



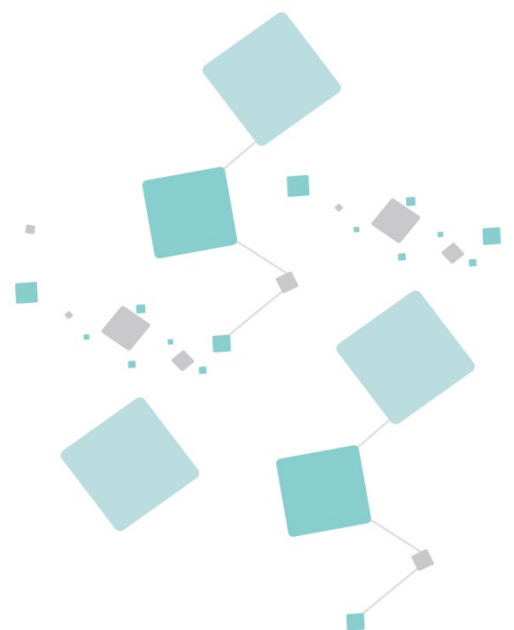
# **L506 AT Command User Guide**

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**LTE Module Series**

**Version:** V4.3

**Date:** 2020-06-08



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## Version History

Date	Version	Description of change	Author
2019-02-18	V4.0	Initial	Jian.Luo
2019-08-09	V4.1	Add AT+MSCANBS command	Dagang.Yang
2019-09-25	V4.2	Add AT+CMUX,AT+CFTPPUTEX, AT+POP3SSL command	Jie.Lu
2020-06-08	V4.3	Add AT+MNETCALL,AT+MNETSTART command	Fl.Wang

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# 1 Introduction

## 1.1 Scope

This document aims to provide a detailed specification and a comprehensive listing as a Reference for the whole set of AT commands.

## 1.2 Audience

Readers of this document should be familiar with Mobiletek modules and how to control them by means of AT Commands.

## 1.3 Document Organization

This document contains the following chapters:

Chapter 1: "Introduction" provides a scope for this document, target audience, contact and support information, and text conventions.

Chapter 2: "Overview" about the aim of this document and implementation suggestions.

Chapter 3: "AT Commands" The core of this Reference guide.

## 1.4 Related Documents

ETSI GSM 07.07 specification and rules

[http://www.3gpp.org/ftp/Specs/archive/07\\_series/07.07/](http://www.3gpp.org/ftp/Specs/archive/07_series/07.07/)

ETSI GSM 07.05 specification and rules

[http://www.3gpp.org/ftp/Specs/archive/07\\_series/07.05/](http://www.3gpp.org/ftp/Specs/archive/07_series/07.05/)

Hayes standard AT command set



## 2 Overview

### 2.1 About the document

This document describes all AT commands implemented in the Mobiletek wireless module L506

Note: In this document, the '\*' character before parameter mean this parameter support in special version.

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## 3 AT Commands

The Mobiletek wireless module family can be controlled via the serial interface using the standard AT commands[1]. The Mobiletek wireless module family is compliant with: – Hayes standard AT command set, in order to maintain the compatibility with existing SW programs.

ETSI GSM 07.07 specific AT command and GPRS specific commands.

ETSI GSM 07.05 specific AT commands for SMS (Short Message Service) and CBS (Cell Broadcast Service)

Moreover Mobiletek wireless module family supports also Mobiletek proprietary AT commands for special purposes.

The following is a description of how to use the AT commands with the Mobiletek wireless module family.

### 3.1 Definitions

The following syntactical definitions apply:

<CR> Carriage return character, is the command line and result code terminator character, which value, in decimal ASCII between 0 and 255, is specified within parameter S3. The default value is 13.

<LF> Linefeed character, is the character recognised as line feed character. Its value, in decimal ASCII between 0 and 255, is specified within parameter S4. The default value is 10. The line feed character is output after carriage return character if verbose result codes are used (V1 option used ) otherwise, if numeric format result codes are used (V0 option used) it will not appear in the result codes.

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

1 The AT is an ATTENTION command and is used as a prefix to other parameters in a string. The AT command combined with other parameters can be set up in the communications package or typed in manually as a command line instruction.

[...] Optional subparameter of a command or an optional part of TA information response is enclosed in square brackets. Brackets themselves do not appear in the command line. When subparameter is not given in AT commands which have a Read command, new value equals to its previous value. In AT commands which do not store the values of any of their subparameters, and so have not a Read command, which are called action type commands, action should be done on the basis of the recommended default setting of the subparameter.

## 3.2 AT Command Syntax

The syntax rules followed by Mobiletek implementation of either Hayes AT commands or GSM/WCDMA/LTE commands are very similar to those of standard basic and extended AT commands. There are two types of extended command:

**Parameter type commands.** This type of commands may be "set" (to store a value or values for later use), "read" (to determine the current value or values stored), or "tested" (to determine ranges of values supported). Each of them has a test command (trailing =?) to give information about the type of its subparameters; they also have a Read command (trailing?) to check the current values of subparameters.

**Action type commands.** This type of command may be "executed" or "tested".  
"executed" to invoke a particular function of the equipment, which generally involves more than the simple storage of a value for later use  
"tested" to determine:

Whether or not the equipment implements the Action Command (in this case issuing the correspondent Test command - trailing =? - returns the OK result code), and if subparameters are associated with the action, the ranges of subparameters values that are supported.

Action commands do not store the values of any of their possible subparameters.

Moreover:

The response to the Test Command (trailing =?) may be changed in the future by Mobiletek to allow the description of new values/functionalities.

If all the subparameters of a parameter type command +CMD are optional, issuing AT+CMD=<CR> causes the OK result code to be returned and the previous values of the omitted subparameters to be retained.

### 3.2.1 String Type Parameters

A string is either enclosed between quotes or not considered a valid string type parameter input. According to V25.ter space characters are ignored on the command line and may be used freely for formatting purposes, unless they are embedded in numeric or quoted string constants.

Therefore a string containing a space character has to be enclosed between quotes to be considered a valid string type parameter (e.g. typing AT+COPS=1,0,"A1" is the same as typing AT+COPS=1,0,A1; typing AT+COPS=1,0,"A BB" is different from typing AT+COPS=1,0,A BB).

A small set of commands requires always writing the input string parameters within quotes. This is explicitly reported in the specific descriptions.

### 3.2.2 Command Lines

A command line made up of three elements: the prefix, the body and the termination character.

The command line prefix consists of the characters "AT" or "at", or, to repeat the execution of the previous command line, the characters "A/" or "a/".

The termination character may be selected by a user option (parameter S3), the default being <CR>.

The basic structures of the command line are:

ATCMD1<CR> where AT is the command line prefix, CMD1 is the body of a basic command (nb: the name of the command never begins with the character "+") and <CR> is the command line terminator character

ATCMD2=10<CR> where 10 is a subparameter

AT+CMD1 ;+CMD2=, ,10<CR> These are two examples of extended commands (nb: the name of the command always begins with the character "+"[2]).

They are delimited with semicolon. In the second command, the subparameter omitted.

+CMD1?<CR> This is a Read command for checking current subparameter values

+CMD1=?<CR> This is a test command for checking possible subparameter values

These commands might perform in a single command line as shown below:

```
ATCMD1 CMD2=10+CMD1;+CMD2=, ,10;+CMD1?;+CMD1=?<CR>
```

anyway it is always preferable to separate into different command lines the basic commands and the extended commands; furthermore it is suggested to avoid placing several action commands in the same command line, because if one of them fails, then an error message is received but it is not possible to argue which one of them has failed the execution.

If command V1 is enabled (verbose responses codes) and all commands in a command line has been performed successfully, result code <CR><LF>OK<CR><LF> is sent from the TA to the TE, if subparameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code <CR><LF>ERROR<CR><LF> is sent and no subsequent commands in the command line are processed.

If command V0 is enabled (numeric responses codes), and all commands in a command line has been performed successfully, result code 0<CR> is sent from the TA to the TE, if sub-parameter values of a command are not accepted by the TA or command itself is invalid, or command cannot be performed for some reason, result code 4<CR> and no subsequent commands in the command line are processed.

In case of errors depending on ME operation, ERROR (or 4) response may be replaced by +CME ERROR: <err> or +CMS ERROR: <err>.

2 The set of proprietary AT commands differentiates from the standard one because the name of each of them begins with either "^", "\$" or "\*". Proprietary AT commands follow the same syntax rules as extended command

### 3.2.3 Information Responses and Result Codes

The TA response, in case of verbose response format enabled, for the previous examples command line could be as shown below:

Information response to +CMD1?:  
<CR><LF>+CMD1:2,1,10<CR><LF>  
Information response to +CMD1=?  
<CR><LF>+CMD1(0-2),(0,1),(0-15)<CR><LF>  
Final result code:  
<CR><LF>OK<CR><LF>

Moreover, there are other two types of result codes:

Result codes that inform about progress of TA operation(e.g. connection establishment CONNECT)

Result codes that indicate occurrence of an event not directly associated with issuance of a command from TE (e.g. ring indication RING).

Here the basic result codes according to ITU-T V25Ter recommendation

Numeric form	Verbose form
<b>0</b>	<b>OK</b>
<b>1</b>	<b>CONNECT</b>
<b>2</b>	<b>RING</b>
<b>3</b>	<b>NO CARRIER</b>
<b>4</b>	<b>ERROR</b>
<b>6</b>	<b>NO DIALTONE</b>
<b>7</b>	<b>BUSY</b>
<b>8</b>	<b>NO ANSWER</b>

### 3.2.4 Command Response Time-Out

Every command issued to the Mobiletek modules returns a result response if response codes are enabled (default). The time needed to process the given command and return the response varies, depending on the command type. Commands that do not interact with the SIM or the network, and involve only internal set up settings or readings, have an immediate response, depending on SIM configuration (e.g., number of contacts stored in the phonebook, number of stored SMS), or on the network the command may interact with.

In the table below are listed only the commands whose interaction with the SIM or the network could lead to long response timings. When not otherwise specified, timing is referred to set command.

For phonebook and SMS writing and reading related commands, timing is referred to commands issued after phonebook sorting is completed.

For DTMF sending and dialing commands timing is referred to module registered on network ("AT+CREG?" answer is "+CREG: 0,1" or "+CREG: 0,5").

Command	Estimated maximum time to get response (Seconds)
<b>+COPS</b>	<b>125 (test command)</b> <b>15 (SS operation)</b>
<b>+CLCK</b>	<b>5 (FDN enabling/disabling)</b> <b>15 (SS operation)</b>
<b>+CPWD</b>	<b>5 (PIN modification)</b>
<b>+CLIP</b>	<b>15 (read command)</b>
<b>+CLIR</b>	<b>15 (read command)</b>
<b>+CCFC</b>	<b>15</b>
<b>+CCWA</b>	<b>15</b>
<b>+CHLD</b>	<b>30</b>
<b>+CPIN</b>	<b>30</b>
<b>+CPBS</b>	<b>5 (FDN enabling/disabling)</b> <b>5 (single reading)</b>
<b>+CPBR</b>	<b>15 (complete reading of a 500 records full phonebook)</b> <b>10 (string present in a 500 records full phonebook)</b> <b>5 (string not present)</b>
<b>+CPBF</b>	<b>5</b>
<b>+CPBW</b>	<b>5</b>
<b>+CACM</b>	<b>5</b>
<b>+CAMM</b>	<b>5</b>
<b>+CPUC</b>	<b>180</b>
<b>+VTS</b>	<b>20 (transmission of full "1234567890*#ABCD" string with no delay between tones, default duration)</b>
<b>+CSCA</b>	<b>5 (read and set commands)</b>
<b>+CSAS</b>	<b>5</b>
<b>+CMGS</b>	<b>120 after CTRL-Z; 1 to get '&gt;' prompt</b>
<b>+CMSS</b>	<b>120 after CTRL-Z; 1 to get '&gt;' prompt</b>
<b>+CMGW</b>	<b>5 after CTRL-Z; 1 to get '&gt;' prompt</b>
<b>+CMGD</b>	<b>5 (single SMS cancellation)</b> <b>25 (cancellation of 50 SMS)</b>
<b>+CNMA</b>	<b>120 after CTRL-Z; 1 to get '&gt;' prompt</b>
<b>+CMGR</b>	<b>5</b>
<b>+CMGL</b>	<b>100</b>
<b>+CGACT</b>	<b>150</b>

<b>+CGATT</b>	<b>140</b> <b>120 (voice call)</b>
<b>D</b>	<b>Timeout set with ATS7 (data call)</b> <b>60 (voice call)</b>
<b>A</b>	<b>Timeout set with ATS7 (data call)</b>
<b>H</b>	<b>30</b>
<b>+CHUP</b>	<b>60</b>
<b>+COPN</b>	<b>10</b>
<b>+COPL</b>	<b>180</b>
<b>+CRSM</b>	<b>180</b>
<b>+FRH</b>	<b>Timeout set with ATS7</b>
<b>+FTH</b>	<b>Timeout set with ATS7</b>
<b>+FRM</b>	<b>Timeout set with ATS7</b>
<b>+FTM</b>	<b>Timeout set with ATS7</b>
<b>+FRS</b>	<b>Timeout set with the command itself</b>
<b>+FTS</b>	<b>Timeout set with the command itself</b>
<b>+WS46</b>	<b>10</b>

### 3.2.5 Command Issue Timing

The chain of "Command -> Response" must always be respected and a new command must not be issued before the module has terminated all the sending of its response result code (whatever it may be).

This applies especially to applications that "sense" the OK text and therefore may send the next command before the complete code <CR><LF>OK<CR><LF> is sent by the module.

It is in any case advisable to wait at least 20ms between the end of the reception of the response and the issue of the next AT command.

If the response codes are disabled and therefore the module does not report any response to the command, then at least the 20ms pause time shall be respected.

During command mode, due to hardware limitations, under severe CPU load the serial port can lose some characters if placed in auto bounding at high speeds. Therefore, if you encounter this problem use a fixed baud rate with +IPR command.



## 3.3 AT Commands Set

### 3.3.1 Command Line General Format

#### 3.3.1.1 Command Line Prefixes

##### 3.3.1.1.1 AT Starting a Command Line

Execution Command	Response
<b>AT</b>	The prefix AT, or at, is a two-character abbreviation (ATtention), always used to start a command line to be sent from TE to TA
Reference	Note
3GPP TS 27.007	

##### 3.3.1.1.2 A/ Last Command Automatic Repetition

Execution Command	Response
<b>A/</b>	If the prefix A/ or a/ is issued, the MODULE immediately executes 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. If A/ is issued before any command line has been executed, the preceding command line is assumed to have been empty (that results in an OK result code).
Reference	Note
V.25ter	this command works only at fixed IPR *Note the custom command #/ has been defined, it causes the last command to be executed again too; but it does not need a fixed IPR.

## 3.3.2 Hayes Compliant AT Commands

### 3.3.2.1 Generic Modem Control

#### 3.3.2.1.1 AT&F Set To Factory-Defined Configuration

Set to factory-defined configuration.

Execution Command	Response
<b>AT&amp;F[&lt;value&gt;]</b>	The execution command sets the configuration parameters to default values specified by manufacturer; it takes into consideration hardware configuration switches and other manufacturer-defined criteria.
Reference	Note
V.25ter.	if parameter <value> is omitted, the command has the same behaviour as AT&F0

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	<b>0</b> just factory profile's base section parameters are considered. <b>*1</b> Both the factory profile base section and the extended section are considered (full factory profile).

#### 3.3.2.1.2 ATZ Soft Reset

Soft Reset

Execution Command	Response
<b>ATZ[&lt;value&gt;]</b>	The execution command loads the base section of the specified user profile and the extended section of the default factory profile.
Reference	Note
V.25ter	any call in progress will terminated. if parameter <n> is omitted, the command has the same behaviour as ATZ0.

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	<b>0</b> User profile number

#### 3.3.2.1.3 AT+FCLASS Select Active Service Class

Select Active Service Class

Execution Command	Response
<b>AT+FCLASS</b>	Execution command returns OK result code. And <n> revert to default values.
Test Command	Response
<b>AT+FCLASS=?</b>	Test command returns all supported values of the parameters <n>.
Read Command	Response
<b>AT+FCLASS?</b>	Read command returns the current configuration value of the parameter <n>.
Write Command	Response
<b>AT+FCLASS=&lt;n&gt;</b>	The set command sets the wireless module into the specified connection mode (data, fax, voice). Hence, all the calls done afterwards will be data or voice.
Reference	Note
3GPP TS 27.007 and ITU-T T.32[12] and TIA-592 and TIA-578-A(3GPP Only) and 3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<b>0</b> Data (factory default) <b>1</b> Fax class (only 3GPP support) <b>2.0</b> Fax class (only 3GPP2 support)

#### 3.3.2.1.4 AT&W Store Current Configuration

Store Current Configuration

Execution Command	Response
<b>AT&amp;W[&lt;n&gt;]</b>	Execution command stores on profile <n> the complete configuration of the device.
Reference	Note
	if parameter omitted, the command has the same behaviour of AT&W0.

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<b>0</b> Profile

### 3.3.2.1.5 AT+GMI Manufacturer Identification

#### Manufacturer Identification

Execution Command	Response
<b>AT+GMI</b>	Execution command returns the manufacturer identification.
Test Command	Response
<b>AT+GMI=?</b>	<b>OK</b>
Reference	Note
V.25ter	

### 3.3.2.1.6 AT+GMM Model Identification

#### Model Identification

Execution Command	Response
<b>AT+GMM</b>	Execution command returns the model identification.
Test Command	Response
<b>AT+GMM=?</b>	<b>OK</b>
Reference	Note
V.25ter	

### 3.3.2.1.7 AT+GMR Revision Identification

#### Revision Identification

Execution Command	Response
<b>AT+GMR</b>	Execution command returns the software revision identification.
Test Command	Response
<b>AT+GMR=?</b>	<b>OK</b>
Reference	Note
V.25ter	

### 3.3.2.1.8 AT+GCAP Capabilities List

#### Capabilities List

Execution Command	Response
<b>AT+GCAP</b>	<b>+CGSM</b> : 3GPP TS command set <b>+FCLASS</b> : Fax command set <b>+DS</b> : Data Service common modem command set <b>+MS</b> : Mobile Specific command set <b>+ES</b> : Synchronous data mode is supported <b>+CIS707-A</b> : CDMA data service command set <b>+CIS-856</b> : EVDO data service command set
Test Command	Response
<b>AT+GCAP=?</b>	<b>OK</b>
Reference	Note
V.25ter	

### 3.3.2.1.9 AT+GSN Serial Number

Serial Number

Execution Command	Response
<b>AT+GSN</b>	Execution command returns the device board serial number.
Test Command	Response
<b>AT+GSN=?</b>	<b>OK</b>
Reference	Note
V.25ter	The number returned is not the IMSI, it is only the board number

### 3.3.2.1.10 ATIV Single Line Connect Message

Single Line Connect Message

Execution Command	Response
<b>ATIV [&lt;value&gt;]</b>	Execution command set single line connect message.

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 off (factory default)
	1 on

### 3.3.2.1.11 ATL Speaker Loudness

Speaker Loudness

Execution Command	Response
<b>ATL[&lt;value&gt;]</b>	<b>OK</b> (not support)

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 low speaker volume (factory default) 1 middle low speaker volume 2 middle speaker volume 3 high speaker volume

### 3.3.2.1.12 ATM Set Monitor Speaker Mode

This command is used to set monitor speaker mode.

Execution Command	Response
<b>ATM [&lt;value&gt;]</b>	Execution command set the speaker mode.

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 always turn off the loudspeaker (factory default) 1 open the speaker until TA notifies the TE carrier detect 2 when the TA hook, open the speaker

### 3.3.2.2 DTE -Modem Interface Control

#### 3.3.2.2.1 ATE Set Command Echo Mode

The setting of this parameter determines whether or not the DCE echoes characters received from the DTE during command state and online command state.

Execution Command	Response
<b>ATE[&lt;value&gt;]</b>	<b>OK</b>
Reference	Note
V25ter	

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 Disables command echo (factory default) 1 Enables command echo, hence command sent to the device are echoed back to the DTE before the response is given.

