status of established connection.

Parameters

<index> 0..4 A numeric parameter which indicates the connection number

<length> A numeric parameter which indicates the length of sending data, MAX size 1024.

<seq> Sequence of data, range 1-255.If omit, will not report data sent status.

Command	Response	Example
	+IPSEND:<socket>,<seq>,<status>	+IPSEND:1,2,1

<status> The status of datagram. 0 Error , 1 Sent

Note:

- +IPSEND EXE Command can only be used in single IP connection mode (+CMMUX=0) and to send data on the TCP or UDP connection that has been established already. Ctrl-Z is used as a termination symbol. ESC is used to cancel sending data. There are at most 1460 bytes which can be sent at a time.

7.3 AT+IPCLOSE Close TCP Or UDP Connection

Command	Possible response(s)
AT+IPCLOSE=[<index>]	<ul style="list-style-type: none">• if connection closed successfully OK
AT+IPCLOSE=?	OK

Parameters

<index> 0..4 A numeric parameter which indicates the connection number

Note:

- Use the “AT+IPSTART” command to establish a connection, regardless of the success or timeout, after used must call “AT+IPCLOSE” to release the resources. If the server is disconnected will response CONNECTION CLOSED:<index>, also need to excute “AT+IPCLOSE” release the resources.

7.4 AT+CMDNSGIP Query The IP Address Of Given Domain

Name

Command	Possible response(s)
AT+CMDNSGIP=<domain name>	<ul style="list-style-type: none">• OK• If successful<ul style="list-style-type: none">– +CMDNSGIP: <IP address>• If fail<ul style="list-style-type: none">– +CMDNSGIP:0,<dns error code>
AT+CMDNSGIP=?	OK

Parameters

<domain name> A string parameter which indicates the domain name

<IP address> A string parameter which indicates the first IP address corresponding to the domain name

<dns error code> A numeric parameter which indicates the error code

There are some other error codes as well.

Note:

- NULL
-

7.5 AT+CMPPROMPT Set show ">" & "SEND OK" when send data

Command	Possible response(s)
AT++CMPPROMPT=<send prompt>	<ul style="list-style-type: none"> • OK • +CME ERROR
AT++CMPPROMPT?	<ul style="list-style-type: none"> • +CMPPROMPT: <send prompt> • OK
AT++CMPPROMPT=?	<ul style="list-style-type: none"> • +CMPPROMPT: (0, 3) • OK

Parameters

<send prompt> A numeric parameter which indicates whether to echo prompt ">" after module issues AT+IPSEND command.

0	It shows "SEND OK" but does not prompt echo ">" when sending is successful.
1	It prompts echo ">" and shows "SEND OK" when sending is successful.
2	It neither prompts echo ">" nor shows "SEND OK" when sending is successful.

<indexd> 0..4 A numeric parameter which indicates the connection number

Note:

- NULL
-

7.6 AT+CMMODE Select TCPIP Application Mode

Command	Possible response(s)
AT+CMMODE=<mode>	<ul style="list-style-type: none">• OK• +CME ERROR
AT+CMMODE?	<ul style="list-style-type: none">• +CMMODE: <mode>• OK
AT+CMMODE=?	<ul style="list-style-type: none">• +CMMODE: (0,1)• OK

Parameters

<mode>

0	Normal mode
1	Transparent mode

In transparent mode, after connection established, UART will be waiting data. Input data will be send to server, and data received from server will be output UART directly,exit waiting data with “+++”, after exit call AT+IPCLOSE release the resources.

Note:

- 1. Transparent mode can be set only in single IP connection mode.
- 2. In transparent mode use AT+IPSTART establish connection automatically enter the data transparent mode.
- 3. In transparent mode establish connection success will return CONNECT, else return FAIL.
- 4. If the connection disconnected, the transparent mode exit also, then need to excute “AT+IPCLOSE” release the resources.
- 5. Exit transparent mode with “+++”, after exit call AT+IPCLOSE release the resources.

7.7 AT+CMMUX Start Up Multi-IP Connection

Command	Possible response(s)
AT+CMMUX=<mode>	<ul style="list-style-type: none"> • OK • ERROR
AT+CMMUX?	<ul style="list-style-type: none"> • +CMMUX: <mode> • OK
AT+CMMUX=?	<ul style="list-style-type: none"> • +CMMUX: (0,1) • OK

Parameters

<mode> Connection mode

0	Single IP connection
1	Multi IP connection

Note:

- In transparent mode not allowed multi IP connection. MAX 5 connections can be established at the same time.

7.8 AT+CMSACK Query Previous Connection Data Transmitting State

Command	Possible response(s)
<ul style="list-style-type: none"> • CMMUX=0 – AT+CMSACK? 	<ul style="list-style-type: none"> • CMMUX=0 – +CMSACK:<totalSend>,<totalRecv>,<sent>,<acked>,<nAked> – OK
AT+CMSACK=?	OK
<ul style="list-style-type: none"> • CMMUX=1 – AT+CMSACK=<n> 	<ul style="list-style-type: none"> • CMMUX=1 – +CMSACK:<totalSend>,<totalRecv>,<sent>,<acked>,<nAked> – OK

Reference

Max Response Time: 300ms

Description

Parameters

- <n>** A numeric parameter which indicates the connection number
- <totalSend>** The data amount which has been sent from setup
- <totalRecv>** The data amount which has been received from setup
- <sent>** The data amount which has been sent
- <acked>** The data amount confirmed successfully by the server
- <nAcked>** The data amount without confirmation by the server

Note:

- AT+CMSACK just query TCP date.
- AT+CMSACK? can be excuted only in the single mode.
- AT+CMSACK=<n> can be excuted only in the multi mode.

7.9 AT+CMNDI Cache recv data

Command	Possible response(s)
AT+CMNDI=?	<ul style="list-style-type: none"> • +CMNDI : (0 , 1) , (0 , 1) • OK
AT+CMNDI ?	<ul style="list-style-type: none"> • +CMNDI : <m> [, <sw>] • OK
AT+CMNDI=<m> [, <sw>]	<ul style="list-style-type: none"> • OK • ERROR

Description
Parameters
<m>

- 0 : don't cache
- 1 : cache and response to UART with +CMRD:<sid>,<len>,<total>

[sw]

- 0 : close cache URC
- 1 : open cache URC

The parameter can be no set, default is 1

<sid> 0..4 A numeric parameter which indicates the connection number, when AT+CMMUX=0,<sid>=0

<len> The data amount which has been received at this time

<total> The data amount which has been cached

Note: NULL

7.10 AT+CMRD Read data of cache recv

Command	Possible response(s)
AT+CMRD=?	<ul style="list-style-type: none">• +CMRD: (0,4), (0,4096)• OK
AT+CMRD=<sid>,<len>	<ul style="list-style-type: none">• <data>• OK
AT+CMRD?	+CMRD:<sid>,<lenlr>,<lentl>

Reference

Max Response Time: 300ms

Description

Parameters

<sid> A numeric parameter which indicates the connection number, range 0~4(when AT+CMMUX=0, <sdi>=0)

<len> Read data length, range 1~4096

<data> Data

<lenlr> Read data length last time

<lentl> The rest of the data amount from cached data

Note: NULL

7.11 AT+CMPING Ctrl “AT+CMPING” ping server of remote

Command	Possible response(s)
AT+CMPING=?	<ul style="list-style-type: none">• +PING:DNS/IP address• OK
AT+CMPING="<host>"	<ul style="list-style-type: none">• OK• [+CMPING:<result>[,<ipAddr>,<bytes>,<time>,<tttl>]...]• +CMPING:<finresult>[,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>]• ERROR

Reference

Max Response Time: param “timeout”

Description**Parameters**

<host> Ipaddr or domain of remote server.

<timeout> Default 1s. Range 1-255.

