Cavli C1RM Smart Module
LTE CAT NB1/NB2/EGPRS
Integrated eSIM

AT Command Manual
Release Version 3.0

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Contents

Chapter 1. Summary

AT command interface, as shown in Figure 1-1:

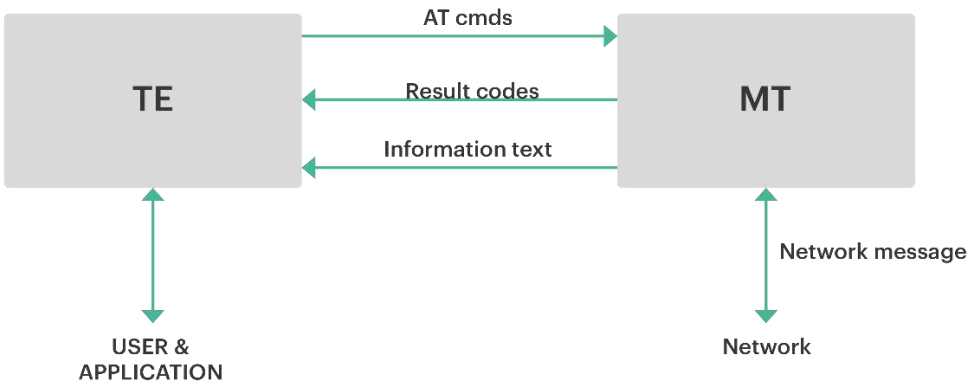

Figure 1. AT command interface

1. 1 AT Command Syntax

1. Optional parameter and required parameters must be arranged in accordance with the provisions of the order, the parameters must be separated by a comma. An example of this"AT+CPWD=<fac>, <oldpwd>, <newpwd>", which is used to set a new password for facility lock.

2. If the parameter is a string (such as <number>), the string must be placed in double quotes. For example, the string "1234" or "cmnet". On the contrary, the symbols in double quotes can be seen as a string.

3. Optional parameters or the optional part of the results return from TA should be in the square brackets.

4. When you don't use double quotes, the spaces between the characters in the string are negligible.

5. In actual use, do not need to enter < >, [].

6. All AT commands are not case sensitive, "AT"or "at"is OK。

1. 2 AT Command Interface

Each interface requires functional cohesion.

Because of the AT command transmit the data packets through communication port, so the size of the package is limited. For sending AT commands, in addition to the characters "AT", MT can receive 1600 characters in length at most, including the null character at the end of the commands. MT active reported response messages or URC, the maximum length is also limited to 1600 characters.

Each command line can contain only one AT command. For the URC or response which MT initiative report to TE, each line also allows only one AT command. AT command end with a carriage return, and response and reporting end with linefeed.

In order to increase the readability and normative of the command and response format, In addition to the original standard protocol interface, all the other new interface parameters cannot contain spaces.

If TE want to execute the second AT command, it must be first wait for the response of the AT command from MT. Or the second AT command will not be executed.

In order to ensure the other affairs without interference, it suggest that report response results in asynchronous mode for the AT command which need long time to response. If MT takes a long time to respond to the TE, there may be a result of the response is interrupted by a URC. This interrupt contains two cases, one is that the URC report during the response process after the AT command executed, the response result will be report after the URC report. Another is that the URC report during the response process after the AT command executed, the AT command still to be executed and the response will be report with the URC report lead to two kinds of reports confusion. For the special URC such as RING will use as a command terminator in some special cases, for example, the hang up command will be aborted if it has RING report in the process of hang up command.

The definition of string: up by double quotes, without quotes or comma byte stream.

AT command string con not appear the combination of comma and quotes. The current version, does not support the escape character. For the UCS2 encoding format of the data, the encoding value reported in character format.

The possible response from MT to TE consist of information text and result code, of which the information text is optional and the result code is Compulsory. Possible response format control by ATV command.

1. 3 AT Command Interface Standards

1. The standard of add new interface

Parameters can be added directly behind the original parameters of AT command, so in the late stage of product development if it is found that the interface cannot adapt to the new demand, it is only allowed add new parameters behind the original interface. Additional parameters should not affect the original function.

2. The design principle of this product does not support function

If the AT command from MT con not recognize the current interface, the result of command not support will be reported. If the parameters more than the original parameters, two report may be reported, the one is result code of too many parameters, another approach is fault-tolerant processing which not to judge the extra parameter

Chapter 2. Terms and Abbreviations

Abbreviations	Full name
AAA	Authentication Authorization Accounting
WCDMA	Wide band Code Division Multiple Access
ESN	Electronic Serial Number
FTP	File Transfer Protocol
GIS	Geographic Information System
GPS	Global Positioning System
IMSI	International Mobile Subscriber Identity
MDN	Mobile Directory Number
PDSN	Packet Data Serving Node
PPP	Point to Point Protocol
SGIP	Short Message Gateway Interface Protocol
SI	System Integrate
SMG	Short Message Gateway
SMPP	Short Message Peer to Peer
TCP	Transmission Control Protocol
UDP	User Data gram Protocol
SIM	User Identity Model
EDGE	Enhanced Data GSM Environment
EGPRS	Enhanced General Packet Radio Service
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications

HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
PDU	Protocol Data Unit

Chapter 3. General Commands

3.1 A/ Repeat last command

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).

3.2 AT+CPOF Switch Off Mobile Station

Description

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

Syntax

Command	Response
AT+CPOF=?	OK
AT+CPOF?	+CME ERROR
AT+CPOF	+CPOF: MS OFF OK

Example

AT+CPOF
+CPOF: MS OFF OK

3.3 ATS0 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.

Syntax

Command	Response
ATS0=?	0-255
ATS0?	<n>
ATS0=[n]	OK

Defined values

Parameter	Explain
<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.

Examples

ATS0=2
OK
ATS0=?
0-25 5 OK
ATS0?

3.4 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.

Syntax

Command	Response
ATS3?	<n>

Defined values

Parameter	Explain
<n>:	Command line termination character 0~13(default)~31

Remark

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

3.5 +++ Switch from Online Data Or PPP Mode To Online Cmd Mode

Description

Return to online command state from online data state.

Syntax

Command	Response
+++	OK

Response

OK If value is valid.

ERROR If value is not recognized or not supported.

3.6 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

Syntax

Command	Response
ATO[<value>]	CONNECT<text>

Defined values

Parameter	Explain
<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.

Examples

ATO0
CONNECT

3.7 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.

Syntax

Command	Response
AT&F[<value>]	OK

Defined values

Parameter	Explain
<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).

Examples

AT&F
OK

3.8 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.

Syntax

Command	Response
ATV[<value>]	if <value> is 1 or empty – OK

	if <value> is 0 – 0

Defined values

Parameter	Explain
<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 if likewise mean "the character with the ordinal value specified in parameter S4"

V0	V1
<text><cr><lf>	<cr><lf> <text><cr><lf>– 0
<numeric code><cr>	><cr> <cr><lf><verbose code><cr><lf>

Examples

ATV1
<CR><LF><text><CR><LF> <CR><LF><verbose code><CR><LF>

3.9 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.

Syntax

Command	Response
AT&W[<value>]	OK

Defined values

Parameter	Explain
<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.

Examples

ATE
OK

3.10 ATQ Set Result Code Presentation Mode

Description

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

Syntax

Command	Response
ATQ[<value>]	OK

Defined values

Parameter	Explain
<value>	0 DCE transmits result code 1 Result codes are suppressed and not transmitted

Example

ATQ0
OK
ATQ1
OK

3.11 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.

Syntax

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

Defined values

Parameter	Explain
<value>	The default value is 4. • 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.

3.12 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 manufactured.

Syntax

Command	Response
ATZ[<value>]	OK

Defined value

Parameter	Explain
<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

3.13 AT+CFUN Set Phone Functionality

Description

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

Syntax

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

Defined values

Parameter	Explain
<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.

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.

Examples

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

3.14 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.

Syntax

Command	Response
AT+CMEE=?	OK
AT+CMEE?	+CMEE:<n>
AT+CMEE=<n>	+CMEE:<n>

Defined values

Parameter	Explain
<value>	• 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.

Examples

AT+CMEE=1
OK
AT+CMEE=5
+CME ERROR:53 at+cmee=? +CMEE: (0-2) OK
at+cmee?
+CMEE: 1 OK

3.15 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.

Syntax

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

Defined values

Parameter	Explain
<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

3.16 AT+CMUX Multiplexing Mode

Description

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

Syntax

Command	Response
AT+CMUX=?	+CMUX: (list of supported <transparency>s),(list of supported <subset>s),(list of supported <port_speed>s),(list of supported <N1>s),(list of supported <T1>s),(list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s),(list of supported <k>s) | OK
AT+CMUX?	+CMUX: <transparency>,[<subset>], <port_speed>,<N1>,<T1>,<N2>,<T2>, <T3>[,<k>] | OK

AT+CMUX=<transparency>[,<subset>[,<port_speed>	OK [,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]

Defined values

Parameter	Explain
<transparency>	0 Basic option 1 Advanced option
<subset>	0 UIH frames used only
<port_speed>	1 9600 bit/s 2 19200 bit/s 3 38400 bit/s 4 57600 bit/s 5 115200 bit/s 6 230400 bits/s
<N1>	1- 2048, where the 31 is default for Basic option and 64 is default for Advanced option (see <transparency>)
<T1>	1-255, where 10 is default (100 ms)
<N2>	0-100, where 3 is default
<T2>	2-255, where 30 is default (300 ms).
<T3>	1-255, where 10 is default
<K>	1-7, where 2 is default

NOTE

T2 must be longer than T1.

Example

AT+CMUX=0,0,5,127,10,3,30,10,2
OK
AT+CMUX=?
+CMUX: (0,1),(0),(1-6),(1-2048),(1-255),(0-100),(2-255),(1-255),(1-7) OK
AT+CMUX?
+CMUX: 0,0,5,127,10,3,30,10,2 OK

3.17 AT+ICF DTE DCE Character Framing

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

Syntax

Command	Response
AT+ICF=[<format>[, <parity>]]	
AT+ICF?	+ICF: <format>,<parity>
AT+ICF=?	+ICF: (list of supported <format> values),(list of supported <parity> values)

Defined values

Parameter	Explain
<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

3.18 AT+IPR Set Fixed Local Rate

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

Syntax

Command	Response

AT+IPR=<rate>	
AT+IPR?	+IPR: <rate>
AT+IPR=?	+IPR: (list of supported autodetectable <rate> values)[,(list of fixedonly <rate> values)]

Defined values

Parameter	Explain
<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.

3.19 AT+GSN Request TA Serial Number Identification | IMEI number

Description

This command request TA serial number identification | IMEI number

Syntax

Command	Response
AT+GSN=?	OK
AT+GSN=0	<sn>
AT+GSN=1	<imei>

Defined values

Parameter	Explain
<sn>:	the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.
<imei>:	International mobile equipment identity.

Examples

```
AT+GSN=0
012345678901234
OK
```

3.20 AT+CGSN Product serial number identification

Description

Execution command causes the TA to return IMEI (International Mobile station Equipment Identity number) and related information to identify the MT that the TE is connected to. Refer subclause 9.2 for possible <err> values. Test command returns values supported as a compound value. For a TA which does not support <snt>, only OK is returned.

Syntax

Command	Response
AT+CGSN[=<snt>]	• +CGSN: <sn> /<imei> OK
AT+CGSN=?	• +CGSN: (list of supported • <snt>s) OK

Defined values

Parameter	Explain
<snt>:	integer type indicating the serial number type that has been requested. * 0 returns <sn> * 1 returns the IMEI (International Mobile station Equipment Identity).
<sn>:	one or more lines of information text determined by the MT manufacturer. Typically, the text will consist of a single line containing

	the IMEI number of the MT, but manufacturers may choose to provide more information if desired. The total number of characters, including line terminators, in the information text shall not exceed 2048 characters. Text shall not contain the sequence 0<CR> or OK<CR>.
<imei>:	string type in decimal format indicating the IMEI; refer 3GPP TS 23.003 [7], subclause 6.2.1. IMEI is composed of Type Allocation Code (TAC) (8 digits), Serial Number (SNR) (6 digits) and the Check Digit (CD) (1 digit). Character set used in <imei> is as specified by command Select TE Character Set +CSCS.

3.21 AT+ICCID Read ICCID in SIM Card

Description

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

Syntax

Command	Response
AT+GMM=?	OK
AT+GMM	<model>

Defined values

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

Examples

AT+GMM

GSM Ultimate Data Device

OK

3.22 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.

Syntax

Command	Response
AT+CGMM=?	OK
AT+CGMM	<model>

Defined values

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

Examples

AT+CGMM

GSM Ultimate Data Device

OK

3.23 AT+GMR Request Revision Identification

Description

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

Syntax

Command	Response
AT+GMR=?	OK

AT+GMR	<revision>

Defined value

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

Example

AT+GMR
3.00 OK

3.24 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.

Syntax

Command	Response
AT+CGMR=?	OK
AT+CGMR	<revision>

Defined value

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

Example

AT+CGMR

3.00
OK

3.25 AT+GMI Request TA Manufacturer Identification

Description

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

Syntax

Command	Response
AT+GMI=?	OK
AT+GMI	<manufacturer>

Defined value

Parameter	Explain
<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

3.26 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.

Syntax

Command	Response
AT+CGMI=?	OK
AT+CGMI	<manufacturer>

Defined value

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

Example

AT+CGMI
Manufacturer: Cavli Wireless Inc. OK

3.27 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)

Syntax

Command	Response
ATI	<module name> <module version>

Defined value

Parameter	Explain
<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
Cavli AT 3.0.0 OK

3.28 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.

Syntax

Command	Response
AT+CIMI=?	OK
AT+CIMI	<IMSI>

Defined value

Parameter	Explain
<IMSI>:	International Mobile Subscriber Identity (string without double quotes)

Example

```
AT+CIMI

460001033113523
OK
```

3.29 AT+CALA Set an Alarm Time

Description

This command is used to set/list alarms or date/time in the ME.

Syntax

Command	Response
AT+CALA=?	+CALA: (list of supported <n>s),(list of supported <type>s), <tlength>,<rlength>,(list of supported <silent>s)
AT+CALA?	[+CALA: <time>,<n1>,<type>,[<text>],

	[<recurr>],<silent><CR><LF>+CALA: <time>,<n2>,<type>,[<text>], [<recurr>],<silent>[...]]]
AT+CALA=<time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]]	OK

Defined value

Parameter	Explain
<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.
<n>, <n1>, <n2>:	Integer type value Indicating the index of the alarm. Default is 1, in the range of 1~15.
<type>:	**>**: Integer type value indicating the type of the alarm (e.g. sound, volume, LED); values and default is 0.
<text>:	String type value indicating the text to be displayed when alarm time is reached; maximum length
<tlength>:	Integer type value indicating the maximum length of <text>
<recurr>:	String type value indicating day of week for the alarm in one of the following formats: "<1..7>[,<1..7>[. . .]]" - Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1),Sunday (7). Example: The string

	"1,2,3,4,5" may be used to set an alarm for all weekdays. "0" - Sets a recurrent alarm for all days in the week.
<rlength>:	Integer type value indicating the maximum length of <recurr>
<silent>:	Integer type value indicating if the alarm is silent or not. If set to 1 the alarm will be silent and the only result from the alarm is the unsolicited result code +CALV. If set to 0 the alarm will not be silent

Remark

- If you want set a recycle alarm,just import the time
- If don't input recur , it will consider it not a recyclable alarm
- If don't input index,the alarm index is 1 will be substitute
- String format of alarm: "yy/MM/dd,hh:mm:ss".
- Maximum number of alarms is 15. Seconds are not taken into account.

Example

AT+CALA="07/10/26,10:20:34",1,0,"alarm1"

<Note : Set alarm for Dec 26th, 2007 at 10:20:34 am, the alarm name is alarm1>

OK

<Note : the alarm is stored>

AT+CALA="18:02:10",2,0,"alarm2","2"

<Note : >

OK

<Note : the alarm is stored>

AT+CALA?

<Note : >

+CALA: "07/10/27,17:35:30",1,0,"alarm1","1,2,3,4,5,6,7" +CALA:

"07/10/27,17:40:23",2,0,"alarm2","1,2,3,4,5,6,7"

+CALA: “07/10/27,18:50:30”,3,0,”alarm test”,”2,4,6,”” +CALA: “07/10/27,17:35:30”,4,0,”alarm5”,”1,3,5,6,””

+CALA: “07/10/29,18:45:30”,5,0,”222”,”1,3,5,””

OK

<Note : >

AT+CALA=?

<Note : >

+CALA: (1-15),(0),(32),(15)

OK

<Note : >

3.30 AT+VGR Receive Gain Selection

Description

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

Syntax

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

Defined value

Parameter	Explain
<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

3.31 AT+CLVL Loudspeaker Volume Level

Description

This command is used to select the volume of the internal loudspeaker of the MT.

Syntax

Command	Response
AT+CLVL=?	+CLVL: (list of supported <level>s)
AT+ CLVL?	+CLVL: <level>
AT+CLVL= <level>	OK

Defined value

Parameter	Explain

level>:	integer type value with manufacturer specific range (smallest value represents the lowest sound level)

Example

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

3.32 AT+CMUT Mute Control

Description

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

Syntax

Command	Response
AT+CMUT=?	+CMUT: (list of supported <n>s)
AT+CMUT?	+CMUT: <n>
AT+CMUT= <n>	OK

Defined value

Parameter	Explain
<n>:	0 mute off 1 mute on.

Example

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

3.33 AT+CCLK Real Time Clock

Description

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

Syntax

Command	Response
AT+CCLK?	+CCLK: <time>
AT+CCLK= <time>	OK

Defined value

Parameter	Explain
<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 -96. . . +96). 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+08"
OK
AT+CCLK?
+CCLK: "07/10/25,11:33:44+08" OK
AT+CCLK=?
OK

3.34 AT+CALD Delete One Alarm

Description

Action command deletes an alarm in the MT

Syntax

Command	Response
AT+CALD=?	+CALD: (list of supported <n>s)
AT+CALD= <n>	OK

Defined value

Parameter	Explain

<n>:	Integer type value Indicating the index of the alarm. default is manufacturer specific

Example

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

3.35 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 9.2 for possible <err> values. Read command returns the current reporting settings in the MT. Test command returns supported <reporting>-values as a compound value.

Syntax

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

Defined value

Parameter	Explain
<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.

3.36 AT+CBC Battery Charging / Discharging and Charge Control

Description

This command is used to set/list alarms or date/time in the ME.

Syntax

Command	Response
AT+CBC=?	+CBC: (list of supported <bcs>s),(list of supported <bcl>s)

AT+CBC?	+CBC: <bcs>,<bcl><bcs>
AT+CBC	OK

Defined value

Parameter	Explain
<bcl>:	Defined values
<bcs>:	0 No charging adapter is connected 1 Charging adapter is connected 2 Charging adapter is connected, charging in progress 3 Charging adapter is connected, charging has finished 4 Charging error, charging is interrupted 5 False charging temperature, charging is interrupted while temperature is beyond allowed range
<bcl>:	Battery capacity 0, 10,20, 30,40, 50,60, 70,80, 90,100 percent of remaining capacity (11 steps) 0 indicates that either the battery is exhausted or the capacity value is not available.

Example

```
AT+CBC?

+CBC: 0,100
OK
AT+CBC=?

+CBC: (0-5), (0,10,20,30,40,50,60,70,80,90,100)
OK
```

3.37 AT+CBCM Supply Information When Battery Capacity Changed Control

Description

This command control information display when battery capacity changed. But this command not support now

Syntax

Command	Response
AT+CBCM=?	+CBCM: list of supported <bNumber>s
AT+CBCM	+CBCM: <bNumber>
AT+CBCM=<bNumber>	OK

Defined value

Parameter	Explain
<bNumber>:	0 means the battery status event will not be reported initiatively 1 means the battery status event will be reported initiatively

Example

AT+CBC=1
OK
AT+CBC=?
+CBC:0 OKCBC: (0-5), (0,10,20,30,40,50,60,70,80,90,100) OK
AT+CBC=?
+CBC: (0-1) OK

3.38 AT+CMER Mobile Termination Event Reporting

Description

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

Syntax

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

Defined value

Parameter	Explain
<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
<keyp>:	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

3.39 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.

Syntax

Command	Response
AT+CEER=?	OK
AT+CEER	+CEER: <report>
AT+CEER=?	OK

Defined value

Parameter	Explain
<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

3.40 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.

Syntax

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

Defined value

Parameter	Explain
<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

3.41 AT+CSCLK Set Low Clock Mode

Description

This command is used to set low clock mode.

Syntax

Command	Response
AT+CSCLK=?	+ CSCLK: (list of supported <pas>s)
AT+ CSCLK =<n>	+ CSCLK: < CSCLK >

Defined value

Parameter	Explain
<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 automaticlly , disable slow clock when uart recieve or send data,otherwise enable slow clock.

Example

At+CSCLK=?
CSCLK:(0,1,2) OK
At+ CSCLK=1

OK

3.42 AT+IFC DTE-DCE local flow control

Description

This command is used to control DTE_DCE local flow

Syntax

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

Defined value

Parameter	Explain
<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?
+IFC: 2,2 Ok

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

3.43 AT+SFUN Set Phone Functionality

Description

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

Syntax

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

Defined value

Parameter	Explain
<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.

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+SFUN=0
OK
AT+SFUN?
+SFUN:0 OK

3.44 AT+CIND Set if the indication event send to ATE

Description

Set if the indication event send to ate

Syntax

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

Defined value

Parameter	Explain
<ind>:	if the indication event send to ate 0 value 0 means that the indicator is off 1 value 1 means that indicator is on 4 Disable phone both transmit and receive RF circuits

Example

```
AT+CIND=1,1,1,0,1,1,1,1

OK

AT+CIND?

+CIND:5,0,0,0,1,0,0,0
OK
```

Chapter 4. SIM COMMANDS

4.1 AT+SIM SIM status checking

Description

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

Syntax

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

Defined values

Parameter	Explain
<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

4.2 AT+SIMIF Request SIM type

Description

Execution command return the type of SIM.

Syntax

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

Defined values

Parameter	Explain
<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”.

Examples

```
AT^SIMIF=?

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

AT^SIMIF?

^SIMIF: 1,0
OK

AT^SIMIF=1,1

^SIMIF: SIM
OK
```

4.3 AT+CCID Request ICC Identification

Description

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

Syntax

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

Defined values

Parameter	Explain
<ccid>:	string type, the ccid read from SIM card.

Examples

AT+CCID
+CCID: 898601061401xxxxxxxx OK
AT+CCID=?
+CME ERROR: 53
AT+CCID?
+CME ERROR: 53

4.4 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.).

Syntax

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

Defined value

Parameter	Explain
<pin>:	string type values
<newpin>:	string type values, new pin after <pin> check pass.
<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 returnedonly 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!

Examples

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

4.5 AT^CPINC Total Times of Access The Sim Card

Description

Remaining times of access the sim card

Syntax

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

Defined value

Parameter	Explain
<pin>:	Password (string type), usually SIM PIN2 or, if requested, SIM PUK2
<newpin>:	If the requested code was SIM PUK2: new password (PIN2).
<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 returnedonly 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)

Examples

AT+CPIN2=?
OK
AT+CPIN2?
+CPIN2: READY OK
AT+CPIN2="2345"
OK

4.6 AT+CPIN2 Pin2 Authentication(for Sim)

Description

+CPIN2 controls network authentication of the MT.

Syntax

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

Defined values

Parameter	Explain
<pin>:	Password (string type), usually SIM PIN2 or, if requested, SIM PUK2
<newpin>:	If the requested code was SIM PUK2: new password (PIN2).

<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 returnedonly 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)

Example

```
AT+CPIN2=?

OK

AT+CPIN2?

+CPIN2: READY
OK

AT+CPIN2="2345"

OK
```

4.7 AT+CLCK Facility Lock

Description

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

Syntax

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

Defined value

Parameter	Explain
<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

AT+CLCK="SC",2

+CLCK: 1
OK

AT+CPIN?

+CPIN: SIM PIN
OK

AT+CPIN="1234"

OK

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

OK

AT+CPIN?