#### 3.3.2.2.2 ATQ Quiet Result Codes

Quiet Result Codes

Execution Command	Response
<b>ATQ [&lt;value&gt;]</b>	Set command enables or disables the result codes.
Reference	Note
V25ter	After issuing either ATQ1 or ATQ2 every information text transmitted in response to commands is not affected

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 enables result codes (factory default) 1 disables result codes *2 disables result codes (only for backward compatibility)

Example:

Commands	Response
After issuing ATQ1 or ATQ2 <b>AT+CGACT=?</b>	<b>+CGACT: (0-1)</b> nothing is appended to the response

#### 3.3.2.2.3 ATV Response Format

Set DCE response format.

Execution Command	Response
<b>ATV[&lt;value&gt;]</b>	<p>This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.</p> <p>When&lt;value&gt;=0</p> <p><b>0</b></p> <p>When&lt;value&gt;=1</p> <p><b>OK</b></p>
Reference	Note
V.25ter	<p>the &lt;text&gt; portion of information responses is not affected by this setting.</p> <p>if parameter is omitted, the command has the same behaviour of ATV0</p>

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	<p>0 limited headers and trailers and numeric format of result codes Information responses:&lt;text&gt;&lt;CR&gt;&lt;LF&gt; Short result code format:&lt;numeric code&gt;&lt;CR&gt;</p> <p>1 full headers and trailers and verbose format of result codes (factory default) Information responses:&lt;CR&gt;&lt;LF&gt;&lt;text&gt;&lt;CR&gt;&lt;LF&gt; Result codes:&lt;CR&gt;&lt;LF&gt;&lt;verbose code&gt;&lt;CR&gt;&lt;LF&gt;</p>

### 3.3.2.2.4 ATX Set CONNECT Result Code Format and Monitor Call Progress

Set command selects the result code messages subset used by the modem to inform the DTE of the result of the commands.

Execution Command	Response
<b>ATX[&lt;value&gt;]</b>	<b>OK or ERROR</b>
Reference	Note
V.25ter	<p>If parameter is omitted, the command has the same behaviour of ATX0 Parameter:</p> <p>&lt;n&gt;</p> <p>0 - EXTENDED MESSAGES:X0=NO</p> <p>1..4 - EXTENDED MESSAGES:X1=YES</p> <p>For complete control on CONNECT response message see also +DR command.</p>

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	<p>0 send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER Results.</p> <p>1...4 reports all messages (factory default is 1).</p>



### 3.3.2.2.5 ATI Identification Information

Identification Information

Execution Command	Response
<b>ATI [&lt;value&gt;]</b>	Execution command returns one or more lines of information for manufacturer model number and software version , followed by a result code.
Reference	Note .
V25ter	

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0-255 parameter are accepted but ignored (to accommodate external software)

### 3.3.2.2.6 AT&C Data Carrier Detect (DCD) Control

Data Carrier Detect (DCD) Control

Execution Command	Response
<b>AT&amp;C[&lt;value&gt;]</b>	Set command controls the RS232 DCD output behaviour. <b>OK</b> or <b>ERROR</b>
Reference	Note
V25ter	

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 DCD remains high always. 1 DCD follows the Carrier detect status: if carrier detected DCD is high, otherwise DCD is low. 2 DCD off while disconnecting(factory default)

### 3.3.2.2.7 AT&D Data Terminal Ready (DTR) Control

Data Terminal Ready (DTR) Control

Execution Command	Response
<b>AT&amp;D[&lt;value&gt;]</b>	The set command controls the Module behaviour for RS232 DTR transitions. <b>OK</b> or <b>ERROR</b>

Reference	Note
V.25ter	if AT&D2 been issued and the DTR has been tied Low, autoanswering is inhibited and it is possible to answer only by issuing command ATA. if parameter is omitted, the command has the same behaviour of AT&D0

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 DTR transitions are ignored 1 When the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode and the current connection is NOT closed. 2 When the MODULE is connected, the High to Low transition of DTR pin sets the device in command mode and the current connection is closed. (factory default)

### 3.3.2.2.8 AT&E Controls the display data rate or wireless connection speed

Controls the display of data rate toe either serial rate or wireless connection speed

Execution Command	Response
<b>AT&amp;E [&lt;value&gt;]</b>	Controls the display of data rate tobe either serial rate or wireless connection speed.
Reference	Note
V.25ter	

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 Serial/DTE rate (factory default) 1 Wireless connection speed

### 3.3.2.2.9 AT\Q Standard Flow Control

Standard Flow Control

Execution Command	Response
<b>AT\Q [&lt;value&gt;]</b>	Set command controls the RS232 flow control behaviour.
Reference	Note
V.25ter	if parameter is omitted, the command has the same behaviour as AT\Q0 \Q's settings are functionally a subset of &K's ones.

Parameters are defined below:

Parameters	Description
<value>	0 no flow control
	1 software bi-directional with filtering (XON/XOFF)
	3 hardware bi-directional flow control (both RTS/CTS active) (factory default)

### 3.3.2.2.10 AT&S Data Set Ready (DSR) Control

#### Data Set Ready (DSR) Control

Execution Command	Response
<b>AT&amp;S [&lt;value&gt;]</b>	The set command controls the RS232 DSR pin behaviour.
Reference	Note
V.25ter	<p>If option 1 selected, then DSR is tied High when the device receives from the network the UMTS traffic channel indication.</p> <p>In power saving mode the DSR pin is always tied Low &amp; USB_VBUS pin is always tied Low.</p> <p>If parameter is omitted, the command has the same behaviour as AT&amp;S0.</p>

Parameters are defined below:

Parameters	Description
<value>	0 always High (factory default)
	1 Follows the GSM traffic channel indication

### 3.3.2.2.11 AT+IPR Fixed DTE Interface Rate

#### Fixed DTE Interface Rate

Execution Command	Response
<b>AT+IPR</b>	Restore to default value
Test Command	Response
<b>AT+IPR=?</b>	<p>Test command returns the list of supported autodetectable &lt;rate&gt; values and the list of fixed-only &lt;rate&gt; values in the format:</p> <p>+IPR:(list of supported autodetectable &lt;rate&gt; values), (list of fixed-only &lt;rate&gt; values)</p>

Read Command	Response
<b>AT+IPR?</b>	Read command returns the current value of +IPR parameter.
Write Command	Response
<b>AT+IPR=[&lt;rate&gt;]</b>	<b>OK</b>
Reference	Note
V.25ter	DTE speed of USB does not change.

Parameters are defined below:

Parameters	Description
<b>&lt;rate&gt;</b>	The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 300,600,1200,2400,4800,9600,19200,38400,57600,115200 (default),230400,460800,921600,2000000.If <rate> is specified DTE-DCE speed is fixed to that speed, hence no speed auto-detection (autobauding) is enable

### 3.3.2.2.12 AT+IFC DTE-Modem Local Flow Control

DTE-Modem Local Flow Control

Execution Command	Response
<b>AT+IFC</b>	Restore to default value
Test Command	Response
<b>AT+IFC=?</b>	Test command returns all supported values of the parameters <b>&lt;by_te&gt;</b> and <b>&lt;by_ta&gt;</b> .
Read Command	Response
<b>AT+ IFC?</b>	Read command returns active flow control settings.
Write Command	Response
<b>AT+IFC=[&lt;by_te&gt;, &lt;by_ta&gt;]</b>	The set command selects the flow control behaviour of the serial port in both directions:
Reference	Note
V25ter	

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;by_te&gt;</b>	flow control option for the data received by DTE. 0 - flow control None (Default) 2 - C105 (RTS)
<b>&lt;by_ta&gt;</b>	flow control option for the data sent by modem 0 - flow control None (Default) 2 - C106 (CTS)

### 3.3.2.2.13 AT+ICF DTE-Modem Character Framing

#### DTE-Modem Character Framing

Execution Command	Response
<b>AT+ICF</b>	Restore to default value
Test Command	Response
<b>AT+ICF=?</b>	Test command returns the ranges of values for the parameters <format> and <parity>
Read Command	Response
<b>AT+ICF?</b>	Read command returns current settings for subparameters <format> and <parity>.
Write Command	Response
<b>AT+ICF=[&lt;format&gt; [,&lt;parity&gt;]]</b>	Set command defines the asynchronous character framing used when autobauding is disabled. The L506 family supports only the 8 Data, 1 Stop setting.
Reference	Note
V25ter	

Parameters are defined below:

Parameters	Description
<b>&lt;format&gt;</b>	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 3 - 8 Data, 1 Stop (default)
<b>&lt;parity&gt;</b>	Determines how the parity bit is generated and checked, if present; setting this subparameter has no meaning. 0 - Odd (not supported) 1 - Even (not supported) 2 - Mark 3 - Space(Default)

### 3.3.2.3 Call Control

#### 3.3.2.3.1 ATD Mobile Originated Call to Dial a Number

Dial

(1) ATD<number>[:]

Execution Command	Response
<b>ATD&lt;number&gt;[:]</b>	The execution command starts a call to the phone number given as parameter. If ";" is present, a voice call to the given number is performed, regardless of the current value of the connection mode set by +FCLASS command.
Reference	Note
V.25ter.(3GPP Only)	Type of call (data, fax or voice) depends on last +FCLASS setting. Note: the characters accepted are 0-9 and *, #, "A", "B", "C", "+". For backwards compatibility with landline modems modifiers "T", "P", "R", " ", "W", "!", "@" are accepted but have no effect.

Parameters are defined below:

Parameters	Description
<b>&lt;number&gt;</b>	Phone number to be dialed

(2) ATD><str>[:]

Execution Command	Response
<b>ATD&gt;&lt;str&gt;[:]</b>	Issues a call to phone number whose corresponding alphanumeric field is <str>; all available memories will be searched for the correct entry. If ";" is present a voice call is performed.
Reference	Note
V.25ter.(3GPP Only)	Parameter <str> is case sensitive. Used character set should be the one selected with +CSCS.  <str> need quotation mark !

Parameters are defined below:

Parameters	Description
<b>&lt;str&gt;</b>	Alphanumeric field corresponding to phone number.

(3) ATD><mem><n>[:]

Execution Command	Response
<b>ATD&lt;mem&gt;&lt;n&gt;[:]</b>	Issues a call to phone number in phonebook memory storage <mem>, entry location <n> (available memories may be queried with AT+CPBS=?). If ";" is present a voice call is performed.
Reference	Note
V.25ter.(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;mem&gt;</b>	phonebook memory storage; "SM" - SIM/UICC phonebook "FD" - SIM/USIM fixed dialing phonebook "LD" - SIM/UICC last dialled phonebook "MC" - Missed calls list "RC" - Received calls list "DC" - MT dialled calls list "ME" - MT phonebook "EN" - SIM/USIM (or MT) emergency number(+CPBW is not be applicable for this storage) "ON" - SIM (or MT) own numbers (MSI storage may be available through + CNUM also). "MB" - Mailbox numbers stored on SIM.(If this service is provided by the SI M).
<b>&lt;n&gt;</b>	Entry location should be in the range of locations available in the memory used

(4) ATD<n>[:]

Execution Command	Response
<b>ATD&lt;n&gt;[:]</b>	Issue a call to a phone number on entry location <n> of the active phonebook memory storage (see +CPBS). If ";" is present a voice call is performed.
Reference	Note
V.25ter.(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	Active phonebook memory storage entry location; it should be in the range of locations available in the active phonebook memory storage.

(5)

Execution Command	Response
<b>ATDL;</b>	Issues a call to the last number dialed.

Reference	Note
V.25ter.(3GPP Only)	

(6)

Execution Command	Response
<b>ATD&lt;number&gt;I[;] ATD&lt;number&gt;i[;]</b>	Issues a call suppressing the CLIR supplementary service subscription default value for this call If ";" is present a voice call is performed. I - invocation, restrict CLI presentation i - suppression, allow CLI presentation

Reference	Note
V.25ter.(3GPP Only)	

(7)

Execution Command	Response
<b>ATD&lt;number&gt;G[;] ATD&lt;number&gt;g[;]</b>	Issues a call checking the CUG supplementary service information for the current call. Refer to +CCUG command. If ";" is present a voice call is performed.

Reference	Note
V.25ter.(3GPP Only)	

(8)

Execution Command	Response
<b>ATD*&lt;gprs_sc&gt;[*&lt;addr&gt;] [*[&lt;L2P&gt;] [*[&lt;cid&gt;]]]#</b>	This command is specific to GPRS functionality and causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.

Reference	Note
V.25ter.(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;gprs_sc&gt;</b>	GPRS Service Code, a digit string (value 99) which identifies a request to use the GPRS
<b>&lt;addr&gt;</b>	string that identifies the called party in the address space applicable to the PDP.
<b>&lt;L2P&gt;</b>	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: 1 - PPP
<b>&lt;cid&gt;</b>	A digit which specifies a particular PDP context definition (see +CGDCONT command).



### 3.3.2.3.2 ATT Select Tone Dialing

#### Select Tone Dialing

Execution Command	Response
<b>ATT</b>	The set command has no effect and is included only for backward compatibility with landline modems.
Reference	Note
V.25ter.	

### 3.3.2.3.3 ATP Select Pulse Dialing

#### Select Pulse Dialing

Execution Command	Response
<b>ATP</b>	Select pulse dialing.
Reference	Note
V.25ter. GSM invalid	

### 3.3.2.3.4 ATA Answer

#### Answer

Execution Command	Response
<b>ATA</b>	Execution command answers an incoming call if automatic answer is disabled.
Reference	Note
V.25ter.(3GPP Only)	Note: This command MUST be the last in the command line and followed immediately by a <CR> character.

### 3.3.2.3.5 ATH Disconnect Existing Connection

#### Disconnect Existing Connection

Execution Command	Response
<b>ATH</b>	The execution command is used to close the current conversation (voice, data or fax).
Reference	Note
V.25ter.(3GPP Only)	this command issued only in command mode. When a data conversation is active the device is in on-line mode (commands are not sensed and characters are sent to the other party), hence escape sequence (see register S2) is required before issuing this command, otherwise if &D1 option is active, DTR pin has to be tied Low to return in command mode.

### 3.3.2.3.6 ATO Return To On Line Mode

#### Return To On Line Mode

Execution Command	Response
<b>ATO</b>	The execution command used to return to on-line mode from command mode. If there is no active connection, it returns NO CARRIER.
Reference	Note
V.25ter.(3GPP Only)	After issuing this command and if the device is in conversation, to send other commands to the device you must return to command mode by issuing the escape sequence (see register S2) or tying low DTR pin if &D1 option is active.

### 3.3.2.4 Compression Control

#### 3.3.2.4.1 AT+DS Data Compression

Data Compression

Execution Command	Response
<b>AT+DS</b>	Restore to default value
Test Command	Response
<b>AT+DS=?</b>	Test command returns all supported values of the parameter <n>
Read Command	Response
<b>AT+DS?</b>	Read command returns current value of the data compression parameter.
Write Command	Response
<b>AT+DS=[&lt;dir&gt;[,&lt;neg&gt;[,&lt;P1&gt;[,&lt;P2&gt;]]]]</b>	Set command sets the V42 compression parameter.
Reference	Note
V.25ter(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;dir&gt;</b>	Desired direction of operations 0 - No compression (factory default) 1 - Transmit only. 2 - Receive only. 3 - Both directions, accept any direction
<b>&lt;neg&gt;</b>	Whether the DCE should continue to operate if the desired result is not obtained. 0 - Do not disconnect if V.42 bis is not negotiated by the remote DCE as specified in <dir>.
<b>&lt;P1&gt;</b>	Maximum number of dictionary entries 512-2048 (Factory default is 2048)
<b>&lt;P2&gt;</b>	The maximum string length 6 – The only supported value

#### 3.3.2.4.2 AT+DR Data Compression Reporting

Data Compression Reporting

Test Command	Response
<b>AT+DR=?</b>	Test command returns all supported values of the parameter <n>

Read Command <b>AT+DR?</b>	Response Read command returns current value of <n>.
Write Command <b>AT+DR=&lt;n&gt;</b>	Response Set command enables/disables the data compression reporting upon connection.
Reference V25ter(3GPP Only)	Note if enabled, the following intermediate result code is transmitted before the final result code: +DR: <compression>

### 3.3.2.5 S Parameters

Basic commands that begin with the letter "S" are known as "S-Parameters". The number following the "S" indicates the "parameter number" being referenced. If the number is not recognized as a valid parameter number, an ERROR result code is issued.

If no value is given for the subparameter of an S-Parameter, an ERROR result code will be issued and the stored value left unchanged.

NOTE: what follows is a special way to select and set an S-Parameter:

- 1) `ATSn<CR>` selects n as current parameter number. If the value of n is in the range (0, 2, 3, 4, 5, 7, 10, 12, 25, 30, 38), this command establishes Sn as last selected parameter. Every value out of this range and less than 256 can be used but has no meaning and is maintained only for backward compatibility with landline modems.
- 2) `AT=<value><CR>` or `ATS=<value><CR>` set the contents of the selected S-parameter

Example:

`ATS7<CR>` establishes S7 as last selected parameter.

Reference: V25ter and RC56D/RC336D

### 3.3.2.5.1 ATS0 Set Number of Rings before Automatically Answering the Call Automatic answer

Number Of Rings To Auto Answer.

Read Command	Response
<b>ATS0?</b>	Read command returns the current value of S0 parameter.
Write Command	Response
<b>ATS0=&lt;value&gt;</b>	This parameter setting determines the number of rings before auto-answer <b>OK</b>
Reference	Note
V.25ter	

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	0 auto answer disabled (factory default) 1-255 number of rings required before automatic answer.

### 3.3.2.5.2 ATS2 Escape Character

Escape Character

Read Command	Response
<b>ATS2?</b>	Read command returns the current value of S2 parameter.
Write Command	Response
<b>ATS2=[&lt;char&gt;]</b>	Set command sets the ASCII character used as escape characters.

Reference	Note
	When write the escape sequence consists of three escape characters preceded and followed by n ms of idle (see S12 to set n).
	When read the format of the numbers in output is always 3 digits, left-filled with 0s

Parameters are defined below:

Parameters	Description
<b>&lt;char&gt;</b>	Escape character decimal ASCII 0..127 - factory default value is 43 (+).

### 3.3.2.5.3 ATS3 Command Line Termination Character

Command Line Termination Character

Read Command	Response
<b>ATS3?</b>	Read command returns the current value of S3 parameter.
Write Command	Response
<b>ATS3=[&lt;char&gt;]</b>	Set command sets the value of the character recognized by the device as command line terminator and generated by the device as part of the header, trailer, and terminator for result codes and information text, along with S4 parameter.
Reference	Note
V25ter	<p>When read the format of the numbers in output is always 3 digits, left-filled with 0s</p> <p>When write the "previous" value of S3 used to determine the command line termination character for entering the command line containing the S3 setting command.</p> <p>However the result code issued shall use the "new" value of S3 (as set during the processing of the command line)</p>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;char&gt;</b>	Command line termination character (decimal ASCII)
<b>0..127</b>	Factory default value is 13 (ASCII <CR>)

-

### 3.3.2.5.4 ATS4 Set Response Formatting Character

Set Response Formatting Character

Read Command	Response
<b>ATS4?</b>	Read command returns the current value of S4 parameter.
Write Command	Response
<b>ATS4=[&lt;char&gt;]</b>	Set command sets the value of the character generated by the device as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.
Reference	Note
V25ter	When the format of the numbers in output is always 3 digits, left-filled with 0s When write if the value of S4 changed in a command line, the result code issued in response

Parameters are defined below:

Parameters	Description
<b>&lt;char&gt;</b>	response formatting character (decimal ASCII) 0..127 - factory default value is 10 (ASCII <LF>)

### 3.3.2.5.5 ATS5 Set Command Line Editing Character

Command Line Editing Character

Read Command	Response
<b>ATS5=[&lt;char&gt;]</b>	Set command sets the value of the character recognized by the device as a request to delete from the command line the immediately preceding character.