<pingnum> Ping count. Default 4. Range 1-10

<result>

- 0 : Recv response of remote server. Display:<ipAdr>,<bytes>,<time>,<ttd>
- 1 : Ping timeout.

<ipAdr> Ipaddr of remote server.

<bytes> Length of ping send data.

<time> Request time consuming of ping. Unit ms.

<ttd> Current time of ping response.

<finresult>

- 2 : Success of active GPRS.
- 3 : TCP/IP protocol stack busy.
- 4 : Not find of remote server.
- 5 : Fail of active PDP.

<sent> Send counts of ping.

<rcvd> Send counts of ping and rcv response times.

<lost> Timeout times of ping.

<min>

- Min response time. Unit : ms.
- Max response time. Unit : ms.

<avg> Average response time. Unit : ms.

Note: NULL

7.12 AT+CMHEAD Add an IP head at the beginning of a package received

Command	Possible response(s)
AT+CMHEAD=<mode>	<ul style="list-style-type: none">• OK• +CME ERROR <err>
AT+CMHEAD?	<ul style="list-style-type: none">• +CMHEAD: <mode>• OK
AT+CMHEAD=?	<ul style="list-style-type: none">• +CMHEAD: (0,1)• OK

Reference

Max Response Time: 100ms

Description

Parameters

<mode> A numeric parameter which indicates whether an IP header is added to the received data or not.

0	Not add IP header
1	Add IP header

Note:

- NULL

7.13 AT+CMSHOWRA Show Remote IP Address And Port When Received Data

Command	Possible response(s)
AT+CMSHOWRA=<mode>	<ul style="list-style-type: none">• OK• +CME ERROR <err>
AT+CMSHOWRA?	<ul style="list-style-type: none">• +CMSHOWRA: <mode>• OK
AT+CMSHOWRA=?	<ul style="list-style-type: none">• +CMSHOWRA: (0,1)• OK

Reference

CMSHOWRA=1 the format is: +RECV FROM: <IP ADDRESS>: <PORT>

Description

Parameters

<mode> A numeric parameter which shows remote IP address and port.

0	Do not show the prompt
1	Show the prompt

Note:

- This command will be effective only in single connection mode (+CMMUX=0)
- Only when +CMHEAD is set to 1, the setting of this command will Work.

7.14 AT+CMSHOWPT Display Transfer Protocol In IP Head

When Received Data

Command	Possible response(s)
AT+CMSHOWPT=<mode>	<ul style="list-style-type: none">• OK• +CME ERROR <err>
AT+CMSHOWPT?	<ul style="list-style-type: none">• +CMSHOWTP: <mode>• OK
AT+CMSHOWPT=?	<ul style="list-style-type: none">• +CMSHOWTP: (0,1)• OK

Reference

- If +CMSHOWPT=1, the format is +IPD,<data size>,<TCP/UDP>:<data>

Description

Parameters

<mode> A numeric parameter which indicates whether to display transfer protocol in IP header to received data or not

0	Not display transfer protocol
1	Display transfer protocol

Note:

- This command will be effective only in single connection mode (+CMMUX=0)
- Only when +CMHEAD is set to 1, the setting of this command will Work.

7.15 AT+CMSHOWLA Show remote ip address when send data

Command	Possible response(s)
AT+CMSHOWLA=?	<ul style="list-style-type: none">• +CMSHOWLA:(0,1)• OK
AT+CMSHOWLA?	<ul style="list-style-type: none">• +CMSHOWLA:<mode>• OK
AT+CMSHOWLA=<mode>	<ul style="list-style-type: none">• OK• ERROR

Reference

Max Response Time: 300ms

Description

Parameters

<mode>

- 0: don't show (default)
- 1: show, format: TO:<IP ADDRESS>

Note:

- This command will be effective only in single connection mode (+CMMUX=0)
- Only when +CMHEAD is set to 1, the setting of this command will Work.

7.16 AT+CMIPMODE Config IPSEND data mode in normal mode (CMMODE=0)

Command	Possible response(s)
AT+CMIPMODE=?	<ul style="list-style-type: none">• +CMIPMODE:(0,1)• OK
AT+CMIPMODE?	<ul style="list-style-type: none">• +CMIPMODE:<mode>• OK
AT+CMIPMODE=<mode>	<ul style="list-style-type: none">• OK• ERROR

Reference

Max Response Time: 300ms

Description
Parameters
<mode> :
The data send mode with AT+IPSEND

- 0 : string data
- 1 : hex data

Note: The max data length of sending is 1k

7.17 AT+CMSTATE Query the connection status of the current access

Command	Possible response(s)
AT+CMSTATE=?	<ul style="list-style-type: none"> • OK
AT+CMSTATE	<ul style="list-style-type: none"> • AT+CMMUX=0 <ul style="list-style-type: none"> - +CMSTATE:<index>,<mode>,<addr>,<port>,<socketstate> - OK • AT+CMMUX=1 <ul style="list-style-type: none"> - +CMSTATE:<index>,<mode>,<addr>,<port>,<state><CR><LF>) - list - OK

Reference

Max Response Time: 300ms

Description
Parameters
<state> Strings parameter which connect state

When AT+CMMUX=0 :

"IP INITIAL"	initialization
"IP START"	start task
"IP CONFIG"	configuration scene
"IP IND"	active GPRS/CSD
"IP GPRSACT"	config receiving scene
"IP STATUS"	get local ip addr

“TCP CONNECTING”	TCP connecting
“UDP CONNECTING”	UDP connecting
“IP CLOSE”	TCP/UDP connection close
“CONNECT OK”	TCP/UDP connection success
“PDP DEACT”	GPRS/CSD scene abnormal closed

When AT+CMMUX=1 :

“IP INITIAL”	initialization
“IP START”	start task
“IP CONFIG”	configuration scene
“IP IND”	active GPRS/CSD
“IP GPRSACT”	config receiving scene
“IP STATUS”	get local ip addrs
“IP PROCESSING”	data processing
“PDP DEACT”	GPRS/CSD scene abnormal closed

<index> 0~4

<mode> Connection type “TCP” TCP connection “UDP” UDP connection

<addr> ip address

<port> port

<socketstate> connection status of the current access, “INITIAL”, ”CONNECTED”

Note: NULL

7.18 AT+CMLPORT Get Local Port

Command	Possible response(s)
AT+CMLPORT?	<ul style="list-style-type: none"> +CMLPORT: <index>, <port><CR><LF>) list OK
AT+CMLPORT=<index>, <port>	<ul style="list-style-type: none"> OK ERROR

Reference

Max Response Time: 300ms

Description

Parameters

<index> 0..4 A numeric parameter which indicates the connection number

<port> 0-65535 A numeric parameter which indicates the local port. Default value is 0, a port can be dynamically allocated a port.

Note:

- This command will be effective when +CMMUX=1.

7.19 AT+CMLOCIP Get Local IP Address

Command	Possible response(s)
AT+CMLOCIP=?	OK
AT+CMLOCIP	<ul style="list-style-type: none">• <IP address>• OK• ERROR

Reference

Max Response Time: 300ms

Description**Parameters**

<IP address> A string parameter which indicates the IP address assigned from GPRS or CSD.

Note:

- Only after PDP context is activated, local IP address can be obtained by AT+CMLOCIP, otherwise it will respond ERROR. To see the status use AT+CMSTATE command. Status should be: IP GPRSACT, TCP CONNECTING, UDP CONNECTING, SERVER LISTENING, IP STATUS, CONNECT OK, TCP CLOSING, UDP CLOSING, TCP CLOSED, UDP CLOSED in single-connection mode (see <state> parameter); IP STATUS, IP PROCESSING in multi-connection mode (see <state> parameter).