+CPIN: READY
OK

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

4.8 AT+CPWD Change Password

Description

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

Syntax

Command	Response
AT+CPWD=?	+CPWD: list of supported (<fac>,<pwdlength>)
AT+CPWD=<fac>,<oldpwd>,<newpwd>	+CPIN: <code>
AT+CPIN=<pin>[,<newpin>]	OK

Defined value

Parameter	Explain
<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

4.9 AT+QSPN Request Service Provider Nam

Description

Execution command return Service Provider Name.

Syntax

Command	Response
AT+QSPN=?	OK
AT+QSPN?	OK
AT+QSPN	+QSPN:<display mode> ,<spn> OK

Defined value

Parameter	Explain
<display mode>:	0 doesn't display PLMN 1 display PLMN
<spn>:	string type, Service Provider Name.

Example

AT+QSPN

+QSPN: 0, Banglalink

OK

AT+QSPN?

OK

4.10 AT+QGID Request SIM

Description

Execution command return SIM GID.

Syntax

Command	Response
AT+QGID=?	OK
AT+QGID?	OK
AT+QGID	+QGID: <gid1>,<gid2> OK

Defined value

Parameter	Explain
<gid1>,<gid2>:	Group Identifier

Example

```
AT+QGID

+QGID: FFFFFFFF,FFFFFFFF

OK

AT+QGID?

OK
```

4.11 AT+CRSM Restricted SIM Access

Description

This command support limited access to SIM database.

Syntax

Command	Response
AT+CRSM=?	OK
AT+CRSM?	OK
AT+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>]]]	+CRSM: <sw1>,<sw2>[, <response>]

Defined value

Parameter	Explain
<command>:	following commands are used for SIM card. 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS commands above plus one are used for USIM card,e.g. read an record of USIM, the command is 179. All other values are reserved
<fileid>:	for SIM card, it is integer type, e.g. read ADN fileid is 28474(6F3A in hex). for USIM card, it is string type, e.g. read ADN fileid is 5F3A4F3A(5F3A is the path, 4F3A is the file id). this is the identifier of a elementary datafile on SIM. Mandatory for every command except STATUS
<P1>, <P2>, <P3>:	integer type; parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET

	RESPONSE and STATUS. The values are described in GSM 11.11 [28]
<data>:	information which shall be written to the SIM (hexadecimal character format; refer +CSCS)
<SW1>, <SW2>:	integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command
<response>:	response of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. This information includes the type of file and its size (refer GSM 11.11 [28]). After READ BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command

Example

```
AT+CRSM=192,28433,0,0,15

+CRSM:144,0,621E82054221001C0283026F40A503

OK

AT+CRSM=179,"5F3A4F3A",1,4,28 //read ADN of USIM

+CRSM:144,0,616263FFFFFFFFFFFFFFFFFFFFFF038121F3FFFFFFFFFFFFFFFFFFFF

OK
```

4.12 AT+CRSML Read records of EF files on (U)SIM

Description

This command read some records of certain files on (U)SIM.

Syntax

AT+CRSML=?	OK
AT++CRSML=<fileid>, <start record>, <count>	+CRSML: <record1\n> | ... +CRSML: <recordn\n> OK
AT+CRSML=?	OK

Description

Parameter	Explain
<fileid>:	integer type; This is the identifier of a elementary datafile on SIM
<start record>:	integer type; First record read from.
<count>:	integer type; The number of records read from (U)SIM
<record1\n>, <record2\n> ... <recordn\n>:	string type; record data from (U)SIM.

Example

AT+CRSML=28474, 1, 2 //read SIM ADN, 28474 is 6F3A(ADN EF ID) in decimal base

+CRSML:144,1,616263FFFFFFFFFFFFFFFFFFFFFF038121F3FFFFFFFFFFFFFFFFFFFF

+CRSML:144,2,FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

OK

AT+CRSML=1597656890, 1, 2 //read USIM ADN, 1597656890 is 5F3A4F3A(ADN and PATH ID) in decimal base

+CRSML:144,1,616263FFFFFFFFFFFFFFFFFFFFFF038121F3FFFFFFFFFFFFFFFFFF

+CRSML:144,2,FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF

OK

4.13 AT+CNUM Subscriber Number

Description

The MS ISDN related to the subscriber

Syntax

Command	Response
AT+CNUM=?	OK
AT+CNUM	+CNUM: [<alpha1>],<number1>,<type1>[<CR><LF>]

Description

Parameter	Explain
<alphax>	optional alphanumeric string associated with numberx used character set should be the one selected with command Select TE Character Set +CSCS
<numberx>	string type phone number of format specified by <typex>
<typex>	type of address octet in integer format

<text>	field of maximum length <tlength>; character set as specified by command +CSCS. The display of text depending to the storage format in the sim card. If we store the pbk entry with ucs2 format, we show Chinese string here, otherwise, we show NON-Chinese string. We do not care about charsets, it is decided by command +CSCS setting when we store them.

Example

AT+CNUM

+CNUM: "john","111",129 (non-Chinese string) (with non-ucs2 of AT+CSCS setting as pbk storing)

+CNUM: "XXXXX","34",129 (Chinese string) (with ucs2 of AT+CSCS setting as pbk storing)

Ok

4.14 AT^SIMSWAP Set Preferred SIM Channel (eSIM or UICC)

Description

This command allows to switch the default SIM channel for the module. C1RM is dual SIM module, but capable of using one SIM at a time. C1RM comes with eSIM inside and an eSIM is the default selection ie, SIM 0. Change in SIM channel will only get into effect after reboot.

Syntax

Command	Response
AT^SIMSWAP=?	^SIMSWAP: (0,1)
AT+SIMSWAP=<0,1>	OK
AT^SIMSWAP?	^SIMSWAP: 0

Chapter 5. CALL CONTROL COMMANDS

5.1 ATA Answer A Call

Description

This command is used to answer an incoming call.

Syntax

Command	Response
ATA	Success: OK Fail: ERROR NO CARRIER

Unsolicited Result Codes

URC1

RING:

URC2

CIEV: SOUNDER 1

CIEV: CALL 1

Remark

This command should be used only when there is one call. When there are several calls, please use the AT+CHLD to answer a new call.

Example

The following examples show the typical application for this command

RING<incoming call>

ATA

CONNECT

5.2 ATD Make A Call

Description

This command is used to make an outgoing call. The length of dial number is less than 20.

Syntax

Command	Response
ATD<number>;	Success: When the call is in progress: OK and NO ANSWER or NO CARRIER or //connection be released NO DAILTONE or BUSY Fail: ERROR

Unsolicited Result Codes

URC1

CONNECT:

URC2

CIEV: SOUNDER 1

CIEV: CALL 1

Defined values

Parameter	Explain
<Number>:	Dialing digits, include 1,2,3,4,5,6,7,8,9,0,*,#,+,A,B,C,. . .

Example

The following examples show the typical application for this command.

ATD10086;

OK

CONNECT

AT+CLCC;

+CLCC: 1,0,0,0,0,"10086",129

OK

OK

NO CARRIER

ATD112;

<Only an emergency call can be made when we do the test without SIM card.

NO CARRIER will be returned when you press the CANCEL

5.3 ATH Disconnect Existing Call

Description

Hang up all existing connected calls, including active, waiting and hold calls.

Syntax

Command	Response
ATH	Success: OK Fail: ERROR

Unsolicited Result Codes

URC1

CIEV: SOUNDER 0

CIEV: CALL 0

Remark

When the link is established or ringing, the command will get OK. But for the establishing, the command will get error.

Example

The following examples show the typical application for this command.

```
ATD10086;

OK
CONNECT

ATH

OK
```

Chapter6 NETWORK SERVICE COMMANDS

6.1 AT+COPN Read Operator Names

Description

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

Syntax

Command	Response
Test Command **AT+COPN=?**	OK
Exec Command **AT+COPN**	''+COPN: <numeric1>,<alpha1>" | ''[<CR><LF>+COPN: <numeric2>,<alpha2>" | ''[. . .]]'' OK ERROR +CME ERROR:<err>

Unsolicited Result Codes

URC1

''+CALA: <text>''

''URC2''

''+SYSSTART ALARM MODE+CALA: <text>''

Defined value

Parameter	Explain
<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 <numericn>that has an alphanumeric equivalent <alphan> in the MT memory shall be returned. ''

Example

AT+COPN
+COPN: XXXXX,"ATT" +COPN: XXXXX,"T-Mobile" .....
<Note:..>
OK <Note:..>

6.2 AT+COPS Operator Selects

Description

This command be used to select the vender.

Syntax

Command	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>[,<AcT>]] +CME ERROR: <err>
Set Command **AT+COPS=mode[,<format>[,<oper>[,<AcT>]]]**	+CME ERROR: <err>

Unsolicited Result Codes

URC1

+CALA: <text>

URC2

+SYSSTART ALARM MODE+CALA: <text>

Defined value

Parameter	Explain
<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> 1 short format alphanumeric <oper> 2 numeric <oper>
<oper>:	string type

<stat>:	<stat>: 0 unknown 1 available 2 current 3 forbidden
<AcT>:	0 GSM 1 GSM Compact 2 UTRAN 3 GSM w/EGPRS 4 UTRAN w/HSDPA 5 UTRAN w/HSUPA 6 UTRAN w/HSDPA and HSUPA 7 E-UTRAN 8 EC-GSM-IoT(A/Gb mode) 9 E-UTRAN(NB-S1 mode)

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> , <oper> and <AcT> 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.

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 ",9 OK
AT+COPS=3,2
OK
AT+COPS?
+COPS: 0,0,46000,9 OK

6.3 AT+CREG Network Registration

Description

This command be used to query the register status.

Syntax

Command	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

Unsolicited Result Codes

URC1

+CALA: <text>

URC2

+SYSSTART ALARM MODE+CALA: <text>

Defined value

Parameter	Explain
<n>:	0 disable network registration unsolicited result code 1 enable network registration unsolicited result code +CREG: <stat> 2 enable network registration and location information unsolicited result code +CREG:
<stat>:	0 not registered, MT is not currently searching a new operator to register to 1 registered, home network 2 not registered, but MT is currently searching a new operator to register to 3 registration denied 4 unknown

	5 registered, roaming
<lac> :	string type; two byte location area code (when <AcT> indicates value 0 to 6), or tracking area code (when <AcT> indicates value 7). In hexadecimal format (e.g. "00C3" equals 195 in decimal).
<ci>:	string type; two byte cell ID in hexadecimal format

Example

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

6.4 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 operater, <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	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

Unsolicited Result Codes

URC1

+CALA: <text>

URC2

+SYSSTART ALARM MODE+CALA: <text>

Defined value

Parameter	Explain
<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)

Example

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

6.5 AT+CSQ Signal Quality

Description

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

syntax

Command	Response
Test Command **AT+CSQ=?**	+CSQ: (list of supported <rssi>s),(list of supported <ber>s)
Read Command **AT+CREG?**	+CREG: <n>,<stat>[,<lac>,<ci>] +CME ERROR: <err>
Exec Command **AT+CSQ**	+CSQ: <rssi>,<ber> +CME ERROR: <err>

Unsolicited Result Codes

URC1

+CALA: <text>

URC2

+SYSSTART ALARM MODE+CALA: <text>

Defined value

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

Example

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

6.6 AT+QNITZ Indicate Network Time

Description

Enable or disable indicate network time.

syntax

Command	Response
Test Command	+QNITZ(0,1)

AT+QNITZ=?	OK
Read Command **AT+QNITZ?**	+QNITZ<enable> OK
Set Command **AT+QNITZ=<enable>Description**	OK ERROR +CME ERROR:<err>

Defined value

The following examples show the typical application for this command.

Parameter	Explain
<enable>	0 disable sync network time 1 enable sync network time

Example

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

6.7 AT+QLTS Query Last Time Status

Description

Get the last time from network.

syntax

Command	Response
Test Command **AT+ QLTS =?**	OK
Read Command **AT+QLTS?**	+QLTS:<time>,<ds> OK +CME ERROR:<err>

Defined value

Parameter	Explain
<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

Example

The following examples show the typical application for this command.

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

6.8 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	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>

Defined value

Parameter	Explain
<mode>:	0: NITZ not update system time 1: NITZ update local time to system 2: NITZ update GMT time to system

Example

The following examples show the typical application for this command.

AT+CTZU=?
+CTZU:(0, 1, 2) OK
AT+CTZU?
+CTZU:0 OK
AT+ CTZU=0
OK

6.9 AT+CTEC Set user preferred RAT

Description

Set user preferred rat (don't support in NBIOT project)

syntax

Command	Response
Set Command **AT+CTEC=<nCurrentRat>,<nPreferRat>**	OK ERROR +CME ERROR:<err>
Read Command **AT+CTEC? |** **+CTEC:<nPreferRat>,<nPreferRat>**	OK ERROR +CME ERROR:<err>

Defined value

Parameter	Explain
<nCurrentRat>:	the current rat value
<nPreferRat>:	the preferred rat value

Example

The following examples show the typical application for this command.

AT+CTEC=1,2
OK
AT+CTEC?
+CTEC: 1,1 OK

6.10 AT+QSCANF Set UE to scan

Description

Set UE to scan

Command to set to air plane mode before doing this

In NBIOT mode does not support this function

syntax

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

Defined value

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

Example

The following examples show the typical application for this command.

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

6.11 AT+SDMBS Set Pseudo base station identification

Description

Set Pseudo base station identification

syntax

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

Defined value

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

Example

The following examples show the typical application for this command.

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

6.12 AT+CCED Cell environment description

Description

This command can be used by the application to retrieve the cell parameters of the main cell and of up to six neighbour cells. Two ways may exist for the external application to know these cell parameters:on request of the application, or automatically by the module every 5 seconds. The automatic mode is not supported during communication or registration.

syntax

Command	Response
Test Command **AT+ CCED=?**	+CCED: (0),(1,2,8) OK
Set Command **AT+CCED= <mode>[, <requested dump>]**	OK

Defined value

Parameter	Explain
<mode>:	integer type 0 Stop automatic shots 1 Automatic shots requested

<requested dump>:	integer type 1 Main Cell: MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev,RxLev Full, RxLev Sub, RxQual, RxQual Full, RxQual Sub, Idle TS 2 Neighbour1 to Neighbour6: MCC, MNC, LAC, CI, BSIC, BCCH Freq (absolute), RxLev 8 Main cell RSSI indications(Rxlev)from 0 to 31

6.13 AT+SNWR Set UE RAT

Description

Set UE rat

syntax

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

Defined value

Parameter	Explain
<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

Example

The following examples show the typical application for this command.

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

Chapter 7 NB-IOT COMMANDS

7.1 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 9.2 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 periodicTAU value in E-UTRAN and the requested Active Time value as compound values.

Syntax

Command	Response
Test Command **AT+CPSMS=?**	+CPSMS: mode=[0-2],,,Requested_Periodic-TAU="8bitStringofByte eg. 01000111", Requested_Active-Time="8bitStringofByte eg. 01100101" OK Fail: +CME ERROR: <err>
Read Command	+CPSMS: 1,,,"01000101","00000000"

AT+CPSMS?	OK Fail: +CME ERROR: <err>
Set Command **AT+CPSMS=1**	OK Fail: +CME ERROR: <err>

Defined value

Parameter	Explain
<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 2 Disable the use of PSM and discard all parameters for PSM or,if available,reset to the manufacturer specific default valueDisable the use of PSM and discard all parameters for PSM or,if available,reset to the manufacturer specific default values.
<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
<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.
<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.
<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

Example

The following examples show the typical application for this command.

```
AT+CPSMS=?
+CPSMS: mode=[0-2],,Requested_Periodic-
TAU="8bitStringofByte eg. 01000111",
Requested_Active-Time="8bitStringofByte eg.
01100101" | OK
AT+CPSMS?
+CPSMS: 1,,"01000101","00000000"
OK
AT+CPSMS=1
OK
```

7.2 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	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: <AcTtype>,<Requested_eDRX_value>[<CR><LF>+CEDRXS: <AcT-type>,<Requested_eDRX_value>[. . .]]] OK
Set Command **AT+CEDRXS=[<mode>,[,<AcTtype>[,<Requested_eDRX_value>]]]**	OK ERROR +CME ERROR: <err>

AT+CEDRXS=[<mode>,[,<AcTtype>[,<Requested_eDRX_value>]]]	

Defined value

Parameter	Explain
<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>. 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>[,<NWprovided_ 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.
<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. 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)
<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.
<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 referes 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.

7.3 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	Response
Test Command **AT+CEDRXRDP**	+CEDRXRDP: <AcT-type>[,<Requested_eDRX_value>[,<NWprovided_ eDRX_value>[,<Paging_time_window>]]] OK +CME ERROR: <err>
Test Command **AT+CEDRXRDP=?**	OK

Defined value

Parameter	Explain
<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 referes 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

7.4 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 9.2 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	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>

Defined value

Parameter	Explain
<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)

<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.
<cpdata>:	string of octets. Contains the user data container contents (refer 3GPP TS 24.301 [83] subclause 9.9.4.24). 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
<RAI>:	integer type. Indicates the value of the release assistance indication, refer 3GPP TS 24.301 [83] subclause 9.9.4.25. 0 No information available. 1 The MT expects that exchange of datawill 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.
<type_of_user_data>:	integer type. Indicates whether the user data that is transmitted is regular or exceptional. 0 Regular data. 1 Exception data.

7.5 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 9.2 for possible <err> values.

Read command returns the current settings.

Test command returns supported values as compound values.

Syntax

Command	Response
Test Command **AT+CRTDCP=?**	+CRTDCP: (list of supported <reporting>s),(range of supported <cid>s),(maximum number of octets of user dataindicated 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>

Defined value

Parameter	Explain
<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.
<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).
<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.
<cpdata>:	i string of octets. Contains the user data container contents (refer 3GPP TS 24.301 [83] subclause 9.9.4.24). 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.

7.6 AT+NIPDATA send nonIP data

Description

The execution command is used to send nonIP data

Syntax

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

Defined value

Parameter	Explain
<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 Cavli"

7.7 AT+NVSETRRCRLSTIMER10 set RRC connection release waiting time

Description

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

Syntax

Command	Response
AT+NVSETRRCRLSTIMER10=?	+NVSETRRCRLSTIMER10: (0,1)
AT+NVSETRRCRLSTIMER10=value"	OK

Defined value

Parameter	Explain
<value>:	0 set 1s 1 set 10s

7.8 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.

Syntax

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

Defined value

Parameter	Explain
<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 10.5.6.3.2. 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.

7.9 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 10.1.43). 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.

Syntax

Command	Response
AT+CRCES	+CRCES: <AcT>,<CE_level>,<CC> OK

Defined value

Parameter	Explain
<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 (ECGSM- 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 • 5 Coverage Class 5

7.10 AT+NVSETPM PM1/3 set PM1/3

Description

The execution command is used to set PM1/2/3

Mode	Description	AT	PSRAM	wakeup
PM0	normal	Work	Work	
PM1	light sleep	Work	Work	AT UART
PM3	deep sleep	Not work	Power due	WAKEUP PIN
PM2		Not work	Work	WAKEUP PIN

Syntax

Command	Response
AT+NVSETPM =?	+NVSETPM:(0,1,2,9,10)0:close, 1:pm1,2:pm1+pm3,9:dynamic, 10:pm1+pm2 OK
AT+NVSETPM=value	OK

Defined value

Parameter	Explain
<value>:	• 0 UE will not enter PM1/PM2/PM3 • 1 UE will enter PM0/PM1 • 2 UE will enter PM0/PM1/PM3 • For all PSM and eDRX with PTW>300s, will use PM3; other use PM1

	• 9 UE will enter PM0/PM1/PM2/PM3 • A=1s B=300s • When sleep time <=A, enter PM1 When sleep time >A and <=B, enter PM2 When sleep time >B, enter PM3 • It is the configuration with best power consumption performance. • 10 UE will enter PM0/PM1/PM2 • When PSM/DRX/EDRX >800ms, use PM2. • When PSM/DRX/EDRX <=800ms, use PM1. • This is not best performance of power consumption. Scenario that not allow PSRAM power down requires this setting.

7.11 AT+CFGDFTPDN set default PDN

Description

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

Syntax

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

Defined value

Parameter	Explain
<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 an APN,just want to switch the PDNTYPE of the mode,you cannot enter the PDN content. This takes into effect only reboot

7.12 AT+CFGHCCP set the HC-CPCIoT

Description

The execution command is used to set the HC-CPCIot

Syntax

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

Defined value

Parameter	Explain
<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.

7.13 AT+NASCFG NAS profile setting

Description

The execution command is used to set NAS profile

Syntax

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

Defined value

Parameter	Explain
<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

7.14 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 iperf5001,bit2 is internet,bit3 is ftp, bit4 is ping

Syntax

Command	Response
AT+IPFLT=value	OK

Defined value

Parameter	Explain
<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

7.15 AT+NVSWITCHBS Scan Band

Description

Switch scan band status

Syntax

Command	Response
Test Command **AT+NVSWITCHBS=?**	+NVSWITCHBS: (0-1)0:close,1:open OK
Set Command **AT+NVSWITCHBS=<status>**	+NVSWITCHBS: <status> OK

Defined value

Parameter	Explain
<status>	0 scan band off

	1 scan band on

7.16 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	Response
Test Command **AT+NVSETSCMODE=?**	+NVSETSCMODE: (0-1)0:close,1:open OK
Set Command **AT+NVSETSCMODE=<version>**	+NVSETSCMODE: <version> OK

Defined value

Parameter	Explain
<version>	• 0 old protocol version • 1 new protocol version

7.17 AT+CFGCIOT CIOT feature configuration

Description

Configure and query the CIOT parameters.

Syntax

Command	Response
Test Command **AT+CFGCIOT=?**	+CFGCIOT: nonip=[0-1], cpciot=[0-1](NBIoT Ignore), upciot=[0-3], erwopdn=[0-2], sms_wo_comb_att=[0-1], apn_rate_control=[0-1], epco=[0-1], cpbackoff=[0-1], roam=[0-1]

	OK
Set Command **AT+CFGCIOT=<nonip>[,<cpciot>[,<upciot>[,<erwopdn>[,<sms_wocomb_att>[,<apn_rate_control>[,epco>]]]]]]**	OK
Read Command **AT+CFGCIOT?**	+CFGCIOT: <nonip>[,<cpciot>[,<upciot>[, <erwopdn>[, <sms_wocomb_att>[, <apn_rate_control>[,epco>]]]]]] OK

Defined value

Parameter	Explain
<nonip>	Configure NonIP 0 not support NonIP 1 support NonIP
<cpciot>	Configure CPCIOT 0 not support CPCIoT, this value is not configured for NB-IoT 1 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)

<erwopdn>	Configure whether the ERwoPDN is supported and preferred. 0 not support ERwoPDN 1 supports but does not optimize ERwoPDN (attach process necessarily c arries 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 SmsWithoutCombinedAttach 1 support SmsWithoutCombinedAttach
<apn_rate_control>	Configure whether the ApnRateControl is supported. 0 not support ApnRateControl 1 support ApnRateControl
<epco>	Configure whether the ePCO is supported. 0 not support ePCO 1 support ePCO

7.18 AT+CCIOTOPT Parameters configure

Description

Configure and query CIoT parameters, switch CIoT report function

Syntax

Command	Response
Test Command **AT+CCIOTOPT=?**	+CCIOTOPT: n=(0,1,3), supported_UE_opt=[0-3], preferred_UE_opt=[1-2] OK

Set Command **AT+CCIOTOPT=[<n>[,<supported_UE_opt>[,<preferred_UE_opt>]]]**	OK
Read Command **AT+CCIOTOPT?**	+CCIOTOPT: <n>,<supported_UE_opt>,<preferred_UE_opt> OK

Defined value

Parameter	Explain
<n>	Integer, Value collection (0,1,3), configuring the Ciot escalation feature. 0 Turn off the escalation function; 1 Turn on the reporting function; 2 Turn off the escalation feature and set the Ciot parameter to the factory default value.
<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 value will be ignored); 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, so configuring this value will be ignored); 3 Support for CP Ciot and up Ciot
<preferred_UE_opt>:	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) 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

7.19 AT+CFGEDRX EDRX features configure

Description

Configure and query CIoT parameters, switch CIoT report function

Syntax

Command	Response
Test Command **AT+CCIOTOPT=?**	+CCIOTOPT: n=(0,1,3), supported_UE_opt=[0-3], preferred_UE_opt=[1-2] OK
Set Command **AT+CCIOTOPT=[<n>[, <supported_UE_opt>[, <preferred_UE_opt>]]]**	OK

Read Command **AT+CCIOTOPT?**	+CCIOTOPT: <n>,<supported_UE_opt>,<preferred_UE_opt> OK

Defined value

Parameter	Explain
<n>	Integer, Value collection (0,1,3), configuring the Ciot escalation feature. 0 Turn off the escalation function; 1 Turn on the reporting function; 2 Turn off the escalation feature and set the Ciot parameter to the factory default value.
<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 value will be ignored); 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, so configuring this value will be ignored); 3 Support for CP Ciot and up Ciot
<preferred_UE_opt>:	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) 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

Chapter 8. EPS COMMANDS

8.1 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	Response
Test Command **AT+CEREG=?**	+CEREG: (list of supported <n>s) OK
Read Command **AT+CEREG?**	when <n>=0, 1, 2 or 3, stat=0, 3 or 4, and command successful: +CEREG: <n>,<stat>[,[<tac>], [<ci>],[<AcT>[,<cause_type>,

	<reject_cause>]]] when <n>=0, 1, 2 or 3, stat=1 or 5, and command successful: +CEREG: <n>,<stat>[,[<tac>], [<ci>],[<AcT>]] when <n>=4 or 5 and command successful: +CEREG: <n>,<stat>[,[<tac>], [<ci>],[<AcT>][,[<cause_type>], [<reject_cause>][, [<Active-Time>], [<Periodic-TAU>]]]] OK
Set Command **AT+CEREG=[<n>]**	OK ERROR +CME ERROR:<err>

Defined value

Parameter	Explain
<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.
<tac>:	string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<ci>:	string type; four byte E-UTRAN cell ID in hexadecimal format
<AcT>:	integer type; indicates the access technology of the serving cell 0 GSM (not applicable) 1 GSM Compact (not applicable) 2 UTRAN (not applicable) 3 GSM w/EGPRS (see NOTE 3) (not applicable) 4 UTRAN w/HSDPA (see NOTE 4) (not applicable) 5 UTRAN w/HSUPA (see NOTE 4) (not applicable) 6 UTRAN w/HSDPA and HSUPA (see NOTE 4) (not applicable) 7 E-UTRAN NOTE 3: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS NOTE 4: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA..
<cause_type>:	integer type; indicates the type of <reject_cause>. 0 Indicates that <reject_cause> contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A. 1 Indicates that <reject_cause> contains a manufacturer-specific cause.