Write Command	Response
<b>ATS5?</b>	Read command returns the current value of S5 parameter.
Reference	Note
V25ter	When read the format of the numbers in output is always 3 digits, left-filled with 0s.

Parameters are defined below:

Parameters	Description
<b>&lt;char&gt;</b>	Command line editing character (decimal ASCII) 0..127 - factory default value is 8 (ASCII <BS>)

### 3.3.2.5.6 ATS7 Set Number of Seconds Wait for Connection Completion

Connection Completion Time-Out

Read Command	Response
<b>ATS7?</b>	Read command returns the current value of +IPR parameter.
Write Command	Response
<b>ATS7=[&lt;tout&gt;]</b>	Set command sets the amount of time, in seconds, that the device shall allow between either answering a call (automatically or by A command) or completion of signalling of call addressing information to network (dialling), and establishment of a connection with the remote device.
Reference	Note
V25ter	When read the format of the numbers in output is always 3 digits, left-filled with 0s

Parameters are defined below:

Parameters	Description
<b>&lt;tout&gt;</b>	0-255 number of seconds

### 3.3.2.5.7 ATS10 Set Disconnect Delay after Indicating the Absence of Data Carrier

Carrier Off With Firm Time

Read Command	Response
<b>ATS10?</b>	Read command returns the current value of S10 parameter.
Write Command	Response
<b>ATS10=&lt;value&gt;</b>	Execution command has no effect and is included only for backward compatibility with landline modems
Reference	Note
	When read the format of the numbers in output is always 3 digits, left-filled with 0s

Parameters are defined below:

Parameters	Description
<b>&lt;value&gt;</b>	Time of TA remains
<b>1..255</b>	Time of TA remains, util is 100ms, default value is 14

### 3.3.2.5.8 ATS30 Disconnect Inactivity Timer

Disconnect Inactivity Timer

Read Command	Response
<b>ATS30?</b>	Read command returns the current value of S30 parameter.
Write Command	Response
<b>ATS30=&lt;tout&gt;</b>	Set command defines the inactivity time-out in minutes. The device disconnects if no characters are exchanged for a period at least <tout> minutes.

Reference	Note
<b>V25ter</b>	When read the format of the numbers in output is always 3 digits, left-filled with 0s

Parameters are defined below:

Parameters	Description
<b>&lt;tout&gt;</b>	0 disabled, disconnection due to inactivity is disabled (factory default)
	1-255 inactivity time-out value

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### 3.3.3 3GPP TS 27.007 AT Commands

#### 3.3.3.1 General

##### 3.3.3.1.1 AT+CGMI Request Manufacturer Identification

Request Manufacturer Identification

Execution Command	Response
<b>AT+CGMI</b>	Execution command returns the device manufacturer identification code without command echo.
Test Command	Response
<b>AT+CGMI=?</b>	OK
Reference	Note
3GPP TS 27.007	

##### 3.3.3.1.2 AT+CGMM Request Model Identification

The command causes the phone to return one or more lines of information text <model> which is intended to permit the user of the ITAE/ETAE to identify the specific model of phone to which it is connected to.

Execution Command	Response
<b>AT+CGMM</b>	Execution command returns the device model identification code without command echo.
Test Command	Response
<b>AT+CGMM=?</b>	OK
Reference	Note
3GPP TS 27.007	

##### 3.3.3.1.3 AT+CGMR Request Revision Identification

The command causes the phone to return a string containing information regarding SW

version.

Execution Command	Response
<b>AT+CGMR</b>	Execution command returns device software revision number without command echo.
Test Command	Response
<b>AT+CGMR=?</b>	<b>OK</b>
Reference	Note
3GPP TS 27.007	

#### 3.3.3.1.4 AT+ CGSN Request Product Serial Number Identification

Returns the IMEI number of the phone.

Execution Command	Response
<b>AT+CGSN</b>	Execution command returns the product serial number , identified as the IMEI of the mobile, without command echo.
Test Command	Response
<b>AT+CGSN=?</b>	<b>OK</b>
Reference	Note
3GPP TS 27.007	

#### 3.3.3.1.5 AT+CSCS Select TE Character Set

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

Test Command	Response
<b>AT+CSCS=?</b>	Test command returns the supported values for parameter <chset>.

Read Command	Response
<b>AT+CSCS?</b>	Read command returns the current value of the active character set.
Write Command	Response
<b>AT+CSCS=&lt;chset&gt;</b>	Set command sets the current character set used by the device.
Reference	Note
3GPP TS 27.007	

Parameters are defined below:

Parameters	Description
<b>&lt;chset&gt;</b>	"GSM" GSM default alphabet (3GPP T S 03.38/23.008). "UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646). "IRA" international Reference alphabet (ITU-T T.50)

Example:

Commands	Response
<b>AT+CSCS="IRA"</b>	<b>OK</b>
<b>AT+CPBR=1</b>	<b>+CPBR: 1,"13845763000",129,"Lin Wang" ,",",0,,</b> <b>OK</b>

### 3.3.3.1.6 AT+CIMI Request International Mobile Subscriber Identity (IMSI)

Request International Mobile Subscriber Identify

Test Command	Response
<b>AT+CIMI=?</b>	<b>OK</b>
Execution Command	Response
<b>AT+CIMI</b>	Execution command returns the value of the Internal Mobile Subscriber Identity stored in the SIM without command echo.

Reference	Note
3GPP TS 27.007(3GPP Only)	When the execution a SIM card must be present in the SIM card housing. Otherwise, the command returns ERROR.

### 3.3.3.1.7 AT+WS46 PCCA STD-101 Query Wireless Network

#### PCCA STD-101 Query Wireless Network

Test Command	Response
<b>AT+WS46=?</b>	<p>Test command reports the range for the parameter &lt;n&gt;.</p> <p>The values in &lt;n&gt; for Query are mutually exclusive. If one value (e.g. "25") is returned, other values shall not be returned.</p>
Read Command	Response
<b>AT+WS46?</b>	<p>Read command reports the currently selected cellular network, in the format:</p> <p><b>+WS46:&lt;n&gt;</b></p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	integer type, it is the WDS-Side Stack to be used by the TA.
12	GSM Digital Cellular Systems (GERAN only)
22	UTRAN only
25	3GPP Systems (GERAN and UTRAN and E-UTRAN) (factory default)
28	E-UTRAN only
29	GERAN and UTRAN

### 3.3.3.2 Call Control

#### 3.3.3.2.1 AT+CMOD Configure Alternating Mode Calls

Configure Alternating Mode Calls

Test Command	Response
<b>AT+CMOD=?</b>	<b>+CMOD: (list of supported &lt;mode&gt;s)</b>
Read Command	Response
<b>AT+CMOD?</b>	Test command returns values supported as a compound value. <b>+CMOD: &lt;mode&gt;</b>
Write Command	Response
<b>AT+CMOD=[&lt;mode&gt;]</b>	Set command selects the call mode of further dialling commands (D) or for next answering command (A). Mode can be either single or alternating (in the present document, terms "alternating mode" and "alternating call" refer to all GSM/UMTS bearer and teleservices that incorporate more than one basic service (voice, data, fax) within one call).  When single mode is selected the call originating and hangup procedures are similar to procedures specified in ITU-T Recommendations V.250 [14], T.31 [11] and T.32 [12].
Reference	Note
3GPP Only	When write the +CMOD shall be set to zero after a successfully completed alternating mode call. It shall be set to zero also after a failed answering. The power-up, factory (&F) and user resets (Z) shall also set the value to zero.  This reduces the possibility that alternating mode calls are originated or answered accidentally.

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 single mode(default mode)



### 3.3.3.2.2 AT+CHUP Hang Up Call

Hang Up Call

Test Command	Response
<b>AT+CHUP=?</b>	<b>OK</b>
Execution Command	Response
<b>AT+CHUP</b>	Execution command cancels all active and held calls, also if a multi-party session is running.
Reference	Note
GSM 07.07(3GPP Only)	

### 3.3.3.2.3 AT+CSTA Select type of address

Select type of address

Test Command	Response
<b>AT+CSTA=?</b>	Test command returns supported <type>s
Read Command	Response
<b>AT+CSTA?</b>	Read command returns selected <type>
Write Command	Response
<b>AT+CSTA=&lt;type&gt;</b>	Set command selects the type of number for further dialling commands (D) according to GSM/UMTS specifications.  <b>OK</b> or <b>+CME ERROR: &lt;err&gt;</b>
Reference	Note
3GPP TS 27.007	

Parameters are defined below:

Parameters	Description
<b>&lt; type&gt;</b>	Type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7). default 145 when dialling string includes international access code character "+", otherwise 129

### 3.3.3.2.4 AT+CBST Select Bearer Service Type

Select Bearer Service Type

Execution Command	Response
<b>AT+CBST</b>	Set value to default..
Test Command	Response
<b>AT+CBST=?</b>	Test command returns the supported range of values for the parameters.
Read Command	Response
<b>AT+CBST?</b>	Read command returns current value of the parameters <speed>, <name> and <ce>
Write Command	Response
<b>AT+CBST=[&lt;speed&gt;[,&lt;name&gt;[,&lt;ce&gt;]]]</b>	Set command sets the bearer service <name> with data rate <speed>, and the connection element <ce> used when data calls are originated. This setting is also used during mobile terminated data call setup, in case of single numbering scheme calls.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;speed&gt;</b>	data rate 0 - autobauding (autobaud) 7 - 9600 bps (V.32)( Not support) 12 - 9600 bps (V.34) ( Not support) 14 - 14400 bps (V.34) 16 - 28800 bps (V.34) 17 - 33600 bps (V.34) 39 - 9600 bps (V.120) ( Not support) 43 - 14400 bps (V.120) 48 - 28800 bps (V.120) 51 - 56000 bps (V.120) 71 - 9600 bps (V.110 or X.31 flag stuffing) ( Not support) 75 - 14400 bps (V.110 or X.31 flag stuffing) 80 - 14400 bps (V.110 or X.31 flag stuffing) 81 - 38400 bps (V.110 or X.31 flag stuffing) 83 - 56000 bps (V.110 or X.31 flag stuffing) 84 - 64000 bps ( X.31 flag stuffing) 116 - 64000 bps (bit transparent) 134 - 64000 bps (multimedia)
<b>&lt;name&gt;</b>	bearer service name 0 - data circuit asynchronous (UDI or 3.1 kHz modem) 1 - data circuit synchronous(UDI or 3.1 kHz modem) 4 - data circuit asynchronous(RDI)
<b>&lt;ce&gt;</b>	connection element 0 - transparent 1 - non transparent (default)
<b>&lt;GSM network&gt;</b>	AT+CBST= 0,0,1 (Autobaud 9.6k, non transparent) AT+CBST= 7,0,1 (V.32 9.6k, non transparent) AT+CBST=12,0,1 (V.34 9.6k, non transparent)) AT+CBST=14,0,1 (V.34 14.4k, non transparent) AT+CBST=39,0,1 (V.120 9.6k, non transparent) ( Not support) AT+CBST=43,0,1 (V.120 14.4k, non transparent) AT+CBST=71,0,1 (V.110 9.6k, non transparent) ( Not support) AT+CBST=75,0,1 (V.110 14.4k, non transparent) AT+CBST= 7,0,0 (V32 9.6k, transparent) ( Not support) AT+CBST=12,0,0 (V34 9.6k, transparent) ( Not support) AT+CBST=14,0,0 (V34 14.4k, transparent) ( Not support)

<b>&lt;WCDMA network&gt;</b>	AT+CBST= 0,0,1 (Autobaud 57.6k, non transparent)
	AT+CBST=14,0,1 (V.34 14.4k, non transparent)
	AT+CBST=16,0,1 (V.34 28.8k, non transparent)
	AT+CBST=17,0,1 (V.34 33.6k, non transparent)
	AT+CBST=43,0,1 (V.120 14.4k, non transparent)
	AT+CBST=48,0,1 (V.120 28.8k, non transparent)
	AT+CBST=51,0,1 (V.120 56k, non transparent)
	AT+CBST=75,0,1 (V.110 14.4k, non transparent)
	AT+CBST=80,0,1 (V.110 28.8k, non transparent)
	AT+CBST=81,0,1 (V.110 38.4k, non transparent)
	AT+CBST=83,0,1 (X.31FS 56k, non transparent)
	AT+CBST=83,4,1 (X.31FS 56k RDI, non transparent)
	AT+CBST=84,0,1 (X.31FS 64k, non transparent)
	AT+CBST=116,1,0 (Bit transparent 64 kbps, transparent)

### 3.3.3.2.5 AT+CRLP Radio Link Protocol

#### Radio Link Protocol

Test Command	Response
<b>AT+CRLP=?</b>	Test command returns the range of setting value for each supported RLP version <ver>
Read Command	Response
<b>AT+CRLP?</b>	<p>Read command returns current settings for each supported RLP version</p> <p><b>+CRLP:&lt;iws&gt;,&lt;mws&gt;,&lt;T1&gt;,&lt;N2&gt;,&lt;ver&gt;</b></p> <p><b>+CRLP: &lt;iws&gt;,&lt;mws&gt;,&lt;T1&gt;,&lt;N2&gt;,&lt;ver&gt;</b></p> <p><b>+CRLP: &lt;iws&gt;,&lt;mws&gt;,&lt;T1&gt;,&lt;N2&gt;,&lt;ver&gt;</b></p> <p><b>OK</b></p>
Write Command	Response
<b>AT+CRLP=[&lt;iws&gt;[,&lt;mws&gt;[,&lt;T 1&gt;,&lt;N2&gt; [,&lt;ver&gt;]]]]</b>	Set command sets Radio Link Protocol (RLP) parameters used when non- transparent data calls originated.

Reference	Note
3GPP TS 27.007(3GPP Only)	Versions 0 and 1 share the same parameter set. Read and Test commands shall return only one line for this set ( where <ver> is not present )

Parameters are defined below:

Parameters	Description
<b>&lt;iws&gt;</b>	IWF window Dimension 0..61 - factory default value is 61 (ver 0/1) 0..488 - factory default value is 240 (ver 2)
<b>&lt;mws&gt;</b>	MS window Dimension 0..61 - default value is 61 ( ver 0/1 ) 0..488 - factory default value is 240 (ver 2)
<b>&lt;T1&gt;</b>	acknowledge timer (10 ms units). 38..255 - default value is 48 (ver 0 or 1) 42..255 - default value is 52 (ver 2)
<b>&lt;N2&gt;</b>	retransmission attempts 1..255 - default value is 6 (ver 0/1/2) <ver> - protocol version 0.1.2

### 3.3.3.2.6 AT+CR Service Reporting Control

Service Reporting Control

Execution Command	Response
<b>AT+CR</b>	Set value to default
Test Command	Response
<b>AT+CR=?</b>	Test command returns the supported range of values of parameter <mode>
Read Command	Response
<b>AT+CR?</b>	Read command returns whether or not intermediate result code +CR is enabled, in the format: <b>+CR: &lt;mode&gt;</b>

Write Command	Response
<b>AT+CR=[&lt;mode&gt;]</b>	Set command controls whether or not the intermediate result code +CR is returned from TA to TE.
Reference	Note
3GPP TS 27.007(3GPP Only)	DTE speed of USB does not change.

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	<p>0 - disables +CR reporting (factory default)</p> <p>1 - enables +CR reporting: the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted.</p> <p>Note: After power off/on in L506 the value returns to "0". Its format is:</p> <p>+CR: &lt;serv&gt;</p> <p>where:</p> <p>&lt;serv&gt;</p> <p>ASync - asynchronous transparent</p> <p>SYnc - synchronous transparent</p> <p>REL ASync - asynchronous non-transparent</p> <p>REL SYnc - synchronous non-transparent.</p> <p>Note: This command replaces V.25ter [14] command Modulation Reporting Control (+MR), which is not appropriate for use with a modern terminal.</p>

### 3.3.3.2.7 AT+CEER Extended Error Report

Extended Error Report

Test Command	Response
<b>AT+CEER=?</b>	<b>OK</b>

Execution Command	Response
<b>AT+CEER</b>	<p>Execution command returns one or more lines of information text &lt;report&gt; offering the TA user an extended error report, in the format:</p> <p><b>+CEER: &lt;report&gt;</b></p> <p>This report regards some error condition that may occur:</p> <p>No cause information available</p> <p>the failure in the last unsuccessful call setup (originating or answering)</p> <p>the last call release</p> <p>the last unsuccessful GPRS attach or unsuccessful PDP context activation</p> <p>the last GPRS detach or PDP context deactivation</p> <p>Note: if none of these conditions have occurred since power up then "Normal, unspecified" condition is reported</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

### 3.3.3.2.8 AT+CRC Cellular Result Codes

#### Cellular Result Codes

Execution Command	Response
<b>AT+CRC</b>	Set value to default.
Test Command	Response
<b>AT+CRC=?</b>	Test command returns supported values of the parameter <mode>.

Read Command	Response
<b>AT+CRC?</b>	Read command returns current value of the parameter <mode>.
Write Command	Response
<b>AT+CRC=[&lt;mode&gt;]</b>	Set command controls whether or not the extended format of incoming call indication is used.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 - disables extended format reporting (factory default) 1 - enables extended format reporting: Where: <type> - call type: ASYNC - asynchronous transparent data SYNC - synchronous transparent data REL ASYNC - asynchronous non-transparent data REL SYNC - synchronous non-transparent data FAX - facsimile (TS 62) VOICE - normal voice (TS 11)

### 3.3.3.2.9 AT+CHSN HSCSD non-transparent call configuration

non-transparent call configuration

Execution Command	Response
<b>AT+CHSN</b>	Set value to default.
Test Command	Response
<b>AT+CHSN=?</b>	<b>+CHSN:</b> (list of supported <wAiur>s), (list of supported <wRx>s), (list of supported <topRx>), (list of supported <codings>s)



Read Command	Response
<b>AT+CHSN?</b>	<b>+CHSN: &lt;wAiur&gt;,&lt;wRx&gt;,&lt;topRx&gt;,&lt;codings&gt;</b>
Write Command	Response
<b>AT+CHSN=[&lt;wAiur&gt;[,&lt;wRx&gt;[,&lt;topRx&gt;[,&lt;codings&gt;]]]]</b>	Set command controls parameters for originating non-transparent HSCSD calls. Values may also be used during mobile terminated data call setup. In GERAN, changing <topRx> or <codings> value during a call does not affect the current call. In GERAN, changing of <wAiur> or <wRx> affects the current call only if <topRx> was non-zero when call was established
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;wAiur&gt;</b>	integer type; wanted air interface user rate. Default value 0 indicates that TA shall calculate a proper value from currently selected fixed network user rate (<speed> subparameter from +CBST command), <codings>, and <wRx> (or <maxRx> from +CHSD command if <wRx>=0). Other values: 1 - 9600 bps 2 - 14400 bps 3 - 19200 bps 4 - 28800 bps 5 - 38400 bps 6 - 43200 bps 7 - 57600 bps Note: only support 0-2,4,7
<b>&lt;wRx&gt;</b>	integer type; wanted amount of receive timeslots. Default value 0 indicates that TA shall calculate a proper value from currently selected<wAiur> and <codings>. This parameter is not applicable to UTRAN or EUTRAN UEs.
<b>&lt;topRx&gt;</b>	integer type; top value for <wRx> that user is going to request during the next established nontransparent HSCSD call. Default value 0 indicates that user is not going to change <wAiur>/<wRx> during the next call. This parameter is not applicable to UTRAN or E-UTRAN UEs.