7.20 AT+CMSTAT Query the current connection state

Command	Possible response(s)
AT+CMSTAT=?	<ul style="list-style-type: none">• OK
AT+CMSTAT	<ul style="list-style-type: none">• AT+CMMUX=0<ul style="list-style-type: none">– STATE:<index>,<mode>,<addr>,<port>– OK• AT+CMMUX=1<ul style="list-style-type: none">– (+CMSTAT:<index>,<mode>,<addr>,<port><CR><LF>)– list– OK

Reference

Max Response Time: 300ms

Description

Parameters

<state> Strings parameter which connect state

“IP INITIAL”	initialization
“IP START”	start task
“IP CONFIG”	configuration scene
“IP IND”	active GPRS/CSD
“IP GPRSACT”	config receiving scene
“IP STATUS”	get local ip addr
“TCP CONNECTING”	TCP connecting
“UDP CONNECTING”	UDP connecting
“IP CLOSE”	TCP/UDP connection close
“CONNECT OK”	TCP/UDP connection success
“PDP DEACT”	GPRS/CSD scene abnormal closed

In ATV0:

0	“IP INITIAL”
1	“IP START”
2	“IP CONFIG”
3	“IP IND”
4	“IP GPRSACT”
6	“TCP CONNECTING” or “UDP CONNECTING”
7	“IP CLOSE”
8	“CONNECT OK”
9	“PDP DEACT”

<index> 0~5

<mode> Connection type “TCP” TCP connection “UDP” UDP connection

<addr> ip address

<port> port

Note: NULL

7.21 AT+CIPTKA Set TCP Keep-alive Parameters

Command	Possible response(s)
---------	----------------------

AT+CIPTKA=<mode>[, <keepIdle>[, <keepInterval>[, <keepCount>]]]	<ul style="list-style-type: none"> • OK If success • ERROR If error is related to ME functionality
AT+CIPTKA?	<ul style="list-style-type: none"> • +CIPTKA: <mode>,<keepIdle>,<keepInterval>,<keepCount> • OK
AT+CIPTKA=?	<ul style="list-style-type: none"> • +CIPTKA: (list of supported <mode>s), (list of supported<keepIdle>s), (list of supported <keepInterval>), (list ofsupported <keepCount>s) • OK

Reference

Description

Parameters

<mode> Set TCP keepalive option. 0 Disable TCP keep alive mechanism 1 Enable TCP keep alive mechanism

<keepIdle> Integer type; Idle time (in second) before TCP send the initial keepalive probe. 30-7200 Default: 7200

<keepInterval> Interval time (in second) between keepalive probesretransmission.30-600 Default: 75

<keepCount> Integer type; Maximum number of keepalive probes to be sent. 1-9 Default: 9

Note:

- NULL

7.22 AT+NQSOS Query Socket Messages Sent Pending Data List

Send a UDP/TCP datagram containing length bytes of data to remote_port on remote_addr and allows meta-data flags to be set.

Command	Response	Example
+NQSOS=<socket>[,<socket>[,<socket>[...]]]	[+IPSEND:<socket>,<sequence><CR><LF> [+IPSEND:<socket>,<sequence>] [...]]	AT+NQSOS=1,2 +IPSEND:1,2 +IPSEND:2,3 OK
+NQSOS?	[+IPSEND:<socket>,<sequence><CR><LF> [+IPSEND:<socket>,<sequence>] [...]]	AT+NQSOS? +IPSEND:1,2 +IPSEND:2,3 OK

Reference

Description**Parameters**

<socket> 0..4 A numeric parameter which indicates the connection number
<sequence> Sequence of data, range 1-255.If omit, will not report data sent status.

7.23 EXAMPLE

Single IP connection

1. AT+CGATT
 - AT+CGATT=1
 - +CGATT:1
 - OK
2. AT+CGDCONT
 - AT+CGDCONT=1,"IP","cmiot"
 - OK
3. AT+CGACT
 - AT+CGACT=1,1
 - OK
4. AT+IPSTART
 - AT+IPSTART="TCP","111.205.140.139",6800
 - OK
 - CONNECT OK
5. AT+IPSEND
 - AT+IPSEND=4
 - test
 - SEND OK
6. AT+IPCLOSE, close client
 - AT+IPCLOSE
 - OK

Multi IP connection

- 1 AT+CGATT
 - AT+CGATT=1
 - +CGATT:1
 - OK
- 2 AT+CGDCONT
 - AT+CGDCONT=1,"IP","cmiot"

- OK
- 3. AT+CGACT
 - AT+CGACT=1,1
 - OK
- 4 AT+CMMUX
 - AT+CMMUX=1
 - OK
- 5 AT+IPSTART
 - AT+IPSTART=3,"TCP","47.93.217.230",2008
 - OK
 - 3,CONNECT OK
- 6 AT+IPSEND
 - AT+IPSEND=3,4
 - test
 - SEND OK
- 7 AT+IPSTART
 - AT+IPSTART=1,"TCP","47.93.217.230",2008
 - OK
 - 1,CONNECT OK
- 8 AT+IPSEND
 - AT+IPSEND=1,4
 - test
 - SEND OK
- 9 AT+IPCLOSE, close client
 - AT+IPCLOSE=1
 - 1,CLOSE OK
 - AT+IPCLOSE=3
 - 3,CLOSE OK

8 NB-IOT COMMANDS

8.1 Network service related commands

8.1.1 AT+CPSMS PSM settings

Description

The set command controls the setting of the UEs power saving mode (PSM) parameters. The command controls whether the UE wants to apply PSM or not, as well as the requested extended periodic RAU value and the requested GPRS READY timer value in GERAN/UTRAN, the requested extended periodic TAU value in E-UTRAN and the requested Active Time value. See the unsolicited result codes provided by commands +CGREG for the Active Time value, the extended periodic RAU value and the GPRS READY timer value that are allocated to the UE by the network in GERAN/UTRAN and +CEREG for the Active Time value and the extended periodic TAU value that are allocated to the UE by the network in E-UTRAN.

A special form of the command can be given as +CPSMS= (with all parameters omitted). In this form, the parameter <mode> will be set to 0, the use of PSM will be disabled and data for all parameters in command +CPSMS will be removed or, if available, set to the manufacturer specific default values.

Refer subclause 8.2 for possible <err> values.

The read command returns the current parameter values.

The test command returns the supported <mode>s and the value ranges for the requested extended periodic RAU value and the requested GPRS READY timer value in GERAN/UTRAN, the requested extended periodic TAU value in E-UTRAN and the requested Active Time value as compound values.

Syntax

Command	Possible response
---------	-------------------

Test Command AT+CPSMS=?	+CPSMS: (list of supported <mode>s),(list of supported <Requested_Periodic-RAU>s),(list of supported <Requested_GPRS-READY-timer>s),(list of supported <Requested_Periodic-TAU>s),(list of supported <Requested_Active-Time>s) OK Fail: +CME ERROR: <err>
Read Command AT+CPSMS?	+CPSMS: <mode>,[<Requested_Periodic-RAU>],[<Requested_GPRS-READY-timer>],[<Requested_Periodic-TAU>],[<Requested_Active-Time>] OK Fail: +CME ERROR: <err>
Set Command AT+CPSMS=[<mode>[,<Requested_Periodic-RAU>[,<Requested_GPRS-READY-timer>[,<Requested_Periodic-TAU>[,<Requested_Active-Time>]]]]]	OK Fail: +CME ERROR: <err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes

None

Parameter

<mode>:integer type. Indication to disable or enable the use of PSM in the UE. 0 Disable the use of PSM
 1 Enable the use of PSM

<p><Requested_Periodic-RAU>: string type; one byte in an 8 bit format. Requested extended periodic RAU value (T3312) to be allocated to the UE in GERAN/UTRAN. The requested extended periodic RAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.060 [47]. The default value, if available, is manufacturer specific</p>
<p><Requested_GPRS-READY-timer>: string type; one byte in an 8 bit format. Requested GPRS READY timer value (T3314) to be allocated to the UE in GERAN/UTRAN. The requested GPRS READY timer value is coded as one byte (octet 2) of the GPRS Timer information element coded as bit format (e.g. "01000011" equals 3 decihours or 18 minutes). For the coding and the value range, see the GPRS Timer IE in 3GPP TS 24.008 [8] Table 10.5.172/3GPP TS 24.008. See also 3GPP TS 23.060 [47]. The default value, if available, is manufacturer specific.</p>
<p><Requested_Periodic-TAU>: string type; one byte in an 8 bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN. The requested extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.</p>
<p><Requested_Active-Time>: string type; one byte in an 8 bit format. Requested Active Time value (T3324) to be allocated to the UE. The requested Active Time value is coded as one byte (octet 3) of the GPRS Timer 2 information element coded as bit format (e.g. "00100100" equals 4 minutes). For the coding and the value range, see the GPRS Timer 2 IE in 3GPP TS 24.008 [8] Table 10.5.163/3GPP TS 24.008. See also 3GPP TS 23.682 [149], 3GPP TS 23.060 [47] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.</p>

Remark

None

Example The following examples show the typical application for this command.