<reject_cause>:	integer type; contains the cause of the failed registration. The value is of type as defined by<cause_type>.
<Active-Time>:	string type; one byte in an 8 bit format. Indicates the Active Time value (T3324) allocated to the UE in E-UTRAN. The 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] and 3GPP TS 23.401 [82].
<Periodic-TAU>:	string type; one byte in an 8 bit format. Indicates the extended periodic TAU value (T3412) allocated to the UE in E-UTRAN. The 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].

NOTE

1. While the network doesn't assign values of Active-Time and Periodic-TAU, When <n>=4 or 5 and command successful, Read Command Response the same as When <n>=1, 2 or 3

Example

The following examples show the typical application for this command

```
AT+CEREG?
+CEREG:1, 1,"114e","097c7474",9
OK
AT+CEREG=?
+CEREG:(0-5)
OK
AT+CEREG=1
OK
```

Chapter 9. RF MODE STANDARD COMMANDS

9.1 RF MODE STANDARD COMMANDS OVERVIEW

Description

These commands are special to Cavli C1RM Only, which support NB-IoT/GSM dual mode single standby.

9.2 AT+CFGDUALMODE Config dual mode

Description

This command config dual mode, the change take effect after reset

Syntax

Command	Response
AT+CFGDUALMODE=[<dual mode> **[,<fastswitch>]]**	+CME ERROR: <err>
AT+CFGDUALMODE?	+CFGDUALMODE:<dualmode>,<fastswitch>
AT+CFGDUALMODE=?	+CFGDUALMODE: dualmode=[0-2],fastswitch=[0-1]

Defined value

Parameter	Explain
<dualmode>	integer. 0 to 2 0 not support dual mode 1 dual mode single standby 2 dual mode dual standby
<fastswitch>	Integer. 0 or 1 0 close fastswitch 1 open fastswitch

9.3 AT+CFGRATPRIO Config dual mode single standby priority

Description

This command set RAT priority.

Syntax

Command	Response
AT+CFGRATPRIO=[<priority>]	+CME ERROR: <err>
AT+CFGRATPRIO?	+CFGRATPRIO:<priority>
AT+CFGRATPRIO=?	+CFGRATPRIO: priority=(2,4)

Defined value

Parameter	Explain
<priority>	> integer . 2 or 4 2 2G priority 4 NB priority

Remark

When Fastswitch is open, the command can execute, but no effect. System will be always NB first.

9.4 AT+CFGLOSSCOVLEN Config network loss and fastswitch related timer length

Description

This command config network loss and fastswitch related timer length.

The change take effect at once, and save to NV

Syntax

Command	Response

AT+CFGLOSSCOVLEN=[<lossCovLen>, **[<lossCovBackoffMaxCnt>]]**	+CME ERROR: <err>
AT+CFGLOSSCOVLEN?	+CFGLOSSCOVLEN:<lossCovLen>, <lossCovBackoffMaxCnt>
AT+CFGLOSSCOVLEN=?	+CFGLOSSCOVLEN: lossCovLen=(n)s, |lossCovBackoffMaxCnt=[0-12] |

Defined value

Parameter	Explain
<lossCovLen>	integer type. >0, default 2min
<lossCovBackoffMaxCnt>	integer type. 0 to 12 default 0

9.5 AT+CFGFASTSWITCHSNR Config fastswitch threshold value for bad signal

Description

This command config fastswitch threshold value to judge bad cell signal

Syntax

Command	Response
AT+CFGFASTSWITCHSNR=[<NbSignal>[,<GsmSignMalE>]]	+CME ERROR: <err>
AT+CFGFASTSWITCHSNR?	+CFGFASTSWITCHSNR:<NbSignal>,<GsmSignal>

AT+CFGFASTSWITCHSNR=?	+CFGFASTSWITCHSNR: NbSignal(dbm),GsmSignal=(-dbm)

Defined value

Parameter	Explain
<NbSignal>	integer. must >0. unit is dbm
<GsmSignal>	integer. must >0. unit is –dbm

9.6 AT+CFGFASTSWITCHTIMERLEN config fast switch timer length

Description

This command config fast switch timer length

Syntax

Command	Response
AT+CFGFASTSWITCHTIMERLEN=<activeProcLen> [,<prohibitNBrecoverLen> **[,<nasCellSelectLen>[,<rrcCellSelectLen>** **[,<ratChangeLen>[,<dualLossCovLen>]]]]**	+CME ERROR: <err>
AT+CFGFASTSWITCHTIMERLEN?	+CFGFASTSWITCHTIMERLEN:<activeProcLen> ,<prohibitNBrecoverLen> ,<nasCellSelectLen>,<rrcCellSelectLen> ,<ratChangeLen>,<dualLossCovLen>
AT+CFGFASTSWITCHTIMERLEN=?	CFGFASTSWITCHTIMERLEN:

	activeProcLen=n(s), prohibitNBrecoverLen=n(s), nasCellSelectLen=n(s), rrcCellSelectLen=n(s), ratChangeLen=n(s), dualLossCovLen=n(s)

Defined value

Parameter	Explain
<activeProcLen>	integer . default 300 seconds
<prohibitNBrecoverLen>	integer . default 600 seconds
<nasCellSelectLen>	integer . default 180 seconds
<rrcCellSelectLen>	integer . default 180 seconds
<ratChangeLen>	integer . default 300 seconds
<dualLossCovLen>	integer . default 300 seconds

Chapter 10. SIM TOOLKIT COMMANDS

10.1 AT+CACM Accumulated Call Meter (acm) Reset or Query

Description

The read command returns the current ACM value. The write command resets the Advice of Charge related to the accumulated call meter (ACM) value in SIM file EF(ACM). ACM contains the total number of home units for both the current and preceding calls

Syntax

Command	Response
AT+CACM = ?	OK
AT+CACM?	+CACM: <acm>
AT+CACM = < password >	OK

Defined value

Parameter	Explain
<passwd>:	SIM PIN2 Note: the string length supported in our environment is no more than 4.
<acm>:	string type; accumulated call meter value similarly coded as <ccm> under +CAOC

Remark

Set CMD reset ACM with parameter SIM PIN2, read CMD get current ACM, Test CMD not defined yet. Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units Command AT+CCWE control the unsolicited result code: +CCWV to be sent shortly before the ACM maximum value reached.

Example

AT+CACM?

+CACM: "000000"

OK

< TA returns the current ACM value: 000000-FFFFFF (Total call fare)>

AT+CACM="1234"

OK

< TA resets the Advice of Charge related to the ACM value in SIM file EF(ACM). 1234 is SIM PIN2>

10.2 AT+CAMM Accumulated Call Meter Maximum (acmmax) Set Or Query

Description

The write command sets the Advice of Charge related to the accumulated call meter maximum value in SIM file EF (ACMmax). ACMmax contains the maximum number of home units allowed to be consumed by the subscriber.

Syntax

Command	Response
AT+CAMM=?	OK
AT+CAMM?	+CAMM:<acmmax>
AT+CAMM =<acmmax>[,<passwd>]	OK

Defined value

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

Remark

Set CMD set the maximum of ACM with SIM PIN2, read command get the AMM, test CMD not defined yet. Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units Shortly before ACM reaches AMM, the unsolicited result code +CCWV will be sent if AT+CCWE enables this operation. For some SIM card, if the PIN1 is verified, the SIM PIN2 is not used as password and ignored.

Example

```
AT+CAMM?
```

+CAMM: 1e OK
AT+CAMM= "00001E", "2345"
< TA returns the current ACMmax value: 0-ffffff)> OK < TA sets the Advice of Charge related to the ACM maximum value in SIM file EF (ACMmax). 2345 is SIM PIN2>

10.3 AT+CAOC Advice of Charge Information

Description

Execute command returns the current call meter value. (Currently not support) The write command sets the Advice of Charge supplementary service function mode.

Syntax

Command	Response
AT+CAOC=?	[+CAOC: (list of supported <mode>s]
AT+CAOC?	+CAOC: <mode>
AT+CAOC[=<mode>]	+CAOC: [<ccm>]

Defined value

Parameter	Explain
<mode>:	# query CCM value # deactivate the unsolicited reporting of CCM value # activate the unsolicited reporting of CCM value
<ccm>:	string type; three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM card or in the active application in the UICC (GSM or USIM)

Remark

Set CMD set the maximum of ACM with SIM PIN2, read command get the AMM, test CMD not defined yet. Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units Shortly before ACM reaches AMM, the unsolicited result code +CCWV will be sent if AT+CCWE enables this operation.

Example

AT+CAOC?
+CAOC: 0 OK < TA returns the current call meter value: 000000-FFFFFF (Last call fare) >

10.4 AT+CPUC Price Per Unit and Currency Table

Description

Read command returns the current parameters of PUC. Write command sets the parameters of Advice of Charge related price per unit and currency table. SIM PIN2 is usually required to set the parameters. PUCT information can be used to convert the home units (as used in +CAOC, +CACM and +CAMM) into currency units

Syntax

Command	Response
AT+CPUC=?	OK
AT+CPUC?	+CPUC:<currency>,<ppu>
AT+CPUC=<currency>,<ppu>,<password>	OK

Defined value

Parameter	Explain
<currency>:	string type; three-character currency code (e.g. "GBP", "DEM") Note: if the string length of <currency> is less than 3, null character(0x20) will be a complement defaultly. Null string is also be allowed.
<ppu>:	string type; price per unit; dot is used as a decimal separator (e.g. "2.66"). Note: the supported string length is no more than 5, and the valid number is less than 4096
<passwd>:	string type; SIM PIN2 Note: the string length supported in our environment is no more than 4.

Remark

For some SIM card, if the PIN1 is verified, the SIM PIN2 is not used as password and ignored

Example

AT+CPUC="EUR","0.10","8888"
OK
AT+CPUC?
+CPUC: "EUR","0.10" OK

10.5 AT+CCFC Call Forwarding Number and Condition

Description

This command Controls the call forwarding supplementary services. Registration, erasure, activation, deactivation and status query are supported.

Syntax

Command	Response
AT+CCFC=?	+CCFC (list of supported<reason>s)

AT+CCFC=<reason>,<mode>, [<number>,[<type>, [<class>, [<subaddr>, [<satype>,[<time>]]]]]]	OK when <mode>=2 and command successful: +CCFC: <status>, class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: <status>, class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] [. . .]]

Defined values

Parameter	Explain
<reason>:	0 unconditional 1 mobile busy 2 no reply 3 not reachable 4 all call forwarding. Note: After setting, if quering the result, need set "reason" to 0. 5 all conditional call forwarding. This operation can finish the call forwarding for the reason that from 1 to 3 by one time, not need by three times. That means all the call forwarding can be done by one time except unconditional.
<mode>:	When set mode=2, the range of "reason" is 0~3. For mode=2,reason 0, only the query of class =1 is support. The other will get error due to not support of the network. 0 disable 1 enable 2 query status 3 registration 4 erasure
<number>:	string type phone number of forwarding address in format specified by <type>. The string length of <number> is 0-20.
<type>:	type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7); default 145 when dialing string includes international access code character "+", otherwise 129
<satype>:	type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8); default 128, others should be defined by factory
<classx>:	is a sum of integers each representing a class of information (default 1): 1 voice (telephony) 2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer

	service if TA does not support values 16, 32, 64 and 128) 4 fax (facsimile services) 8 short message service 16 data circuit sync 32 data circuit async 64 dedicated packet access 128 dedicated PAD access
<**time**>:	5. . . 30 when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value 20
<status>:	0 not active 1 active
<subaddr>:	string type subaddress of format specified by <satype>
<satype>:	type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8); default 128

Remark

When setting the international call, the fourth parameter "type" must be filled. The "type" will be checked if presented. When the "mode" is set to "1", the third parameter "number" will be omitted and don't be checked. Except that non-number is input as "number". When the parameters are NULL, some will use the default parameters, some is omitted. The parameter "classx" is 1. the "subaddr" and "satype" is not used in current version. The "type" is determined by the "number".

Example

```
AT+CCFC=0,3,"13698754858",145

OK

AT+CCFC=0,2

+CCFC:1,1,"+13698754858",145
OK
```

10.6 AT+CCWA Set Call Waiting Control

Description

This command allows control of the Call Waiting supplementary service according to 3GPP TS 22.083 [5]. Activation, deactivation and status query are supported. The interaction of this command with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standards.

Syntax

Command	Response
AT+CCWA=?	+CCWA: (list of supported<n>s)
AT+CCWA?	+CCWA: <n>
AT+CCWA=<n>[,<mode>[,<class>]]	OK when <mode>=2 and command successful +CCWA: <status>,<class1>[<CR><LF>+CCWA: <status>,<class2>[. . .]]

Unsolicited Result Codes

URC 1 +CCWA; < number >,<type>,<class>,[<alpha>][,<CLI validity>]

Defined values

Parameter	Explain
<n>:	(sets/shows the result code presentation status in the MT/TA) 0 disable 1 enable three times. That means all the call forwarding can be done by one time except unconditional.
<mode>:	(when <mode> parameter is not given, network is not interrogated) 0 disable 1 enable 2 query status
<classx>:	is a sum of integers each representing a class of information (default 1) 1 voice (telephony)
<status>:	0 not active 1 active
<number>:	string type phone number of calling address in format specified by <type>
<type>:	type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)
<alpha>:	optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character

	set should be the one selected with command Select TE Character Set +CSCS
<CLI validity>:	0 CLI valid 1 CLI has been withheld by the originator. 2 CLI is not available due to interworking problems or limitations of originating network.

Remark

- AT+CPBW=[<index>],<number>[,<type>[,<text>]],the number setting NULL is forbidden.
- Executed AT+CLCK and "FD" is locked, then operation of "SM" phonebooks are forbidden, but operation of other phonebooks is allowed.

Example

AT+CCWA=1,1,1
OK
ATD1861;
OK +CCWA: "02085563410", 129, 1, "", 0
AT+CCWA=0,1 ,1
OK
ATD1861;
OK
AT+CCWA=1,2
+CCWA: 0,1 +CCWA: 0,2 +CCWA: 0,4 OK

AT+CCWA=0,0,1
OK
AT+CCWA=1,1,1
OK

10.7 AT+ CLIP Calling Line Identification Presentation

Description

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

Syntax

Command	Response
AT+CLIP=?	+CLIP: (list of supported<n>s))
AT+CLIP?	+CLIP: <n><m>
AT+CLIP=<n>	OK

Defined value

Parameter	Explain
<n>:	(sets/shows the result code presentation status in the MT/TA) 0 disable 1 enable
<m>:	(parameter shows the subscriber CLIP service status in the network): 0 CLIP not provisioned 1 CLIP provisioned 2 unknown (e.g. no network, etc.)
<number>:	string type phone number of calling address in format specified by <type>

<type>:	type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)
<alpha>:	optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set +CSCS
<CLI validity>:	0 CLI valid 1 CLI has been withheld by the originator. 2 CLI is not available due to interworking problems or limitations of originating network.
<subaddr>:	string type subaddress of format specified by <satype>
<satype>:	type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8) Unsolicited Result Codes URC 1 +CLIP: <number>,<type>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]

Remark

Parameter n may control the unsolicited result code +CLIP should be presented to TE or not

Example

```
AT+CLIP=1
```

```
OK

RING

+CLIP: “02085563192”,129,,,,0

<URC presentation>
```

10.8 AT+ CLIR Calling Line Identification Restriction

Description

The AT+CLIR command refers to the GSM supplementary service CLIR (Calling Line Identification Restriction).

Syntax

Command	Response
AT+CLIR=?	+CLIR (list of supported<n>s))
AT+CLIR?	+CLIR: <n>,<m>
AT+CLIR=<n>	OK

Defined value

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

Example

AT+CLIR=2
OK
AT+CLIR=?
+CLIR:(0,1,2) OK
AT+CLIR?
+CLIR:2,0

OK

10.9 AT+ COLP Connected Line Identification Presentation

Description

This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network

Syntax

Command	Response
AT+COLP=?	+COLP: (list of supported<n>s))
AT+COLP?	+COLP: <n>,<m>
AT+COLP=<n>	OK

Defined value

Parameter	Explain
<n>:	(parameter sets/shows the result code presentation status in the MT/TA): 0 presentation indicator is used according to the subscription of the CLIR service 1 CLIR invocation
<m>:	(parameter shows the subscriber COLP service status in the network): 0 COLP not provisioned 1 COLP provisioned 2 unknown (e.g. no network, etc.)

Example

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

10.10 AT+ CSSN Supplementary Service Notifications

Description

The write command enables or disables the presentation of URCs for supplementary services.

Syntax

Command	Response
AT+CSSN=?	+CSSN: (list of supported <n>s),(list of supported<m>s)
AT+CSSN?	+CSSN:<n>,<m>'
AT+CSSN=<n>[,<m>]	OK'

Defined value

Parameter	Explain
<n>:	(parameter sets/shows the +CSSI result code presentation status to the TE): 0 disable 1 enable
<m>:	(parameter sets/shows the +CSSU result code presentation status to the TE): 0 disable 1 enable
<code1>:	(it is manufacturer specific, which of these codes are supported): 0 unconditional call forwarding is active 1 some of the conditional call forwardings are active 2 call has been forwarded 3 call is waiting
<code2>:	(it is manufacturer specific, which of these codes are supported): 0 this is a forwarded call (MT call setup) 1 this is a CUG call (also

	<index> present) (MT call setup) 2 call has been put on hold (during a voice call) 3 call has been retrieved (during a voice call) 4 multiparty call entered (during a voice call) 5 call on hold has been released (this is not a SS notification) (during a voice call)

Remark

When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: <code1>[,<index>] is sent to TE before any other MO call setup result codes presented in the present document or in V.25ter [14]. When several different <code1>s are received from the network, each of them shall have its own +CSSI result code. When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received, unsolicited result code +CSSU: <code2>[, <index>[, <number>, <type>[, <subaddr>,<satype>]]] is sent to TE. In case of MT call setup, result code is sent after every +CLIP result code (refer command "Calling line identification presentation +CLIP") and when several different <code2>s are received from the network, each of them shall have its own +CSSU result code. Refer 27007 release99. The gray item of <code1> doesn't been supported by CMCC and UMCC.S

Example

```
AT+CSSN=1,1
```

```
OK
```

10.11 AT+ CUSD Unstructured Supplementary Service Data

Description

This command allows control of the Unstructured Supplementary Service Data (USSD) according to GSM 02.90. Both network and mobile initiated operations are supported.

Syntax

Command	Response
AT+CUSD=?	+CUSD: (list of supported <n>s)
AT+CUSD?	+ CUSD:<n>
AT+ CUSD=<n>[,<str>[,<dcs>]]	OK

Defined value

Parameter	Explain
<n>:	0 disable the result code presentation to the TE 1 enable the result code presentation to the TE 2 cancel session (not applicable to read command response)
<m>:	0 no further user action required (network initiated USSD Notify, or no further information needed after mobile initiated operation) 1 further user action required (network initiated USSD Request, or further information needed after mobile initiated operation) 2 USSD terminated by network 3 other local client has responded 4 operation not supported 5 network time out
<str>:	string type USSD string (when <str> parameter is not given, network is not interrogated): if <dcs> indicates that 3GPP TS 23.038 [25] 7 bit default alphabet is used: if TE character set other than "HEX" (refer command Select TE Character Set +CSCS): MT/TA converts GSM alphabet into current TE character set according to rules of 3GPP TS 27.005 [24] Annex A if TE character set is "HEX": MT/TA converts each 7 bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character (GSM 23) is presented as 17 (IRA 49 and 55)) if <dcs> indicates that 8 bit data coding scheme is used: MT/TA converts each 8 bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
<DCS>:	3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 0)

Remark

This command allows control of the Unstuctured Supplementary Service Data (USSD) according to 3GPP TS 22.090 [23]. Both network and mobile initiated operations are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code (USSD response from the network, or network initiated operation) +CUSD: <m>[,<str>,<dcs>] to the TE. In addition, value <n>=2 is used to cancel an ongoing USSD session. When <str> is given, a mobile initiated USSD string or a response USSD string to a network initiated operation is sent to the network. The response

USSD string from the network is returned in a subsequent unsolicited +CUSD result code. If the <dcs> parameter is input, the data will be transmitted as USSD vertion2, otherwise, it will be transmitted as USSD version 1.

Example

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

Chapter 11. SMS COMMANDS

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

Description

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

Syntax

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

AT+CSDH=<show>	OK

Defined value

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

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

11.2 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..

Syntax

Command	Response

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

Defined value

Parameter	Explain
<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]
< Dcs>:	depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default0),or Cell Broadcast Data Coding Scheme in integer format [supported there types of csw allowed,0,4,8]

Remark

Parameter <fo> <vp> <pid> and <dcs>, 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 "dcs" value for MO message, we must make sure that the dcs 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

11.3 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).

Syntax

Command	Response
AT+CMSS=?	OK
AT+CMSS=<index>[,<da>[,<toda>]]	if PDU mode(+CMGF=0)and sending successful: +CMSS: <mr>[,<ackpdu>] if sending fails: +CMS ERROR: <err>

Defined value

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

Remark

1. <toda>have there 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

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

Description

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

Defined value

Parameter	Explain
<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)
<dcs>	depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default0), 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

0891683110102105F0240D91683120117013F50000807020619393000 7F4F29C9E769F01

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

Chapter 12. GPRS/PACKET DATA COMMANDS

12.1 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.

Syntax

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

Defined values

Parameter	Explain
<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

12.2 AT+CGDCONT Define PDP Context

Description

This command be used to defined PDP x context.