<b>&lt;codings&gt;</b>	a sum of integers each representing a channel coding that is accepted for non-transparent HSCSD calls. Default value 0 indicates that all supported codings are accepted (refer +CHSD command for other values). This parameter is not applicable to UTRAN or E-UTRAN UEs.
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### 3.3.3.2.10 AT+CVHU Voice Hang Up Control

Voice Hang Up Control

Execution Command	Response
<b>AT+CVHU</b>	Set value to default.
Test Command	Response
<b>AT+CVHU=?</b>	Test command reports the range of supported values for parameter <mode>
Read Command	Response
<b>AT+CVHU?</b>	Read command reports the current value of the <mode> parameter, in the format: <b>+CVHU: &lt;mode&gt;</b>
Write Command	Response
<b>AT+CVHU=[&lt;mode&gt;]</b>	Set command selects whether ATH or "drop DTR" shall cause a voice connection to disconnect or not.
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	<p>0 "Drop DTR" ignored but OK result code given. ATH disconnects. (factory default).</p> <p>1 "Drop DTR" and ATH ignored but OK result code given.</p> <p>*2 "Drop DTR" behaviour according to &amp;D setting. ATH disconnects</p>

### 3.3.3.2.11 AT+CSTF Setting Time Format

#### Setting Time Format

Test Command	Response
<b>AT+CSTF=?</b>	Test command reads the supported <mode>s as a compound value. <b>+CSTF: (list of supported &lt;mode&gt;s)</b> <b>+CME ERROR: &lt;err&gt;</b>
Read Command	Response
<b>AT+CSTF?</b>	Read command reads the current setting. Possible Response(s): <b>+CSTF: &lt;mode&gt;</b> <b>+CME ERROR: &lt;err&gt;</b>
Write Command	Response
<b>AT+CSTF=[&lt;mode&gt;]</b>	Set command sets the time format of the time information presented to the user. Refer subclause 9.2 for possible <err> values Possible Response(s): <b>+CME ERROR: &lt;err&gt;</b>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	integer type. The default value is manufacturer specific. 1 -- HH:MM (24 hour clock) 2 -- HH:MM a.m./p.m.

### 3.3.3.3 Network Service Handling

#### 3.3.3.3.1 AT+CNUM Subscriber Number

Subscriber Number

Test Command	Response
<b>AT+CNUM=?</b>	<b>OK</b>
Execution Command	Response
<b>AT+CNUM</b>	<p>Execution command returns the MSISDN (if the phone number of the device has been stored in the SIM card) in the format:</p> <p><b>+CNUM: &lt;alpha&gt;,&lt;number&gt;,&lt;type&gt;[&lt;CR&gt;&lt;LF&gt;</b>  <b>+CNUM: &lt;alpha&gt;,&lt;number&gt;,&lt;type&gt;[...]]</b></p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;alpha&gt;</b>	Alphanumeric string associated to <number>; used character set should be the one selected with +CSCS.
<b>&lt;number&gt;</b>	String containing the phone number in the format <type>
<b>&lt;type&gt;</b>	<p>type of number:</p> <p>129 - national numbering scheme</p> <p>145 - international numbering scheme (contains the character "+").</p>

#### 3.3.3.3.2 AT+COPN Read Operator Names

Read Operator Names

Execution Command	Response
<b>AT+COPN</b>	Execution command returns the list of operator names from the ME in the format:  <b>+COPN: &lt;numeric1&gt;,&lt;alpha1&gt;[&lt;CR&gt;&lt;LF&gt; +COPN:&lt;numeric2&gt;,&lt;alpha2&gt;[...]]</b>  Each operator code <numericn> that has an alphanumeric equivalent <alphan> in the ME memory is returned
Test Command	Response
<b>AT+COPN=?</b>	<b>OK</b>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;numericn&gt;</b>	String type, operator in numeric format (see +COPS)
<b>&lt;alphan&gt;</b>	String type, operator in long alphanumeric format (see +COPS)

### 3.3.3.3.3 AT+CREG Network Registration Report

Network Registration Report

Test Command	Response
<b>AT+CREG=?</b>	Test command returns the range of supported <mode>
Read Command	Response
<b>AT+CREG?</b>	Read command reports the <mode> and <stat> parameter values in the format: <b>+CREG: &lt;mode&gt;,&lt;stat&gt;[,&lt;Lac&gt;,&lt;Ci&gt;,&lt;Act&gt;]</b>  Note: <Lac>,<Ci> and <Act> are reported only if <mode> =2 and the mobile is registered on some network cell.

Write Command	Response
<b>AT+CREG=[&lt;n&gt;]</b>	<p>Set command enables/disables network registration reports depending on the parameter &lt;mode&gt;.</p> <p>Note: &lt;Lac&gt;,&lt;Ci&gt; and &lt;Act&gt; are reported only if &lt;mode&gt;=2 and the mobile is registered on some network cell.</p> <p>Note: The value 8/9(CDMA/HDR) do not follow the 3gpp spec, we add this value to distinguish CDMA/HDR</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	<p>0 - disable network registration unsolicited result code (factory default)</p> <p>1 - enable network registration unsolicited result code</p> <p>2 - enable network registration unsolicited result code with network Cell identification data</p> <p>If &lt;mode&gt;=1, network registration result code reports: +CREG: &lt;stat&gt;</p> <p>If &lt;mode&gt;=2, network registration result code reports: +CREG: &lt;stat&gt;[,&lt;lac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</p>
<b>&lt;stat&gt;</b>	<p>0 - not registered, ME is not currently searching for a new operator to register to</p> <p>1 - registered, home network</p> <p>2 - not registered, but ME is currently searching for a new operator to register to</p> <p>3 - registration denied</p> <p>4 - unknown</p> <p>5 - registered, roaming</p> <p>6 - not initialized(Internal use only)</p>
<b>&lt;lac&gt;</b>	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
<b>&lt;ci&gt;</b>	string type; four byte GERAN/UTRAN/E-UTRAN cell ID in hexadecimal format.

<b>&lt;AcT&gt;</b>	<p>integer type; access technology of the serving cell</p> <p>0 - GSM</p> <p>1 - GSM Compact</p> <p>2 - UTRAN</p> <p>3 - GSM w/EGPRS</p> <p>4 - UTRAN w/HSDPA</p> <p>5 - UTRAN w/HSUPA</p> <p>6 - UTRAN w/HSDPA and HSUPA</p> <p>7 - E-UTRAN</p> <p>8 - CDMA</p> <p>9 - HDR</p> <p>Note: &lt;Lac&gt;,&lt;Ci&gt; and &lt;AcT&gt; are reported only if &lt;mode&gt;=2 and the mobile is registered on some network cell.</p> <p>Note: The value 8/9(CDMA/HDR) do not follow the 3gpp spec, we add this value to distinguish CDMA/HDR</p>
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Example:

Commands	Response
<b>AT+CREG?</b>	<p><b>+CREG: 0,2</b></p> <p><b>OK</b></p>
<b>AT+CREG?</b>	<p><b>+CREG: 0,2</b></p> <p><b>OK</b></p> <p>(the MODULE is in network searching state)</p>
<b>AT+CREG?</b>	<p><b>+CREG: 0,2</b></p> <p><b>OK</b></p>
<b>AT+CREG?</b>	<p><b>+CREG: 0,2</b></p> <p><b>OK</b></p>
<b>AT+CREG?</b>	<p><b>+CREG: 0,1</b></p> <p><b>OK</b></p>

### 3.3.3.3.4 AT+COPS Operator Selection

Operator Selection

Test Command	Response
<b>AT+COPS=?</b>	<p>Test command returns a list of quintuplets, each representing an operator present in the network. The quintuplets in the list are separated by commas:</p> <p><b>+COPS: [list of supported (&lt;stat&gt;,long alphanumeric &lt;oper&gt;,short alphanumeric&lt;oper&gt;,numeric &lt;oper&gt;,&lt;AcT&gt;)][(list of supported &lt;mode&gt;s),(list of supported &lt;format&gt;s)]</b></p>
Read Command	Response
<b>AT+COPS?</b>	<p>Read command returns current value of &lt;mode&gt;,&lt;format&gt; and &lt;oper&gt; in format &lt;format&gt;; if no operator is selected, &lt;format&gt; and &lt;oper&gt; are omitted</p> <p><b>+COPS: &lt;mode&gt;[,&lt;format&gt;,&lt;oper&gt;,&lt; AcT&gt;]</b></p>
Write Command	Response
<b>AT+COPS=[&lt;mode&gt;[,&lt;format&gt;[,&lt;oper&gt;[,&lt; AcT&gt;]]]]</b>	<p>Set command forces an attempt to select and register the GSM\UMTS network operator.</p> <p>&lt;Mode&gt; parameter defines whether the operator selection is automatic or forced by this command to operator &lt;oper&gt;.</p> <p>The operator &lt;oper&gt; given in format &lt;format&gt;.</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	When test if the command options require a network scan, this command may require some seconds before the output is given.

Parameters are defined below:

Parameters	Description
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<b>&lt;mode&gt;</b>	<p>0 - automatic choice (the parameter &lt;oper&gt; will be ignored) (factory default)</p> <p>1 - manual choice (&lt;oper&gt; field shall be present)</p> <p>2 - deregister from the network; the MODULE is kept unregistered until a +COPS with &lt;mode&gt;=0, 1 or 4 is issued</p> <p>3 - set only &lt;format&gt; parameter (the parameter &lt;oper&gt; will be ignored)</p> <p>4 - manual/automatic (&lt;oper&gt; field shall be present); if manual selection fails, automatic mode (&lt;mode&gt;=0) is entered</p>
<b>&lt;format&gt;</b>	<p>0 - alphanumeric long form (max length 16 digits)</p> <p>1 - short format alphanumeric &lt;oper&gt;</p> <p>2 - numeric &lt;oper&gt;</p>
<b>&lt;Oper&gt;</b>	<p>String type &lt;format&gt; indicates if the format is alphanumeric or numeric. Long alphanumeric format can be up to 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]). Numeric format is the GSM Location Area Identification number (refer 3GPP TS24.008 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific. Returned &lt;oper&gt; shall not be in BCD format, but in IRA characters converted from BCD. Hence, the number has the structure: (country code digit 3) (country code digit 2) (country code digit 1) (network code digit 3) (network code digit 2) (network code digit 1).</p> <p>Note: &lt;mode&gt; parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only &lt;format&gt; parameter).</p> <p>Note: if &lt;mode&gt;=1 or 4, the selected network is stored in NVM too and is available at next reboot (this will happen even with a new SIM inserted)</p> <p>Note: &lt;format&gt; parameter setting is never stored in NVM</p>
<b>&lt;stat&gt;</b>	<p>0 - unknown</p> <p>1 - available</p> <p>2 - current</p> <p>3 - forbidden</p>

<b>&lt;AcT&gt;</b>	<p>access technology selected</p> <p>0 - GSM</p> <p>1 - GSM Compact</p> <p>2 - UTRAN</p> <p>3 - GSM w/EGPRS (see NOTE 1)</p> <p>4 - UTRAN w/HSDPA (see NOTE 2)</p> <p>5 - UTRAN w/HSUPA (see NOTE 2)</p> <p>6 - UTRAN w/HSDPA and HSUPA (see NOTE 2)</p> <p>7 - E-UTRAN</p> <p>8 - CDMA (see NOTE 3)</p> <p>9 - HDR (see NOTE 3)</p> <p>NOTE: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS.</p> <p>NOTE: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.</p> <p>NOTE: The value 8/9(CDMA/HDR) do not follow the 3gpp spec, we add this value to distinguish CDMA/HDR, and only support AT+COPS?.</p>
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### 3.3.3.3.5 AT+CLCK Facility Lock/Unlock

#### Facility Lock/Unlock

Test Command	Response
<b>AT+CLCK=?</b>	Test command reports all the facilities supported by the device.
Write Command	Response
<b>AT+CLCK=&lt;fac&gt;,&lt;mode&gt;[,&lt;passwd&gt;[,&lt;class&gt;]]</b>	Execution command used to lock or unlock a ME or a network facility.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
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<b>&lt;fac&gt;</b>	<p>Facility</p> <p>"SC" - SIM (PIN request) (device requests SIM password at power- up and when this lock command issued)</p> <p>"AO" - BAOC (Barr All Outgoing Calls)</p> <p>"OI" - BOIC (Barr Outgoing International Calls)</p> <p>"OX" - BOIC-exHC (Barr Outgoing International Calls except to Home Country)</p> <p>"AI" - BAIC (Barr All Incoming Calls)</p> <p>"IR" - BIC-Roam (Barr Incoming Calls when Roaming outside the home country)</p> <p>"AB" - All Barring services (applicable only for &lt;mode&gt;=0)</p> <p>"AG" - All Outgoing Barring services (applicable only for &lt;mode&gt;=0) "AC" - All Incoming Barring services (applicable only for &lt;mode&gt;=0)</p> <p>"AC" - All InComing Barring services (refer 3GPP TS 22.030 [19]) (applicable only for &lt;mode&gt;=0)</p> <p>"FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as &lt;passwd&gt;)</p> <p>"PN" - network Personalisation</p> <p>"PU" - network subset Personalisation</p> <p>"PP" - service Provider Personalization (refer 3GPP TS 22.022 [33])</p> <p>"PC" - Corporate Personalization (refer 3GPP TS 22.022 [33])</p> <p>"PF" - lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT requests password when any other than the first SIM/UICC card is inserted)</p>
<b>&lt;mode&gt;</b>	<p>defines the operation to be done on the facility</p> <p>0 - unlock facility</p> <p>1 - lock facility</p> <p>2 - query status</p> <p>Note: when &lt;mode&gt;=2 and command successful, it returns: +CLCK: &lt;status&gt;[,&lt;class1&gt;[&lt;CR&gt;&lt;LF&gt;+CLCK: &lt;status&gt;,&lt;class2&gt; [...]]</p> <p>Where:</p> <p>&lt;status&gt; - the current status of the facility</p> <p>0 - not active</p> <p>1 - active</p> <p>&lt;classn&gt; - class of information of the facility</p>

<b>&lt;passwd&gt;</b>	shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD
<b>&lt;class&gt;</b>	<p>sum of integers each representing a class of information (default is 7)</p> <p>1 - voice (telephony)</p> <p>2 - data (refers to all bearer services)</p> <p>4 - fax (facsimile services)</p> <p>8 - short message service 6 - data circuit sync</p> <p>32 - data circuit async</p> <p>64 - dedicated packet access 128 - dedicated PAD access</p>

### 3.3.3.3.6 AT+CPWD Change Facility Password

#### Change Facility Password

Test Command	Response
<b>AT+CPWD=?</b>	Test command returns a list of pairs (<fac>,<pwdlength>) which presents the available facilities and the maximum length of their password (<pwdlength>)
Write Command	Response
<b>AT+CPWD=&lt;fac&gt;,&lt;oldpwd&gt;,&lt;newpwd&gt;</b>	Execution command changes the password for the facility lock function defined by command Facility Lock +CLCK
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
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<b>&lt;fac&gt;</b>	facility SC - SIM (PIN request) AB - All barring services P2 - SIM PIN2 AC - All Incoming barring services AG – All outgoing barring services AI - BAIC (Barr All Incoming Calls) AO - BAOC (Barr All Outgoing Calls) IR - BIC-Roam (Barr Incoming Calls when Roaming outside the home country) OI - BOIC (Barr Outgoing International Calls) OX - BOIC-exHC (Barr Outgoing International Calls except to Home Country)
<b>&lt;oldpwd&gt;</b>	String type, it shall be the same as password specified for the facility from the ME user interface or with command +CPWD
<b>&lt;newpwd&gt;</b>	String type, it is the new password

### 3.3.3.3.7 AT+CLIP Calling Line Identification Presentation

#### Calling Line Identification Presentation

Test Command	Response
<b>AT+CLIP=?</b>	Test command returns the supported values of parameter <n>
Read Command	Response
<b>AT+CLIP?</b>	Read command returns the presentation status of the CLI in the format:  <b>+CLIP: &lt;n&gt;,&lt;m&gt;</b>  Note: This command issues a status request to the network. Hence, it may take a few seconds to give the answer due to the time needed to exchange data.

Write Command	Response
<b>AT+CLIP=[&lt;n&gt;]</b>	<p>Set command enables/disables the presentation of the CLI (Calling Line Identity) at the TE. This command refers to the UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the CLI of the calling party when receiving a mobile terminated call.</p> <p>Note: in the +CLIP: response the subaddress information and the subaddress type information are not currently supported. The subaddress is always "" after the 2nd comma and the subaddress type is always 128 after the 3rd comma</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	The command changes only the report behaviour of the device. It does not change CLI supplementary service setting on the network.

Parameters are defined below:

Parameters	Description
(Read Command) <b>&lt;n&gt;</b>	0 - CLI presentation disabled 1 - CLI presentation enabled
<b>&lt;m&gt;</b>	status of the CLIP service on the network 0 - CLIP not provisioned 1 - CLIP provisioned 2 - unknown (e.g. no network is present )
(Write Command) <b>&lt;n&gt;</b>	0 - disables CLI indication (factory default) 1 - enables CLI indication If enabled the device reports after each RING the response: +CLIP:<number>,<type>,"",128,<alpha>,<CLI_validity>
<b>&lt;number&gt;</b>	String type phone number of format specified by <type>
<b>&lt;type&gt;</b>	Type of address octet in integer format 128 - both the type of number and the numbering plan are unknown 129 - unknown type of number and ISDN/Telephony numbering plan 145 - international type of number and ISDN/Telephony numbering plan (contains the character "+") 161 - national numbering scheme

<b>&lt;alpha&gt;</b>	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.
<b>&lt;CLI_validity&gt;</b>	<CLI_validity> 0 - CLI valid 1 - CLI has been withheld by the originator. 2 - CLI is not available due to interworking problems or limitation of originating network.

### 3.3.3.3.8 AT+CLIR Calling Line Identification Restriction

Requests calling line identification restriction.

Test Command	Response
<b>AT+CLIR=?</b>	Test command reports the supported values of parameter <n>.
Read Command	Response
<b>AT+CLIR?</b>	Read command gives the default adjustment for all outgoing calls (<n>) and also triggers an interrogation of the provision status of the CLIR service (<m>), where
Write Command	Response
<b>AT+CLIR=[&lt;n&gt;]</b>	Set command overrides the CLIR subscription set in the network. The value becomes the default setting for all following outgoing calls. This adjustment can be revoke by using the opposite command. This command refers to CLIR- service (3GPP TS 02.81/21.081) that allows a calling subscriber to enable or disable the presentation of the CLI to the called party when originating a call.
Parameters	Note
3GPP TS 27.007(3GPP Only)	This command sets the default behaviour of the device for outgoing calls.

Parameters are defined below:

Parameters	Description
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<b>&lt;n&gt;</b>	facility status on the Mobile 0 - CLIR facility according to CLIR service network status 1 - CLIR facility active (CLI not sent) 2 - CLIR facility not active (CLI sent)
<b>&lt;m&gt;</b>	facility status on the Network 0 - CLIR service not provisioned 1 - CLIR service provisioned permanently 2 - Unknown (e.g. no network present, etc.) 3 - CLI temporary mode presentation restricted 4 - CLI temporary mode presentation allowed

### 3.3.3.3.9 AT+COLP Connected line identification presentation

Connected line identification presentation.

Test Command	Response
<b>AT+COLP=?</b>	Test command returns supported parameters <n>
Read Command	Response
<b>AT+COLP?</b>	Read command gives the status of <n> and triggers an interrogation of the provision status of the COLP service according 3GPP TS 22.081 [3] (given in <m>). <b>+COLP: &lt;n&gt;,&lt;m&gt;</b>
Write Command	Response
<b>AT+COLP=[&lt;n&gt;]</b>	Set command enables or disables the presentation of the COLP at the TE
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
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<b>&lt;n&gt;</b>	0 disable (factory default) 1 enable  Note: When enabled (and the called subscriber allows it), +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is returned from TA to TE before any +CR or V.25ter [14] responses.  It is manufacturer specific if this response is used when normal voice call is established.
<b>&lt;m&gt;</b>	0 - COLP not provisioned 1 - COLP provisioned 2 - unknown (e.g. no network, etc.)

### 3.3.3.3.10 AT+CCFC Call Forwarding Number and Conditions

Call Forwarding Number and Conditions.

Test Command	Response
<b>AT+CCFC=?</b>	Test command reports supported values for the parameter <reason>.
Write Command	Response
<b>AT+CCFC=&lt;reason&gt;,&lt;cmd&gt; [,&lt;number&gt; [,&lt;type&gt; [,&lt;class&gt; [,,,&lt;time&gt;]]]]</b>	Execution command controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.
Reference	Note
3GPP TS 27.007(3GPP Only)	When querying the status of a network service (<cmd>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>.