Command	Possible response
AT+CPSMS=?	

AT+CPSMS?	+CPSMS: enbale=[0-1], periodicRAU="8bitStringofByte eg. 01000111",periodicTAU=" 8bitStringofByte eg. 01000111",GPRSReadyTimer="8bitStringofByte eg. 01000111",activeTimer="8bitStringofByte eg. 01000111" OK
AT+ CPSMS	

8.1.2 AT+CEDRXS eDRX settings

Description

The set command controls the setting of the UEs eDRX parameters. The command controls whether the UE wants to apply eDRX or not, as well as the requested eDRX value for each specified type of access technology.

The set command also controls the presentation of an unsolicited result code +CEDRXP:

<AcT-type>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]] when <n>=2 and there is a change in the eDRX parameters provided by the network.

A special form of the command can be given as +CEDRXS=3. In this form, eDRX will be disabled and data for all parameters in the command +CEDRXS will be removed or, if available, set to the manufacturer specific default values.

The read command returns the current settings for each defined value of <AcT-type>. The test command returns the supported <mode>s and the value ranges for the access technology and the requested eDRX value as compound values.

Syntax

Command	Possible response
Test Command AT+CEDRXS=?	+CEDRXS: (list of supported <mode>s),(list of supported <AcT-type>s),(list of supported <Requested_eDRX_value>s) OK
Read Command AT+CEDRXS?	+CEDRXS:<AcT-type>, <Requested_eDRX_value>[...]] OK
Set Command CEDRXS=[<mode>[,<AcT-type>[,<Requested_eDRX_value>]]]	OK ERROR +CME ERROR: <err>
Reference: 3GPP TS 27.007 V14.5.0	

Unsolicited Result Codes

None

Parameter

<p>to all all</p>	<p><mode>: integer type, indicates to disable or enable the use of eDRX in the UE. This parameter is applicable to all specified types of access technology, i.e. the most recent setting of <mode> will take effect for all specified values of <AcT>.</p> <p>0 Disable the use of eDRX 1 Enable the use of eDRX 2 Enable the use of eDRX and enable the unsolicited result code +CEDRXP: <AcT-type>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]] 3 Disable the use of eDRX and discard all parameters for eDRX or, if available, reset to the manufacturer specific default values.</p>
	<p><AcT-type>: integer type, indicates the type of access technology. This AT-command is used to specify the relationship between the type of access technology and the requested eDRX value.</p> <p>0 Access technology is not using eDRX. This parameter value is only used in the unsolicited result code. 1 EC-GSM-IoT (A/Gb mode) 2 GSM (A/Gb mode) 3 UTRAN (Iu mode) 4 E-UTRAN (WB-S1 mode) 5 E-UTRAN (NB-S1 mode)</p>
	<p><Requested_eDRX_value>: string type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008. The default value, if available, is manufacturer specific.</p>
	<p><NW-provided_eDRX_value>: string type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.</p>
<p>the the 3GPP</p>	<p><Paging_time_window>: string type; half a byte in a 4 bit format. The paging time window refers to bit 8 to 5 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see the Extended DRX parameters information element in 3GPP</p>
	<p>TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.</p>

Remark

None

Example

None

8.1.3 AT+CEDRXRDP eDRX dynamic parameter reads

Description

The execution command returns <AcT-type> and <Requested_eDRX_value>, <NW-provided_eDRX_value> and <Paging_time_window> if eDRX is used for the cell that the MS is currently registered to.

If the cell that the MS is currently registered to is not using eDRX, AcT-type=0 is returned.

Syntax

Command	Possible response
Test Command AT+CEDRXRDP=?	+CEDRXRDP: <AcT-type>[,<Requested_eDRX_value> [,<NW- provided_eDRX_value>[, <Paging_time_window>]]] OK +CME ERROR: <err>
Read Command AT+CEDRXRDP?	[+CEDRXRDP: <AcT- type>,<Requested_eDRX_value>[<CR><LF> OK +CME ERROR: <err>
Test Command AT+CEDRXRDP=?	OK
Reference: 3GPP TS 27.007 V14.5.0	

Unsolicited Result Codes

None

Parameter

<AcT-type>:

integer type, indicates the type of access technology. This AT-command is used to specify the relationship between the type of access technology and the requested eDRX value.

- 0 Access technology is not using eDRX
- 1 EC-GSM-IoT (A/Gb mode)
- 2 GSM (A/Gb mode)
- 3 UTRAN (Iu mode)
- 4 E-UTRAN (WB-S1 mode)
- 5 E-UTRAN (NB-S1 mode)

<Requested_eDRX_value>:

string type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.

<NW-provided_eDRX_value>:

string type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.

<Paging_time_window>:

string type; half a byte in a 4 bit format. The paging time window refers to bit 8 to 5 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see the Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008

Remark

None

Example

None

8.2 Terminal status and control commands

8.2.1 AT+CLAC lists all available at commands

Description

Execution command causes the MT to return one or more lines of AT Commands. Refer subclause 8.2 for possible <err> values.

Command	Possible response
AT+CLAC	<AT Command1>[<CR><LF><AT Command2>[...]]
AT+CLAC=?	OK

Parameter

<AT Command>:

Defines the AT command including the prefix AT. Text shall not contain the sequence 0<CR> or OK<CR>

8.2.2 AT+CTZR Time zone report

Description

This set command controls the time zone change event reporting. If reporting is enabled the MT returns the unsolicited result code +CTZV: <tz>, +CTZE: <tz>,<dst>,<time>], or +CTZEU: <tz>,<dst>,<utime>] whenever the time zone is changed. The MT also provides the time zone upon network registration if provided by the network. If setting fails in an MT error, +CME ERROR: <err> is returned. Refer subclause 8.2 for possible <err> values. Read command returns the current reporting settings in the MT. Test command returns supported <reporting>-values as a compound value.

Command	Possible response
AT+CTZR=[<reporting>]	OK
AT+CTZR?	+CTZR:<reporting>
AT+CTZR=?	+CTZR: (list of supported <reporting>s)

Parameter

<tz>: string type value representing the sum of the local time zone (difference between the local time and GMT expressed in quarters of an hour) plus daylight saving time. The format is "zz", expressed as a fixed width, two digit integer with the range -48 ... +56. To maintain a fixed width, numbers in the range -9 ... +9 are expressed with a leading zero, e.g. "-09", "+00" and "+09".

<dst>:

integer type value indicating whether <tz> includes daylight savings adjustment; * 0 <tz> includes no

adjustment for Daylight Saving Time * 1 <tz> includes +1 hour (equals 4 quarters in <tz>) adjustment for daylight saving time * 2 <tz> includes +2 hours (equals 8 quarters in <tz>) adjustment for daylight saving time

<time>:

string type value representing the local time. The format is "YYYY/MM/DD,hh:mm:ss", expressed as integers representing year (YYYY), month (MM), date (DD), hour (hh), minute (mm) and second (ss). The local time can be derived by the MT from information provided by the network at the time of delivering time zone information and will be present in the unsolicited result code for extended time zone and local time reporting if the universal time is provided by the network.