Syntax

Command	Response
AT+CGDCONT =?	+CGDCONT: (range of supported <cid>s), <PDP_type>,(list of supported<d_comp>s), (list of supported <h_comp>s) [<CR><LF> | [+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>[<CR><LF> | +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

Defined value

Parameter	Explain

<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) IPV4V6 Virtual <PDP_type> introduced to handle dual IP stack UE capability. (See 3GPP TS 24.301 [83]) PPP Point to Point Protocol (IETF STD 51) Non-IP Transfer of Non-IP data to external packet data network (see 3GPP TS 23.401 [82])
<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,IPV4V6,PPP,Non-IP),(0..3),(0..4)
```

OK
AT+CGDCONT=1, "IP","cmnet"
OK
AT+CGDCONT?
+CGDCONT:1,"IP", "cmnet", ,0,0 OK

12.3 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

Syntax

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

Defined value

Parameter	Explain
<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 simultaneity.

So the number of cid in this command is limited to 3. And if you have defined more than 3 cids with command AT+CGDCONT, 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
```

12.4 AT+CRC 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

Syntax

Command	Response
AT+CRC =?	+CRC: (0,1) OK
AT+CRC?	+CRC: <mode> OK
AT+CRC=<mode>	OK

Defined value

Parameter	Explain
<mode>:	0 disables extended format (default) 1 enables extended format
<cid>	A numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). Range from 1 to 7.

Example

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

12.5 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

Syntax

Command	Response
AT+CGQMIN=?	Success: – +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) []] OK
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

Defined value

Parameter	Explain
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 (~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) IPV4V6 Virtual <PDP_type> introduced to handle dual IP stack UE capability. (See 3GPP TS 24.301 [83]) PPP Point to Point Protocol (IETF STD 51)

Example

```
AT+CGQMIN=?

+CGQMIN: (IP,PPP,IPV6,IPV4V6), (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
```

12.6 AT+CGPADDR Show PDP Address

Description

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

Syntax

Command	Response
AT+CGPADDR=?	+CGPADDR: (list of defined <cid>s)

	OK
AT+CGPADDR=<cid>[,<cid>[,]]	Success: +CGPADDR: <cid>,<PDP_addr>[<CR><LF> +CGPADDR: <cid>,<PDP_addr>[. . .]] OK

Defined value

Parameter	Explain
<cid>	0 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
```

12.7 AT+CGAUTO Auto Response to 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

Syntax

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

Defined value

Parameter	Explain
<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

12. 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

Syntax

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

Defined value

Parameter	Explain
<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 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 throughout 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)

+CGQREQ: IPV6, (0..3), (0..4), (0..5) , (0..9), (0..18,31)

+CGQREQ: PPP, (0..3), (0..4), (0..5) , (0..9), (0..18,31) OK
AT+CGQREQ=1,1,1,1,1,1

+CGQREQ:1,1,1,1,1,1

OK
```

AT+CGQREQ?
+CGQREQ: 1,1,1,1,1,1 +CGQREQ: 2,0,0,0,0,0 +CGQREQ: 3,0,0,0,0,0 OK

12.9 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.

Syntax

Command	Response
D*<GPRS_SC_IP>[*<cid>[,<cid>[,]]]#	• Success: • CONNECT OK

Defined value

Parameter	Explain
< 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.>

12.10 AT+CGANS PDP Manual Response to A New 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 signalled 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

Syntax

Command	Response
AT+CGANS=?	Success: +CGANS: (list of supported <response>s), (list of supported <L2P>s) OK

AT+CGANS=[<response>, [<L2P> ,[<cid>]]]	Success: CONNECT . . . (data transfer) OK <cid>,<PDP_addr>[<CR><LF> +CGPADDR: <cid>,<PDP_addr>[. . .]] OK

Defined value

Parameter	Explain
< 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) (“PPP,IP,IPV6”)

OK
```

12.11 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

Syntax

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

Defined value

Parameter	Explain
< mode >	0 buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded 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 automatically rejected. . .

URC2	+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>] The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT. . .
URC3	+CGEV:NWDEACT <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: (0,1),(0,1)

OK
AT+CGEREP=1,1

OK
AT+CGEREP?

+CGEREP: 1,1

OK
```

12.12 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.

Syntax

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

Defined value

Parameter	Explain
< 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: (“PPP”) OK
AT+CGDATA=”PPP”,1
CONNECT 115200

12.13 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

Syntax

Command	Response
AT+CGCLASS =?	Success: +CGCLASS: (list of supported <class>s) OK

AT+CGCLASS?	Success: +CGCLASS: <class> OK
AT+CGCLASS =[<class>]	Success: OK

Defined value

Parameter	Explain
< 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

12.14 AT+QGPCLASS Get the GPRS class of UE support

Description

Get the GPRS class of UE support

Syntax

Command	Response
AT+QGPCLASS=?	Success: +QGPCLASS: <class> OK
AT+QGPCLASS?	Success: +QGPCLASS: <class> OK
AT+QGPCLASS =[<class>]	ERROR

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

Description

This command allows the TE to specify a UMTS Quality of Service Profile that is used when the MT activates a PDP context. The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. The specified profile will be stored in the MT and sent to the network only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGEQREQ command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

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

The read command returns the current settings 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.

Syntax

Command	Response
AT+CGEQREQ=?	+CGEQREQ: <PDP_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s) [<CR><LF>+CGEQREQ: <PDP_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of

	supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s) [. . .]]
AT+CGEQREQ?	[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>, <Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>] [<CR><LF>+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source Statistics Descriptor>,<Signalling Indication> [. . .]]

Defined value

Parameter	Explain
<cid>	integer type; specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands).
<PDP_type>:	string type; specifies the type of packet data protocol (see the +CGDCONT command).
For the following parameters, see also 3GPP TS 23.107 [46].	
<Traffic class>:	<Traffic class>: integer type; indicates the type of application for which the UMTS bearer service is optimised (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 conversational 1 streaming 2 interactive 3 background 4 subscribed value If the Traffic class is specified as conversational or streaming, then the Guaranteed and Maximum bitrate parameters should also be provided.
<Maximum bitrate UL>:	integer type; indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=.. . ,32,. . .). This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Maximum bitrate DL>:	integer type; indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=.. . ,32,. . .). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Guaranteed bitrate UL>:	integer type; indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=.. . ,32,. . .).

	If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Guaranteed bitrate DL>:	integer type; indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=.. . ,32,. . .). If the parameter is set to '0' the subscribed value will be requested. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Delivery order>:	>: integer type; indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 no 1 yes 2 subscribed value
<Maximum SDU size>:	integer type; (1,2,3,. . .) indicates the maximum allowed SDU size in octets. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<SDU error ratio>:	string type; indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5?10-3 would be specified as "5E3" (e.g. AT+CGEQREQ=.. . ,"5E3",. . .). "0E0" means subscribed value (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Residual bit error ratio>:	string type; indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example a target residual bit error ratio of 5?10-3 would be specified as "5E3" (e.g. AT+CGEQREQ=.. . ,"5E3",. . .). "0E0" means subscribed value (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Delivery of erroneous SDUs>:	integer type; indicates whether SDUs detected as erroneous shall be delivered or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 no 1 yes

	2 no detect 3 subscribed value
<Transfer delay>:	integer type; (0,1,2,. . .) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Traffic handling priority>:	integer type; (1,2,3,. . .) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Source Statistics Descriptor>:	integer type; specifies characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 Characteristics of SDUs is unknown 1 Characteristics of SDUs corresponds to a speech source
<Signalling Indication>:	integer type; indicates signalling content of submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 PDP context is not optimized for signalling 1 PDP context is optimized for signalling<PDP_type> (see +CGDCONT and +CGDSCONT commands). If a value is omitted for a particular class then the value is considered to be unspecified.

NOTE

1. When in dual mode with EPS the MT provides a mapping function to EPS Quality of Service parameter used for an EPS bearer resource activation request socket command.

12.16 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.

Syntax

Command	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) OK
+CGDSCONT?	[+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp> [<CR><LF>+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp>] OK
+CGDSCONT=[<cid>,<p_cid>[,<d_comp>[,<h_comp>]]]	Success: OK

Defined value

Parameter	Explain
<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 +CGDSCONT.
<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 SNDCP 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 SNDCP 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

NOTE

1. IM_CN_Signalling_Flag_Ind parameter not supported

12.17 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.

Syntax

Command	Response
AT+CGTFT =?	+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) [<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) [. . .]] OK
+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>

Defined value

Parameter	Explain
<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 +CGDSCONT.
<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 SNDCP 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 SNDCP 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: "a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6. m7.m8.m9. m10. m11.m12. m13. m14. m15.m16", for IPv6. | When +CGPIAF is supported, its settings can influence the format of this parameter returned with the read form of +CGTFT.
<protocol number (ipv4) / next header (ipv6)>:	integer type. Value range is from 0 to 255.
<local port range>:	string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".
<remote port range>:	string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".
<ipsec security parameter index (spi)>:	numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.
<type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask>:	string type. The string is given as dot-separated numeric (0-255) parameters on the form "t.m".
<flow label (ipv6)>:	numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.

<direction>:	integer type. Specifies the transmission direction in which the packet filter shall be applied. 0 Pre-Release 7 TFT filter (see 3GPP TS 24.008 [8], table 10.5.162) 1 Uplink 2 Downlink 3 Birectional (Up & Downlink)
<local address and subnet mask>:	string type. The string is given as dot-separated numeric (0-255) parameters on the form: "a1.a2.a3.a4.m1.m2.m3.m4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8.a9.a10.a11.a12.a13.a14.a15.a16.m1.m2.m3.m4.m5.m6. m7.m8.m9.m10. m11 .m12. m13.m14.m15.m16", for IPv6. When +CGPIAF is supported, its settings can influence the format of this parameter returned with the read form of +CGTFT.

12.18 AT+CGCMOD PDP context modify

Description

The execution command is used to modify the specified PDP context (s) with respect to QoS profiles and TFTs. After the command has completed, the MT returns to V.250 online data state. If the requested modification for any specified context cannot be achieved, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command. Refer subclause Appendix A for possible <err> values.

For EPS, the modification request for an EPS bearer resource will be answered by the network by an EPS bearer modification request. The request must be accepted by the MT before the PDP context is effectively changed.

If no <cid>s are specified the activation form of the command modifies all active contexts.

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

Syntax

Command	Response
Test Command **AT+CGCMOD=?**	+CGCMOD:(list of <cid>s associated with active contexts) OK
Set Command **AT+CGCMOD** **[=<cid>[,<cid>[,...]]]**	OK +CME ERROR: <err>

Defined value

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

Example

AT+CGCMOD=?
+CGCMOD: (1,.....7) OK
AT+CGCMOD=1
OK

12.19 AT+CGPDNSADDR Get active PDP dns address

Description

This command allows the TE get all actived pdp dns address

Syntax

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

Defined value

Parameter	Explain
<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 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. the test form of the command.

12.20 AT+CGEQMIN Not support

Description

This command allows the TE to specify a minimum acceptable profile, which is checked by the MT against the negotiated profile returned in the PDP context establishment and PDP contect modification procedures.

The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. The specified profile will be stored in the MT and checked against the negotiated profile only at activation or MS-initiated modification of the related context. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGEQMIN command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value.

A special form of the set command, +CGEQMIN=<cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

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

The test command returns values supported as compound values. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.

Syntax

Command	Response
AT+CGEQMIN =?	+CGEQMIN: <PDP_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s) [<CR><LF>+CGEQMIN: <PDP_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s) [. . .]]
AT+CGEQMIN?	[+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic

	handling priority>,<Source statistics descriptor>,<Signalling indication>] [<CR><LF>+CGEQMIN: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication> +CGEQMIN=[<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,< Maximum SDU size>[,<SDU error ratio>[,< Residual bit error ratio>[,<Delivery of erroneous SDUs> [,<Transfer delay>[,<Traffic handling priority>[,<Source statistics descriptor>[,<Signalling indication>]]]]]]]]]]]]]

Defined value

Parameter	Explain
<cid>:	integer type; specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands).
<PDP_type>:	string type; specifies the type of packet data protocol (see the +CGDCONT command). Support IP,IPV6 and PPP currently.
For the following parameters, see also 3GPP TS 23.107 [46].	
<Traffic class>:	integer type; indicates the type of application for which the UMTS bearer service is optimised (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 conversational 1 streaming 2 interactive 3 background
<Maximum bitrate UL>:	integer type; indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=.. . ,32,. . .) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Maximum bitrate DL>:	integer type; indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=.. . ,32,. . .) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Guaranteed bitrate UL>:	integer type; indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=.. . ,32,. . .) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Guaranteed bitrate DL>:	integer type; indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=.. . ,32,. . .) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Delivery order>:	integer type; indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 no 1 yes
<Maximum SDU size>:	integer type; (1,2,3,. . .) indicates the maximum allowed SDU size in octets (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<SDU error ratio>:	string type; indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as "mEe". As an example a target SDU error ratio of 5?10-3 would be specified as "5E3" (e.g. AT+CGEQMIN=.. . ,"5E3",. . .) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Residual bit error ratio>:	string type; indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example a target residual bit error ratio of 5?10-3 would be specified as "5E3" (e.g. AT+CGEQMIN=.. . ,"5E3",. . .) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Delivery of erroneous SDUs>:	integer type; indicates whether SDUs detected as erroneous shall be delivered or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 no 1 yes

	2 no detect
<Transfer delay>:	integer type; (0,1,2,. . .) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Traffic handling priority>:	integer type; (1,2,3,. . .) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
<Source Statistics Descriptor>:	integer type; specifies characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 Characteristics of SDUs is unknown 1 Characteristics of SDUs corresponds to a speech source
<Signalling Indication>:	integer type; indicates signalling content of submitted SDUs for a PDP context. Thisparameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). 0 PDP context is not optimized for signalling 1 PDP context is optimized for signalling If a value is omitted for a particular class then the value is considered to be unspecified.

12.21 AT+DIRECTIPMODE configuration DirectIp mode

Description

Set whether to open the DirectIp mode

Syntax

Command	Response
AT+DIRECTIPMODE =?	Success:

	+DIRECTIPMODE: mode=[0-1] (0, use internal LwIP; 1-direct IP OK
AT+DIRECTIPMODE?	Success: +DIRECTIPMODE: 0 OK
AT+DIRECTIPMODE=<mode>	Success: OK

Defined value

Parameter	Explain
< 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

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.

12.22 AT+PING Start Ping IP Address or Host

Description

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

Syntax

Command	Response

AT+PING=<IP address>, [<timeout>, <packet_length>, <ping_count>] **AT+PING=<domain name>,[<timeout>, <packet_length>, <ping_count>]**	OK Reply from <IP address>: bytes= <nbyte> time = < replyTime >(ms), TTL = <ttl> Reply from <IP address>: bytes= <nbyte> time =< replyTime >(ms), TTL = <ttl> [...] Ping statistics for <IP address>:Packets: Sent = <nsendPackage>, Received = < nreceivePackage >, Lose = <nlostPackage><<lostRange>%>
AT+PING=?	+PING: (DNS/IP address),(list of supported<timeout>s),(list of supported <packet_length>),(list of supported <ping_count>s)

Defined value

Parameter	Explain
<IP address>	A string parameter which indicates ping IP address
<domain name>	A string parameter which indicates ping domain name
<timeout>	Ping ICMP package timeout (1~255)
<packet_length>	Ping ICMP package size (36~1500 ipv4) (56~1500 ipv6)
<ping_count>	Ping ICMP package send times (1~65535)
<nbyte>	Ping package size
< replyTime >	Time, in units of ms, required to receive the response
<ttl>	Time to live
<nsendPackage	Send package number
< nreceivePackage >	Receive package number
<nlostPackage>	Lost package number
<lostRange>	Lost package range

12.23 AT+PINGSTOP Stop Ping IP Address or Host

Description

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

Syntax

Command	Response
AT+PINGSTOP	OK

NOTE

1. AT+PINGSTOP can stop AT+PING in <ping_count>

Chapter 13 TCP/IP COMMANDS

13. 1 AT+CIPMUX Start Up Multi-IP Connection

Syntax

Command	Response

AT+CIPMUX=<n>	
AT+CIPMUX?	+CIPMUX: <n>
AT+CIPMUX=?	+CIPMUX: (show <n> values)

Defined value

Parameter	Explain
<n> **Connection mode**	0 Single IP connection 1 Multi IP connection
<cid>	A numeric parameter which specifies a particular PDP context definition

NOTE

1. Only in IP initial state, AT+CIPMUX=1 is effective
2. Only when multi IP connection and GPRS application are both shut down, AT+CIPMUX=0 is effective

Example

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

13. 2 AT+CIPSTART Start Up TCP Or UDP Connection

Syntax

Command	Response
• **CIPMUX=0** **–** **AT+CIPSTART=<mode>, <IP address>, <port>** **–** **AT+CIPSTART=<mode>, <domain name>, <port>** • **CIPMUX=1** **–** **AT+CIPSTART=<n>, <mode>, <IP address>, <port>** **–** **AT+CIPSTART=<n>, <mode>, <domain name>, <port>**	• CIPMUX=0 – OK – +CME ERROR <err> – ALREADY CONNECT – CONNECT OK – STATE: <state> CONNECT FAIL • CIPMUX=1 – OK – +CME ERROR <err> – <n>,ALREADY CONNECT – <n>,CONNECT OK – <n>,CONNECT FAIL
AT+CIPSTART=?	• CIPMUX=0 – +CIPSTART: (list of supported <mode>),(<IP address>),(<port>) • CIPMUX=1 – +CIPSTART: (list of supported <n>),(list of supported <mode>),(<IP address>),(<port>)

Reference

Parameter	Explain

Max Response Time:	75 seconds	When mode is multi-IP state
	160 seconds	When mode is single state, and the state is IP INITIAL

Defined value

Parameter	Explain
<n>	0..5 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
<port>	Remote server port
<domain name>	A string parameter which indicates remote server domain name
<state>	A string parameter which indicates the progress of connecting In Single IP state (CIPMUX=0): 1. IP INITIAL 2. IP START 3. IP CONFIG 4. IP GPRSACT 5. IP STATUS 6. TCP CONNECTING/UDP CONNECTING/SERVER LISTENING 7. CONNECT OK 8. TCP CLOSING/UDP CLOSING 9. TCP CLOSED/UDP CLOSED 10. PDP DEACT

	In Multi-IP state (CIPMUX=1): 1. IP INITIAL 2. IP START 3. IP CONFIG 4. IP GPRSACT 5. IP STATUS 6. IP PROCESSING 7. PDP DEACT

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.

When module is in multi-IP state, before this command is executed, it is necessary to process "AT+CSTT, AT+CIICR, AT+CIFSR".

Example

```
AT+CIPSTART="TCP","111.205.140.139",6800

OK

CONNECT OK
AT+CIPSTART=1,"TCP","111.205.140.139",6800
```

OK 1,CONNECT OK
AT+CIPSTART=?
+CIPSTART: (“TCP”, “UDP”), (“(0-255).(0-255).(0-255).(0-255)”), (0-65535) OK
AT+CIPSTART=?
+CIPSTART: (0-7), (“TCP”, “UDP”), (“(0-255).(0-255).(0-255).(0-255)”), (0-65535) OK

13. 3 AT+CIPSEND Send Data Through TCP Or UDP Connection

Syntax

Command	Response
• **CIPMUX=0** **–** **AT+CIPSEND=<length>** • **CIPMUX=1** **–** **AT+CIPSEND=<n>,<**	• CIPMUX=0 – +CME ERROR <err> – SEND OK When +CIPQSEND=0 – DATA ACCEPT:<length> When +CIPQSEND=1 – SEND FAIL If sending fails • CIPMUX=1 – +CME ERROR <err> – <n>,SEND OK When +CIPQSEND=0 – DATA ACCEPT:<n>,<length> When +CIPQSEND=1 – <n>,SEND FAIL If sending fails
AT+CIPSEND?	• CIPMUX=0 – +CIPSEND: <size> – OK

	• CIPMUX=1 – +CIPSEND: <n>,<size> – OK
AT+CIPSEND=?	• CIPMUX=0 – +CIPSEND: <length> – OK • CIPMUX=1 – +CIPSEND: (0-5),<length> – OK
AT+CIPSEND	• response >, then type data for send, tap CTRL+Z to send, tap ESC to cancel the operation • +CME ERROR <err> • SEND OK When +CIPQSEND=0 • DATA ACCEPT:<length> When +CIPQSEND=1 • SEND FAIL If sending fails

Reference

- The data length which can be sent depends on network status.
- Set the time that send data automatically with the Command of AT+CIPATS.
- Only send data at the status of established connection.
- When +CIPQSEND=0 and the remote server no response, after 645 seconds, CLOSE will be reported.

Defined value

Parameter	Explain
<n>	0..5 A numeric parameter which indicates the connection number

<length>	A numeric parameter which indicates the length of sending data, it must be less than <size>

NOTE

+CIPSEND EXE Command can only be used in single IP connection mode (+CIPMUX=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 <size> bytes which can be sent at a time.

Example

```
AT+CIPSTART="TCP","111.205.140.139",6800

OK

CONNECT OK
AT+CIPSEND (CIPMUX=0)
> test trontrol+z

SEND OK
AT+CIPSEND=10 (CIPMUX=0)
> abcdefghij

SEND OK
AT+CIPSEND=1 (CIPMUX=1)
> test1 trontrol+z

1,SEND OK
AT+CIPSEND=1,10 (CIPMUX=1)
> abcdefghij

1,SEND OK
```

13. 4 AT+CIPQSEND Select Data Transmitting Mode

Syntax

Command	Response
AT+CIPQSEND=<n>	OK
AT+CIPQSEND?	CIPQSEND: <n> OK
AT+CIPQSEND=?	+CIPQSEND: (0,1) OK

Defined value

Parameter	Explain
<n>	0 Normal mode – when the server receives TCP data, it will response SEND OK. 1 Quick send mode – when the data is sent to module, it will response DATA ACCEPT:<n>,<length>.
<cid>	A numeric parameter which specifies a particular PDP context definition

Example

AT+CIPQSEND=0
OK
AT+CIPMUX?
+CIPQSEND:0 OK
AT+CIPQSEND=?
+CIPQSEND:(0,1) OK

13. 5 AT+CIPACK Query Previous Connection Data Transmitting State

Syntax

Command	Response
• **CIPMUX=0** **– AT+CIPACK** • **CIPMUX=1** **–** **AT+CIPACK=<n>**	• CIPMUX=0 – +CIPACK: <txlen>, <acklen>, <nacklen> – OK • CIPMUX=1 – +CIPACK: <txlen>, <acklen>, <nacklen> – OK
AT+CIPACK=?	OK

Defined value

Parameter	Explain
<n>	A numeric parameter which indicates the connection number
<txlen>	The data amount which has been sent
<acklen>	The data amount confirmed successfully by the server
<nacklen>	The data amount without confirmation by the server

Example

```
AT+CIPACK (CIPMUX=0)

+CIPACK:0,0,0

OK
AT+CIPACK=1 (CIPMUX=1)

+CIPACK:0,0,0

OK
AT+CIPACK=?
```

OK

13. 6 AT+CIPCLOSE Close TCP Or UDP Connection

Syntax

Command	Response
• **CIPMUX=0** **–** **AT+CIPCLOSE=<n>** • **CIPMUX=1** **–** **AT+CIPCLOSE=<id>, [<n>]**	• CIPMUX=0 – CLOSE OK • CIPMUX=1 – <id>, CLOSE OK
+CIPCLOSE=?	OK
AT+CIPCLOSE	• CLOSE OK If close is successfully +CME ERROR <err> If close fails

Reference

AT+CIPCLOSE only closes connection at corresponding status of TCP/UDP stack. To see the status use AT+CIPSTATUS command. Status should be:TCP CONNECTING,UDP CONNECTING, SERVER LISTENING or CONNECT OK in single-connection mode (see <state> parameter); CONNECTING or CONNECTED in multi-connection mode (see <client state>);OPENING or LISTENING in multi-connection mode (see <server state>).Otherwise it will return ERROR".