Parameters are defined below:

Parameters	Description
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<b>&lt;reason&gt;</b>	0 - unconditional 1 - mobile busy 2 - no reply 3 - not reachable 4 - all calls (not with query command) 5 - all conditional calls (not with query command)
<b>&lt;cmd&gt;</b>	0 - disable 1 - enable 2 - query status 3 - registration 4 - erasure
<b>&lt;number&gt;</b>	string type phone number of forwarding address in format specified by <type> parameter
<b>&lt;type&gt;</b>	type of address octet in integer format : 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")
<b>&lt;class&gt;</b>	sum of integers each representing a class of information which the command refers to; default 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile service) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access
<b>&lt;time&gt;</b>	time in seconds to wait before call is forwarded; it is valid only when <reason> "no reply" is enabled (<cmd>=1) or queried (<cmd>=2) 1..30 - automatically rounded to a multiple of 5 seconds (default is 20)  Note: when <cmd>=2 and command successful, it returns: +CCFC:<status>,<class1>[,<number>,<type>[,,<time>]] [<CR><LF>]
<b>&lt;status&gt;</b>	current status of the network service 0 - not active 1 - active
<b>&lt;classn&gt;</b>	same as <class>
<b>&lt;time&gt;</b>	it is returned only when <reason>      <cmd>=2

### 3.3.3.3.11 AT+CCWA Call Waiting

## Call Waiting

Test Command	Response
<b>AT+CCWA=?</b>	Test command reports the supported values for the parameter <n>.
Read Command	Response
<b>AT+CCWA?</b>	Read command reports the current value of the parameter <n>.
Write Command	Response
<b>AT+CCWA=[&lt;n&gt;[,&lt;cmd&gt;[,&lt;class&gt;]]]</b>	<p>Set command allows the control of the call waiting supplementary service. Activation, deactivation, and status query are supported</p> <p>Note: the unsolicited result code enabled by parameter &lt;n&gt; is in the format: +CCWA:&lt;number&gt;,&lt;type&gt;,&lt;class&gt;,[&lt;alpha&gt;][,&lt;cli_validity&gt;]</p> <p>Note: if parameter &lt;cmd&gt; omitted then the network is not interrogated. Note: On the query command, the class parameter must not be issued.</p> <p>Note: the difference between call waiting report disabling (AT+CCWA = 0,1,7) and call waiting service disabling (AT+CCWA = 0,0,7) is that in the first case the call waiting indication is sent to the device by network but the device does not report it to the DTE. Instead, in the second case the, call waiting indication is not generated by the network. Hence, the device returns busy to the third party in the 2nd case while in the 1st case a ringing indication is sent to the third party.</p> <p>Note: The command AT+CCWA=1,0 has no effect and is nonsense and must not be issued.</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	enables/disables the presentation of an unsolicited result code: 0 - disable 1 - enable
<b>&lt;cmd&gt;</b>	enables/disables or queries the service at network level: 0 - disable 1 - enable 2 - query status
<b>&lt;class&gt;</b>	is a sum of integers each representing a class of information which the command refers to; default is 7 (voice + data + fax) 1 - voice (telephony) 2 - data 4 - fax (facsimile services) 8 - short message service 16 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access Note: the response format to the query command is: +CCWA: <status>,<class1>[<CR><LF> +CCWA:<status>,<class2>[...]]
<b>&lt;status&gt;</b>	represents the status of the service: 0 - inactive 1 - active <classn> - same as <class>
<b>&lt;number&gt;</b>	string type phone number of calling address in format specified by <type>
<b>&lt;type&gt;</b>	type of address in integer format
<b>&lt;class&gt;</b>	see before
<b>&lt;alpha&gt;</b>	String type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.
<b>&lt;cli_validity&gt;</b>	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.

### 3.3.3.3.12 AT+CHLD Call Holding Services

#### Call Holding Services

Test Command	Response
<b>AT+CHLD=?</b>	Test command returns the list of supported <n>s.  <b>+CHLD: (0,1,1X,2,2X,3,4)</b>
Write Command	Response
<b>AT+CHLD=&lt;n&gt;</b>	Execution command controls the network call holding services. With this service, it is possible to temporarily disconnect a call and keep it suspended while the network retains it and in parallel, it is possible to connect another party or make a multiparty connection
Reference	Note
3GPP TS 27.007(3GPP Only)	ONLY for VOICE calls

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<p>0 - releases all held calls, or sets the UDUB (User Determined User Busy) indication for a waiting call. (only from version D)</p> <p>1 - releases all active calls (if any exist), and accepts the other (held or waiting) call</p> <p>1X - releases a specific active call X.</p> <p>2 - Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.</p> <p>2X - places all active calls on hold except call X with which communication shall be resumed (only from version D).</p> <p>3 - adds a held call to the conversation</p> <p>4 - Connects the two calls and disconnects the subscriber from both calls (ECT).</p> <p>Note: "X" is the numbering (starting with 1) of the call given by the sequence of setting up or receiving the calls (active, held or waiting) as seen by the served subscriber. Calls hold their number until released. New calls take the lowest available number.</p> <p>Note: where both a held and a waiting call exist, the above procedures apply to the waiting call (i.e. not to the held call) in conflicting situation.</p>

### 3.3.3.3.13 AT+CTFR Call deflection

#### Call deflection

Test Command	Response
<b>AT+CTFR=?</b>	Test command returns the OK result code
Write Command	Response
<b>AT+CTFR=&lt;number&gt;[,&lt;type&gt;[,&lt;subaddr&gt;[,&lt;satype&gt;]]]</b>	<p>This refers to a service that causes an incoming alerting call to be forward to a specified number.</p> <p>It is based on the GSM/UMTS supplementary service CD (Call Deflection; refer 3GPP TS 22.072 [30]).</p> <p>The interaction of this command with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard. Refer subclause (3.2.3 ME Error Result Code - +CME ERROR: &lt;err&gt;) for possible &lt;err&gt; values.</p>
Reference	Note
3GPP Only	Call Deflection is only applicable to teleservice 11

Parameters are defined below:

Parameters	Description
<b>&lt;number&gt;</b>	String type phone number of format specified by <type>
<b>&lt;type&gt;</b>	Type of address octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.7); default 145 when dialling string includes international access code character "+", otherwise 129
<b>&lt;subaddr&gt;</b>	String type subaddress of format specified by <satype>
<b>&lt;satype&gt;</b>	Type of subaddress octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.8); default 128

### 3.3.3.3.14 AT+CUSD Unstructured Supplementary Service Data

#### Unstructured Supplementary Service Data

Execution Command	Response
<b>AT+CUSD</b>	Set value to default.

Test Command	Response
<b>AT+CUSD=?</b>	Test command reports the supported values for the parameter <n>
Read Command	Response
<b>AT+CUSD?</b>	Read command reports the current value of the parameter <n>
Write Command	Response
<b>AT+CUSD=&lt;n&gt;[,&lt;str&gt;[,&lt;dc&gt;]]</b>	Set command allows control of the Unstructured Supplementary Service Data (USSD [3GPP TS 02.90/22.090]).
Reference	Note
3GPP TS 27.007(3GPP Only)	Only mobile initiated operations are supported

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	used to disable/enable the presentation of an unsolicited result code. 0 - disable the result code presentation in the DTA 1 - enable the result code presentation in the DTA 2 - cancel an ongoing USSD session (not applicable to read command response)
<b>&lt;str&gt;</b>	USSD-string (when <str> parameter is not given, network is not interrogated) If <dc> indicates that 3GPP TS 3.38/23.038 default alphabet is used ME/TA converts GSM alphabet into current TE character set (see +CSCS). If <dc> indicates that 8-bit data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number; e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65).

<b>&lt;dc&gt;</b>	<p>Note: the unsolicited result code enabled by parameter &lt;n&gt; is in the format:</p> <p>+CUSD: &lt;m&gt;[,&lt;str&gt;,&lt;dc&gt;] to the TE</p> <p>where: &lt;m&gt;</p> <ul style="list-style-type: none"> <li>0 - no further user action required (network initiated USSD-Notify, or no further information needed after mobile initiated operation).</li> <li>1 - further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)</li> <li>2 - USSD terminated by the network</li> <li>3 - other local client has responded</li> <li>4 - operation not supported</li> <li>5 - network time out</li> </ul>
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### 3.3.3.3.15 AT+CAOC Advice of Charge

#### Advice of Charge

<p>Execution Command</p> <p><b>AT+CAOC</b></p>	<p>Response</p> <p>Set the value to default.</p> <p>Note: the unsolicited result code enabled by parameter &lt;mode&gt; is in the format:</p> <p><b>+CCCM: &lt;ccm&gt;</b></p> <p>Note: the unsolicited result code +CCCM sent when the CCM value changes, but not more than every 10 seconds.</p>
<p>Test Command</p> <p><b>AT+CAOC=?</b></p>	<p>Response</p> <p>Test command reports the supported values for &lt;mode&gt; parameter.</p>
<p>Read Command</p> <p><b>AT+CAOC?</b></p>	<p>Response</p> <p>Read command reports the value of parameter &lt;mode&gt; in the format:</p> <p><b>+CAOC: &lt;mode&gt;</b></p>



Write Command	Response
<b>AT+CAOC=&lt;mode&gt;</b>	Set command refers to the Advice of Charge supplementary services that enable subscriber to get information about the cost of calls; the command also includes the possibility to enable an unsolicited event reporting of the Current Call Meter (CCM) information.
Reference	Note
3GPP TS 27.007(3GPP Only)	+CAOC command returns an estimate of the cost of the current call only, produced by the MS and based on the information provided by either AoCI or AOCC supplementary services; it is not stored in the SIM.

Parameters are defined below:

Parameters	Description
<b>&lt;ccm&gt;</b>	current call meter in home units, string type: three bytes of the CCM. Value in hexadecimal format [e.g. "00001E" indicates decimal value 30]
<b>&lt;mode&gt;</b>	0 - query CCM value 1 - disables unsolicited CCM reporting 2 - enables unsolicited CCM reporting

### 3.3.3.3.16 AT+CLCC List Current Calls

List Current Calls

Execution Command	Response
<b>AT+CLCC</b>	<p>Execution command returns the list of current calls and their characteristics in the format:</p> <p><b>[+CLCC:</b>  <b>&lt;id1&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;empty&gt;,&lt;number&gt;,&lt;type&gt;,&lt;alpha&gt;[&lt;CR&gt;&lt;LF&gt;+CLCC:</b>  <b>&lt;id2&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;empty&gt;,&lt;number&gt;,&lt;type&gt;,&lt;alpha&gt;[...]]]</b></p> <p>Note: If no call is active then only OK message is sent. This command is useful in conjunction with command +CHLD to know the various call status for call holding.</p>

Test Command	Response
<b>AT+CLCC=?</b>	Test command returns the OK result code
Reference	Note
3GPP TS 27.007	

Parameters are defined below:

Parameters	Description
<b>&lt;idn&gt;</b>	call identification number
<b>&lt;dir&gt;</b>	call direction 0 - mobile originated call 1 - mobile terminated call
<b>&lt;stat&gt;</b>	state of the call 0 - active 1 - held 2 - dialing (MO call) 3 - alerting (MO call) 4 - incoming (MT call) 5 - waiting (MT call)
<b>&lt;mode&gt;</b>	call type 0 - voice 1 - data 2 - fax 9 - unknown
<b>&lt;mpty&gt;</b>	multiparty call flag 0 - call is not one of multiparty (conference) call parties 1 - call is one of multiparty (conference) call parties
<b>&lt;number&gt;</b>	string type phone number in format specified by <type>
<b>&lt;type&gt;</b>	type of phone number octet in integer format 128 - restricted number type includes unknown type and format 145 - international numbering scheme (contains the character "+") 161 - national numbering scheme 129 - other
<b>&lt;alpha&gt;</b>	String type; alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with +CSCS.

### 3.3.3.3.17 AT+CSSN SS Notification

## SS Notification

Test Command	Response
<b>AT+CSSN=?</b>	Test command reports the supported range of values for parameters <n>, <m>.
Read Command	Response
<b>AT+CSSN?</b>	Read command reports the current value of the parameters.
Write Command	Response
<b>AT+CSSN=&lt;n&gt;[,&lt;m&gt;]</b>	This refers to supplementary service related network initiated notifications. Set command enables/disables the presentation of notification result codes from TA to TE.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	sets the +CSSI result code presentation status 0 - disable 1 - enable When <n>=1 and a supplementary service notification is received after a mobile originated call setup, an unsolicited code: +CSSI: <code1> is sent to TE before any other MO call setup result codes, where:
<b>&lt;code1&gt;</b>	0 - unconditional call forwarding is active 1 - some of the conditional call forwardings are active 2 - call has been forwarded 3 - call is waiting 5 - outgoing calls are barred 6 - incoming calls are barred

<b>&lt;m&gt;</b>	sets the +CSSU result code presentation status 0 - disable 1 - enable When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, an unsolicited result code:  +CSSU: <code2> is sent to TE.
<b>&lt;code2&gt;</b>	0 - this is a forwarded call (MT call setup) 2 - call has been put on hold (during a voice call) 3 - call has been retrieved (during a voice call). 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)

### 3.3.3.3.18 AT+CCUG Closed User Group Supplementary Service Control

Closed User Group Supplementary Service Control

Execution Command	Response
<b>AT+CCUG</b>	Set value to default.
Test Command	Response
<b>AT+CCUG=?</b>	<b>OK</b>
Read Command	Response
<b>AT+CCUG?</b>	Read command reports the current value of the parameters
Write Command	Response
<b>AT+CCUG=[&lt;n&gt;[,&lt;index&gt;[,&lt;info&gt;]]]</b>	Set command allows control of the Closed User Group supplementary service [3GPP TS 02.08/22.085].
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	0 - disable CUG temporary mode (factory default). 1 - enable CUG temporary mode: it enables to control the CUG information on the air interface as a default adjustment for all following outgoing calls.
<b>&lt;index&gt;</b>	0..9 - CUG index 10 - not an index (preferential CUG taken from subscriber data) (default)
<b>&lt;info&gt;</b>	0 - no information (default) 1 - suppress Outgoing Access (OA) 2 - suppress preferential CUG 3 - suppress OA and preferential CUG

### 3.3.3.3.19 AT+CPOL Preferred Operator List

#### Preferred Operator List

Test Command	Response
<b>AT+CPOL=?</b>	Test command returns the whole <index> range supported by the SIM and the range for the parameter <format>
Read Command	Response
<b>AT+CPOL?</b>	Read command returns all used entries from the SIM list of preferred operators.
Write Command	Response
<b>AT+CPOL=[&lt;index&gt;][,&lt;format&gt; [&lt;oper&gt;] [&lt;GSM_AcT&gt;,&lt;GSM_Compact_AcT&gt;,&lt;UTRAN_AcT&gt;,&lt;EUTRAN_AcT&gt;]]</b>	Execution command writes an entry in the SIM list of preferred operators.  Note: if <index> is given but <oper> left out, the entry is deleted. If <oper> is given but <index> left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command changes. Currently <GSM_Compact_AcT> is not supported but the set value is accepted.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	integer type; the order number of operator in the SIM preferred operator list 1..n
<b>&lt;format&gt;</b>	0 long format alphanumeric <oper> 1 short format alphanumeric <oper> 2 numeric <oper>
<b>&lt;oper&gt;</b>	String type, The same values cannot be set
<b>&lt;GSM_AcT&gt;</b>	GSM access technology 0 access technology not selected 1 access technology selected
<b>&lt;GSM_Compact_AcT&gt;</b>	GSM compact access technology 0 access technology not selected 1 access technology selected
<b>&lt;UTRA_AcT&gt;</b>	UTRA access technology 0 access technology not selected 1 access technology selected
<b>&lt;E-UTRAN_AcTn&gt;</b>	E-UTRAN access technology: 0 access technology not selected 1 access technology selected

### 3.3.3.3.20 AT+CPLS Selection of preferred PLMN list

Selection OF Preferred PLMN List

Test Command	Response
<b>AT+CPLS=?</b>	Test command returns the whole index range supported by the SIM/USIM
Read Command	Response
<b>AT+CPLS?</b>	Read command returns the selected PLMN selector list from the SIM/USIM <b>+CPLS: &lt;list&gt;</b>

Write Command	Response
<b>AT+CPLS=&lt;list&gt;</b>	Set command select one PLMN selector with Access Technology list in the SIM card or active application in the UICC (GSM or USIM), that is used by +CPOL command.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;list&gt;</b>	<p>0 - User controlled PLMN selected from Access Technology EFPLMNwAcT, if not found in the SIM/UICC, then use PLMN preferred list EFPLMNsel (this file is only available in SIM card or GSM application selected in UICC) (Default)</p> <p>1 - Operator controlled PLMN selector with Access Technology EFOPLMNwAcT</p> <p>2 - HPLMN selector with Access Technology EFHPLMNwAcT</p>

### 3.3.3.4 Mobile Equipment Control

#### 3.3.3.4.1 AT+CPAS Phone Activity Status

Phone Activity Status

Test Command	Response
<b>AT+CPAS=?</b>	<p>Test command reports the supported range of values for &lt;pas&gt;.</p> <p>Note: although +CPAS is an execution command, 3gpp TS 27.007 requires the Test command to be defined.</p>
Execution Command	Response
<b>AT+CPAS</b>	<p>Execution command reports the device status in the form:</p> <p><b>+CPAS: &lt;pas&gt;</b></p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;pas&gt;</b>	<p>phone activity status</p> <p>0 - ready (device allows commands from TA/TE)</p> <p>3 - ringing (device is ready for commands from TA/TE, but the ringer is active)</p> <p>4 - call in progress (device is ready for commands from TA/TE, but a call is in progress)</p>

#### 3.3.3.4.2 AT+CFUN Set Phone Functionality

Set Phone Functionality

Test Command	Response
<b>AT+CFUN=?</b>	<p>Test command returns the list of supported values for &lt;fun&gt; and &lt;rst&gt;.</p>



Read Command	Response
<b>AT+CFUN?</b>	Read command reports the current setting of <fun>.
Write Command	Response
<b>AT+CFUN=[&lt;fun&gt;[,&lt;rst&gt;]]</b>	Set command selects the level of functionality in the ME
Reference	Note
3GPP TS 27.007	<ol style="list-style-type: none"> <li>1. Issuing AT+CFUN=4[,0] in fact causes the module to perform both a network deregistration and a SIM deactivation.</li> <li>2. AT+CFUN=6 must be used after setting AT+CFUN=7. If module in offline mode, must execute AT+CFUN=6 or restart module to online mode</li> <li>3. AT+CFUN=5 can not exit factory test mode via restart module, it need set by AT+CFUN</li> </ol>

Parameters are defined below:

Parameters	Description
<b>&lt;fun&gt;</b>	<p>is the power saving function mode</p> <ul style="list-style-type: none"> <li>0 - minimum functionality</li> <li>1 - mobile full functionality with power saving disabled (factory default)</li> <li>4 - disable phone both transmit and receive RF circuits</li> <li>5 - factory test mode</li> <li>6 - reset</li> <li>7 - offline mode</li> </ul>
<b>&lt;rst&gt;</b>	<p>reset flag</p> <ul style="list-style-type: none"> <li>0 - do not reset the ME before setting it to &lt;fun&gt; functionality level.</li> <li>1 - reset the ME before setting it to &lt;fun&gt; functionality level. This option works only with &lt;fun&gt; =1, with other values it will return an error.</li> </ul>

### 3.3.3.4.3 AT+CPIN Enter PIN

Enter PIN

Test Command	Response
<b>AT+CPIN=?</b>	<b>OK</b> or <b>ERROR</b>
Write Command	Response
<b>AT+CPIN=&lt;pin&gt;[,&lt;newpin&gt;]</b>	<p>Set command sends the device one of the necessary passwords before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).</p> <p>If the &lt;pin&gt; required is SIM PUK or SIM PUK2, the &lt;newpin&gt; is required. This second pin, &lt;newpin&gt; will replace the old pin in the SIM.</p> <p>The command may be used to change the SIM PIN by sending it with both parameters &lt;pin&gt; and &lt;newpin&gt; when PIN request is pending; if no PIN request is pending the command will return an error code. To change the PIN the command +CPWD must be used instead.</p>
Read Command	Response
<b>AT+CPIN?</b>	<p>Read command reports the PIN/PUK/PUK2 request status of the device in the form:</p> <p>+CPIN: &lt;code&gt; where:</p> <p>&lt;code&gt; - PIN/PUK/PUK2 request status code</p> <p>READY - ME is not awaiting any password</p> <p>SIM PIN - ME is awaiting SIM PIN</p> <p>SIM PUK - ME is awaiting SIM PUK</p> <p>PH-SIM PIN - ME is awaiting phone-to-SIM card password.</p> <p>PH-FSIM PIN - ME is awaiting phone-to-very-first-SIM card password. PH-FSIM PUK - ME is awaiting phone-to-very-first-SIM card unblocking password.</p> <p>SIM PIN2 - ME is awaiting SIM PIN2; this &lt;code&gt; is returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17)</p> <p>SIM PUK2 - ME is awaiting SIM PUK2; this &lt;code&gt; is returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18)</p> <p>PH-NET PIN - ME is awaiting network personalization password</p> <p>PH-NET PUK - ME is awaiting network personalization unblocking password</p>

	<p>PH-NETSUB PIN - ME is awaiting network subset personalization password</p> <p>PH-NETSUB PUK - ME is awaiting network subset personalization unblocking password</p> <p>PH-SP PIN - ME is awaiting service provider personalization password</p> <p>PH-SP PUK - ME is awaiting service provider personalization unblocking password</p> <p>PH-CORP PIN - ME is awaiting corporate personalization password</p> <p>PH-CORP PUK - ME is awaiting corporate personalization unblocking password</p> <p>Note: Pin pending status at startup depends on PIN facility setting, to change or query the default power up setting use the command AT+CLCK=SC,&lt;mode&gt;,&lt;pin&gt;</p>
Reference	<p>Note</p> <p>What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK</p>

Example:

Commands	Response
<b>AT+CMEE=1</b>	<b>OK</b>
<b>AT+CPIN?</b>	<b>+CME ERROR: 10</b> // error: you have to insert the SIM
<b>AT+CPIN?</b>	<b>+CPIN: READY</b> // you inserted the SIM and device is not waiting for PIN to be given <b>OK</b>

### 3.3.3.4.4 AT+CSQ Signal Quality

Signal Quality.