<utime>:

string type value representing the universal time. The format is "YYYY/MM/DD,hh:mm:ss", expressed as integers representing year (YYYY), month (MM), date (DD), hour (hh), minute (mm) and second (ss). The universal time can be provided by the network at the time of delivering time zone information and will be present in the unsolicited result code for extended time zone and universal time reporting if provided by the network.

8.3 Group Fields Command

8.3.1 AT+CSODCP Send initial data through the control surface

Description

The set command is used by the TE to transmit data over control plane to network via MT. Context identifier <cid> is used to link the data to particular context.

This command optionally indicates that the application on the MT expects that the exchange of data:

- will be completed with this uplink data transfer; or
- will be completed with the next received downlink data.

This command also optionally indicates whether or not the data to be transmitted is an exception data.

This command causes transmission of an ESM DATA TRANSPORT message, as defined in 3GPP TS 24.301 [83].

Refer subclause 8.2 for possible <err> values.

Test command returns range of supported <cid>s, the maximum number of bytes of user data indicated by <cpdata_length>, supported <RAI>s and supported <type_of_user_data>s as compound values.

Syntax

Command	Possible response
Test Command AT+CSODCP=?	+CSODCP: (range of supported <cid>s),(maximum number of octets of user data indicated by <cpdata_length>),(list of supported <RAI>s),(list of supported <type_of_user_data>s) OK
Set Command AT+CSODCP=<cid>,<cpdata_length>,<cpdata>[, <RAI>[,<type_of_user_data>]]	OK +CME ERROR: <err>
Reference: 3GPP TS 27.007 V14.5.0	

Unsolicited Result Codes**None****Parameter**

<p><cid>: integer type. A numeric parameter which specifies a particular PDP context or EPS bearer context definition. The <cid> parameter is local to the TE-MT interface and identifies the PDP or EPS bearer contexts which have been setup via AT command (see the +CGDCONT and +CGDSCONT commands)</p>
<p><cpdata_length>: integer type. Indicates the number of octets of the <cpdata> information element. When there is no data to transmit, the value shall be set to zero.</p>
<p><cpdata>: string of octets. Contains the user data container contents (refer 3GPP TS 24.301 [83] subclause 8.9.4.24). When there is no data to transmit, the <cpdata> shall be an empty string (""). This parameter shall not be subject to conventional character conversion as per +CSCS. The coding format of the user data container and the maximum length of <cpdata> are implementation specific</p>
<p><RAI>: integer type. Indicates the value of the release assistance indication, refer 3GPP TS 24.301 [83] subclause 8.9.4.25. 0 No information available. 1 The MT expects that exchange of data will be completed with the transmission of the ESM DATA TRANSPORT message. 2 The MT expects that exchange of data will be completed with the receipt of an ESM DATA TRANSPORT message.</p>
<p><type_of_user_data>: integer type. Indicates whether the user data that is transmitted is regular or exceptional. 0 Regular data. 1 Exception data.</p>

Remark**None****Example****None**

8.3.2 AT+CRTDCP Escalate the finalization data through the control surface

Description

The set command is used to enable and disable reporting of data from the network to the MT that is transmitted via the control plane in downlink direction. If reporting is enabled, the MT returns the unsolicited result code +CRTDCP: <cid>,<cpdata_length>,<cpdata> when data is received from the network. Refer subclause 8.2 for possible <err> values.

Read command returns the current settings.

Test command returns supported values as compound values.

Syntax

Command	Possible response
Test Command AT+CRTDCP=?	+CRTDCP: (list of supported <reporting>s),(range of supported <cid>s),(maximum number of octets of user data indicated by <cpdata_length>) OK +CME ERROR: <err>
Read Command AT+CRTDCP?	+CRTDCP: <reporting> OK +CME ERROR: <err>
Set Command AT+CRTDCP=[<reporting>]	OK +CME ERROR: <err>
Reference: 3GPP TS 27.007 V14.5.0	

Unsolicited Result Codes

None

Parameter

<p><reporting>: integer type, controlling reporting of mobile terminated control plane data events 0 Disable reporting of MT control plane data. 1 Enable reporting of MT control plane data by the unsolicited result code +CRTDCP.</p>
<p><cid>: integer type. A numeric parameter which specifies a particular PDP context or EPS bearer context definition. The <cid> parameter is local to the TE-MT interface and identifies the PDP or EPS bearer contexts which have been setup via AT command (see the +CGDCONT and +CGDSCONT commands).</p>
<p><cpdata_length>: integer type. Indicates the number of octets of the <cpdata> information element. When there is no data to transmit, the value shall be set to zero.</p>
<p><cpdata>: i string of octets. Contains the user data container contents (refer 3GPP TS 24.301 [83] subclause 8.9.4.24). When there is no data to transmit, the <cpdata> shall be an empty string (""). This parameter shall not be subject to conventional character conversion as per +CSCS. The coding format of the user data container and the maximum length of <cpdata> are implementation specific.</p>

Remark

None

Example

None

8.4 Text mode commands

8.4.1 AT+CSMS Select message service

Description

Set command selects messaging service <service>. It returns the types of messages supported by the ME: <mt> for mobile terminated messages, <mo> for mobile originated messages and <bm> for broadcast type messages. If chosen service is not supported by the ME (but is supported by the TA), final result code +CMS ERROR: <err> shall be returned. See chapter Message Service Failure Result Code for a list of <err> values. Also read command returns supported message types along the current service setting. Test command returns a list of all services supported by the TA.

Command	Possible response
AT+CSMS=?	+CSMS: (list of supported
AT+CSMS?	+CSMS: <service>, <mt>, <mo>, <bm>
+CSMS=<service>	+CSMS: <mt>, <mo>, <bm>

Parameter

<service>: integer type

- 0 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]
- 1 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]the requirement of <service> setting 1 is mentioned under corresponding command descriptions)
- 2...127 reserved
- 128... manufacturer specific

<mt>, <mo>, <bm>:

integer type * 0 type not supported * 1 type supported

8.4.2 AT+CNMA ME/TA new message acknowledgement for

Description

Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE (refer command +CNMI table 3.4.1-3 and table 3.4.1-5). This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1. TA shall not send another +CMT or +CDS result code to TE before previous one is acknowledged. If ME does not get acknowledgement within required time (network timeout), ME should respond as specified in 3GPP TS 24.011 [6] to the network. ME/TA shall automatically disable routing to TE by setting both <mt> and <ds> values of +CNMI to zero. If command is executed, but no acknowledgement is expected, or some other ME related error occurs, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for a list of <err> values.

Command	Possible
if text mode	+CNMA

8.4.3 AT+CMGC Send command

Description

Execution command sends a command message from a TE to the network (SMS-COMMAND). The entering of text (3GPP TS 23.040 [3] TP-Command-Data) is done similarly as specified in command Send Message +CMGS, but the format is fixed to be a sequence of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octets (refer +CMGS). Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code. If sending fails in a network or an ME error, final result code +CMS ERROR: <err>

is returned. See chapter Message Service Failure Result Code for a list of <err> values. This command should be abortable.

Command	Possible response
+CMGC=<fo>,<ct>[,<pid>[,<mn>[,<da>[,<toda>]]]]<CR>text is entered<ctrl-Z/ESC>	+CMGC: <mr>[, <scts>]

8.5 Test Command

8.5.1 AT+TRB (optional) Restart

Description

Execution command restart the module.

Comman	Possible
AT+TRB	REBOOTING

8.5.2 AT+TUESTATS (optional) Query UE status

Description

Execution command query UE status

Command	Possible
AT+TUESTATS=<type>	'UE status'

Parameter

<type>:

String

- RADIO radio specific information
- CELL per-cell information for the top 8 cells
- BLER block error rate information
- THP throughput
- ALL all information. The value of <type> output is the correct one for each data type.