Defined value

Parameter	Explain
<id>	0..5 A numeric parameter which indicates the connection number
<n>	Close Mode 0 Slow close

	1	Quick close

NOTE

+CIPCLOSE EXE Command can only be used in single IP connection mode (+CIPMUX=0)

Example

AT+CIPCLOSE (CIPMUX=0)
CLOSE OK
AT+CIPCLOSE=1 (CIPMUX=1)
1,CLOSE OK
AT+CIPCLOSE=?
OK

13. 7 AT+CIPSHUT Disconnect Wireless Connection

Syntax

Command	Response
AT+CIPSHUT=?	OK
AT+CIPSHUT	• SHUT OK If close is successfully • +CME ERROR <err> If close fails

Reference

Max Response Time: 65 seconds

NOTE

1. If this command is executed in multi-connection mode, all of the IP connection will be shut.
2. User can close gprs pdp context by AT+CIPSHUT. After it is closed, the status is IP INITIAL.
3. If +PDP: DEACT urc is reported which means the gprs is released by the network, then user still needs to execute AT+CIPSHUT command to make PDP context come back to original state.

Example

AT+CIPSHUT
SHUT OK
AT+CIPSHUT=?
OK

13. 8 AT+CLPORT Set Local Port

Syntax

Command	Response
• **CIPMUX=0** **–** **AT+CLPORT=<mode>, <port>** • **CIPMUX=1** **–** **AT+CLPORT=<n>, <mode>, <port>**	• OK • +CME ERROR <err>
AT+CLPORT?	• CIPMUX=0

	– +CLPORT: <TCP port>,<UDP port> – OK • CIPMUX=1 – +CLPORT: 0,<TCP port>,<UDP port> – +CLPORT: 1,<TCP port>,<UDP port> – +CLPORT: 2,<TCP port>,<UDP port> – +CLPORT: 3,<TCP port>,<UDP port> – +CLPORT: 4,<TCP port>,<UDP port> – +CLPORT: 5,<TCP port>,<UDP port> – OK
AT+CLPORT=?	• CIPMUX=0 – +CLPORT: ("TCP","UDP"),(0-65535) – OK • CIPMUX=1 – +CLPORT: (0-5),("TCP","UDP"),(0-65535) – OK

Defined value

Parameter	Explain
<n>	0..5 A numeric parameter which indicates the connection number
<mode>	A string parameter which indicates the connection type "TCP" TCP local port "UDP" UDP local port
<port>	0-65535 A numeric parameter which indicates the local port. Default value is 0, a port can be dynamically allocated a port.

NOTE

Only when multi IP connection and GPRS application are both shut down,

Example

AT+CLPORT="TCP",23400 (CIPMUX=0)

OK

AT+CLPORT=? (CIPMUX=0)

+CLPORT:(“TCP”,”UDP”),(0-65535)

OK

AT+CLPORT=? (CIPMUX=1)

+CLPORT: (0-7),(“TCP”,”UDP”),(0-65535)

OK

AT+CLPORT?

+CLPORT:0,TCP:0,UDP:0

+CLPORT:1,TCP:23400,UDP:0

+CLPORT:2,TCP:0,UDP:0

+CLPORT:3,TCP:0,UDP:0

+CLPORT:4,TCP:0,UDP:0

+CLPORT:5,TCP:0,UDP:0

+CLPORT:6,TCP:0,UDP:0

+CLPORT:7,TCP:0,UDP:0

OK

13. 9 AT+CSTT Start Task and Set APN, User ID, Password

Syntax

Command	Response
AT+CSTT=<apn>, <username>, <password>	• OK +CME ERROR <err>
AT+CSTT?	• +CSTT: <apn>,<user name>,<password> OK
AT+CSTT=?	• +CSTT: "APN","USER","PWD" OK
AT+CSTT	• OK +CME ERROR <err>

Defined value

Parameter	Explain
<apn>	A string parameter which indicates the GPRS access point name. The max length is 50 bytes. Default value is "CMNET".
<user name>	A string parameter which indicates the GPRS user name. The max length is 20 bytes
<password>	A string parameter which indicates the GPRS password. The max length is 20 bytes.

NOTE

1. The write command and execution command of this command is valid only at the state of IP INITIAL. After this command is executed, the state will be changed to IP START.

Example

AT+CSTT="CMNET","",""
OK
AT+CSTT=?
+CSTT: “APN”, “USER”, “PWD” OK
AT+CSTT?
+CSTT: “CMNET”, “”, “” OK

13. 10 AT+CIICR Bring Up Wireless Connection With GPRS

Syntax

Command	Response
AT+CIICR=?	OK
AT+CIICR	• OK +CME ERROR <err>

Reference

Max Response Time: 85 second

NOTE

1. AT+CIICR only activates moving scene at the status of IP START, after operating this Command is executed, the state will be changed to IP CONFIG.
2. After module accepts the activated operation, if it is activated successfully, module

state will be changed to IP GPRSACT, and it responds OK, otherwise it will respond ERROR.

Example

AT+CIICR=?
OK
AT+CSTT
OK

13. 11 AT+CIFSR Get Local IP Address

Syntax

Command	Response
AT+CIFSR=?	OK
AT+CIFSR	• <IP address> OK

Defined value

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

NOTE

1. Only after PDP context is activated, local IP address can be obtained by AT+CIFSR, otherwise it will respond ERROR. To see the status use AT+CIPSTATUS 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).

Example

AT+CIFSR
10.203.20.202 OK
AT+CIFSR=?
OK

13. 12 AT+CIPSTATUS Query Current Connection Status

Syntax

Command	Response
AT+CIPSTATUS=?	OK
CIPMUX=1 **–** **AT+CIPSTATUS=<n>**	• +CIPSTATUS: <n>,<bearer>,<TCP/UDP>,<IP address>, <port>,<client state> OK
AT+CIPSTATUS	• CIPMUX=0 – OK – <state> • CIPMUX=1 – OK – <state> – S: 0, <bearer>, <port>, <server state> If the module is set as server

	– C:0,<bearer>,<TCP/UDP>,<IP address>, <port>,<client state> – C:1,<bearer>,<TCP/UDP>,<IP address>,<port>,<client state> – C:2,<bearer>,<TCP/UDP>,<IP address>,<port>,<client state> – C:3,<bearer>,<TCP/UDP>,<IP address>,<port>,<client state> – C:4,<bearer>,<TCP/UDP>,<IP address>,<port>,<client state> – C:5,<bearer>,<TCP/UDP>,<IP address>,<port>,<client state>

Defined value

Parameter	Explain
<n>	0-5 A numeric parameter which indicates the connection number
<bearer>	0-1 GPRS bearer, default is 0 <server state> OPENING LISTENING CLOSING <client state> INITIAL CONNECTING CONNECTED

	REMOTE CLOSING CLOSING CLOSED
<state>	A string parameter which indicates the progress of connecting In Single IP state (CIPMUX=0): 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 TCP CONNECTING/UDP CONNECTING/SERVER LISTENING 6 CONNECT OK 7 TCP CLOSING/UDP CLOSING 8 TCP CLOSED/UDP CLOSED 9 PDP DEACT In Multi-IP state (CIPMUX=1): 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 IP PROCESSING 9 PDP DEACT

Example

AT+CIPSTATUS (CIPMUX=0)
OK STATE:IP INITIAL
AT+CIPSTATUS (CIPMUX=1)
OK STATE:IP INITIAL C:0,0,TCP„0,IP INITIAL C:1,0,TCP„0,IP INITIAL C:2,0,TCP„0,IP INITIAL C:3,0,TCP„0,IP INITIAL C:4,0,TCP„0,IP INITIAL C:5,0,TCP„0,IP INITIAL C:6,0,TCP„0,IP INITIAL C:7,0,TCP„0,IP INITIAL

13. 13 AT+CDNSCFG Configure Domain Name Server

Syntax

Command	Response
AT+CDNSCFG=<pri_dns>[,<sec_dns>]	• OK +CME ERROR <err>

AT+CDNSCFG?	• PrimaryDns: <pri_dns> • SecondaryDns: <sec_dns> OK
AT+CDNSCFG=?	• +CDNSCFG: ("Primary DNS"),("Secondary DNS") OK

Defined value

Parameter	Explain
<pri_dns>	A string parameter which indicates the IP address of the primary domain name server. Default value is 0.0.0.0.
<sec_dns>	A string parameter which indicates the IP address of the secondary domain name server. Default value is 0.0.0.0.

Example

AT+CDNSCFG?
PrimaryDns: <168.48.6.0> SecondaryDns: <0.0.0.0> OK
AT+CDNSCFG=?
+CDNSCFG: “PrimaryDNS”,”SecondaryDNS” OK
AT+CDNSCFG="168.48.6.0","8.8.8.8"
OK

13. 14 AT+CDNSGIP Query The IP Address Of Given Domain Name

Syntax

Command	Response
AT+CDNSGIP=<domain name>	• OK • +CME ERROR <err> • +CDNSGIP: 1, <domain name>,<IP1>[,<IP2>] If successful • +CDNSGIP:0,<dns error code> If fail
AT+CDNSGIP=?	OK

Defined value

Parameter	Explain
<domain name>	A string parameter which indicates the domain name
<IP1>	A string parameter which indicates the first IP address corresponding to the domain name
<IP2>	A string parameter which indicates the second IP address corresponding to the domain name
<dns error code>	A numeric parameter which indicates the error code 8 DNS COMMON ERROR 3 NETWORK ERROR

Example

AT+CDNSGIP=?
OK
AT+CDNSGIP="www.baidu.com"
OK +CDNSGIP: 1,"www.baidu.com","111.13.100.92","111.13.100.91"

13. 15 AT+CIPHEAD Add an IP head at the beginning of a package received

Syntax

Command	Response
AT+CIPHEAD=<mode>	• OK +CME ERROR <err>
AT+CIPHEAD?	• +CIPHEAD: <mode> OK
AT+CIPHEAD=?	• +CIPHEAD: (list of supported <mode> s) OK

Reference

CIPHEAD=1 the format is:

- For single IP connection (+CIPMUX=0) +IPD,<data length>:
- For multi IP connection (+CIPMUX=1) +RECEIVE,<n>,<data length>:

Example

```
AT+CIPHEAD?

+CIPHEAD:0

OK
AT+CIPHEAD=?

+CIPHEAD:(0,1)

OK
AT+CIPHEAD=1

OK
```

13. 16 AT+CIPATS Set Auto Sending Timer

Syntax

Command	Response
AT+CIPATS=<mode>, [<time>]	• OK +CME ERROR <err>

AT+CIPATS?	• +CIPATS: <mode>,<time> OK
AT+CIPATS=?	• +CIPATS: (list of supported <mode> s),(list of supported <time>) OK

Defined value

Parameter	Explain
<mode>	A numeric parameter which indicates whether set timer when module is sending data 0 Not set timer when module is sending data 1 Set timer when module is sending data
<time>	1..100 A numeric parameter which indicates the seconds after which the data will be sent

NOTE

1. When the mode is set to 0, the second parameter time should not be set; when the mode is set to 1, the time should be set.

Example

```
AT+CIPATS=?

+CIPATS:(0,1),(1-100)

OK
AT+CIPATS=1,50

OK
AT+CIPATS?
```

+CIPATS:1,50

OK

13. 17 AT+CIPSPRT Set Prompt Of '>' When Module Sends Data

Syntax

Command	Response
AT+CIPSPRT=<send prompt>	• OK +CME ERROR <err>
AT+CIPSPRT?	• +CIPSPRT: <send prompt> OK
AT+CIPSPRT=?	• +CIPSPRT: (list of supported <send prompt> s) OK

Defined value

Parameter	Explain
<send prompt>	A numeric parameter which indicates whether to echo prompt '>' after module issues AT+CIPSEND 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.
<cid>	A numeric parameter which specifies a particular PDP context definition

Example

AT+CIPSPRT=?
+CIPSPRT:(0,1,2) OK
AT+CIPSPRT=2
OK
AT+CIPSPRT?
+CIPSPRT:2 OK

13. 18 AT+CIPSERVER Configure Module As Server

Syntax

Command	Response
AT+CIPSERVER=<mode>[,<port>]	• OK +CME ERROR <err>
AT+CIPSERVER?	• +CIPSERVER: <mode>[,<port>,<channel id>,<bearer>] OK
AT+CIPSERVER=?	• +CIPSERVER: (0-CLOSE SERVER, 1-OPEN SERVER), (1-65535) OK

Defined value

Parameter	Explain
<mode>	0 Close server 1 Open server
<port>	1..65535 Listening port

<channel id>	Channel id
<bearer>	GPRS bearer

NOTE

1. This command is allowed to establish a TCP server 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.

Example

```
AT+CIPSERVER=?

+CIPSERVER:(0-CLOSE SERVER,1-OPEN SERVER),(1,65535)

OK
AT+CIPSERVER=1,10254

OK
SERVER OK
AT+CIPSERVER?

+CIPSERVER:1,10254

OK
```

13. 19 AT+CIPCSGP Set CSD Or GPRS For Connection Mode

Syntax

Command	Response
AT+CIPCSGP=<mode>[,(<apn>,<username>,<password>),(<dial number>,<user name>,<password>,<rate>)]	• OK +CME ERROR <err>

AT+CIPCSGP?	• +CIPCSGP: <mode>, <apn>, <user name>, <password>[,<rate>] OK
AT+CIPCSGP=?	• +CIPCSGP:0-CSD,DIALNUMBER,USERNAME,PASSWORD, RATE(0-3)-- NOT SUPPORT • +CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD OK

Defined value

Parameter	Explain
<mode>	A numeric parameter which indicates the wireless connection Mode 0 set CSD as wireless connection mode 1 set GPRS as wireless connection mode
GPRS parameters:	
<apn>	A string parameter which indicates the access point name
<user name>	A string parameter which indicates the user name
<password>	A string parameter which indicates the password
CSD parameters:	
<dial number>	A string parameter which indicates the CSD dial numbers
<user name>	A string parameter which indicates the CSD user name
<password>	A string parameter which indicates the CSD password
<rate>	A numeric parameter which indicates the CSD connection rate 0 2400 1 4800 2 9600 3 14400

Example

AT+CIPCSGP=1,"CMNET","",""
OK
AT+CIPCSGP?
+CIPCSGP:1,"CMNET","",""   OK
AT+CIPCSGP=?
+CIPCSGP: 0-CSD,DIALNUMBER,USER NAME,PASSWORD,RATE(0-3) – NOT SUPPORT   +CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD   OK

13. 20 AT+CIPSRIP Show Remote IP Address And Port When Received Data

Syntax

Command	Response
AT+CIPSRIP=<mode>	• OK +CME ERROR <err>
AT+CIPSRIP?	• +CIPSRIP: <mode> OK
AT+CIPSRIP=?	• +CIPSRIP: (list of supported <mode> s) OK

Reference

CIPSRIP=1 the format is:

- For single IP connection (+CIPMUX=0) +RECV FROM:<IP ADDRESS>:<PORT>

For multi IP connection (+CIPMUX=1) +RECEIVE,<n>,<data length>,<IP ADDRESS>:<PORT>

Defined value

Parameter	Explain
<mode>	A numeric parameter which shows remote IP address and port. 0 Do not show the prompt 1 Show the prompt1 Multi IP connection

Example

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

13. 21 AT+CIPDPDP Check State Of GPRS Network Timing (Not supported)

Syntax

Command	Response
AT+CIPDPDP=<mode>[,<interval>,<timer>]	• OK +CME ERROR <err>
AT+CIPDPDP?	• +CIPDPDP: <mode>, <interval>, <timer> OK

AT+CIPDPDP=?	• +CIPDPDP: (list of supported <mode> s, list of supported <interval> , list of supported <timer>) OK

Defined value

Parameter	Explain
<mode>	0 Not set detect PDP 1 Set detect PDP
<interval>	1-180(s), default value is 10.
<timer>	1-10, default value is 3.

NOTE

1. If +PDP: DEACT urc is reported because of module not attaching to gprs for a certain time or other reasons, user still needs to execute AT+CIPSHUT command makes PDP context come back to original state.
2. This command is not supported yet.

13. 22 AT+CIPMODE Select TCPIP Application Mode

Syntax

Command	Response
AT+CIPMODE=<mode>	• OK +CME ERROR <err>
AT+CIPMODE?	• +CIPDPDP: <mode> OK
AT+CIPMODE=?	• +CIPMODE: (0-NORMAL MODE, 1-TRANSPARENT MODE)

	OK

Defined value

Parameter	Explain
<mode>	<mode>1 Multi IP connection

Example

AT+CIPMODE?
+CIPMODE:0 OK
AT+CIPMODE=?
+CIPMODE: (0-NORMAL MODE, 1-TRANSPARENT MODE) OK
AT+CIPMODE=0
OK

13. 23 AT+CIPCCFG Configure Transparent Transfer Mode

Syntax

Command	Response
AT+CIPCCFG=<NmRetry>,<WaitTm>,<SendSz>,<esc>[,<Rxmode>,<RxSize>,<Rxtimer>]	• OK +CME ERROR <err>
AT+CIPCCFG?	• +CIPCCFG:<NmRetry>,<WaitTm>,<SendSz>,<esc>,<Rxmode>,<RxSize>,<Rxtimer> OK

AT+CIPCCFG=?	• +CIPCCFG:(NmRetry:3-8),(WaitTm:1-10), (SendSz:1-1460),(esc:0,1) , (Rxmode:0,1), (RxSize:50-1460),(Rxtimer:20-1000) OK

Defined value

Parameter	Explain
<NmRetry>	Number of retries to be made for an IP packet.Default value is 5.
<WaitTm>	Number of 100ms intervals to wait for serial input before sending the packet. Default value is 2.
<SendSz>	Size in bytes of data block to be received from serial port before sending. Default value is 128.
<esc>	Whether turn on the escape sequence, default is TRUE. 0 Turn off the escape sequence 1 Turn on the escape sequence
<Rxmode>	Whether to set time interval during output data from serial port. 0 output data to serial port without interval 1 output data to serial port within <Rxtimer> interval
<RxSize>	Output data length for each time. Default value is 1460.
<Rxtimer>	Time interval (ms) to wait for serial port to output data again. Default value: 50ms

NOTE

1. This command will be effective only in single connection mode (+CIPMUX=0)

Example

AT+CIPCCFG?
+CIPCCFG:5,2,1024,1,0,1460,50 OK
AT+CIPCCFG=?
+CIPCCFG: (NmRetry:3-8),(WaitTm:1-10),(SendSz:1-1460),(esc:0,1),(Rxmode:0,1),(RxSize:50-1460),(Rxtimer:20- 1000) OK
AT+CIPCCFG=4,2,1024,1,0,1440,80
OK

13. 24 AT+CIPSHOWTP Display Transfer Protocol In IP Head When Received Data

Syntax

Command	Response
AT+CIPSHOWTP=<mode>	• OK +CME ERROR <err>
AT+CIPSHOWTP?	• +CIPSHOWTP: <mode> OK
AT+CIPSHOWTP=?	• +CIPSHOWTP: (list of supported <mode> s) OK

Reference

if **+CIPSHOWTP=1** The format is +IPD,<data size>,<TCP/UDP>:<data>

Defined value

Parameter	Explain
<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

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

Example

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

13. 25 AT+CIPUDPMODE UDP Extended Mode

Syntax

Command	Response
• **CIPMUX=0** **–** **AT+CIPUDPMODE=<mode>[,** **<IPaddress>,** **<Port>]** • **CIPMUX=1** **–** **AT+CIPUDPMODE=<n>,** **<mode>[,** **<IPaddress>,** **<Port>]**	• CIPMUX=0 – OK – +CME ERROR <err> • CIPMUX=1 – OK – +CME ERROR <err>
• **CIPMUX=0** **– AT+** **CIPUDPMODE?** • **CIPMUX=1** **– AT+** **CIPUDPMODE?**	• CIPMUX=0 – +CIPUDPMODE: <mode>[,<IP address>,<Port>] – OK • CIPMUX=1 – +CIPUDPMODE: 0, <mode>[,<IP address>,<Port>] – +CIPUDPMODE: 1,<mode>[,<IP address>,<Port>] – +CIPUDPMODE: 2,<mode>[,<IP address>,<Port>] – +CIPUDPMODE: 3,<mode>[,<IP address>,<Port>] – +CIPUDPMODE: 4,<mode>[,<IP address>,<Port>] – +CIPUDPMODE: 5,<mode>[,<IP address>,<Port>] – OK

• **CIPMUX=0** **– +** **CIPUDPMODE=?** • **CIPMUX=1** **– +** **CIPUDPMODE=?**	• CIPMUX=0 – +CIPUDPMODE: (0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535) – OK • CIPMUX=1 – +CIPUDPMODE: (0-5),(0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535) – OK

Defined value

Parameter	Explain
<n>	0..5 A numeric parameter which indicates the connection number
<mode>	0 UDP Normal Mode 1 UDP Extended Mode 2 Set UDP address to be sent
<IP address>	A string parameter which indicates remote IP address
<Port>	Remote port

Example

```
AT+CIPUDPMODE=?

+CIPUDPMODE: (0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)

OK
AT+CIPUDPMODE=2,"192.168.1.108",4500

OK
AT+CIPUDPMODE?
```

+CIPUDPMODE:0,192.168.1.108,4500

OK

13. 26 AT+CIPRXGET Get Data from Network Manually

Syntax

Command	Response
• **CIPMUX=0** **–** **+CIPRXGET=<mode>[,** **<reqlength>]** • **CIPMUX=1** **–** **+CIPRXGET=<mode>[,** **<id>,** **<reqlength>]**	• CIPMUX=0 – AT+CIPRXGET=0 – OK – +CME ERROR <err> – 1)For single IP connection – If "AT+CIPSRIP=1" is set, IP address and port are contained. – if <mode>=1 – AT+CIPRXGET=1 – +CIPRXGET: 1[,<IP ADDRESS>:<PORT>] – if <mode>=2 – AT+CIPRXGET=2,<reqlength> – +CIPRXGET: 2,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>] – 1234567890. . . – OK – if <mode>=3 – AT+CIPRXGET=3,<reqlength> – +CIPRXGET: 3,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]

	– 5151. . . – OK – if <mode> =4 – AT+CIPRXGET=4 – +CIPRXGET: 4, <cnflength> – OK • CIPMUX=1 – For multi IP connection – If "AT+CIPSRIP=1" is set, IP address and port is contained. – if <mode> =1 – AT+CIPRXGET=1 – +CIPRXGET: 1[,<id>,<IP ADDRESS>:<PORT>] – if <mode> =2 – AT+CIPRXGET=2,<id>,<reqlength> – +CIPRXGET: 2,<id>,<reqlength>,<cnflength>[,<IPADDRESS>:<PORT>] – 1234567890. . . – OK – if <mode> =3 – AT+CIPRXGET=3,<id>,<reqlength> – +CIPRXGET: 3,<id>,<reqlength>,<cnflength>[,<IPADDRESS>:<PORT>] – 5151. . .

	– OK – if <mode>=4 – AT+CIPRXGET=4,<id> – +CIPRXGET: 4, <id>,<cnflength> – OK
AT+CIPRXGET?	• +CIPRXGET: <mode> • OK
• **CIPMUX=0** **–** **AT+CIPRXGET=?** • **CIPMUX=1** **–** **AT+CIPRXGET=?**	• CIPMUX=0 – +CIPRXGET: (list of supported <mode>s),(list of supported <reqlength>) – OK • CIPMUX=1 – +CIPRXGET: (list of supported <mode>s), (list of supported <id>s), (list of supported <reqlength>) – OK

Defined value

Parameter	Explain
<mode>	0 Disable getting data from network manually, the module is set to normal mode, data will be pushed to TE directly. 1 Enable getting data from network manually. 2 The module can get data, but the length of output data can not exceed 1460 bytes at a time. 3 Similar to mode 2, but in HEX mode, which means the module can get 730 bytes maximum at a time. 4 Query how many data are not read with a given ID.
<id>	A numeric parameter which indicates the connection number <reqlength> Requested number of data bytes (1-1460 bytes)to be

	read <cnflength> Confirmed number of data bytes to be read. 0 indicates that no data can be read.