Execution Command	Response
<b>AT+CSQ</b>	<p>Execution command reports received signal quality indicators in the form:</p> <p><b>+CSQ: &lt;rssi&gt;,&lt;ber&gt;</b></p>

Test Command	Response
<b>AT+CSQ=?</b>	<p>Test command returns the supported range of values of the parameters &lt;rss&gt; and &lt;ber&gt;.</p> <p>Note: although +CSQ is an execution command without parameters, 3GPP TS 27.007 requires the Test command to be defined.</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;rss&gt;</b>	<p>received signal strength indication</p> <p>0 - (-113) dBm or less</p> <p>1 - (-111) dBm</p> <p>2..30 - (-109)dBm..(-53)dBm / 2 dBm per step</p> <p>31 - (-51)dBm or greater</p> <p>99 - not known or not detectable</p>
<b>&lt;ber&gt;</b>	<p>bit error rate (in percent)</p> <p>0 - less than 0.2%</p> <p>1 - 0.2% to 0.4%</p> <p>2 - 0.4% to 0.8%</p> <p>3 - 0.8% to 1.6%</p> <p>4 - 1.6% to 3.2%</p> <p>5 - 3.2% to 6.4%</p> <p>6 - 6.4% to 12.8%</p> <p>7 - more than 12.8%</p> <p>99 - not known or not detectable</p> <p>Note: this command should be used instead of the %Q and %L commands, since the relevant parameters refer to the radio link and no line is present, hence %Q and %L have no meaning.</p>

### 3.3.3.4.5 AT+CIND Indicator Control

Indicator Control

Test Command	Response
<b>AT+CIND=?</b>	<p>indicator, in the format:  <b>+CIND: (&lt;descr&gt;, (list of supported &lt;ind&gt;s)),(&lt;descr&gt;, (list of supported &lt;ind&gt;s))(&lt;descr&gt;, (list of supported &lt;ind&gt;s))</b></p> <p>Test command returns pairs, where string value &lt;descr&gt; is a description (max. 16 chars) of the indicator and compound value is the supported values for the indicator.</p>
Read Command	Response
<b>AT+CIND?</b>	<p><b>+CIND: &lt;ind&gt;,&lt;ind ind&gt;</b></p> <p>Read command returns the current value of ME indicators  Note: the order of the values for &lt;ind&gt; is the same as that in which the associated indicators appear from test command AT+CIND=?</p>
Reference	Note
3GPP TS 27.007	

Parameters are defined below:

Parameters	Description
<b>&lt;descr&gt;</b>	indicator names as follows (along with their <ind> ranges).
battchg - battery charge level. <b>&lt;ind&gt;</b>	battery charge level indicator range 0..5 - battery levels.
signal - signal quality. <b>&lt;ind&gt;</b>	signal quality indicator range 0..5- signal levels.
service - service availability. <b>&lt;ind&gt;</b>	service availability indicator range 0 - not registered to any network. 1 - Registered.
call - call in progress. <b>&lt;ind&gt;</b>	call in progress indicator range. 0 - there are no calls in progress 1 - at least one call has been established.
roam - roaming. <b>&lt;ind&gt;</b>	roaming indicator range. 0 - registered to home network or not registered. 1 - registered to other network.

<p>smsfull - a short message memory storage in the MT has become full (1), or memory locations are available (0).</p> <p><b>&lt;ind&gt;</b></p>	<p>short message memory storage indicator range.</p> <p>0 - memory locations are available.</p> <p>1 - a short message memory storage in the MT has become full.</p>
<p><b>"GPRS coverage"</b></p>	<p>there is packet service coverage.</p> <p>0 no packet service.</p> <p>1 module is attached to a packet service.</p>
<p><b>"callsetup"</b></p>	<p>call setup status indicator.</p> <p>0 - No active call setup.</p> <p>1 - MT call is waiting or ringing.</p> <p>2 - MO call was initiated.</p> <p>3 - MO call ringing at B-party.</p>

#### 3.3.3.4.6 AT+CPBS Select Phonebook Memory Storage

Select Phonebook Memory Storage

<p>Test Command</p> <p><b>AT+CPBS=?</b></p>	<p>Response</p> <p>Test command returns the supported range of values for the parameters &lt;storage&gt;.</p>
<p>Read Command</p> <p><b>AT+CPBS?</b></p>	<p>Response</p> <p>Read command returns the current values of the parameter &lt;storage&gt;, the number of occupied records &lt;used&gt; and the maximum index number &lt;total&gt;, in the format:</p> <p><b>+CPBS: &lt;storage&gt;,&lt;used&gt;,&lt;total&gt;</b></p> <p>Note: For: if there is more than one missed call from the same number, the read command will return only the last call.</p>

Write Command	Response
<b>AT+CPBS=&lt;storage&gt;</b>	Set command selects phonebook memory storage <storage>, which will be use by other phonebook commands.
Reference	Note
3GPP TS 27.007	

Parameters are defined below:

Parameters	Description
<b>&lt;storage&gt;</b>	<p>"SM" - SIM phonebook</p> <p>"FD" - SIM fixed dialling-phonebook (only phase 2/2+ SIM)</p> <p>"LD" - SIM last-dialled-phonebook (+CPBW 、 +CPBF is not applicable for this storage)</p> <p>"MC" - device missed calls (unanswered received) list (+CPBF is not applicable for this storage) (Not supported now)</p> <p>"RC" - ME received calls list (+CPBF is not applicable for this storage). (Not supported now)</p> <p>"DC" - MT dialled calls list (+CPBW、 +CPBF is not applicable for this storage)</p> <p>"ME" - MT phonebook (+CPBF is not applicable for this storage)</p> <p>"EN" - SIM/USIM (or MT) emergency number (+CPBW is not applicable for this storage)</p> <p>"ON" - SIM (or MT) own numbers (MSI storage may be available through +CNUM also).</p> <p>"MB" - mailbox numbers stored on SIM; it is possible to select this storage only if the mailbox service is provided by the SIM (see #MBN).</p> <p>"SD" - SIM Service Dialling Numbers (SDN) phonebook (+CPBW is not applicable for this storage).</p>

### 3.3.3.4.7 AT+CPBR Read Phonebook Entries

Read Phonebook Entries

Test Command	Response
<b>AT+CPBR=?</b>	<p>Test command returns the supported range of values for parameters &lt;index n&gt; and the maximum lengths of &lt;number&gt; and &lt;text&gt; fields in the format:</p> <p><b>+CPBR:(&lt;minIndex&gt;-&lt;maxIndex&gt;),&lt;nlength&gt;,&lt;tlength&gt;,&lt;glength&gt;,&lt;slength&gt;,&lt;elength&gt;</b></p> <p>Note: the value of &lt;nlength&gt; could vary, depending on the availability of Extension service, in the following situations:</p> <ol style="list-style-type: none"> <li>1. If "SM" memory storage has been selected [see +CPBS] and the SIM supports the Extension1 service</li> <li>2. If "FD" memory storage has been selected [see +CPBS] and the SIM supports the Extension2 service</li> <li>3. If "MB" memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service</li> </ol>
Write Command	Response
<b>AT+CPBR=&lt;index1&gt;[,&lt;index2&gt;]</b>	<p>Execution command returns phonebook entries in location number range &lt;index1&gt;..&lt;&lt;index2&gt; from the current phonebook memory storage selected with +CPBS. If &lt;index2&gt; is omitted, only location &lt;index1&gt; is returned.</p> <p>The response format is:</p> <p><b>[+CPBR:&lt;index1&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;,&lt;group&gt;],[&lt;adnumber&gt;],[&lt;adtype&gt;],[&lt;secondtext&gt;],[&lt;email&gt;][&lt;CR&gt;&lt;LF&gt;+CPBR:&lt;index2&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;,&lt;group&gt;],[&lt;adnumber&gt;],[&lt;adtype&gt;],[&lt;secondtext&gt;],[&lt;email&gt;[...]]]</b></p> <p>or</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Reference	Note
3GPPTS27.007	Remember to select the PB storage with +CPBS command before issuing PB commands.

Parameters are defined below:

Parameters	Description
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<b>&lt;index1&gt;</b>	integer type. Value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).
<b>&lt;index2&gt;</b>	integer type. Value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).
<b>&lt;indexn&gt;</b>	the location number of the phonebook entry
<b>&lt;number&gt;</b>	string type phone number of format <type>
<b>&lt;type&gt;</b>	type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")
<b>&lt;text&gt;</b>	the alphanumeric text associated to the number; used character set should be the one selected with command +CSCS.
<b>&lt;group&gt;</b>	group name the entry may belong to; used character set should be the one selected with command +CSCS.
<b>&lt;adnumber&gt;</b>	additional string type phone number of format <adtype>.
<b>&lt;adtype&gt;</b>	additional type number octet in integer format. 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")
<b>&lt;secondtext&gt;</b>	the alphanumeric text associated to secondary text; used character set should be the one selected with command +CSCS.
<b>&lt;email&gt;</b>	The alphanumeric text associated to email address; used character set should be the one selected with command +CSCS.
<b>&lt;minIndex&gt;</b>	the minimum <index> number, integer type
<b>&lt;maxIndex&gt;</b>	the maximum <index> number, integer type
<b>&lt;nlength&gt;</b>	maximum <number> field length, integer type
<b>&lt;tlength&gt;</b>	maximum <name> field length, integer type
<b>&lt;glength&gt;</b>	group name length for example AND group, FDN group
<b>&lt;slength&gt;</b>	Secondary text length associated with the number.
<b>&lt;elength&gt;</b>	<email> length

Example:

Commands	Response
<b>AT+CPBS?</b>	<b>+CPBS: "ME",1,100</b> <b>OK</b>
<b>AT+CPBR=?</b>	<b>+CPBR: (1-500),40,20,2,20,20</b> <b>OK</b>
<b>AT+CPBR=1,"", "",0,"", ""</b>	<b>ERROR</b>

### 3.3.3.4.8 AT+CPBF Find Phonebook Entries

#### Find Phonebook Entries

Test Command	Response
<b>AT+CPBF=?</b>	<p>Test command returns the supported range of values for parameters            &lt;indexn&gt; and the maximum lengths of &lt;number&gt; and &lt;text&gt; fields, in the format:  <b>+CPBF:&lt;nlength&gt;,&lt;tlength&gt;,&lt;glength&gt;,&lt;slength&gt;,&lt;ele            ngth&gt;</b></p> <p>Note: the value of &lt;nlength&gt; could vary depending on the availability of Extension service, in the following situations:</p> <ol style="list-style-type: none"> <li>1. If "SM" memory storage has been selected [see +CPBS] and the SIM supports the Extension1 service</li> <li>2. If "FD" memory storage has been selected [see +CPBS] and the SIM supports the Extension2 service</li> <li>3. If "MB" memory storage has been selected (see +CPBS) and the SIM supports the Extension6 service</li> </ol>
Write Command	Response
<b>AT+CPBF=&lt;findtext&gt;</b>	<p>Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) whose alphanumeric field starts with string &lt;findtext&gt;.</p> <p>The command returns a report in the form:  <b>[+CPBF: &lt;index1&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;[&lt;CR&gt;&lt;LF&gt;            +CPBF: &lt;index2&gt;,&lt;number&gt;,&lt;type&gt;,&lt;text&gt;[...]]]</b></p> <p>Note: +CPBF is not applicable if the current selected storage (see +CPBS) is not reachable for +CPBF.</p> <p>Note: if &lt;findtext&gt; the command returns all the phonebook records.</p> <p>Note: If no PB records satisfy the search criteria then an ERROR message is returned.</p>
Reference	Note
3GPP TS 27.007	Remember to select the PB storage with +CPBS command before issuing PB commands

Parameters are defined below:

Parameters	Description
<b>&lt;findtext&gt;</b>	string type, used character set should be as selected with command +CSCS.
<b>&lt;index n&gt;</b>	the location number of the phonebook entry
<b>&lt;number&gt;</b>	string type phone number of format <type>
<b>&lt;type&gt;</b>	type of phone number octet in integer format 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")
<b>&lt;text&gt;</b>	the alphanumeric text associated to the number; used character set should be as selected with command +CSCS.
<b>&lt;secondtext&gt;</b>	secondary text
<b>&lt;email&gt;</b>	email text Either "MC", either "RC" or "LD" or "DC"
<b>&lt;nlength&gt;</b>	maximum <number> field length, integer type
<b>&lt;tlength&gt;</b>	maximum <name> field length, integer type
<b>&lt;glength&gt;</b>	group name length for example AND group, FDN group
<b>&lt;slength&gt;</b>	Secondary text length associate with the number
<b>&lt;elength&gt;</b>	<email> length

### 3.3.3.4.9 AT+CPBW Write Phonebook Entry

#### Write Phonebook Entry

Test Command	Response
<b>AT+CPBW=?</b>	<p>Test command returns location range supported by the current storage as a compound value, the maximum length of &lt;number&gt; field, supported number format of the storage and maximum length of &lt;text&gt; field. The format is:</p> <p><b>+CPBW: (list of supported &lt;index&gt;s),&lt;nlength&gt;,(list of supported &lt;type&gt;s),&lt;tlength&gt;[,&lt;PBM word size&gt;,&lt;tlenght&gt;,&lt;tlenght&gt;]</b></p>

Write Command	Response
<b>AT+CPBW=[&lt;index&gt; [,&lt;number&gt; [,&lt;type&gt; [,&lt;text&gt; [,&lt;group&gt; [,&lt;adnumber&gt; [,&lt;adtype&gt; [,&lt;secondtext&gt;[,&lt; email]]]]]]]]]</b>	<p>Execution command writes phonebook entry in location number &lt;index&gt; in the current phonebook memory storage selected with +CPBS.</p> <p>Note: If record number &lt;index&gt; already exists, it will be overwritten.</p> <p>Note: if either &lt;number&gt;, &lt;type&gt;, &lt;text&gt;, &lt;group&gt;, &lt;adnumber&gt;, &lt;adtype&gt;, &lt;secondtext&gt; and &lt;email&gt; are omitted the phonebook entry in location &lt;index&gt; is deleted.</p> <p>Note: if &lt;index&gt; is omitted the number &lt;number&gt; is stored in the first free phonebook location.</p>

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	integer type, value in the range of location numbers of the currently selected phonebook memory storage (see +CPBS).
<b>&lt;number&gt;</b>	string type, phone number in the format <type>
<b>&lt;type&gt;</b>	the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")
<b>&lt;text&gt;</b>	the text associated to the number, string type; used character set should be the one selected with command +CSCS.
<b>&lt;group&gt;</b>	group name the entry may belong to; used character set should be the one selected with command +CSCS.
<b>&lt;adnumber&gt;</b>	additional string type phone number of format <adtype>.
<b>&lt;adtype&gt;</b>	additional type number octet in integer format. 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")
<b>&lt;secondtext&gt;</b>	the alphanumeric text associated with secondary text; used character set should be the one selected with command +CSCS.
<b>&lt;email&gt;</b>	The alphanumeric text associated with email address; used character set should be the one selected with command +CSCS.

### 3.3.3.4.10 AT+CCLK Clock Management

#### Clock Management

Test Command	Response
<b>AT+CCLK=?</b>	Test command returns the <b>OK</b> result code.
Read Command	Response
<b>AT+CCLK?</b>	Read command returns the current setting of the real-time clock, in the format <b>&lt;time&gt;</b> .
Write Command	Response
<b>AT+CCLK=&lt;time&gt;</b>	Set command sets the real-time clock of the ME. Note: after automatic update is enabled, the time cannot be modified
Reference	Note
3GPP TS 27.007	

Parameters are defined below:

Parameters	Description
<b>&lt;time&gt;</b>	current time as quoted string in the format: "yy/MM/dd,hh:mm:ss±zz" yy - year (two digits are mandatory). range is (00..99) MM - month (two digits are mandatory). range is (01..12) dd - day (two digits are mandatory). available ranges are: (01..28) (01..29) (01..30) (01..31) hh - hour (two digits are mandatory). range is (00..23) mm - minute (two digits are mandatory). range is (00..59) ss - Seconds (two digits are mandatory). range is (00..59) ±zz - time zone (indicates the difference, expressed in quarter of an hour, between the local time and GMT; two digits are mandatory), range is - 96..+96

### 3.3.3.4.11 AT+CRSM Restricted SIM Access

Restricted SIM Access

Test Command	Response
<b>AT+CRSM=?</b>	Test command returns the <b>OK</b> result code
Write Command	Response
<b>AT+CRSM=&lt;command&gt; [,&lt;fileid&gt; [,&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt; [,&lt;data&gt;]]]</b>	<p>Execution command transmits to the ME the SIM &lt;command&gt; and its required parameters. ME handles internally all SIM-ME interface locking and file selection routines. As a response to the command, ME sends the current SIM information parameters and response data.</p> <p>The response of the command is in the format:  <b>+CRSM: &lt;sw1&gt;,&lt;sw2&gt;[,&lt;response&gt;]</b> where:            &lt;sw1&gt;,&lt;sw2&gt; - information from the SIM about the execution of the current command both on successful or failed execution.            &lt;response&gt; - on a successful completion of the command previously issued it returns the requested data (hexadecimal character format). It is not returned after a successful UPDATE, BINARY or UPDATE RECORD command.</p> <p>Note: this command requires PIN authentication. However commands READ BINARY and READ RECORD can be issued before PIN authentication and if the SIM is blocked (after three failed PIN authentication attempts) to access the contents of the Elementary Files.</p>
Reference	Note
3GPP TS 27.007, 3GPP TS 11.11/51.011(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;command&gt;</b>	command passed on by the ME to the SIM 176 - READ BINARY 178 - READ RECORD 192 - GET RESPONSE 214 - UPDATE BINARY 220 - UPDATE RECORD 242 - STATUS

<b>&lt;Fileid&gt;</b>	identifier of an elementary data file on SIM. Mandatory for every command except STATUS.
<b>&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;</b>	parameter passed on by the ME to the SIM; they are mandatory for every command except GET RESPONSE and STATUS 0..255
<b>&lt;Data&gt;</b>	information to be read/written to the SIM (hexadecimal character format).