<type> = RADIO

- <signal power in centibels>
- <total power in centibels>
- <current TX power level in centibels >
- <total TX time since last reboot in millisecond>
- <total RX time since last reboot in millisecond>

- <last SIB1 cell ID>
- <last ECL value>

- < last snr value>
- < last earfcn value>
- < last pci value>
- <rsrq in centibels>

<type> = **CELL** per-cell information for the top 5 cells. Returned entries are of the form:

- <earfcn>,<physical cell id>,<primary cell>,<rsrp>,<rsrq>,<rssi>
- <earfcn> absolute radio-frequency channel number
- <physical cell id> physical id of the cell
- <primary cell> 1 indicates the current serving cell
- <rsrp> reference signal received power
- <rsrq> reference signal received quality
- <rssi> received signal strength indicator
- <snr> signal to noise ratio

<type> = **BLER**

block error rate

- <rlc_ul_bler> RLC layer block error rate (uplink). Integer %
- <rlc_dl_bler> RLC layer block error rate (downlink). Integer %
- <mac_ul_bler> physical layer block error rate (uplink). Integer %
- <mac_dl_bler> physical layer block error rate (downlink). Integer %
- <total bytes transmitted>
- <total bytes received>
- <transport blocks sent>
- <transport blocks received>
- <transport blocks retransmitted>
- <total ack/nack messages received>

<type> = **THP**

throughput

- <rlc_ul> RLC layer throughput (uplink). Integer bps
- <rlc_dl> RLC layer throughput (downlink). Integer bps
- <mac_ul> physical layer throughput (uplink). Integer bps
- <mac_dl> physical layer throughput (downlink). Integer bps

8.6 AT+NIPDATA send nonIP data

Description

The execution command is used to send nonIP data

Command	Possible response
AT+NIPDATA=?	+NIPDATA:cid,"This is Non-IP"
AT+CGATT=cid,"string"	OK

Parameter

<cid>: integer type. A numeric parameter which specifies a particular PDP context or EPS bearer context definition. The <cid> parameter is local to the TE-MT interface and identifies the PDP or EPS bearer contexts which have been setup via AT command (see the +CGDCONT and +CGDSCONT commands).

<string>: data to be sent

Remark

Should active NONIP PDF firstly before send data

- 1. AT+CGDCONT=1,"Non-IP","apn_name"
- 2. AT+CGACT=1,1
- 3. AT+NIPDATA=1, "I am RDA"

8.7 AT+NVSETRRCRLSTIMER10 set RRC connection release waiting time

Description

The execution command is used to set RRC connection release waiting time

Command	Possible
AT+NVSETRRCRLSTIMER10=?	1
AT+NVSETRRCRLSTIMER10=value	OK

Parameter

<value>:

- 0 set 1s
- 1 set 10s

8.8 AT+CGAPNRC APN rate control

Description

This execution command returns the APN rate control parameters (see 3GPP TS 24.008 [8]) associated to the provided context identifier <cid>. If the parameter <cid> is omitted, the APN rate control parameters for all active PDP contexts are returned. The test command returns a list of <cid>s associated with secondary and non secondary active PDP contexts.

Command	Possible response
AT+CGAPNRC=<cid>[,<Additional_exception_reports>[,<Uplink_time_unit>[,<Maximum_uplink_rate>]]]	OK
AT+CGAPNRC=?	+CGAPNRC: (list of <cid>s associated with active contexts)

Parameter

<cid>:

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

<Additional_exception_reports>:

integer type; indicates whether or not additional exception reports are allowed to be sent when the maximum uplink rate is reached. This refers to bit 4 of octet 1 of the APN rate control parameters IE as specified in 3GPP TS 24.008 [8] subclause 8.5.6.3.2.

- 0 Additional_exception_reports at maximum rate reached are not allowed to be sent.
- 1 Additional_exception_reports at maximum rate reached are allowed to be sent.

<Uplink_time_unit>:

integer typ; specifies the time unit to be used for the maximum uplink rate. This refers to bits 1 to 3 of octet

- 1 of the APN rate control parameters IE as specified in 3GPP TS 24.008 [8] subclause 10.5.6.3.2.
- 0 unrestricted
- 1 minute
- 2 hour
- 3 day
- 4 week

<Maximum_uplink_rate>:

integer type; specifies the maximum number of messages the UE is restricted to send per uplink time unit. This refers to octet 2 to 4 of the APN rate control parameters IE as specified in 3GPP TS 24.008 [8] subclause 10.5.6.3.2.

8.9 AT+CRCES Reading Coverage Enhancement Status

Description

This command returns the coverage enhancement status of the MT. The terminal can consider the coverage enhancement status prior to deciding to transmit data (see e.g. subclause 8.1.43). Depending on the coverage enhancement status the terminal can refrain from transmitting data. The coverage enhancement status is only provided by the MT if the access technology of the serving cell is E-UTRAN, EC-GSM-IoT or E-UTRAN (NB-S1 mode). If the access technology of the serving cell is different, <Act>=0 is indicated.

Comman	Possible response
+CRCES	+CRCES: <Act>, <CE_level>, <CC>

Parameter

<AcT>:

integer type; access technology of the serving cell.

- 0 Serving cell has no coverage enhancement
- 1 E-UTRAN
- 2 EC-GSM-IoT (A/Gb mode) (see NOTE 1)
- 3 E-UTRAN (NB-S1 mode) (see NOTE 2)

NOTE 1: 3GPP TS 44.018 [156] specifies the EC-SCH INFORMATION message which, if present, indicates that the serving cell supports EC-GSM-IoT. NOTE 2: 3GPP TS 36.331 [86] specifies the System Information blocks which give the information about whether the serving cell supports NB-IoT, which corresponds to E-UTRAN (NB-S1 mode).

<CE_level>:

integer type; Coverage Enhancement (CE) level of the MT in the serving cell. Applicable only if <Act>=1 (E-UTRAN) or <Act>=3 (E-UTRAN (NB-S1 mode)). The Coverage Enhancement levels are defined and specified in 3GPP TS 36.331 [86].

- 0 No Coverage Enhancement in the serving cell
- 1 Coverage Enhancement level 0
- 2 Coverage Enhancement level 1
- 3 Coverage Enhancement level 2
- 4 Coverage Enhancement level 3

<CC>:

integer type; Coverage Class (CC) of the MT in the serving cell. Applicable only if <Act>=2 (EC- GSM-IoT). The Coverage Classes are defined and specified in 3GPP TS 43.064 [13].

- 0 No Coverage Class in the serving cell
- 1 Coverage Class 1
- 2 Coverage Class 2
- 3 Coverage Class 3
- 4 Coverage Class 4

8.10 AT+NVSETPM PM1/3 set PM1/3

Description

The execution command is used to set PM1/3

Command	Possible
AT+NVSETPM=?	OK
AT+NVSETPM=value	OK

Parameter

<value>:

- 0 close PM1 & PM3
- 1 Open PM1
- 2 Open PM1 & PM3

AT+CFGDFTPDN set default PDN

Description

The execution command is used to set and get default PDN type and apn

Command	Possible response
AT+CFGDFTPDN =<mode>[,<apn>]	OK
AT+CFGDFTPDN=?	+CFGDFTPDN: nooip=[1,2,3,5],apn="string"
AT+CFGDFTPDN?	+CFGDFTPDN: <defaultPdnType>;[0] <pdnType><apn>; [1] <pdnType><apn>; [2] <pdnType><apn>; [3] <pdnType><apn>

Parameter

<defaultPdnType>:

- 1 pdnType is IPv4
- 2 pdnType is IPv6
- 3 pdnType is IPv4v6
- 5 pdnType is NonIP

Remark

Currently, you can save these two kinds of PdnType apn content at the same time.If the user has already configured a APN,just want to switch the PDNTYPE of the mode,you can not enter the PDN content.