NOTE

1. To enable this function, parameter <mode> must be set to 1 before connection

13. 27 AT+CIPSCONT Save TCPIP Application Context

Syntax

Command	Response
AT+CIPSCONT?	• +CIPTKA: <mode>,<keepIdle>,<keepInterval>,<keepCount> • +CIPSCONT: <mode0> • +CIPCSGP: <mode> • Gprs Config APN: <apn> • Gprs Config UserId: <user name> • Gprs Config Password: <password> • +CIPHEAD: <mode> • +CIPSHOWTP: <mode> • +CIPSRIP: <mode> • +CIPATS: <mode>,<time> • +CIPSPRT: <send prompt>,<notshowsendok> • +CIPQSEND: <n> • +CIPMODE: <mode> • +CIPCCFG:<NmRetry>,<WaitTm>,<SendSz>,<esc>,<Rxmode>,<RxSize>,<Rxtimer> • +CIPMUX: <n>

	• +CIPDPDP: <mode>, <interval>, <timer> • +CIPRXGET: <mode> • +CIPRDTIMER: <rdsigtimer>,<rdmuxtimer> • OK
AT+CIPSCONT	• OK If success Module saves current TCPIP Application Contexts to NVRAM. When system is rebooted, the parameters will be loaded automatically. ERROR If error is related to ME functionality

Defined value

Parameter	Explain
<mode0>	0 Saved, the value from NVRAM 1 Unsaved, the value from RAM
<cid>	A numeric parameter which specifies a particular PDP context definition

13. 28 AT+CIPRDTIMER Set Remote Delay Timer

Syntax

Command	Response
AT+CIPRDTIMER=<rdsigtimer>,<rdmuxtimer>	• OK If success ERROR If error is related to ME functionality
AT+CIPRDTIMER?	• +CIPRDTIMER: <rdsigtimer>,<rdmuxtimer> • OK
AT+CIPRDTIMER=?	• +CIPRDTIMER: (100-4000),(100-7000) OK

Defined value

Parameter	Explain
<rdsigtimer>	Remote delay timer of single connection. Default value is 2000.
<rdmuxtimer>	Remote delay timer of multi-connections. Default value is 3500.

NOTE

2. This command is used to shorten the disconnect time locally when the remote server has been disconnected.

13. 29 AT+CIPSGTXT Select GPRS PDP Context

Syntax

Command	Response
AT+CIPSGTXT=<mode>	• OK If success ERROR If error is related to ME functionality
AT+CIPSGTXT=?	• +CIPSGTXT: (0,1,2) OK
	•

Defined value

Parameter	Explain
<mode>	0 Select first PDP context 1 Select second PDP context 2 Select WIFI context

NOTE

1. If select PDP context(0,1), must set multi IP connection (+CIPMUX=1) first.

2. If select the WIFI context(2), the WIFI must be connect first

Example

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

13. 30 AT+CIPTKA Set TCP Keep-alive Parameters

Syntax

Command	Response
AT+CIPTKA=<mode>[, <keepIdle>[, <keepInterval>[, <keepCount>]]]	• OK If success ERROR If error is related to ME functionality
AT+CIPTKA?	• +CIPTKA: <mode>,<keepIdle>,<keepInterval>, <keepCount> OK
AT+CIPTKA=?	• +CIPTKA: (list of supported <mode>s),(list of supported<keepIdle>s),(list of supported <keepInterval>),(list ofsupported <keepCount>s) OK

Defined value

Parameter	Explain
<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

13. 31 AT^NETIF Show Net Interface Information

Syntax

Command	Response
AT^NETIF?	• default netif: <netif> • [<netif0>: • inet4 addr: <ip address> • inet6 addr0: <ip address> • inet6 addr1: <ip address> • gw addr: <ip address> • mask addr <ip address> • dns addr <ip address> • dns2 addr <ip address> • [...]] OK

13. 32 Example of TCP Client (Single IP connection)

Example

```
AT+CIPMUX=0
```

OK
AT+CSTT="CMNET","",""
OK
AT+CIICR
OK
AT+CIPSTART="TCP","111.205.140.139",6800
OK CONNECT OK
AT+CIPSEND
> Just test `Control+z` SEND OK
AT+CIPCLOSE
CLOSE OK
AT+CIPSHUT
SHUT OK

13. 33 Example of TCP Client (Multi IP connection)AT+CIPMUX Start Up Multi-IP Connection

Example

AT+CIPMUX=1
OK
AT+CSTT="CMNET","",""
OK
AT+CIICR
OK
AT+CIPSTART=1,"TCP","111.205.140.139",6800
OK

1,CONNECT OK
AT+CIPSTART=2,"UDP","111.205.140.139",7000
OK 2, CONNECT OK
AT+CIPSEND=1
> Just test 1 `Control+z` 1,SEND OK
AT+CIPSEND=2
> Just test 2 `Control+z` 2,SEND OK
AT+CIPCLOSE=1
1,CLOSE OK
AT+CIPCLOSE=2
2,CLOSE OK
AT+CIPSHUT
SHUT OK

13. 34 Example of TCP Server

Example

AT+CSTT="CMNET","",""
OK
AT+CIPSERVER=1,11003
OK SERVER OK
AT+CIICR
OK
AT+CIPSERVER=0

OK SERVER CLOSED
AT+CIPSHUT
SHUT OK

Chapter 14 UDP COMMANDS

14.1 AT+TSOCR Create DGRAM type socket

Syntax

Command	Response
+TSOCR=<type>,<protocol>, <listen port>[,<receive control>]	<socket> +CME ERROR:<err>

Defined values

Parameter	Explain
<type>	Socket type. Support DGRAM only,quotation mark is required
<protocol>	The protocol definition of standard internet. For example: UDP is 17
<listen port>	Local port, 0-65535(except 5683), this is used to send /receive message
<receive control>	when set to 1, Incoming messages will be received; while when set to 0, Incoming messages will be ignored. The default value is 1(receive messages).
<socket>	Socket id, it cannot less than 0.

Example

```
AT+TSOCR="DGRAM",17,56,1

1

OK
```

NOTE

1. Before this command executed, it is necessary to process "AT+CGACT=1" to activate PDP.

2. The socket would not be created successfully with the protocol and port which have been used to create a socket successfully before .

14.2 AT+TSOST Send UDP message

Description

This command is used to configure parameters of socket.

Syntax

Command	Response
+TSOST=<socket>, <remote_addr>, <remote_port>,<length>, <data>	• <socket>,<length>[,<seqno>] • +CME ERROR:<err>

Defined value

Parameter	Explain
<socket>	The socket id which +TSOCR command returned.
<remote addr>	IPv4 IP address.
<remote port>	Remote port, 0-65535.
<length>	Decimal length of the data to be send.
<seqno>	sequence number, 0-255

Example

AT+TSOST=1,"111.205.140.139",7000,7,"testrda"

1,7

OK

AT+TSOST=1,"111.205.140.139",7000,3,1A2B3C
1,3 OK

NOTE

1) Before this command executed, it is necessary to process "AT+TSOCR"

2) This command returns the socket id and the number of bytes of sent data .The length we want to send should fit for the data length.

14.3 AT+TSORF Receive UDP message

Description

This command is used to sending wait peer TCP ACK mode or sending without waiting peer TCP ACK mode. The default mode is sending without waiting peer TCP ACK mode.

Syntax

Command	Response
AT+TSORF=<socket>, <req_length>, [<timeout>]	<socket>,<ip_addr>,<port>,<length>,<data>, <remaining_length> +CME ERROR:<err> Reference

Defined value

Parameter	Explain
<socket>	The socket id +TSOCR command returned.

<req_length>	Max length of received message.
<timeout>	The maximum waiting time for receiving data,unit of time(second).(optional parameters,default is 30 s)
<ip_addr>	IPv4 IP address where the message send from.
<port>	Remote port, 0-65535.
<length>	The actual length of the received data.If the <req_length> is smaller than the length of received data actully, the length is req_length.
<data>	Received data, display in Hexadecimal format
<remaining_length>	Remaining length of the received data. If the <req_length> is larger than the length we received actually, the Remaining length is 0;if contrary, the remaining length is the length of the rest data.

Example

AT+TSORF=1,2

1,111.205.140.139,7000, 2,7465,5

NOTE

1) Before this command is executed, it is necessary to process "AT+TSOCR",and the last parmeter of "+TSOCR" should be 0.

14.4 AT+TSOCL Close socket

Syntax

Command	Response
AT+TSOCL=<socket>	• OK +CME ERROR:<err>

Defined value

Parameter	Explain
<socket>	The socket id +TSOCR command returned.

Example

AT+TSOCL=1
OK

NOTE

1. Before this command is executed, it is necessary to process "AT+TSOCR"

14.5 AT+TPING Connect between IP net and remote host

Syntax

Command	Response
AT+TPING=<remote_address>[,<p_size>[,<timeout>]]	• +TPING:<remote_address>,<ttl>,<rtt> +TPINGERR:<err>

Defined value

Parameter	Explain
<remote addr>	IPv4 Address the data packets will be send to.
<p_size>	The size of echo packet payload (8-1460), 8 is the default value.
<timeout>	Max time to wait the response(ms), (10-60000), 1000 is the default.
<ttl>	Receive from response packets.
<rtt>	The minimum duration time from when the packets be send to when the response packets received(ms).
<err>	An int value, providing some information about the reason for the failure of PING request: 1, Remote host doesn't respond in schedule time. 2, Ping request send fail.

Example

```
AT+TPING="111.205.140.139"
```

```
OK

+TPING: 111.205.140.139, 255, 906
```

NOTE

1. This command will send ICMP data packet to Specified host address. If connect successful to remote host, return a data packet as response. If connect failed, there will be no response from remote host, then try again, if still no response in limited time, return error.

Chapter 15 HTTP COMMANDS

15.1 AT+CGPS Start/Stop GPS session

Description

Before the AT Commands is executed, AT+HTTPINIT should be executed first.

The Commands should be used in combination, a complete example is shown.

15.2 AT+HTTPINIT Initialize HTTP service

Syntax

Command	Response

AT+HTTPINIT	• **If success:** – OK • **If failed:** – +CME ERROR: <err>
AT+HTTPINIT=?	• **If success:** – +HTTPINIT – OK • **If failed:** – +CME ERROR:<err>

Example

```
AT+HTTPINIT

OK
```

NOTE

1) Before this command executed, it is necessary to process "AT+CGACT".

2) HTTPINIT should first be executed to initialize the HTTP service.

15.3 AT+HTTPTERM Terminate HTTP service

Syntax

Command	Response
AT+HTTPTERM	• **If success:**

	– OK • **If failed:** – +CME ERROR: <err>
AT+HTTPTERM=?	• **If success:** – +HTTPTERM – OK • **If failed:** – +CME ERROR:<err>

Example

AT+HTTPTERM
OK

NOTE

1) Before this command executed, it is necessary to process "AT+HTTPINIT".

2) HTTPTERM should last be executed to terminate the HTTP service.

15. 4 AT+HTTPPARA Set HTTP parameters value

Syntax

Command	Response
AT+HTTPPARA=<HTTPParamTag>, <HTTPParamValue>	• **If success:** – OK • **If failed:** – +CME ERROR: <err>
AT+HTTPPARA=?	• **If success:** – +HTTPPARA:<tag>,<value>

	– OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<HTTPParamTag>	Name of HTTP parameter. parameter list: "**CID**" (Mandatory Parameter) Bearer profile identifier "**URL**" (Mandatory Parameter) HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IPaddress, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616". "**UA**" The user agent string which is set by the application to identify the mobile. Usually this parameter is set as operation system and software version information. Default value is "Cavli8955". "**PROIP**" The IP address of HTTP proxy server "**PROPORT**" The port of HTTP proxy server "**REDIR**" This flag controls the redirection mechanism of the Cavli8955 when it is acting as HTTP client (numeric). If the server sends a redirect code (range 30x), the client will automatically send a new HTTP request when the flag is set to (1). "**BREAK**" Parameter for HTTP method "GET", used for resuming broken transfer. "**BREAKEND**" Parameter for HTTP method "GET", used for resuming broken transfer. which is used together with "BREAK",If the value of "BREAKEND" is bigger than "BREAK", the transfer scope is from "BREAK" to "BREAKEND". If the value of "BREAKEND" is smaller than "BREAK", the transfer scope is from "BREAK" to the end of the file. "**TIMEOUT**" If both "BREAKEND" and "BREAK" are 0, the resume broken transfer function is disabled. HTTP session timeout value,

	scope: 30-1000 second.Default value is 120 seconds. HTTP Parameter value. Type and supported content depend on related <HTTPParamTag>. "**CONTENT**" Used to set the "Content-Type" field in HTTP header "**USECavliTA**" User data
<**HTTPParamValue**>	HTTP Parameter value.Type and supported content depend on related <HTTPParamTag>.

Example

AT+HTTPPARA="CID","1"

OK

15.5 AT+HTTPDATA Input HTTP data

Syntax

Command	Response
AT+HTTPDATA	• **If success:** – > – OK • **If failed:** – +CME ERROR: <err>
AT+HTTPDATA=?	• **If success:** – +HTTPDATA – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<'>'>	When receive this parameters, you can enter your data in send box and send out. When you send out your data, you should focus your cursor in receive box and use combination key: "CTRL+Z" to finish this command.

Example

AT+HTTPDATA

>

1234567

->

OK

NOTE

1. Before this command is executed, it is necessary to process "AT+HTTPINIT"

15.6 AT+HTTPSSETCRT Set HTTPS certificates

Syntax

Command	Response
AT+ HTTPSSETCRT=<crtFlag>	• **If success:** – OK

	– <response_data> • **If failed:** – +CME ERROR: <err>
AT+HTTPSSETCRT=?	• **If success:** – +HTTPSSETCRT:(0~2) – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<crtFlag>	0 Set CA certificate 1 Set client certificate 2 Set client private key

Example

```
AT+ HTTPSSETCRT= 0
```

```
OK
```

NOTE

1. After?this?command?is?executed,?it is?necessary?to?process?"AT+HTTPDATA" to finish set CRT.

15. 7 AT+HTTPACTION HTTP method action

Syntax

Command	Response

AT+HTTPACTION=<method_code>	• **If success:** – OK – <method_code>,<status_code>, <content_length> • **If failed:** – +CME ERROR: <err>
AT+HTTPACTION=?	• **If success:** – +HTTPACTION=(0~5) – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<**method_code**>	HTTP methods. 0 GET 1 POST 2 HEAD 3 DELETE 4 DELETE(for onenet) 5 PUT(for onenet)
<**status_code**>	HTTP Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616) 100 Continue 101 Switching Protocols 200 OK 201 Created

	202 Accepted 203 Non-Authoritative Information 204 No Content 205 Reset Content 206 Partial Content 300 Multiple Choices 301 Moved Permanently 302 Found 303 See Other 304 Not Modified 305 Use Proxy 307 Temporary Redirect 400 Bad Request

	401 Unauthorized
	402 Payment Required
	403 Forbidden
	404 Not Found
	405 Method Not Allowed
	406 Not Acceptable
	407 Proxy Authentication Required
	408 Request Time-out
	409 Conflict
	410 Gone
	411 Length Required
	412 Precondition Failed

	413 Request Entity Too Large 414 Request-URI Too Large 415 Unsupported Media Type 416 Requested range not satisfiable 417 Expectation Failed 500 Internal Server Error 501 Not Implemented 502 Bad Gateway 503 Service Unavailable 504 Gateway Time-out 505 HTTP Version not supported 600 Not HTTP PDU 601 Network Error

	602 No memory 603 DNS Error 604 Stack Busy
<**content_length**>	HTTP content_length responded by remote server.

Example

AT+HTTPACTION=0
OK 0,200,10

NOTE

1) Before this command is executed, it is necessary to process "AT+HTTPPARA"

2) The <content_length> will be 0 except GET method.

15.8 AT+HTTPREAD Read the HTTP server response

Syntax

Command	Response

AT+HTTPREAD=<start_address>, <byte_size>	• **If success:** – OK – +HTTPREAD:<data_len>,<data> • **If failed:** – +CME ERROR: <err>
AT+HTTPREAD=?	• **If success:** – AT+HTTPREAD:<start_address>, <byte_size> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<**start_address**>	The starting point for data output. 0-319488 (bytes)
<**byte_size**>	The length for data output.1-319488 (bytes)
<**data_len**>	The actual length for data output.
<**data**>	Data from HTTP server or user input.

Example

```
AT+HTTPREAD="2","8"

OK

+HTTPREAD:8

12345678
```

NOTE

1) Read data when AT+HTTPACTON=0 or AT+HTTPDATA is executed. If<byte_size> is bigger than the data size received, module will only Return actual data size.
2) It is strongly recommended to set enough time to input all data with the length of <byte_size>.

15.9 AT+HTTPSTATUS Read HTTP status

Syntax

Command	Response
AT+HTTPSTATUS	• **If success:** – <mode>,<status>,<finish>,<remain> – OK • **If failed:** – +CME ERROR: <err>
AT+HTTPSTATUS=?	• **If success:** – +HTTPSTATUS – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<**mode**>	GET POST HEAD
<**status**>	0 idle 1 receiving 2 sending
<**finish**>	The amount of data which have been transmitted

<**remain**>	The amount of data remaining to be sent or received

Example

AT+HTTPSTATUS

GET,1,210,0

OK

NOTE

1) Before this command is executed, it is necessary to process "AT+HTTPACTION"

15.10 AT+HTTPGET Get HTTP resources

Syntax

Command	Response
AT+HTTPGET	• **If success:** – OK – <response_data> • **If failed:** – +CME ERROR: <err>
AT+HTTPGET=?	• **If success:** – +HTTPGET – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<response_data>	Response from HTTP server

Example

```
AT+CGACT=1,1

OK

AT+HTTPINIT

OK

AT+HTTPPARA="CID","1"

OK

AT+HTTPPARA="URL","http://111.205.140.139:1080/"

OK

AT+HTTPGET

Date

Wed, 28 Feb 2018 03:23:38 GMT

Server

Apache/2.4.25 (Win64) OpenSSL/1.0.2k

Last-Modified
```

Thu, 20 Apr 2017 08:19:31 GMT

ETag

“df-54d94cce976c8”

Accept-Ranges

bytes

Content-Length

223

Content-Type

text/html

<html>

<head>

<title>Cavli POST TEST!</title>

</head>

<body>

<form> login

<input name = “post” type = “text” maxlength = “8” size = “5” value = “typeing. . . ”>

</form>

<h1>http test. It works!</h1>

</body>

</html>

OK

AT+HTTPTERM

OK

NOTE

1) Before this command is executed, it is necessary to process "AT+CGACT"

15.11 AT+HTTPDOWNLOAD Download files from HTTP server

Syntax

Command	Response
AT+HTTPDOWNLOAD	• **If success:** – OK – <response_data> • **If failed:** – +CME ERROR: <err>
AT+HTTPDOWNLOAD	• **If success:** – +HTTPDOWNLOAD – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<response_data>	Response from HTTP server

Example

AT+CGACT=1,1
OK
AT+HTTPINIT
OK
AT+HTTPPARA="CID","1"
OK
AT+HTTPPARA="URL","http://111.205.140.139:1080/webdav1/put2.txt"
OK
AT+HTTPDOWNLOAD
OK
AT+HTTPTERM
OK

NOTE

2. Before this command is executed, it is necessary to process "AT+CGACT"
3. if the downloaded file >= 50K,return content;else return 0 200 <length of content>

15.12 Example

1) Activate net	AT+CGACT=1,1 OK
2) Init HTTP DATA structure	AT+HTTPINIT OK
3) Set parameters according to the app info	AT+HTTPPARA = "CID","1" OK AT+HTTPPARA = "URL","http://api.heclouds.com/devices/25336211/datapoints?type=5" OK AT+HTTPPARA="CONTENT","application/json" OK AT+HTTPPARA="API_KEY","qnx1RqyuLFOfliMXmwe243HUZeo=" OK AT+HTTPDATA

	> ,;temperature,2015-03-22T22:31:12,22.5;102;pm2.5,89;10 -> OK
4) executed HTTP action	AT+HTTPACTION =1 OK 1 200 26
5) Read the response data	AT+HTTPREAD = “0”,”26” OK +HTTPREAD: 26 {“errno”:0,”error”:”succ”}
6) Term HTTP DATA structure	AT+HTTPTERM

	OK Another HTTP ACTION in step 4 AT+HTTPACTION = 0 0 200 223 OK After this action we can get the action status use AT+HTTPSTATUS, the HTTPSTATUS only support action 0~3 AT+HTTPSTATUS GET 1 223 0 OK

15.13 Example for HTTPS

1) active network	AT+CGACT=1,1 OK

2) set ca certificate,send by ctrl+z	AT+HTTPSSETCRT=0 > ——BEGIN CERTIFICATE—— MIICvTCCAiagAwIBAgIJAP60GSWlAKIAMA0GCSqGSIb3DQEB CwUAMHYxCzAJBgNV BAYTAkNOMQswCQYDVQQIDAJUSjEQMA4GA1UEBwwHdGlh bmppbjEMMAoGA1UECgwD UkRBMQwwCgYDVQQLDANSREExDDAKBgNVBAMMA1JEQT EeMBwGCSqGSIb3DQEJARYP Y2FAcmRhbWljcm8uY29tMB4XDTE4MDEwMzA5MjQzM1oXD TI4MDEwMTA5MjQzM1ow djELMAkGA1UEBhMCQ04xCzAJBgNVBAgMAlRKMRAwDgYD VQQHDAd0aWFuamluMQww CgYDVQQKDANSREExDDAKBgNVBAsMA1JEQTEMMAoGA1U EAwwDUkRBMR4wHAYJKoZI hvcNAQkBFg9jYUByZGFtaWNyby5jb20wgZ8wDQYJKoZIhvcN AQEBBQADgY0AMIGJ AoGBAOAb6LrGRRSYO6ckemz597tx1tH+TSykIDUlSHZYo8n5 0rEm6plCB8fp4rUQ vbi8oMm5bqgKHOyGoYUJJ8yFHeNxllGaDhe4ZxyFhgVeQDBZ 8vl1MYpAnliMeVGZ dFOItdTQ6XmIKgMi5gOX++/Guwyvq3Si9L5L3kTC2luOieeVA gMBAAGjUzBRMB0G A1UdDgQWBBSniKsXob3VbrPQzv58g9mXd57hjjAfBgNVHSM EGDAWgBSniKsXob3V br- PQzv58g9mXd57hjjAPBgNVHRMBAf8EBTADAQH/MA0GCSq GSIb3DQEBCwUAA4GB

	AEDx50ZilQDhfBV6qVBmqR6iQC+uOwyORpCrGytSyAKgFzxeu01YbJkV/wkrhEJo QMSu+GltzriVaJNhCz0vrdhZliDhIZD2gSgwOzapZeyCF4udxTbIMlRV7IOqb1XD yCaGbj2MfmuLSlXJ3nWS3y/f7zVEPWmSj5vEhVSp0fBj ——END CERTIFICATE—— OK
3) set client certificate,send by ctrl+z	AT+HTTPSSETCRT=1 > **Certificate:** **Data:** Version: 3 (0x2) Serial Number: 18 (0x12) **Signature Algorithm: sha256WithRSAEncryption** Issuer: C=CN, ST=TJ, L=tianjin, O=Cavli, OU=Cavli, CN=Cavli/emailAddress=ca@cavliwireless.com Validity Not Before: Sep 15 00:00:00 2017 GMT Not After : Sep 15 00:00:00 2018 GMT

Subject: C=CN, ST=TJ, O=Cavli, OU=Cavli, CN=Cavli/emailAddress=client@rdamicro.com

Subject Public Key Info:

Public Key Algorithm: rsaEncryption Public-Key: (1024 bit)
Modulus:

00:ac:03:cd:98:fb:81:95:e9:7b:31:00:ed:00:24:
39:6c:e4:2b:cb:73:f6:ed:15:a8:9e:41:18:6b:2b:
74:f1:24:a7:b4:c4:2a:48:c2:90:90:0e:fc:c8:69:
cd:68:55:c8:38:18:43:cd:de:f4:cd:ef:33:06:42:
47:74:12:18:5d:7e:be:c2:9c:0d:6f:b4:48:2f:10:
3e:37:3b:7e:be:0f:27:7c:c6:59:45:39:19:7c:5c:
88:76:9e:ad:47:2e:fa:55:d5:70:05:13:b5:0a:6b:
67:b9:a9:48:c1:ab:8a:fe:db:ee:fa:25:eb:15:52:
4a:2a:09:10:a7:2b:8f:0a:15

Exponent: 65537 (0x10001)

X509v3 extensions:

X509v3 Basic Constraints: CA:FALSE

Netscape Comment: OpenSSL Generated Certificate

X509v3 Subject Key Identifier:
56:1C:4A:BD:64:1A:32:EC:4B:19:8B:3B:E9:36:19:8D:27:79:6C:EB