### 3.3.3.4.12 AT+CACM Accumulated Call Meter

#### Accumulated Call Meter

Test Command	Response
<b>AT+CACM=?</b>	Test command returns the <b>OK</b> result code
Read Command	Response
<b>AT+CACM?</b>	Read command reports the current value of the SIM ACM in the format: <b>+CACM: &lt;acm&gt;</b>
Write Command	Response
<b>AT+CACM=[&lt;pwd&gt;]</b>	Set command resets the Advice of Charge related Accumulated Call Meter stored in SIM (ACM): it contains the total number of home units for both the current and preceding calls.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;pwd&gt;</b>	to access this command provide PIN2; if PIN2 has been already input once after startup, it is required no more
<b>&lt;acm&gt;</b>	accumulated call meter in home units, string type

### 3.3.3.4.13 AT+CAMM Accumulated Call Meter Maximum

#### Accumulated Call Meter Maximum

Test Command	Response
<b>AT+CMM=?</b>	Test command returns the <b>OK</b> result code
Read Command	Response
<b>AT+CMM?</b>	Read command reports the ACMmax value stored in SIM in the format: <b>+CMM : &lt;acmm&gt;</b>
Write Command	Response
<b>AT+CMM=[&lt;acmmmax&gt; [,&lt;pwd&gt;]]</b>	Set command sets the Advice of Charge related Accumulated Call Meter Maximum Value stored in SIM (ACMmax). This value represents the maximum number of home units allowed to be consumed by the subscriber. When ACM reaches <acmmmax> value further calls are prohibited.  Note: <acmmmax> = 0 value disables the feature.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;acmmmax&gt;</b>	ACM max value, integer type: it is the maximum number of home units allowed to be consumed by the subscriber.
<b>&lt;pwd&gt;</b>	PIN2; if PIN2 has been already input once after startup, it is required no more
<b>&lt;acmm&gt;</b>	ACMmax value in home units, string type

#### 3.3.3.4.14 AT+CTZU Automatic Time Zone update

Automatic Time Zone update

Test Command	Response
<b>AT+CTZU=?</b>	Test command reports the supported range of values for parameter <onoff>



Read Command	Response
<b>AT+CTZU?</b>	Read command reports the currently selected <onoff> in the format: <b>+CTZU: &lt;onoff&gt;</b>
Write Command	Response
<b>AT+CTZU=&lt;onoff&gt;</b>	This command enables and disables automatic time zone update via NITZ  Note: despite the name, the command AT+CTZU=1 enables automatic update of the date and time set by AT+CCLK command (not only time zone). This happens when a Network Identity and Time Zone (NITZ) message is sent by the network.
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;onoff&gt;</b>	0 - Disable automatic time zone update via NITZ 1 - Enable automatic time zone update via NITZ (default) Note: need to restart the machine to take effect.

### 3.3.3.4.15 AT+MWAKEUPCFG Wakeup Service Config

This instruction is mainly used to configure the types of events that wake up the external MCU.

Execution Command	Response
<b>AT+ MWAKEUPCFG</b>	Use this command will set value to default. <b>OK</b>
Test Command	Response
<b>AT+MWAKEUPCFG=?</b>	<b>+MWAKEUPCFG: (0-7),(0-1000), (0-1)</b> <b>OK</b>

Read Command	Response
<b>AT+MWAKEUPCFG?</b>	Read command: <b>+MWAKEUPCFG:&lt;mode&gt;,&lt;time_delay&gt;,&lt;gpio&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+MWAKEUPCFG=&lt;mode&gt;,&lt;time_delay&gt;,&lt;gpio&gt;</b>	This command is used to configure wakeup external MCU function  Responses <b>OK</b> or <b>ERROR</b>
Reference	Note
Vendor	Notice:if Uart2 port is support AT Command, parameter gpio=0 can't be used to output pin, it's only be used to Uart2 Tx pin.

Parameters are defined below:

Parameters	Description								
<b>&lt;mode&gt;</b>	<p>Range:0 to 7(default is 3)</p> <p>Note: 0:close wakeup external MCU function 1~7: Configured to wake up external MCU by different events</p> <p>Source:</p> <table><tr><td>Bit3-7</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr><tr><td>undefine</td><td>data</td><td>sms</td><td>Call</td></tr></table> <p>Description:</p> <p>0 (000): close wakeup external MCU function 1 (001): call event wakeup external MCU function 2 (010): sms event wakeup external MCU function 3 (011): call and sms event wakeup external MCU function 4 (100): data event wakeup external MCU function 5 (101): call and data event wakeup external MCU function 6 (110): data and sms event wakeup external MCU function 7 (111): call、 sms and data event wakeup external MCU function</p>	Bit3-7	Bit2	Bit1	Bit0	undefine	data	sms	Call
Bit3-7	Bit2	Bit1	Bit0						
undefine	data	sms	Call						
<b>&lt;time delay&gt;</b>	Range 0 to 1000(default is 0)								

<b>&lt;gpio&gt;</b>	Range:0 to 1(default is 0) 0: Select RI pin as notification signal. 1: Select wakeup out pin as notification signal.
---------------------	--

Example:

Commands	Response
<b>AT+MWAKEUPCFG=3,1000,1</b>	<b>OK</b>
<b>AT+MWAKEUPCFG?</b>	<b>+MWAKEUPCFG: 3,1000,1</b> <b>OK</b>

### 3.3.3.4.16 AT+CMUX Multiplexer Control

This command is used to Multiplexer Control.

Test Command <b>AT+CMUX=?</b>	Response <b>+CMUX:(0),(0-2),(1-9),(1-32786),(1-255),(0-100),(2-255),(1-255),(1-7)</b>  <b>OK</b>
Read Command <b>AT+CMUX?</b>	Response <b>+CMUX:[&lt;mode&gt;,&lt;subset&gt;,&lt;port_speed&gt;,&lt;N1&gt;,&lt;T1&gt;,&lt;N2&gt;,&lt;T2&gt;,&lt;T3&gt;,&lt;k&gt;]]]]]]]]</b>  <b>OK</b> <b>ERROR</b>
Write Command <b>AT+CMUX=&lt;mode&gt;,&lt;subset&gt;,&lt;port_speed&gt;,&lt;N1&gt;,&lt;T1&gt;,&lt;N2&gt;,&lt;T2&gt;,&lt;T3&gt;,&lt;k&gt;]]]]]]]]</b>	Response If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>

Reference	Note															
GSM 07.07 [13]	<p>The multiplexing transmission rate is according to the current serial baud rate. It is recommended to enable multiplexing protocol under 115200 bit/s baud rate</p> <p>Multiplexer control channels are listed as follows:</p> <table><tr><th>Channel Number</th><th>Type</th><th>DLCI</th></tr><tr><td>None</td><td>Multiplexer Control</td><td>0</td></tr><tr><td>1</td><td>07.07 and 07.05</td><td>1</td></tr><tr><td>2</td><td>07.07 and 07.05</td><td>2</td></tr><tr><td>3</td><td>07.07 and 07.05</td><td>3</td></tr></table>	Channel Number	Type	DLCI	None	Multiplexer Control	0	1	07.07 and 07.05	1	2	07.07 and 07.05	2	3	07.07 and 07.05	3
Channel Number	Type	DLCI														
None	Multiplexer Control	0														
1	07.07 and 07.05	1														
2	07.07 and 07.05	2														
3	07.07 and 07.05	3														
	<p>Note:</p> <p>this command is only supported by L506X.</p>															

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Multiplexer transparency mechanism 0 Basic option
<b>&lt;subset&gt;</b>	The way in which the multiplexer controls channel is set up 0 UIH frames used only 1 UI frames used only 2 I frames used only
<b>&lt;port_speed&gt;</b>	Transmission rate 1 9 600 bits/t 2 19 200 bits/t 3 38 400 bits/t 4 57 600 bits/t 5 115200bit/s 6 230 400 bits/t 7 460 800 bits/t 8 921 600 bits/t 9 2 000 000 bits/t
<b>&lt;N1&gt;</b>	Maximum frame size 1-32786 Default: 31
<b>&lt;T1&gt;</b>	Acknowledgement timer in units of ten milliseconds 1-255 Default:10 (100 ms)
<b>&lt;N2&gt;</b>	Maximum number of re-transmissions 0-100 Default:3

<b>&lt;T2&gt;</b>	Response timer for the multiplexer control channel in units of ten milliseconds 2-255      Default:30
<b>&lt;T3&gt;</b>	Wake up response timers in seconds 1-255      Default:10
<b>&lt;k&gt;</b>	Window size, for Advanced operation with Error Recovery options 1-7      Default:2

### 3.3.3.5 Mobile Equipment Errors

#### 3.3.3.5.1 AT+CMEE Report Mobile Equipment Error

Report Mobile Equipment Error

Test Command	Response
<b>AT+CMEE=?</b>	Read command returns the current value of subparameter <n>: <b>+CMEE: (0,1,2)</b>  <b>OK</b>
Read Command	Response
<b>AT+CMEE?</b>	Read command returns the current value of subparameter <n>: <b>+CMEE: &lt;n&gt;</b>  <b>OK</b>

Write Command	Response
<b>AT+CME=[&lt;n&gt;]</b>	<p>Set command enables/disables the reporting of result codes:  <b>+CME ERROR: &lt;err&gt;</b></p> <p>It is an indication of an error relating to the +Cxxx commands issued.</p> <p>When enabled, device related errors cause the +CME ERROR &lt;err&gt; result code instead of the default ERROR result code. ERROR will still be returned normally when the error message relates to syntax, invalid parameters, or DTE functionality.</p>
Reference	Note
3GPP TS 27.007	+CME has no effect on the final result code +CMS

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<p>enable flag</p> <p>0 - disable +CME ERROR:&lt;err&gt; reports, use only ERROR report. (default)</p> <p>1 - enable +CME ERROR:&lt;err&gt; reports, with &lt;err&gt; in numeric format</p> <p>2 - enable +CME ERROR: &lt;err&gt; reports, with &lt;err&gt; in verbose format</p>

### 3.3.3.6 Voice Control

#### 3.3.3.6.1 AT+VTS DTMF Tones Transmission

DTMF Tones Transmission

Test Command	Response
<b>AT+VTS=?</b>	Test command provides the list of supported <dtmf>s
Write Command	Response
<b>AT+VTS=&lt;dtmfstring&gt;</b>	Execution command allows the transmission of DTMF tones.
Reference	Note
3GPP TS 27.007 and TIA IS-101 (3GPP Only)	This command operates in voice mode only (see +FCLASS). Telecom SIM-card do not support A-D characters

Parameters are defined below:

Parameters	Description
<b>&lt;dtmfstring&gt;</b>	string of <dtmf>s, i.e. ASCII characters in the set (0-9), #, *, (A-D); the string can be at most 255 <dtmf>s long; it allows the user to send a sequence of DTMF tones, each of them with a duration that was defined through +VTD command.

### 3.3.3.6.2 AT+MVTR Receive DTMF in Call

Receive DTMF in Call

Test Command	Response
<b>AT+MVTR=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+MVTR?</b>	Read command returns the current status value of the parameter
Write Command	Response
<b>AT+MVTR=&lt;status&gt;</b>	<p>This asynchronous command is only used to receive DTMF of peer pointer in call. The receive DTMF is automatically turned on incoming or original call and turned off when the call is hung up</p> <p>Command responses:</p> <p><b>OK</b></p> <p><b>ERROR</b></p> <p><b>BUSY</b> (Indicates that the previous command has not been completed.)</p> <p>Successful results:</p> <p><b>+ MVTR: SUCCESS</b></p> <p>Failure results:</p> <p><b>+ MVTR: FAIL,client init failed</b></p> <p><b>+ MVTR: FAIL,enable failed</b></p> <p><b>+ MVTR: FAIL,disable failed</b></p> <p>Receive DTMF results:</p> <p><b>+DTMF: &lt;DTMF character&gt;</b> (DTMF characteres: 0123456789*#ABCD)</p>
Reference	Note



Parameters are defined below:

Parameters	Description
<b>&lt;status&gt;</b>	0    disable DTMF receive function. 1    enable DTMF receive function.

Example:

Commands	Response
<b>AT+ MVTR=?</b>	<b>+ MVTR: (0-1)</b> <b>OK</b>
<b>AT+ MVTR?</b>	<b>+ MVTR:0</b> <b>OK</b>
<b>AT+ MVTR=1</b>	<b>ERROR</b>
<b>AT+ MVTR=0</b>	<b>ERROR</b>
<b>ATD&lt;phone number&gt;;</b>	<b>OK</b> <b>+DTMF: 5</b> <b>+DTMF: 9</b> <b>+DTMF: 9</b> <b>+DTMF: 7</b>
<b>AT+ MVTR=0</b>	<b>OK</b>
<b>AT+ MVTR=0</b>	<b>BUSY</b> <b>+ MVTR: SUCCESS</b>
<b>AT+ MVTR?</b>	<b>+ MVTR:0</b> <b>OK</b>
<b>AT+ MVTR=1</b>	<b>OK</b> <b>+ MVTR: SUCCESS</b> <b>+DTMF: *</b> <b>+DTMF: #</b> <b>NO CARRIER</b>

ATA	RING
	OK
	+DTMF: 7
	NO CARRIER

### 3.3.3.7 Commands for Package Domain

#### 3.3.3.7.1 AT+CGCLASS CPRS Mobile Station Class

CPRS Mobile Station Class

Test Command	Response
<b>AT+CGCLASS=?</b>	Test command reports the range for the parameter <class>
Read Command	Response
<b>AT+CGCLASS?</b>	Read command returns the current value of the GPRS class in the format:  <b>+CGLASS: &lt;class&gt;</b> <b>OK</b>

Write Command	Response
<b>AT+CGCLASS=[&lt;class&gt;]</b>	Set command sets the GPRS class according to <class> parameter.
Reference	Note
3GPP Only	the setting is saved in NVM (and available on following reboot). the current system to CLASS A only.

Parameters are defined below:

Parameters	Description
<b>&lt;class&gt;</b>	"A"- WCDMA (factory default)

### 3.3.3.7.2 AT+CGATT GPRS Attach or Detach

GPRS Attach or Detach

Test Command	Response
<b>AT+CGATT=?</b>	Test command requests information on the supported GPRS service states.
Read Command	Response
<b>AT+CGATT?</b>	Read command returns the current GPRS service state.
Write Command	Response
<b>AT+CGATT=[&lt;state&gt;]</b>	Execution command used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter <state>.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;state&gt;</b>	state of GPRS attachment 0 - detached 1 - attached
----------------------	--

Example:

Commands	Response
<b>AT+CGATT?</b>	<b>+CGATT: 0</b> <b>OK</b>
<b>AT+CGATT=?</b>	<b>+CGATT: (0,1)</b> <b>OK</b>
<b>AT+CGATT=1</b>	<b>OK</b>

### 3.3.3.7.3 AT+CGEREP GPRS Event Reporting

GPRS Event Reporting

Test Command	Response
<b>AT+CGEREP=?</b>	Test command reports the supported range of values for the +CGEREP command parameters.
Read Command	Response
<b>AT+CGEREP?</b>	Read command returns the current <mode> and <bfr> settings, in the format: <b>+CGEREP: &lt;mode&gt;,&lt;bfr&gt;</b>
Write Command	Response
<b>AT+CGEREP=[&lt;mode&gt;[,&lt;bfr&gt;]]</b>	Set command enables or disables sending of unsolicited result codes +CGEV: XXX (see below) from TA to TE in the case of certain events occurring in the TA or the network regarding GPRS events.
Reference	Note: Some events do not apply to EPS
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
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<b>&lt;mode&gt;</b>	controls the processing of URCs specified with this command. 0 - Buffer unsolicited result codes in the TA. If TA result code buffer is full, the oldest one may be discarded. No codes are forwarded to the TE. 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 when TA-TE link becomes available, otherwise forward them directly to the TE.
<b>&lt;bfr&gt;</b>	controls the effect on buffered codes when <mode> 1 or 2 is entered: 0 - TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1 or 2 is entered. 1 - TA 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

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

**+CGEV: REJECT <PDP\_type>, <PDP\_addr>**

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

**+CGEV: PDN ACT[<cid>]**

PDP context activation for EPS Network.

NOTE: Not defined in 3GPP.

**+CGEV: PDN DEACT[<cid>]**

PDP context deactivation for EPS Network.

NOTE: Not defined in 3GPP.

**+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 TA.

**+CGEV: NW DEACT <PDP\_type>, <PDP\_addr>, [<cid>]**

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

NOTE : This event is not applicable for EPS.

**+CGEV: ME DEACT <PDP\_type>, <PDP\_addr>, [<cid>]**

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

**+CGEV: NW DETACH**

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

**+CGEV: ME DETACH**

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

**+CGEV: ME CLASS <class>**

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

### 3.3.3.7.4 AT+CEREG EPS Network Registration Status

## EPS Network Registration Status

Test Command	Response
<b>AT+CEREG=?</b>	<p>Test command returns values supported as a compound value.</p> <p><b>+CEREG: (list of supported &lt;n&gt;s)</b></p>
Read Command	<p>Response</p> <p><b>AT+CEREG?</b></p> <p><b>+CEREG:&lt;n&gt;, &lt;stat&gt;</b> or <b>+CEREG: &lt;n&gt;,&lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b> or <b>+CEREG: &lt;n&gt;,&lt;stat&gt;[,&lt;tac&gt;],[&lt;rac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b> or <b>+CEREG:&lt;n&gt;,&lt;stat&gt;[,&lt;tac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;],[&lt;cause_type&gt;,&lt;reject_cause&gt;]]</b></p> <p>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.</p> <p>Note 3: 3GPP TS 44.060 [71] specifies the System Information messages which give</p>

Write Command	Response
<b>AT+CEREG=[&lt;n&gt;]</b>	<p>The set command controls the presentation of an unsolicited result code</p> <p><b>+CEREG: &lt;stat&gt;</b> when &lt;n&gt;=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code.</p> <p><b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;rac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b> when &lt;n&gt;=2 and there is a change of the network cell in E-UTRAN. The parameters &lt;AcT&gt;, &lt;tac&gt; and &lt;ci&gt; are sent only if available.</p> <p>The value &lt;n&gt;=3 further extends the unsolicited result code with [,&lt;cause_type&gt;,&lt;reject_cause&gt;], when available, when the value of &lt;stat&gt; changes. Refer subclause 9.2 for possible &lt;err&gt; values. Current version cannot support &lt;n&gt;=3.</p> <p>Note: 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.</p> <p>Possible response(s):</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<p>integer type</p> <p>0 - disable network registration unsolicited result code</p> <p>1 - enable network registration unsolicited result code</p> <p>2 - enable network registration and location information unsolicited result code</p> <p>*3 - enable network registration, location information and EMM cause value information unsolicited result code. Current version cannot support &lt;n&gt;=3.</p>



<b>&lt;stat&gt;</b>	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 - not initialized(Internal use only)
<b>&lt;tac&gt;</b>	string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).
<b>&lt;ci&gt;</b>	string type; four byte E-UTRAN cell ID in hexadecimal format.
<b>&lt;AcT&gt;</b>	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 (not applicable) 4 - UTRAN w/HSDPA (not applicable) 5 - UTRAN w/HSUPA (not applicable) 6 - UTRAN w/HSDPA and HSUPA (not applicable) 7 - E-UTRAN
<b>&lt;cause_type&gt;</b>	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.
<b>&lt;reject_cause&gt;</b>	integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.
<b>&lt;rac&gt;</b>	string type; one byte routing area code in hexadecimal format.