AT +CFGHCCP set the HC-CPCIoT

Description

The execution command is used to set the HC-CPCIoT

Command	Possible response
---------	-------------------

AT+CFGHCCP=<mode>[,<profile>[,<maxcid>]]	OK
AT+CFGHCCP?	+CFGHCCP:<mode>[,<profile>[,<maxcid>]]
AT+CFGHCCP=?	+CFGHCCP:enable=[0,1],profile=[0-15], maxcid=[1,16383]

Parameter

<mode>:

- 0 Support HC-CPCiot
- 1 Not Support HC-CPCiot

<profile>:

Set profile's bitmap, only 3/2/0 bits play a role. Corresponding value TCP/IP/UDP.

AT+NASCFG NAS profile setting
Description

The execution command is used to set NAS profile

Command	Possible response
AT+NASCFG=[<LowPriority>[<T3245>]]	OK
AT+NASCFG?	+NASCFG: [<LowPriority>[<T3245>[,<ExceptionData>]]]
AT+NASCFG=?	+NASCFG: LowPriority=[0-2],T3245=[0-1],ExceptionData=[0-1]

Parameter

<LowPriority>:

Integer,the range of value [0-1],whether the configuration terminal supports LowPriority and Override LowPriority

- 0: LowPriority and Override LowPriority are not supported.
- 1: Support LowPriority,but do not support Override LowPriority
- 2: Support LowPriority and Override LowPriority

<T3245>:

Integer,the range of value [0-1],whether the configuration terminal to use the T3245 feature

- 0: Do not use T3245
- 1: Use T3245

<ExceptionData>:

Integer,the range of value [0-1],whether the configuration terminal to use the ExceptionData feature

- 0: Do not use ExceptionData
- 1: Use ExceptionData

8.11 AT+IPFLT set packet filtering mode

Description

The execution command is used to set packet filtering mode. It is best to set the packet filtering mode with the AT command. bit1 is iperf, bit2 is internet, bit3 is ftp, bit4 is ping

Command	Possible
AT+IPFLT=value	OK

Parameter

<value>:

- 1 it is only iperf, and the port must be set to 5001, and the other types of packets are filtered
- 2 it is only on the internet
- 4 you only do ftp
- 8 you only do ping
- 3 you do iperf+internet
- 5 you do iperf+ftp

Remark

The command cannot be saved, and every boot is default without packet filtering. Be careful: The 084 version can be used to do TCP, and it is recommended to set up AT+IPFLT=1, and the port range must be set to 5001-5031. Sending iperf -c 192.168.0.1 -p5001 -l1000 -t300 -i1

8.12 AT+NVS SWITCHBS Scan Band

Description

Switch scan band status

Syntax

Command	Possible response
Test Command AT+NVS SWITCHBS=?	+NVS SWITCHBS: <status> OK
Set Command AT+NVS SWITCHBS=<status>	+NVS SWITCHBS: <status> OK

Parameter

<status>

0	scan band off
1	scan band on

Remark**Example**

8.13 AT+NVSETSCMODE Set scrambling code state

Description

Set the protocol version followed by the scrambling code used by the UE to scramble MIB and SIB1

Syntax

Command	Possible response
Test Command AT+NVSETSCMODE=?	+NVSETSCMODE: <version> OK
Set Command AT+NVSETSCMODE=<version>	+NVSETSCMODE: <version> OK

Parameter

<version>

0	old protocol version
1	new protocol version

Remark**Example**

8.14 AT+CFGCIOT CIOT feature configuration

Description

Configure and query the CIOT parameters.

Syntax

Command	Possible response
Test Command AT+CFGCIOT=?	AT+CFGCIOT=[0-1],[0-1],[0-2],[0-2],[0-1],[0-1],[0-1] OK
Set Command +CFGCIOT: <nonip>[,<cpciot>[,<upciot>[,<erwopdn>[,<sm s_	OK wocomb_att>[,<apn_rate_control>[,epco>]]]]]]
Read Command +CFGCIOT?	+CFGCIOT: <nonip>[,<cpciot>[,<upciot>[,<erwopdn>[,<stt>[,<apn_rate ms_ OK

Parameter

<nonip> Configure NonIP

0	not support
1	support NonIP

<cpciot> Configure CPCIoT

0	not support CPCIoT, this value is not configured for NB-IoT
1	support CPCIoT

<upciot>

Configure whether the UPCIoT feature is supported and preferred.

0	not support S1uData and UPCIoT
1	support S1uData, not support UPCIoT
2	Supports but does not optimize UPCIoT (CP mode is preferred for PDN services that can use both CP and up)
3	Supports and optimizes UPCIoT (preferred up method for PDN business that can use both CP and UP)

Note: About 2 and 3 is the preference for Upciot, which affects:

- The EMM indicates prefer in the Additionupdateypeie which way;
- for the PDN business where CP and up can be used, RABM takes precedence over which way

<erwopdn> Configure whether the ERwoPDN is supported and preferred.

0	not support ERwoPDN
1	supports but does not optimize ERwoPDN (attach process necessarily carries PDN)
2	support and optimize ERwoPDN (when attach process can not carry PDN, do not carry PDN);

<sms_wocomb_att> Configure whether the SmsWithoutCombinedAttach is supported.

0	not support
1	support SmsWithoutCombinedAttach

<apn_rate_control> Configure whether the ApnRateControl is supported.

0	not support
1	support ApnRateControl

<epco>

Configure whether the ePCO is supported.

0	not support
1	support ePCO

Note that for Nbiot, the EPCO must be used in accordance with the Protocol, but the actual test found that some vendor protocol versions are older and do not support EPCO, so add the configuration entry.

Remark
Example

8.15 AT+CCIoTOP Parameters configure

Description

Configure and query CIoT parameters, switch CIoT report function

Syntax

Command	Possible response
Test Command AT+CCIoTPT=?	AT+CCIoTPT=(0-3),[0-3],[0-2] OK

Set Command +CCIOTOPT:[<n>[,<supported_UE_opt>[,<preferred_UE_opt>]]]	OK red_UE_opt>]]]
Read Command +CCIOTOPT?	+CCIOTOPT: <n>,<supported_UE_opt>,<preferred_UE_opt> t> OK

Parameter
<n>

Integer, Value collection (0,1,3), configuring the Ciot escalation feature.

0	Turn off the escalation function;
1	Turn on the reporting function;
3	Turn off the escalation feature and set the Ciot parameter to the factory default

<supported_UE_opt>:

integer, Value range [0-3], representing the Ciot parameters supported by the UE.

0	CP and up Ciot are not supported (because Nbiot must support CP Ciot, so configuring this
1	only supports CP Ciot, does not support up Ciot;
2	Only up Ciot is supported and CP Ciot is not supported (because Nbiot must support CP Ciot,
3	Support for CP Ciot and up Ciot.

<preferred_UE_opt>:

integer, Value range [0-2], representing the UE preferred Ciot parameter.

0	No preference information;
1	priority CP Ciot;
2	Priority up Ciot (takes effect only if you have configured support for Upciot).

<supported_Network_opt>:

Integer, Range [0-3], reporting the CI of the network

Remark
Example

8.16 AT+CFGEDRX EDRX features configure

Description

Configure and query EDRX parameters

Syntax

Command	Possible response
Test Command AT+CFGEDRX=?	AT+CFGEDRX=[0-1],[0-15],[0-15] OK
Set Command +CFGEDRX:[<enable>[,<ptw>[,<edrx_val>]]]	OK
Read Command +CFGEDRX?	+CFGEDRX: <enable>[,<ptw>[,<edrx_val>]] OK

Parameter

<enable>

integer, Value range [0-1], configured to support EDRX functionality.