X509v3 Authority Key Identifier: keyid:A7:88:AB:17:A1:
BD:D5:6E:B3:D0:CE: FE:7C:83:D9:97: 77:9E:E1:8E

Signature Algorithm: sha256WithRSAEncryption
5c:31:31:47:a7:aa:3d:87:14:97:11:2e:69:7e:66: dd:bf:87:
8d:42:3f:9e:be:c3:d7:40:aa:fb:af:c7:25:37:a5:9c:d9:ee:
da:a7:a8:6d:66:44:c4:0d:71: 88:3c: 3d:73:ac: 4a:7a:7b:10:
e9:4b:c8:fa:d6:9a:9b:7a:63:d1:93:b3:6c:e1:e3:89:58:1b:
d0:3c:a9:e7:bd: 56:bc:c3: 86:e8:61:51:4c:fd:90:8b:31:b3:
80:0a:bc:f3:12:35:1f:ef:b0:e7:ce:77:34:d9:bc:13:30:b0: b5:fb:f6:
7e:04: 87:7b: 5a:f8:ed:7a:00:b5:83:ae:4a:48:01: b4:5c

——BEGIN CERTIFICATE——

MIICzzCCAjigAwIBAgIBEjANBgkqhkiG9w0BAQsFADB2MQswC
QYDVQQGEwJDTjEL

MAkGA1UECAwCVEoxEDAOBgNVBAcMB3RpYW5qaW4xDDA
KBgNVBAoMA1JEQTEMMAoG

A1UECwwDUkRBMQwwCgYDVQQDDANSREExHjAcBgkqhkiG
9w0BCQEWD2NhQHJkYW1p

Y3JvLmNvbTAeFw0xNzA5MTUwMDAwMDBaFw0xODA5MTU
wMDAwMDBaMGgxCzAJBgNV

BAYTAkNOMQswCQYDVQQIDAJUSjEMMAoGA1UECgwDUkR
BMQwwCgYDVQQLDANSREEx

DDAKBgNVBAMMA1JEQTEiMCAGCSqGSIb3DQEJARYTY2xpZ
W50QHJkYW1pY3JvLmNv

bTCBnzANBgkqhkiG9w0BAQEFAAOBjQAwgYkCgYEArAPNmP
uBlel7MQDtACQ5bOQr

y3P27RWonkEYayt08SSntMQqSMKQkA78yGnNaFXIOBhDzd7
0ze8zBkJHdBIYXX6+
wpwNb7RILxA+Nzt+vg8nfMZZRTkZfFyIdp6tRy76VdVwBRO1
CmtnuallwauK/tvu +iXr-

	FVJKKgkQpyuPChUCAwEAAaN7MHkwCQYDVR0TBAIwADAsBglghkgBhvhCAQ0E HxYdT3BlblNTTCBHZW5lcmF0ZWQgQ2VydGlmaWNhdGUwHQYDVR0OBBYEFFYcSr1k GjLsSxmLO+k2GY0neWzrMB8GA1UdIwQYMBaAFKeIqxehvdVus9DO/nyD2Zd3nuGO MA0GCSqGSIb3DQEBCwUAA4GBAFwxMUenqj2HFJcRLml+Zt2/h41CP56+w9dAqvuv xyU3pZzZ7tqnqG1mRMQNcYg8PXOsSnp7EOlLyPrWmpt6Y9GTs2zh44lYG9A8qee9 VrzDhuhhUUz9kIsxs4AKvPMSNR/ vsOfOdzTZvBMwsLX79n4Eh3ta+O16ALWDrkpI AbRc ——END CERTIFICATE—— OK
4) set client private key,send by ctrl+z	AT+HTTPSSETCRT=2 > ——BEGIN RSA PRIVATE KEY—— MIICXQIBAAKBgQCsA82Y+4GV6XsxAO0AJDls5CvLc/btFaieQRhrK3TxJKe0xCpI wpCQDvzIac1oVcg4GEPN3vTN7zMGQkd0Ehhdfr7CnA1vtEgvED43O36+Dyd8xllF ORl8XIh2nq1HLvpV1XAFE7UKa2e5qUjBq4r+2+76JesVUkoqCRCnK48KFQIDAQAB

	AoGBAKUZSV5KF4iBfmH8V31JR2zCW159QUUxApRSOlOydB 13ZxfTKBqJ1CLQn8Lj +ejoXLGqaHnSQvjd- WwXo25gGPib7x+hI1cNhdz6I6hzSxvJ4on8dLpm7Jni4Hv6T GeMJklCtcR4+p6L30UyKM1/YUg61G+k34DQDSHRmraTGhu NJAkEA00MF61l8TgMm Fo61RmrH1/JgR8nBEn8i8ye0kSqHS2i18kIAOqOm8bisv8CHnV HujGTOR+6wRgFJ Nal4bqSr6wJBANBxHVRJAuBHyUgugvieocCTilUCRfsva1UtM ManOxvuLfEGsH9p A24CrPr73+sZyXmJrGrccnKr37bVLQL7of8CQH11FOPRrW8Kk ajdsKsTqIAGUMTw /DZGx/OMRb/beKMAmOQ367jnDLIJkJUC+cYkLLy09IdlKMs54 kb60Ckso2cCQQC4 VI+/TaHBfTo/HwKron0gtFkMvCnu7AxbEs+jnZfkJ0lxcJz8z308 +BjJC50FZ5SI anuTNMfxKJV6NiLMFIM5AkA/ 5LD4+6NXK9AWYwfZTCY26FwqIxFYz/2HDcW+xzvw Hzh5qIBqlc9XGyOP0+2uuHn+b5D7czwEVOFEHZ98AK0k ——END RSA PRIVATE KEY—— OK
5) get from https url	AT+INITHTTP OK

	AT+HTTPGET="https://111.205.140.139:1443/" Date Thu, 01 Mar 2018 07:52:10 GMT Server Apache/2.4.25 (Win64) OpenSSL/1.0.2k Last-Modified Tue, 21 Feb 2017 01:25:24 GMT ETag "3a-549004119e375" Accept-Ranges bytes Content-Length

	58 Content-Type text/html <html><body> https test. It works! </body></html> OK AT+TERMHTTP OK

15.14 HTTP COMMANDS SET 2 OVERVIEW

Description

The Commands in the following chapters can be used in separate, every chapter has its own example.

Before the AT Commands is executed, AT+INITHTTP should be executed first.

15.15 AT+INITHTTP Initialize HTTP service

Syntax

Command	Response
AT+INITHTTP	• **If success:** – OK • **If failed:**

	– +CME ERROR: <err>
AT+INITHTTP=?	• **If success:** – +INITHTTP – OK • **If failed:** – +CME ERROR:<err>

Example

AT+INITHTTP
OK

NOTE

1. Before?this?command?executed,?it is?necessary?to?process?"AT+CGACT".
2. INITHTTP should first be executed to initialize the HTTP service.

15.16 AT+TERMHTTP Terminate HTTP service

Syntax

Command	Response
AT+TERMHTTP	• **If success:** – OK • **If failed:** – +CME ERROR: <err>
AT+TERMHTTP=?	• **If success:** – +TERMHTTP

	– OK • **If failed:** – +CME ERROR:<err>

Example

AT+TERMHTTP
OK

NOTE

1. Before?this?command?executed,?it is?necessary?to?process?"AT+HTTPINIT".
2. TERMHTTP should last be executed to terminate the HTTP service.

15.17 AT+HTTPAUTHOR Set HTTP authority

Syntax

Command	Response
AT+HTTPAUTHOR = <url>, <username>,<password>	• **If success:** – OK – <response_data> • **If failed:**

	– +CME ERROR: <err>
AT+HTTPAUTHOR=?	• **If success:** – +HTTPAUTHOR: <url>,<username>, <password> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<url>	HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IP-address, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616".
<username>	Your username
<password>	Your password
<response_data>	Response from HTTP server

Example

```
AT+CGACT=1,1

OK

AT+INITHTTP

OK

AT+HTTPAUTHOR="http://111.205.140.139:1080/webdav/index.html","crethdom","123456"
```

OK

Date

Wed, 28 Feb 2018 03:17:27 GMT

Server

Apache/2.4.25 (Win64) OpenSSL/1.0.2k

Last-Modified

Tue, 01 Aug 2017 06:54:36 GMT

ETag

"e3-555ab9ee0f9cb"

Accept-Ranges

bytes

Content-Length

227

Content-Type

text/html

<html>

<head>

<title>Cavli Author TEST!</title>

</head>

<body>

<form> login

<input name = “post” type = “text” maxlength = “8” size = “5” value = “typeing. . . ”>

</form>

<h1>Author test. It works!</h1>

</body>

</html>

AT+TERMHTTP

OK

NOTE

1. Before?this?command?is?executed,?it is?necessary?to?process?”AT+CGACT”

15.18 AT+HTTPPOST Post data to HTTP server

Syntax

Command	Response
AT+HTTPPOST = <url>, <content_type>, <body_content>	• **If success:** – OK – <response_data> • **If failed:**

	– +CME ERROR: <err>
AT+HTTPPOST=?	• **If success:** – +HTTPPOST: <url>,<content_type>, <body_content> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<url>	HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IP-address, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616".
<content_type>	type of HTTP body_content
<body_content>	HTTP body_content
<response_data>	Response from HTTP server

Example

AT+CGACT=1,1
OK
AT+INITHTTP
OK
AT+HTTPPOST="http://111.205.140.139:1080/","text/plain","helloworld"
Date

Wed, 28 Feb 2018 02:46:56 GMT

Server

Apache/2.4.25 (Win64) OpenSSL/1.0.2k

Last-Modified

Thu, 20 Apr 2017 08:19:31 GMT

ETag

"df-54d94cce976c8"

Accept-Ranges

bytes

Content-Length

223

Content-Type

text/html

<html>

<head>

<title>Cavli POST TEST!</title>

</head>

<body>

<form> login

<input name = "post" type = "text" maxlength = "8" size = "5" value = "typeing. . . ">

</form> http test. It works! </body> </html> Content_Type: text/plain Content_Length: 10 helloworld OK
AT+TERMHTTP
OK

NOTE

1) Before?this?command?is?executed,?it is?necessary?to?process?"AT+CGACT"

2) HTTPPOST: send data to HTTP server.

15.19 AT+HTTPPUT Put data to files on HTTP server

Syntax

Command	Response

AT+HTTPPUT=<url>, <content_type>, <content_name>, <body_content>	• **If success:** – OK – <response_data> • **If failed:** – +CME ERROR: <err>
AT+HTTPPUT=?	• **If success:** – +HTTPPUT=<url>,<content_type>, <content_name>,<body_content> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<url>	HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IP-address, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616".
<content_type>	type of HTTP body_content
<content_name>	file name (body_content will be write in this file in server)
<body_content>	HTTP body_content
<response_data>	Response from HTTP server

Example

```
AT+CGACT=1,1

OK

AT+INITHTTP
```

OK
AT+HTTPPUT=”http://111.205.140.139:1080/webdav1/”,”text/plain”,”put2.txt”,”helloworld”
success,file created OK
AT+TERMHTTP
OK

NOTE

1) Before?this?command?is?executed,?it is?necessary?to?process?”AT+CGACT”

2) HTTPPUT: send data to file which on the server

15.20 AT+HTTPHEAD Read the HTTP header information of server

Syntax

Command	Response
AT+HTTPHEAD = <url>	• **If success:** – OK – <response_data>

	• **If failed:** – +CME ERROR: <err>
AT+HTTPHEAD=?	• **If success:** – +HTTPHEAD = <url> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<url>	HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IP-address, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616".
<response_data>	Response from HTTP server

Example

```
AT+CGACT=1,1

OK

AT+INITHTTP

OK

AT+HTTPHEAD="http://111.205.140.139:1080/webdav/index.html"

OK

Date

Wed, 28 Feb 2018 03:21:07 GMT

Server
```

Apache/2.4.25 (Win64) OpenSSL/1.0.2k WWW-Authenticate Basic realm="DAV-upload" Content-Type text/html; charset=iso-8859-1
AT+TERMHTTP
OK

NOTE

1) Before this command is executed, it is necessary to process "AT+CGACT"

15.21 AT+HTTPOPTIONS Query HTTP supported methods

Syntax

Command	Response
AT+HTTPOPTIONS = <url>	• **If success:** – OK – <response_data> • **If failed:** – +CME ERROR: <err>

AT+HTTPOPTIONS=?	• **If success:** – +HTTPOPTIONS = <url> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<url>	HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IP-address, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616".
<response_data>	Response from HTTP server

Example

AT+CGACT=1,1
OK
AT+INITHTTP
OK
AT+HTTPOPTIONS="http://111.205.140.139:1080/"
OK Date Wed, 28 Feb 2018 03:21:44 GMT Server Apache/2.4.25 (Win64) OpenSSL/1.0.2k

Allow GET,HEAD,POST,OPTIONS,HEAD,HEAD,TRACE Content-Length 0 Content-Type text/html
AT+TERMHTTP
OK

NOTE

1) Before this command is executed, it is necessary to process "AT+CGACT"

15. 22 AT+HTTPTRACE Get the requested path of HTTP server

Syntax

Command	Response
AT+HTTPTRACE = <url>	• **If success:** – OK – <response_data> • **If failed:** – +CME ERROR: <err>
AT+HTTPTRACE=?	• **If success:**

	– +HTTPTRACE = <url> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<url>	HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IP-address, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616".
<response_data>	Response from HTTP server

Example

```
AT+CGACT=1,1

OK

AT+INITHTTP

OK

AT+HTTPTRACE="http://111.205.140.139:1080/webdav/index.html"

OK

Date

Wed, 28 Feb 2018 03:20:33 GMT

Server

Apache/2.4.25 (Win64) OpenSSL/1.0.2k

Transfer-Encoding
```

chunked Content-Type message/http Content-Length 95 TRACE /webdav/index.html HTTP/1.1 HOST: 111.205.140.139:1080 User-Agent: mUPnP-HTTP/3.0.2
AT+TERMHTTP
OK

NOTE

1) Before this command is executed, it is necessary to process "AT+CGACT"

15.23 AT+HTTPDELETE Delete HTTP resources

Syntax

Command	Response
AT+HTTPDELETE = <url>	• **If success:** – OK – <response_data> • **If failed:** – +CME ERROR: <err>

AT+HTTPDELETE=?	• **If success:** – +HTTPDELETE = <url> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<url>	HTTP client URL: "http://'server'/'path':'tcpPort'". "server": FQDN or IP-address, "path": path of file or directory, "tcpPort": default value is 80. Refer to "IETF-RFC 2616".
<response_data>	Response from HTTP server

Example

```
AT+CGACT=1,1

OK

AT+INITHTTP

OK

AT+HTTPDELETE="http://111.205.140.139:1080/webdav1/","put.txt"

success,file deleted

OK

AT+TERMHTTP

OK
```

NOTE

1) Before this command is executed, it is necessary to process “AT+CGACT”

Chapter 16. FTP COMMANDSHTTP

16.1 AT^FTPOPEN Open ftp connect

Syntax

Command	Response
AT^FTPOPEN=<url>, <username>,<password>, <mode>,<tout>,<type>	• **If success:** – OK • **If failed:** – +CME ERROR: <err>
AT^FTPOPEN?	• **Get the opened status, If had opened:** – ^FTPOPEN:1

	• **Get the opened status, If not opened yet:** – ^FTPOPEN:0
AT^FTPOPEN=?	• **If success:** – ^FTPOPEN:<url>,<username>,<password>,<mode>,<tout>,<type> – OK • **If failed:** • – +CME ERROR: <err>

Defined value

Parameter	Explain
<url>	<string> Server address (ex. "192.168.1.101:21").
<username>	<string> The username for FTP authentication.
<password>	<string> The password for FTP authentication.
<mode>	<int> 0 Active FTP mode, 1 Passive FTP mode
<tout>	<int> 5~180(s) The device will logout in background when no FTP operation during the "tout".
<type>	<int> 1 for FTP Binary sessions, 0 for ascii session.

Example

```
AT^FTPOPEN="192.168.1.101:21","username","passwd",0,180,0

OK

AT^FTPOPEN?

FTPOPEN:1
OK
```

AT^FTPOPEN=?

FTPOPEN:<url>,<username>,<password>,<mode>,<tout>,<type> OK

NOTE

1) Before?this?command?is?executed,?it is?necessary?to?process?"AT+CGACT"

16.2 AT^FTPCLOSE Close ftp connect

Syntax

Command	**Response**
AT^FTPCLOSE	• **If success:** – OK – "^URCFTP:0" • **If failed:** – +CME ERROR: <err>

Example

AT^FTPCLOSE

OK URCFTP:0

16.3 AT^FTPGETSET Set GET Params

Syntax

Command	Response
AT^FTPGETSET=<filename>, [offset, [size]]	• **If success:** **– OK** • **If failed:** **– +CME ERROR: <err>**
AT^FTPGETSET?	• **If success:** **– ^FTPGETSET:<filename>, <offset>, <size>** **– OK** • **If failed:** **– +CME ERROR: <err>**
AT^FTPGETSET=?	• **If success:** **– ^FTPGETSET:<filename>, [offset, [size]]** **– OK** • **If failed:** **– +CME ERROR: <err>**

Defined value

Parameter	Explain
<filepath>	<string> The file with full path in FTP server.
<offset>	<int> Download offset from the file, if this parameter is empty, download from file begin (optional).

<size>	<int> Download length from the file <offset> or begin. if this parameter is empty, download file from <offset> or begin to end (optional).

Example

```
AT^FTPGETSET="/file.1M",1024,256

OK
AT^FTPGETSET?

FTPGETSET:"/file.1M",1024,256
OK

AT^FTPGETSET=?

^FTPGETSET:<filename>, [offset, [size]]
OK
```

NOTE

1. If run the command AT^FTPGETSET with 1 parameter, then the parameter must be <filepath> value.

2. If run the command AT^FTPGETSET with 2 parameters, then the parameter must be <filepath> and <offset> value.
3. You cannot use the command such as AT^FTPGETSET="/file.1M"„256 to skip the second parameter. Instead of you can run the command AT^FTPGETSET with 3 parameters AT^FTPGETSET="/file.1M",0,256.

16.4 AT^FTPGET Get file

Syntax

Command	Response
AT^FTPGET=<mode>[, reqlength]	• **If success, when "mode = 1":** – OK – ^FTPGET:1,1 – ^FTPGET=2,reqlength – ... //output data – ^FTPGET=2,0 • **If success, when "mode = 2 & reqlength = 0":** – OK – ^FTPGET=2,0 • **If failed:** – +CME ERROR: <err>

Defined value

Parameter	Explain
<mode>:	<int> • 1: if mode is 1, reqlength is unused, to start the transfer • 2: if mode is 2, reqlength must be 0, to stop the transfer
<reqlength>:	<int> when mode is 2, requlength is 0, stop the transfers

Example

AT^FTPGET=1

OK

^FTPGET:1,1

^FTPGET=2,1440

. . . //output data

^FTPGET=2,1440

. . . //output data

^FTPGET=2,1440

. . . //output data

^FTPGET=2,0 // finish

- AT^FTPGET=2,0

- OK
- ^FTPGET=2,0 // finish

NOTE

1. The info "^FTPGET=2,1440" means received the 1440 bytes data from server.

2. The command "AT^FTPGET=2,0" must be run when data is received now. If the transfers is over, running this command will return fails.

16.5 AT^FTPPUTSET Set PUT Params

Syntax

Command	Response
AT^FTPPUTSET=<filename>	• **If success:** – OK • **If failed:** – +CME ERROR: <err>
AT^FTPPUTSET?	• **If success:** – ^FTPPUTSET:<filename> – OK • **If failed:** • – +CME ERROR: <err>
AT^FTPPUTSET=?	• **If success:** – ^FTPPUTSET:<filename> – OK • **If failed:** • – +CME ERROR: <err>

Defined value

Parameter	Explain
<filename> :	<string> The file name with full path will stored in FTP server.

Example

AT^FTPPUTSET=”/put.txt”
OK
AT^FTPPUTSET?
^FTPPUTSET:”/put.txt” OK
AT^FTPPUTSET=?
^FTPPUTSET:<filename> OK

16.6 AT^FTPPUT Put file

Syntax

Command	Response
AT^FTPPUT= :<mode>[, <reqlength>]	• **If success, when "mode = 1":** – OK – ^FTPPUT:1,3072 • **If success, when "mode = 2 & reqlength != 0":**

	– ... //input data – OK • **If success, when "mode = 2 & reqlength = 0":** – OK – ^FTPPUT:2,0 • **If failed:** – +CME ERROR: <err>
AT^FTPPUT=?	• **If success:** – ^FTPPUT: mode[,<reqlength>] – OK • **If failed:** • – +CME ERROR: <err>

Defined value

Parameter	Explain
<mode>:	<int> • 1: start trans file • 2: transfer data.
<reqlength>:	<int> Request length of data bytes to be transmitted, if reqlength is 0, stop transfer.

Example

AT^FTPPUT=1 //start transfer
OK ^FTPPUT:1,3072
AT^FTPPUT=2,10
. . . // input data, size is 10 OK
AT^FTPPUT=2,0
OK ^FTPPUT:2,0 //transfer finish confirm
AT^FTPPUT=?
^FTPPUT: mode[,<reqlength>] OK

NOTE

1. The command "AT^FTPPUT=2,10" means there are 10 bytes data will upload to server.

2. When "AT^FTPPUT=2,10" running successfully, user can't input bytes data more than 10.

3. The command "AT^FTPPUT=2,0" must be run when data is transmitted now. If the transfers is over, running this command will return fails.

16.7 AT^FTPSIZE Get file size

Syntax

Command	Response
AT^FTPSIZE=<filename>	• **If success:** – ^FTPSIZE:xxx – OK • **If failed:** – +CME ERROR: <err>

Defined value

Parameter	Explain
<filename>:	<string> The file name with full path which stored in FTP server.

Example

```
AT^FTPSIZE=”size.txt”

^FTPSIZE:xxx

OK
```

16.8 AT^FTPSIZE Get file size

Syntax

Command	Response
AT^FTPSSETCERT=<crtFlag>	• **If success:** – >\ – ... //input data – OK • **If failed:** – +CME ERROR: <err>
AT^FTPSSETCERT?	• **If success:** – ... //output data – OK • **If failed:** – +CME ERROR:<err>
AT^FTPSSETCERT=?	• **If success:** – ^FTPSSETCERT=<crtFlag> – OK • **If failed:** – +CME ERROR:<err>

Defined value

Parameter	Explain
<crtFlag>	• 0 Set CA certificate • 1 Set client certificate • 2 Set client private key

Example

```
AT^FTPSSETCERT=0

>

123 // input data, enter "Ctrl+Z" to finish

OK

AT^FTPSSETCERT?

123 // output data

OK

AT^FTPSSETCERT=?

^FTPSSETCERT=<crtFlag>

OK
```

NOTE

1) Before run the command of "AT^FTPSSETCERT?", you should run "AT^FTPSSETCERT=<crtFlag>" firstly

2) When you run the command of "AT^FTPSSETCERT=<crtFlag>", you can enter "Ctrl+Z" to finish or "ESC" to exit

16.9 AT^FTPSCLOSE Close ftps connect

Syntax

Command	Response
AT^FTPSCLOSE	• **If success:** – OK – "^URCFTP:0" • **If failed:** – +CME ERROR: <err>

Example

```
AT^FTPSCLOSE

OK

^URCFTP:0
```

16.10 AT^FTPSGETSET Set GET Params

Syntax

Command	Response
AT^FTPSGETSET=<filename>, **[offset, [size]]**	• **If success:** – OK • **If failed:** – +CME ERROR: <err>

AT^FTPSGETSET?	• **If success:** – ^FTPGETSET:<filename>, <offset>, <size> – OK • **If failed:** – +CME ERROR: <err>
AT^FTPSGETSET=?	• **If success:** – ^FTPGETSET:<filename>, [offset, [size]] – OK • **If failed:** – +CME ERROR: <err>

Defined value

Parameter	Explain
<filepath>	<string> The file with full path in FTPS server.
<offset>	<int> Download offset from the file, if this parameter is empty, download from file begin (optional).
<size>	<int> Download length from the file <offset> or begin. if this parameter is empty, download file from <offset> or begin to end (optional).