0	Edrx is not supported, and <ptw> and <edrx_val> are invalid when the value is taken;
1	Support Edrx;

<ptw>

integer, Value range [0-15], to configure the index value of the UE requested paging time Window length. See 24.008

8.17 AT+NVCFGARFCN Set a prior frequency

Description

Query the current state: AT+NVCFGARFCN?

Set a prior frequency:

1 No a prior frequency: AT+NVCFGARFCN=0

2 Set one prior frequency: AT+NVCFGARFCN=1,3625,19

3 Set three priors frequency: AT+NVCFGARFCN=3,3701,19,3702,20,3703,21

Syntax

None
Unsolicited Result Codes
None
Parameter
None
Remark

The number of prior frequency points currently supports up to 3.
Offset is the number in the AT command minus 20.
After setting,AT+CFUN=0 will be executed.
The use of locking function,if you want to return to normal test,need to use AT+NVSETLOCKFREQ=0 to close the locking function

Example
None

8.18 AT+NVSETLOCKFREQ lock frequency

Description

Query the current state: AT+NVSETLOCKFREQ?
Setup of locking freq(parameter three cases):
1 Close the lock freq: AT+NVSETLOCKFREQ=0
2 Open the lock cell: AT+NVSETLOCKFREQ=1,3701,19,1
3 Open the lock freq: AT+NVSETLOCKFREQ=2,3,3701,19,3702,20,3703,21

Syntax
None
Unsolicited Result Codes
None
Parameter
None
Remark

When the lock freq,maximum support 9.

Example
None

8.19 AT+CNVCFGARFCN Set a prior frequency

Description

Query the current state: AT+NVCFGARFCN?

Set a prior frequency:

1 No a prior frequency: AT+CNVCFGARFCN=0

2 Set one prior frequency: AT+CNVCFGARFCN=1,3625,19

3 Set three priors frequency: AT+CNVCFGARFCN=3,3701,19,3702,20,3703,21

Syntax

Unsolicited Result Codes

Parameter

Remark

The number of prior frequency points currently supports up to 3.

Offset is the number in the AT command minus 20.

After setting, AT+CFUN=0 will be executed.

The use of locking function, if you want to return to normal test, need to use AT+NVSETLOCKFREQ=0 to close the locking function

Example

None

8.20 AT+NVSETLOCKFREQ lock frequency

Description

Query the current state: AT+NVCFGARFCN?

Setup of locking freq(parameter three cases):

1 Close the lock freq: AT+NVSETLOCKFREQ=0

2 Open the lock cell: AT+NVSETLOCKFREQ=1,3701,19,1

3 Open the lock freq: AT+NVSETLOCKFREQ=2,3,3701,19,3702,20,3703,21

Syntax**None****Unsolicited Result Codes****None****Parameter****None****Remark**

When the lock freq,maximum support 9.

Example

None

8.21 AT+NVSETBAND Set band

Description**None****Syntax**

Read Command AT+NVSETBAND?	OK Fail: +CME ERROR: <err>
Set Command AT+NVSETBAND =[<totalband>,<band1>,<band2>]	OK Fail: +CME ERROR: <err>
Reference: 3GPP TS 27.007 V3.12.0	

Unsolicited Result Codes**None****Parameter**

<totalband>: The total number of band numbers to be set
<band1>: The number of band,the range of 1-6

<band2>:
The number of band,the range of 1-3,5,8,20

Remark

None

Example The following examples show the typical application for this command.

Command	Possible response
AT+NVSETBAND=2,1,3	OK



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9 FILESYSTEM COMMANDS

9.1 AT+FSDWNFILE Write File

Command	Possible response(s)
+FSDWNFILE=<filename>, <size>[,<tag>] > <text>	<ul style="list-style-type: none">• If success<ul style="list-style-type: none">– OK• If failed<ul style="list-style-type: none">– +CME ERROR <err>

Reference:

AT+FSDWNFILE="test",10

> 1234567890

OK

Description

Stores(writes) a file into the file system

Parameters

<filename> File's name

<size> File size expressed in bytes

<tag> Option parameter that specifies the application file type

<text> Stream of bytes

Note:

- NULL

9.2 AT+FSLSTFILE List Files Information

Command	Possible response(s)
---------	----------------------

+FSLSTFILE=0[,<tag>]	<ul style="list-style-type: none"> • If success <ul style="list-style-type: none"> – +FSLSTFILE:[<filename1>[,<filename2>[...[,<filenameN>]]]] – OK • If failed <ul style="list-style-type: none"> – +CME ERROR <err>
+FSLSTFILE=1[,<tag>]	<ul style="list-style-type: none"> • If success <ul style="list-style-type: none"> – +FSLSTFILE:<free_fs_space> – OK • If failed <ul style="list-style-type: none"> – +CME ERROR <err>
+FSLSTFILE=2,<filename>[,<tag>]	<ul style="list-style-type: none"> • If success <ul style="list-style-type: none"> – +FSLSTFILE:<file_size> – OK • If failed <ul style="list-style-type: none"> – +CME ERROR <err>

Reference:

AT+FSLSTFILE=0

+FSLSTFILE: AT_CFG_TCPIP.BIN,AT_CFG_0.BIN,AT_CFG_AUTOSAVE.BIN,sms_dm_nv.bin,cfw_nv.bin

OK

AT+FSLSTFILE=1

+FSLSTFILE:353408

OK

AT+FSLSTFILE=2,"cfw_nv.bin"

+FSLSTFILE: 2468

OK

Description

Retrieves some information about the FS. Depending on the specified <op_code>, it can print:

List of files stored into the FS

Remaining free FS space expressed in bytes

Size of the specified file expressed in bytes

Parameters

<op_code> Option code

0	lists the files belonging to <tag> file type
1	gets the free space for the specific <tag> file type
2	gets the file size expressed in bytes,belonging to <tag> type(if specified)

<tag> Specifies the application file type

<filename(1~N)> File name

<free_fs_space> Available free space on FS in bytes

<file_size> Size of the file specified with the <filename> parameter

Note:

- NULL
-

9.3 AT+FSRDFILE Read File

Command	Possible response(s)
+FSRDFILE=<filename>[,<tag>]	<ul style="list-style-type: none">• If success<ul style="list-style-type: none">– +FSRDFILE:<filename>,<size>,<data>– OK• If failed<ul style="list-style-type: none">– +CME ERROR <err>

Reference:

AT+FSRDFILE="test"

+FSRDFILE: test,10,

1234567890

OK

Description

Retrieves a file from the file system

Parameters

<tag> Specifies the application file type

<filename> File name

<data> File content

<size> File size, in bytes

Note:

- NULL
-

9.4 AT+FSRDBLOCK Partial Read File

Command	Possible response(s)
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+FSRDBLOCK=<filename>,<offset>,<size>[,<tag>]	<ul style="list-style-type: none"> • If success <ul style="list-style-type: none"> – +FSRDBLOCK:<filename>,<size>,<data> – OK • If failed <ul style="list-style-type: none"> – +CME ERROR <err>
---	--

Reference:

AT+FSRDBLOCK="test",5,5

+FSRDBLOCK: test,5,

67890

OK

Description

Retrieves a file from the file system. this command allows the user to read only a portion of the file

Parameters

<filename> File name

<offset> Offset in bytes from the beginning of the file

<size> Number of bytes to be read starting from the <offset>

<data> Content of the file read

<tag> Specifies the application file type

Note:

- NULL

9.5 AT+FSDELFILE Delete File

Command	Possible response(s)
+FSRDELFILE=<filename>[,<tag>]	[, <ul style="list-style-type: none"> • If success <ul style="list-style-type: none"> – OK • If failed <ul style="list-style-type: none"> – +CME ERROR <err>

Reference:

AT+FSDELFILE="test"

OK

Description

Deletes a stored file from the file system.

Parameters

<filename> File name

<tag> Specifies the application file type

Note:

- NULL
-



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