Example

AT^FTPSGETSET=”/file.1M”,1024,256
OK
AT^FTPSGETSET?
^FTPGETSET:”/file.1M”,1024,256 OK
AT^FTPSGETSET=?
^FTPGETSET:<filename>, [offset, [size]] OK

NOTE

1. If run the command AT^FTPSGETSET with 1 parameter, then the parameter must be <filepath> value.

2. If run the command AT^FTPSGETSET with 2 parameters, then the parameter must be <filepath> and <offset> value.

3. You cannot use the command such as AT^FTPSGETSET=”/file.1M”„256 to skip the second parameter. Instead of you can run the command AT^FTPSGETSET with 3 parameters AT^FTPSGETSET=”/file.1M”,0,256.

16.11 AT^FTPSPUTSET Set PUT Params

Syntax

Command	Response

AT^FTPSPUTSET=<filename>	• **If success:** – OK • **If failed:** – +CME ERROR: <err>
AT^FTPSPUTSET?	• **If success:** – ^FTPPUTSET:<filename> – OK • **If failed:** – +CME ERROR: <err>
AT^FTPSPUTSET=?	• **If success:** – ^FTPPUTSET:<filename> – OK • **If failed:** – +CME ERROR: <err>

Defined value

Parameter	Explain
<filename> :	<string> The file name with full path will stored in FTPS server

Example

AT^FTPSPUTSET="/put.txt"

OK

AT^FTPSPUTSET?
^FTPPUTSET:"/put.txt" OK
AT^FTPSPUTSET=?
^FTPPUTSET:<filename> OK

16.12 AT^FTPSPUT Put file

Syntax

Command	Response
AT^FTPSPUT= :<mode>[, <reqlength>]	• **If success, when "mode = 1":** – OK – ^FTPPUT:1,3072 • **If success, when "mode = 2 & reqlength != 0":** – ... //input data – OK • **If success, when "mode = 2 & reqlength = 0":** – OK – ^FTPPUT:2,0 • **If failed:** – +CME ERROR: <err>

AT^FTPSPUT=?	• **If success:** – ^FTPPUT: mode[,<reqlength>] – OK • **If failed:** – +CME ERROR: <err>

Defined value

Parameter	Explain
<mode>:	<int> • 1: start trans file • 2: transfer data.
<reqlength>:	<int> Request length of data bytes to be transmitted, if reqlength is 0, stop transfer.

Example

```
AT^FTPSPUT=1 //start transfer

OK
```

^FTPPUT:1,3072
AT^FTPSPUT=2,10
. . . // input data, size is 10 OK
AT^FTPSPUT=2,0
OK ^FTPPUT:2,0 //transfer finish confirm
AT^FTPSPUT=?
^FTPPUT: mode[,<reqlength>] OK

NOTE

1. The command "AT^FTPSPUT=2,10" means there are 10 bytes data will upload to server.

2. When "AT^FTPSPUT=2,10" running successfully, user can't input bytes data more than 10.

3. The command "AT^FTPSPUT=2,0" must be run when data is transmitted now. If the transfers is over, running this command will return fails.

16.13 AT^FTPSSIZE Get file size

Syntax

Command	Response

AT^FTPSSIZE=<filename>	• **If success:** – OK – ^FTPSIZE:xxx • **If failed:** – +CME ERROR: <err>

Defined value

Parameter	Explain
<filename>:	<string> The file name with full path which stored in FTPS server.

Example

```
AT^FTPSSIZE="size.txt"

OK

^FTPSIZE:xxx
```

Chapter 17. COAP COMMANDS

17. 1 AT^COAPREQUEST Send request to coap server.

Syntax

Command	Response
AT^COAPREQUEST=<url>, <cmdline>	If success it return: [service response content] +COAP(length):OK

	If error it return: +CME ERROR: <err>

Defined value

Parameter	Explain
<**url**>	A string parameter which is the address of the resource, usually the url includes uri-host, uri-port, uri-path and uri-query.
<**cmdline**>	A string parameter which includes many optional parameters, each optional parameter must be followed by an optional tag.

Max Response Time

Default : 90 seconds. Range[1-120]. If timeout value > 120 or < 1, timeout value is 90.

NOTE

1) GPRS or WIFI must be connected before AT+COAPREQUEST executed.
2) If cmdline support "-m post -r ram" or "-m put -r ram", must be set payload first.
3) "-r ram" is means : loading payload data from ram.

17.2 AT^COAPPAYLOAD Set payload from uart to ram.

Syntax

Command	Response
AT^COAPPAYLOAD=<length>[, timer]	If success it return: OK

	if error ir return: ‘’ +CME ERROR: <err>‘’
AT^COAPPAYLOAD=?	+COAPDATA:[1-1024][,[1-120]] OK

Defined value

Parameter	Explain
<**length**>	1 to 1024 The data length of input.
[**timer**]	Timer is the data input cycle, if timeout data input must be terminated. The <length> is input data already.

Max Response Time

If [timer] is not set, the max response time 90 seconds.

17.3 AT^COAPREG Configuration data register to the server

Syntax

Command	Response
AT^COAPREG=<reset>	If success it returns OK, if error ir returns

	+CME ERROR: <err>

Defined values

Parameter	Explain
<reset>	1 Update the ICCID saved in NV item. 0 ICCID saved in NV item without updated

NOTE

1. GPRS or WIFI must be connected before AT^COAPREG executed.

17.4 Parameters and response explanation

cmdline

- Cmdline include many optional parameters, each optional parameter must be followed by an optional tag, and cmdline also include must parameter uri, uri doesn't need tag but must be at the end of cmdline.

- General tag: -m get/post/put/delete; -B timeout; -p port; -r ram; -t content-format; -k psk; -u userId

Content-Format

- The payload type of the coap message.

- 1: plain

- 2: text/plain
- 3: link
- 4: link-format
- 5: application/link-format
- 6: xml
- 7: binary
- 8: octet-stream
- 9: application/octet-stream
- 10: exi
- 11: application/exi
- 12: json
- 13: application/json

Psk

- Pre-shared key for the specified user. This argument required with PSK to be available.

userId

- User identity for pre-shared key mode. This argument requires DTLS with PSK to be available.

Port

- The coap default port is 5683.While coaps default port is 5684 which requires DTLS to be available.

url

- The address of the resource:
- 1: Uri-Host Option specifies the Internet host of the resource being requested.
- 2: Uri-Port Option specifies the transport-layer port number of the resource.
- 3: Uri-Path Option specifies one segment of the absolute path to the resource.
- 4: Uri-Query Option specifies one argument parameterizing the resource.

Server response error

- Client Error 4.xx
- 4.00 Bad Resuest
- 4.01 Unauthorized
- 4.02 Bad Option
- 4.03 Forbidden
- 4.04 Not Found
- 4.05 Method Not Allowed
- 4.06 Not Acceptable
- 4.12 Precondition Failed
- 4.13 Request Entity Too Large

- 4.15 Unsupported Content-Format
- Server Error 5.xx
- 5.00 Internal Server Error
- 5.01 Not Implemented
- 5.02 Bad Gateway
- 5.03 Service Unavailable
- 5.05 Proxying Not Supported

17.5 Example of COAP client

GPRS connected

1) AT+CGATT=1

   +CGATT:1

   OK

2) AT+CGDCONT=1,"IP","cmnet"

   OK

3) AT+CGACT=1,1

OK

COAP command

1) AT^COAPREQUEST="coap://36.110.97.243","-m get -p 5683"

****

CoAP RFC 7252 Cf 2.0.0-SNAPSHOT

******

****

This server is using the Eclipse Californium (Cf) CoAP framework

published under EPL+EDL: http://www.eclipse.org/californium/

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****

+COAP(448):OK

2) AT^COAPPAYLOAD=11,5

unisocQCtest

OK

t

AT^COAPREQUEST=”coap://36.110.97.243:5683/large-update”,”-m put -t text/plain -p 5683 -r ram”

+COAP(0):OK

3) AT^COAPPAYLOAD=11

unisocQCtest

OK

t

AT^COAPREQUEST=”coap://36.110.97.243:5683/large-post”,”-m post -t text/plain -p 5683 –r ram”

UNISOCQCTES

+COAP(11):OK

4) AT^COAPREQUEST=”coap://36.110.97.243:5683/obs”,”-m delete -p 5683”

+COAP(0):OK

Chapter 18. MQTT COMMANDS

18.1 AT+MQTTCONN Create MQTT connection

Syntax

Command	Response
AT+MQTTCONN=<host>, <port>,<clientid>, <keepalive>, <cleansession>, [username],[password]	• **success**: OK • **fail**: +CME ERROR: <err> **connected timeout:** +MQTTDISCONNECTED:<num>

Defined value

Parameter	Explain
<**host**>	host name of MQTT server.
<**port**>	port of MQTT server.
<**clientid**>	client ID.
<**keepalive**>	keep-alive of mqtt connection; time in milliseconds.
<**cleansession**>	whether clean session.
[**username**]	user name
[**password**]	password

18.2 AT+MQTTSUBUNSUB Subscribe or Unsubscribe a MQTT topic

Syntax

Command	Response
AT+MQTTSUBUNSUB=<topic>, <sub flag>,<qos>	**success:** OK **fail:** +CME ERROR: <err>

Defined value

Parameter	Explain
<**topic**>	topic of mqtt
<**sub flag**>	1: subscribe 0: unsubscribe
<**qos**>	quality of service values include 0, 1, 2

18.3 AT+MQTTPUB Publish a MQTT message on topic

Syntax

Command	Response
AT+MQTTPUB=<topic>, <message>,<qos>, <duplicate>,<retain>	**success:** OK **fail:** +CME ERROR: <err>

Defined value

Parameter	Explain
<**topic**>	topic of MQTT, see note for max length
<**message**>	message to publish, see note for max length
<**qos**>	quality of service values include 0, 1, 2
<**duplicate**>	duplicate flag of MQTT, value inclue 0, 1
<**retain**>	retain flag of MQTT, value include 0, 1

NOTE

the max length of mqtt publish package is set to 256. the total lenght of topic, message and other mqtt package data must be no larger than it, other mqtt package data may use 9 byte at max, so the max length of topic and message is the length of mqtt publish package subtract the length of other mqtt package data

18.4 AT+MQTTDISCONN Disconnect the MQTT connection

Syntax

Command	Response
AT+MQTTDISCONN	**success:** OK **fail:** +CME ERROR: <err>

18.5 Examples to use MQTT

Connect to mosquito

1. **Craete MQTT connection** AT+MQTTCONN="test.mosquitto.org",1883,"rdatest",90,0
2. **Subscribe a MQTT topic** AT+MQTTSUBUNSUB="/rda/test_topic",1,1
3. **Publish a MQTT message on topic** AT+MQTTPUB="/rda/test_topic","hello mqtt message published by Cavli",1,0,0
4. **Unsubscribe a MQTT topic** AT+MQTTSUBUNSUB="/rda/test_topic",0
5. **Disconnect MQTT connection** AT+MQTTDISCONN

Connect to onenet

To connection to onenet, firstly we should register account on onenet website: https://open.iot.10086.cn, and create product and device, then we will get product id, device id, and auth_info; use device id to fill clientid, product id to fill username, and auth_info to fill password.

1. **Craete MQTT connection** AT+MQTTCONN = ”183.230.40.39”, 6002, ”23036025”, 120,0,”112333”, ”ABC123Cavli”

2. **Subscribe a MQTT topic** AT+MQTTSUBUNSUB=”CavliTEST_TOPIC”,1,1

3. **Publish a MQTT message on topic** AT+MQTTPUB=”CavliTEST_TOPIC”,”hello mqtt published by rda”,1,0,0

4. **Unsubscribe a MQTT topic** AT+MQTTSUBUNSUB=”CavliTEST_TOPIC”,0

5. **Disconnect MQTT connection** AT+MQTTDISCONN

Chapter 19. DM COMMANDS

19.1 AT+SELFREGISTER Set the flag of operator self-register

Description

This command is used to enable sleep function.

Syntax

Command	Response
AT+SELFREGISTER=<OPERATOR>, <FLAG>	OK or ERROR
OTHER	OK

Defined value

Parameter	Explain
<OPERATOR>	operator name 0 CMCC 1 UNICOM 2 CTCC
<FLAG>	flag 0 turn off self-register 1 turn on self-registe

Chapter 20. FILESYSTEM COMMANDS

20.1 AT+FSDWNFILE Write File

Description

Stores(writes) a file into the file system. The stream of bytes can be entered after the > prompt has been provided to the user. The file transfer is terminated exactly when <size> bytes have been sent entered and either "OK" final result code or an error result code is returned. The feed process cannot be interrupted i.e. the command mode is re-entered once the user has provided the declared the number of bytes.

In implementation, <size> is limited to AT_CMD_LINE_BUFF_LEN (5KB by default). When <size> is larger than AT_CMD_LINE_BUFF_LEN, it will return error.

Syntax

Command	Response
AT+FSDWNFILE=<filename>, <size>[,<tag>] > text	OK
AT+FSDWNFILE=?	+FSDWNFILE: filename,size[,tag] OK

Defined value

Parameter	Explain
<**filename**>	File's name. It is an utf-8 string, and file name length must smaller than <specific fs>_FILE_NAME_MAX (mostly default 64 bytes)
<**size**>	File size expressed in bytes, must larger than zero, and smaller than min(AT_CMD_LINE_BUFF_LEN, file system size).

<**tag**>	Option parameter that specifies the application file type
<**text**>	Stream of bytes

Example

```
AT+FSDWNFILE="test",10

> 1234567890

OK
```

20.2 AT+FSLSTFILE List Files Information

Description

Retrieves some information about the file system. Depending on the specified <op_code>, it can print:

- List of files stored into the file system
- Remaining free file system space expressed in bytes
- Size of the specified file expressed in bytes

\

Syntax

Command	Response
List files stored on file system: **AT+FSLSTFILE=[0[,<tag>]]**	+FSLSTFILE:[<filename1>[,<filename2>[... [,<filenameN>]]]] OK
Remaining file system free space in bytes: **AT+FSLSTFILE=1[,<tag>]**	+FSLSTFILE:<free_fs_space> OK
Size of specified file: **AT+FSLSTFILE=2,<filename>[, <tag>]**	+FSLSTFILE:<file_size> OK
AT+FSLSTFILE=?	+FSLSTFILE: [(0,1,2)[,param1[,param2]] OK

Defined value

Parameter	Explain
<op_code>	> Option code lists the files belonging to <tag> file type gets the free space for the specific <tag> file type 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

Example

```
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
```

20.3 AT+FSRDFILE Read File

Description

Retrieves a file from the file system. When the file size is larger than AT_CMD_LINE_BUFF_LEN, only the file name and size will be output, and the file data will be ignored.

Syntax

Command	Response
AT+FSRDFILE=<filename>[, <tag>]	+FSRDFILE:<filename>,<size>,<data> OK
AT+FSRDFILE=?	+FSRDFILE: file_name[,tag] OK

Defined value

Parameter	Explain
<**tag**>	Specifies the application file type
<**filename**>	File name
<**data**>	File content
<**size**>	File size, in bytes

Example

AT+FSRDFILE="test"

+FSRDFILE: test,10,1234567890

OK

AT+FSRDFILE="test2"

+FSRDFILE: test2,100000,

OK

20.4 AT+FSRDBLOCK Partial Read File

Description

Retrieves a file from the file system. this command allows the user to read only a portion of the file. <size> should be larger than zero, and smaller than AT_CMD_LINE_BUFF_LEN.

When <offset> is larger than or equal to file size, it will return error.

The returned <size> is the real data size. It may less than the <size> in parameter.

Syntax

Command	Response
AT+FSRDBLOCK=<filename>, <offset>,<size>[,<tag>]	• +FSRDBLOCK:<filename>,<size>,<data> • OK
AT+FSRDBLOCK=?	• +FSRDBLOCK: filename,offset,size[,tag] • OK

Defined value

Parameter	Explain
<**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

Example

```
AT+FSRDBLOCK="test",5,5

+FSRDBLOCK: test,5,67890

OK
```

20.5 AT+FSDELFILE Delete File

Description

Deletes a stored file from the file system.

Syntax

Command	Response
AT+FSDELFILE=<filename>[, <tag>]	**If success** OK **If failed** – +CME ERROR <err>
AT+FSDELFILE=?	+FSDELFILE: filename[,tag] OK

Defined value

Parameter	Explain
<**filename**>	File name
<**tag**>	Specifies the application file type

Example

```
AT+FSDELFILE="test"

OK
```

Chapter 21. EXTEND COMMANDS

21. 1 AT+CBCE Battery info report state

Description

This command is used to enable sleep function.

Syntax

Command	Response
Test Command **AT+CBCE=?**	+CBCE: (0,1) OK
Set Command **AT+CBCE= <echo_mode>**	OK

Defined value

Parameter	Explain
<echo_mode>	1 start battery info report 0 stop battery info report
<nBcs>	0 No charging adapter is connected 1 Charging adapter is connected 2 Charging adapter is connected, charging in progress 3 Charging adapter is connected, charging has finished 4 Charging error, charging is interrupted 5 False charging temperature, charging is interrupted while temperature is beyond allowed range
<nBcl>	0 battery is exhausted, or does not have a battery connected 20, 40, 60, 80, 100 percent of remaining capacity. The percent is not accurate ,but a estimated expression.

21. 2 AT+GCHS Get csw and cos heap space of remaining

Syntax

Command	Response

Exe Command **AT+GCHS**	+GCHS:CSW:<size>,COS:<size> OK

21. 3 AT+UPTIME Get update time of system in milliseconds

Syntax

Command	Response
Exec Command **AT+UPTIME**	^UPTIME:<milliseconds> OK

21. 4 AT+CGBV baseband version

Description

This command is used to Get baseband version.

Syntax

Command	Response
Test Command **AT+ CGBV=?**	OK
Exec Command **AT+ CGBV**	+CGBV: Cavli<Version> OK

21. 5 AT+TRB (optional) Restart

Description

This command is used to restart the module.

Syntax

Command	Response
AT+TRB	REBOOTING

21. 6 AT+TUESTATS Query UE status

Description

This command is used to enable sleep function.

Syntax

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

Defined value

Parameter	Explain
<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

21. 7 AT+AUEND End audio cycle test

Description

This command is used to enable sleep function.

Syntax

Command	Response
Exec Command **AT+AUEND**	OK

21. 8 AT+SNFS Select audio hardware set

Description

This command is used to select audio mode

Syntax

Command	Response
Test Command **AT+SNFS=?**	+SNFS:(0-2) OK
Read Command **AT+SNFS?**	+SNFS:<mode> OK
Set Command **AT+SNFS= <mode>**	OK

Defined value

Parameter	Explain
<mode>	0 handset mode 1 earpiece mode 2 loudspeaker mode

21. 9 AT+CRSL Set UE volume level

Description

This command is used to set UE volume level

Syntax

Command	Response
Test Command **AT+CRSL=?**	+CRSL: (0-15) OK
Read Command	+CRSL:<level>

AT+CRSL?	OK
Set Command **AT+CRSL= <level>**	OK

Defined value

Parameter	Explain
<level>	0-15 volume level

21. 10 AT+CAUDIO audio

Description

This command is used to open or close audio.

Syntax

Command	Response
Test Command **AT+CAUDIO=?**	+CAUDIO: (0-1) OK
Set Command **AT+CAUDIO = <mode>**	OK

Defined value

Parameter	Explain
<mode>:integer type	0 close audio 1 open audio

21. 11 AT+QLTONE Produce local custom frequency tone

Description

This command is used to produce Local custom frequency tone

Syntax

Command	Response
Test Command **AT+QLTONE=?**	+QLTONE:(0,1),(425,950,1400,1800),(1-25500),(0-25500),(1-25500) OK
Set Command **AT+QLTONE=<mode>,<frequency>,<periodOn>,<periodOff >,<duration>**	OK

Defined value

Parameter	Explain
<mode>	0 play stop 1 play start
<frequency>	supported frequency tone:425HZ,950HZ,1400HZ,1800HZ
<periodon>	the period of play custom tone in ms
<periodoff>	the period of stop custom tone in ms
<duration>	When the specified frequency tone is started, the module will continue to play the tone <periodon>time long, and then stop playing tone <periodoff> ,loop sequentially, until <duration>time is over.

21. 12 AT+CMIC Change mic gain level

Description

This command is used to change mic gain level

Syntax

Command	Response
Test Command **AT+CMIC=?**	+CMIC:(0),(0-15) OK
Set Command	OK

AT+CMIC= <channel>,<level>	
Read Command **AT+CMIC?**	+CMIC:<channel>,<level> OK

Defined value

Parameter	Explain
<channel>	we only support main channel 0
<level>	mic gain level range 0-15

21. 13 AT+VGT Set audio mute

Description

This command is used to set audio mute.

Syntax

Command	Response
Test Command **AT+VGT =?**	+VGT :16 OK
Read Command **AT+VGT ?**	+VGT :<m> OK

Defined value

Parameter	Explain
<m>: integer type	16 Mute Sounds
<duration>	When the specified frequency tone is started, the module will continue to play the tone <periodon>time long, and then stop playing tone <periodoff> ,loop sequentially, until <duration>time is over.

Chapter 22. CME ERROR (GSM Equipment Related errors)

Error	Description
CME ERROR: 0	Phone failure
CME ERROR: 1	No connection to phone
CME ERROR: 2	Phone adapter link reserved
CME ERROR: 3	Operation not allowed
CME ERROR: 4	Operation not supported
CME ERROR: 5	PH_SIM PIN required
CME ERROR: 6	PH_FSIM PIN required
CME ERROR: 7	PH_FSIM PUK required
CME ERROR: 10	SIM not inserted
CME ERROR: 11	SIM PIN required
CME ERROR: 12	SIM PUK required
CME ERROR: 13	SIM failure
CME ERROR: 14	SIM busy
CME ERROR: 15	SIM wrong
CME ERROR: 16	Incorrect password
CME ERROR: 17	SIM PIN2 required
CME ERROR: 18	SIM PUK2 required
CME ERROR: 20	Memory full
CME ERROR: 21	Invalid index

CME ERROR: 22	Not found
CME ERROR: 23	Memory failure
CME ERROR: 24	Text string too long
CME ERROR: 25	Invalid characters in text string
CME ERROR: 26	Dial string too long
CME ERROR: 27	Invalid characters in dial string
CME ERROR: 30	No network service
CME ERROR: 31	Network timeout
CME ERROR: 32	Network not allowed, emergency calls only
CME ERROR: 40	Network personalization PIN required
CME ERROR: 41	Network personalization PUK required
CME ERROR: 42	Network subset personalization PIN required
CME ERROR: 43	Network subset personalization PUK required
CME ERROR: 44	Service provider personalization PIN required
CME ERROR: 45	Service provider personalization PUK required
CME ERROR: 46	Corporate personalization PIN required
CME ERROR: 47	Corporate personalization PUK required
CME ERROR: 48	PH-SIM PUK required
CME ERROR: 100	Unknown error
CME ERROR: 103	Illegal MS
CME ERROR: 106	Illegal ME
CME ERROR: 107	GPRS services not allowed
CME ERROR: 111	PLMN not allowed
CME ERROR: 112	Location area not allowed

CME ERROR: 113	Roaming not allowed in this location area
CME ERROR: 126	Operation temporary not allowed
CME ERROR: 132	Service operation not supported
CME ERROR: 133	Requested service option not subscribed
CME ERROR: 134	Service option temporary out of order
CME ERROR: 148	Unspecified GPRS error
CME ERROR: 149	PDP authentication failure
CME ERROR: 150	Invalid mobile class
CME ERROR: 256	Operation temporarily not allowed
CME ERROR: 257	Call barred
CME ERROR: 258	Phone is busy
CME ERROR: 259	User abort
CME ERROR: 260	Invalid dial string
CME ERROR: 261	SS not executed
CME ERROR: 262	SIM Blocked
CME ERROR: 263	Invalid block
CME ERROR: 527	Please wait, and retry your selection later (Specific Modem Sierra)
CME ERROR: 528	Location update failure – emergency calls only (Specific Modem Sierra)
CME ERROR: 529	Selection failure – emergency calls only (Specific Modem Sierra)
CME ERROR: 772	SIM powered down