### 3.3.3.7.5 AT+CGREG GPRS Network Registration Status

#### GPRS Network Registration Status

Test Command	Response
<b>AT+CGREG=?</b>	Test command returns supported values for parameter <n>

Read Command	Response
<b>AT+CGREG?</b>	<p>Read command returns the status of result code presentation mode &lt;n&gt; and the integer &lt;stat&gt; which shows whether the network has currently indicated the registration of the terminal in the format:</p> <p><b>+CGREG: &lt;n&gt;,&lt;stat&gt;</b></p>
Write Command	Response
<b>AT+CGREG= [&lt;n&gt;]</b>	<p>Set command controls the presentation of an unsolicited result code regarding GPRS network registration state</p> <p><b>+CGREG: (see format below).</b></p> <p>Note: The value 8/9(CDMA/HDR) do not follow the 3gpp spec, we add this value to distinguish CDMA/HDR</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<p>result code presentation mode</p> <p>0 - disable network registration unsolicited result code</p> <p>1 - enable network registration unsolicited result code; if there is a change in the terminal GPRS network registration status the unsolicited result code is issued</p> <p>2 - enable network registration and location information unsolicited result code</p>

<b>&lt;stat&gt;</b>	<p>registration status</p> <p>0 - not registered, terminal is not currently searching a new operator to register to</p> <p>1 - registered, home network</p> <p>2 - not registered, but terminal is currently searching a new operator to register to</p> <p>3 - registration denied</p> <p>4 - unknown</p> <p>5 - registered, roaming</p> <p>6 - not initialized(Internal use only)</p> <p>If &lt;n&gt;=2 - enable network registration and location information unsolicited result code. if there is a change of the network cell, it is issued the unsolicited result code</p> <p>+CGREG: &lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;,&lt;Act&gt;,&lt;rac&gt;]</p> <p>or</p> <p>+CGREG: &lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;,&lt;Act&gt;]</p> <p>where:</p> <p>&lt;stat&gt; - registration status (see above for values)</p> <p>&lt;lac&gt; - location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)</p> <p>&lt;ci&gt; - cell ID in hexadecimal format.</p> <p>&lt;AcT&gt;: integer type; access technology of the serving cell</p> <p>0 GSM</p> <p>1 GSM Compact</p> <p>2 UTRAN</p> <p>3 GSM w/EGPRS</p> <p>4 UTRAN w/HSDPA</p> <p>5 UTRAN w/HSUPA</p> <p>6 UTRAN w/HSDPA and HSUPA</p> <p>7 E-UTRAN (not applicable)</p> <p>&lt;rac&gt; - string type; one byte routing area code in hexadecimal format.</p>
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### 3.3.3.7.6 AT+CGPIAF Printing IP Address Format

Printing IP Address Format

Test Command	Response
<b>AT+CGPIAF=?</b>	Test command returns values supported as compound parameter setting.

Read Command	Response
<b>AT+CGPIAF?</b>	Read command returns the current parameter setting.
Write Command	Response
<b>AT+CGPIAF=</b> <b>[&lt;IPv6_AddressFormat&gt;</b> <b>[,&lt;IPv6_SubnetNotation&gt;</b> <b>[,&lt;IPv6_leadingZeros&gt;</b> <b>[,&lt;IPv6_compress</b> <b>Zeros&gt;]]]]</b>	Set command decides what the format to print IPv6 address parameter.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;IPv6_AddressFormat&gt;</b>	decides the IPv6 address format. Relevant for all AT command parameters, that can hold an IPv6 address. 0 Use IPv4-like dot-notation. IP addresses, and subnetwork mask if applicable, are dot-separated. 1 Use IPv6-like colon-notation. IP address, and subnetwork mask if applicable and when given explicitly, are separated by a space.
<b>&lt;IPv6_SubnetNotation&gt;</b>	decides the subnet-notation for <remote address and subnet mask> Setting does not apply if IPv6 address format <IPv6_AddressFormat> = 0. 0 Both IP address and subnet mask are stated explicitly, separated by a space. 1 The printout format applies /(forward slash) subnet-prefix Classless Inter-Domain Routing (CIDR) notation.
<b>&lt;IPv6_LeadingZeros&gt;</b>	decides whether leading zeros are omitted or not. Setting does not apply for IPv6 address format <IPv6_AddressFormat> = 0. 0 Leading zeros are omitted. 1 Leading zeros are included.
<b>&lt;IPv6_CompressZeros&gt;</b>	integer type, decides whether 1-n instances of 16-bit zero-values are replaced by only '::'. This applies only once. Setting does not apply if <IPv6_AddressFormat> = 0. 0 No zero compression. 1 Use zero compression.

Example:

Commands	Response
<b>AT+CGPIAF=0,0,0,0</b>	<b>OK</b>
<b>at+CGPIAF=1,0,0,0</b>	<b>OK</b>

### 3.3.3.7.7 AT+CGDCONT Define PDP Context

Define PDP Context

Test Command	Response
<b>AT+CGDCONT=?</b>	Test command returns values supported as a compound value
Read Command	Response
<b>AT+CGDCONT?</b>	Read command returns the current settings for each defined context in the format: <b>+CGDCONT:&lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;[,&lt;pd1&gt;[...,&lt;pdN&gt;]] [&lt;CR&gt;&lt;LF&gt;+CGDCONT:&lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;[,&lt;pd1&gt;[...,&lt;pdN&gt;]] [...]]</b>
Write Command	Response
<b>AT+CGDCONT=[&lt;cid&gt;[,&lt;PDP_type&gt;[,&lt;APN&gt;[,&lt;PDP_addr&gt;[,&lt;d_comp&gt;[,&lt;h_comp&gt;[,&lt;pd1&gt;[...,&lt;pdN&gt;]]]]]]]]]</b>	Set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter<cid>.  Note:a special form of the Set command, +CGDCONT=<cid>, causes the values for context number<cid> to become undefined.
Reference	Note
3GPPTS27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	(PDP Context Identifier) numeric parameter which specifies a particular PDP context definition. 1..max – where the value of max is returned by the Test command.

<b>&lt;PDP_type&gt;</b>	(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol. "IP" - InternetProtocol "PPP" - PointtoPointProtocol "IPV6" - InternetProtocol,Version6 "IPV4V6" – Virtual <PDP_type> introduced to handle dual IP stack UE capability.
<b>&lt;APN&gt;</b>	(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.
<b>&lt;PDP_addr&gt;</b>	A string parameter that identifies the terminal in the addresss pace applicable to the PDP. The allocated address may be readusing the +CGPADDR command.
<b>&lt;d_comp&gt;</b>	Numeric parameter that controls PDP data compression. 0 - off (default if value is omitted) 1 - on 2 - V.42bis Other values are reserved
<b>&lt;h_comp&gt;</b>	Numeric parameter that controls PDP header compression. 0 - off(default if value is omitted) 1 - on 2 - RFC1144(applicable for SND CP only) 3 - RFC2507 4 - RFC3095(applicable for PDCP only)
<b>&lt;pd1&gt;</b>	<pdN> - zero to N string parameters whose meanings are specific to the <PDP_type>

### 3.3.3.7.8 AT+CGDSCONT Define Secondary PDP Context

Define Secondary PDP Context

Test Command	Response
<b>AT+CGDSCONT=?</b>	<b>+CGDSCONT: (range of supported &lt;cid&gt;s), (list of &lt;cid&gt;s for active primary contexts), "&lt;PDP_type&gt;", (list of supported &lt;d_comp&gt;s), (list of supported &lt;h_comp&gt;s)</b> Note: PDP_type is read-only.

Read Command	Response
<b>AT+CGDSCONT?</b>	<b>+CGDSCONT: &lt;cid&gt;, &lt;p_cid&gt;, &lt;d_comp&gt;, &lt;h_comp&gt;</b> <b>[&lt;CR&gt;&lt;LF&gt;+CGDSCONT:&lt;cid&gt;, &lt;p_cid&gt;, &lt;d_comp&gt;, &lt;h_comp&gt; [...]]</b>
Write Command	Response
<b>AT+CGDSCONT=</b> <b>[&lt;cid&gt;, &lt;p_cid&gt; [, &lt;d_comp&gt;</b> <b>[, &lt;h_comp&gt;]]]</b>	<p>Possible response(s):</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p> <p>Description:</p> <p>The set command specifies the PDP context parameter values for a Secondary PDP context identified by the (local) context Identification parameter, &lt;cid&gt;.</p> <p>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.</p> <p>In EPS the command is used to define traffic flows. A special form of the set command, +CGDSCONT= &lt;cid&gt; causes the values for context number &lt;cid&gt; to become undefined.</p> <p>The read command returns the current settings for each defined context.</p>
Reference	Note
3GPP Only	

Parameters are defined below:

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

<b>&lt;p_cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. The list of permitted values is returned by the test form of the command.
<b>&lt;d_comp&gt;</b>	a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065 [61]) 0 - off (default if value is omitted) 1 - on (manufacturer preferred compression) 2 - V.42bis 3 - V.44 Other values are reserved.
<b>&lt;h_comp&gt;</b>	a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 [61] and 3GPP TS 25.323 [62]) 0 - off (default if value is omitted) 1 - on (manufacturer preferred compression) 2 - RFC1144 (applicable for SNDCP only) 3 - RFC2507 4 - RFC3095 (applicable for PDCP only) Other values are reserved.

### 3.3.3.7.9 AT+CGTFT Traffic Flow Template

#### Parameter Command Syntax

Test Command	Response
<b>AT+CGTFT=?</b>	The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type r eturned 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.



	<p><b>+CGTFT:</b> &lt;PDP_type&gt;, (list of supported &lt;packet filter identifier&gt;s), (list of supported &lt;evaluation precedence index&gt;s), (list of supported &lt;source address and subnet mask&gt;s), (list of supported &lt;protocol number (ipv4) / next header (ipv6)&gt;s), (list of supported &lt;destination port range&gt;s), (list of supported &lt;source port range&gt;s), (list of supported &lt;ipsec security parameter index (spi)&gt;s), (list of supported &lt;type of service (tos) (ipv4) and mask / traffic class(ipv6) and mask&gt;s), (list of supported &lt;flow label (ipv6)&gt;s)) [&lt;CR&gt;&lt;LF&gt;</p> <p><b>+CGTFT:</b> &lt;PDP_type&gt;, (list of supported &lt;packet filter identifier&gt;s), (list of supported &lt;evaluation precedence index&gt;s), (list of supported &lt;source address and subnet mask&gt;s), (list of supported &lt;protocol number (ipv4) / next header (ipv6)&gt;s), (list of supported &lt;destination port range&gt;s), (list of supported &lt;source port range&gt;s), (list of supported &lt;ipsec security parameter index (spi)&gt;s), (list of supported &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;s), (list of supported &lt;flow label(ipv6)&gt;s)]</p>
<p>Read Command</p> <p><b>AT+CGTFT?</b></p>	<p>Response</p> <p>The read command returns the current settings for all Packet Filters for each defined context.</p> <p><b>+CGTFT:</b> &lt;cid&gt;, &lt;packet filter identifier&gt;, &lt;evaluation precedence index&gt;, &lt;source address and subnet mask&gt;, &lt;protocol number (ipv4) / next header (ipv6)&gt;, &lt;destination port range&gt;, &lt;source port range&gt;, &lt;ipsec security parameter index (spi)&gt;, &lt;type of service (tos) (ipv4) and mask /traffic class (ipv6) and mask&gt;, &lt;flow label (ipv6)&gt; [&lt;CR&gt;&lt;LF&gt;+CGTFT: &lt;cid&gt;, &lt;packet filter identifier&gt;, &lt;evaluation precedence index&gt;, &lt;source address and subnet mask&gt;, &lt;protocol number (ipv4) / next header (ipv6)&gt;, &lt;destination port range&gt;, &lt;source port range&gt;, &lt;ipsec security parameter index (spi)&gt;, &lt;type of service (tos) (ipv4) and mask /traffic class (ipv6) and mask&gt;, &lt;flow label (ipv6)&gt; [...]]</p>

Write Command	Response
<p><b>AT+CGTFT=[&lt;cid&gt;, &lt;packet filter identifier&gt;, &lt;evaluation precedence index&gt;[,&lt;source address and subnet mask&gt; [,&lt;protocol number (ipv4) / next header (ipv6)&gt; [,&lt;destination port range&gt; [,&lt;source port range&gt; [,&lt;ipsecsecurity parameter index (spi)&gt; [,&lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt; [,&lt;flow label (ipv6)&gt;]]]]]]]]]</b></p>	<p>Possible Response(s):</p> <p><b>OK</b> or <b>ERROR</b></p> <p>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 further described in the 3GPP TS 23.060 [47].</p> <p>A TFT consists of one to 16 Packet Filters, each identified by a unique &lt;packet filter identifier&gt;. A Packet Filter also has an &lt;evaluation precedence index&gt; that is unique within all TFTs associated with all PDP contexts that are associated with the same PDP address.</p> <p>The set command specifies a Packet Filter that is added to the TFT stored in the MT and used for the context identified by the (local) context identification parameter, &lt;cid&gt;. 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.</p> <p>A special form of the set command, +CGTFT= &lt;cid&gt; causes all of the Packet Filters in the TFT for context number &lt;cid&gt; to become undefined.</p> <p>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.</p> <p>Some of the above listed attributes may coexist in a Packet Filter while others mutually exclude each other, the possible combinations are shown in 3GPP TS 23.060 [47].</p>

Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). The following parameters are defined in 3GPP TS 23.060 [47]:
<b>&lt;packet filter identifier&gt;</b>	a numeric parameter, value range from 1 to 16.
<b>&lt;evaluation precedence index&gt;</b>	a numeric parameter. The value range is from 0 to 255.
<b>&lt;source address and subnet mask&gt;</b>	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.
<b>&lt;protocol number (ipv4) / next header (ipv6)&gt;</b>	a numeric parameter, value range from 0 to 255.
<b>&lt;destination port range&gt;</b>	string type. The string is given as dot-separated numeric (0-65535) parameters in the form "f.t".
<b>&lt;source port range&gt;</b>	string type. The string is given as dot-separated numeric (0-65535) parameters in the form "f.t".
<b>&lt;ipsec security parameter index (spi)&gt;</b>	numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF. in the form "t.m".
<b>&lt;flow label (ipv6)&gt;</b>	numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.

### 3.3.3.7.10 AT+CGQMIN Quality of Service Profile (Minimum Acceptable)

Quality of Service Profile (Minimum Acceptable)

Test Command	Response
<b>AT+CGQMIN=?</b>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p><b>+CGQMIN: &lt;PDP_Type&gt;,(list of supported &lt;precedence&gt;s),(list of supported &lt;delay&gt;s),(list of supported &lt;reliability&gt;s),(list of supported &lt;peak&gt;s),(list of supported &lt;mean&gt;s)</b></p> <p>Note: only the "IP" PDP_Type currently supported.</p>
Read Command	Response
<b>AT+CGQMIN?</b>	<p>Read command returns the current settings for each defined context in the format:</p> <p><b>+CGQMIN:</b>  &lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[&lt;CR&gt;&lt;LF&gt;  <b>+CGQMIN: &lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[...]</b></p> <p>If no PDP context is defined, it has no effect and OK result code returned.</p>
Write Command	Response
<b>AT+CGQMIN=</b> <b>[&lt;cid&gt; [,&lt;precedence&gt;</b> <b>[,&lt;delay&gt; [,&lt;reliability&gt;</b> <b>[,&lt;peak&gt; [,&lt;mean&gt;]]]]]</b>	<p>Set command allows to specify a minimum acceptable profile, checked by the terminal against the negotiated profile returned in the Activate PDP Context Accept message.</p> <p>If a value omitted for a particular class then this class is not checked. Note: a special form of the Set command, +CGQMIN=&lt;cid&gt; causes the requested profile for context number &lt;cid&gt; to become undefined.</p>
Reference	Note
3GPP TS 27.007; 3GPP TS 03.60/23.060(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	PDP context identification (see +CGDCONT command).
<b>&lt;precedence&gt;</b>	precedence class
<b>&lt;delay&gt;</b>	delay class
<b>&lt;reliability&gt;</b>	reliability class
<b>&lt;peak&gt;</b>	peak throughput class
<b>&lt;mean&gt;</b>	mean throughput class

Example:

Commands	Response
<b>AT+CGQMIN=1,0,0,3,0,0</b>	<b>OK</b>
<b>AT+CGQMIN?</b>	<b>+CGQMIN: 1,0,0,5,0,0</b> <b>OK</b>
<b>AT+CGQMIN=?</b>	<b>+CGQMIN: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)</b> <b>+CGQMIN: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)</b> <b>+CGQMIN: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31)</b> <b>OK</b>

### 3.3.3.7.11 AT+CGEQMIN 3G Quality Of Service Profile (Minimum Acceptable)

3G Quality Of Service Profile (Minimum Acceptable)

<p>Test Command</p> <p><b>AT+CGEQMIN=?</b></p>	<p>Response</p> <p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p><b>+CGEQMIN: &lt;PDP_Type&gt;,(list of supported &lt;Traffic class&gt;s),(list of supported &lt;Maximum bitrate UL&gt;s),(list of supported &lt;Maximum bitrate DL&gt;s),(list of supported &lt;Guaranteed bitrate UL&gt;s),(list of supported &lt;Guaranteed bitrate DL&gt;s),(list of supported &lt;Delivery order&gt;s),(list of supported &lt;Maximum SDU size&gt;s),(list of supported &lt;SDU error ratio&gt;s),(list of supported &lt;Residual bit error ratio&gt;s),(list of supported &lt;Delivery of erroneous SDUs&gt;s),(list of supported &lt;Transfer delay&gt;s),(list of supported &lt;Traffic handling priority&gt;s),(list of supported &lt;Source statistics descriptor&gt;s) ,(list of supported &lt;Signalling indication&gt;s)</b></p>
<p>Read Command</p> <p><b>AT+CGEQMIN?</b></p>	<p>Response</p> <p>Read command returns the current settings for each defined context in the format:</p> <p><b>[+CGEQMIN:&lt;cid&gt;,&lt;Trafficclass&gt;,&lt;MaximumbitrateUL&gt;,&lt;MaximumbitrateDL&gt;,&lt;GuaranteedbitrateUL&gt;,&lt;GuaranteedbitrateDL&gt;,&lt;Deliveryorder&gt;,&lt;MaximumSDUsize&gt;,&lt;SDUerrorratio&gt;,&lt;Residualbiterrorratio&gt;,&lt;Deliveryof erroneousSDUs&gt;,&lt;Transferdelay&gt;,&lt;Traffichandling&gt;&lt;CR&gt;&lt;LF&gt;]</b>  <b>[+CGEQMIN:...]</b></p> <p>If no PDP context defined, it has no effect and OK result code returned.</p>

Write Command	Response
<b>AT+CGEQMIN=[&lt;cid&gt;          [,&lt;Traffic class&gt;          [,&lt;Maximum bitrate UL&gt;          [,&lt;Maximum bitrate DL&gt;          [,&lt;Guaranteed bitrate UL&gt;          [,&lt;Guaranteed bitrate DL&gt;          [,&lt;Delivery order&gt;          [,&lt;Maximum SDU size&gt;          [,&lt;SDU error ratio&gt;          [,&lt;Residual bit error ratio&gt;          [,&lt;Delivery of erroneous          SDUs&gt; [,&lt;Transfer delay&gt;          [,&lt;Traffic handling          priority&gt;]]]]]]]]]]]]]]]]]]       </b>	<p>Set command allows specify a 3G quality of service profile for the context identified by the (local) context identification parameter &lt;cid&gt; that is checked by the MT against the negotiated profile returned in the Activate/Modify PDP Context Accept Message.</p> <p>Note:a special form of the Set command, +CGEQMIN=&lt;cid&gt; causes the requested profile for context number &lt;cid&gt; to become undefined.</p>
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	PDP context identification (see +CGDCONT command).
<b>&lt;Traffic class&gt;</b>	Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribed value
<b>&lt;Maximum bitrate UL&gt;</b>	Maximum bitrate Up Link (kbits/s) 0 - subscribed value 1...11520
<b>&lt;Maximum bitrate DL&gt;</b>	Maximum bitrate down link (kbits/s) 0 – subscribed value 1...42200
<b>&lt;Guaranteed bitrate UL&gt;</b>	the guaranteed bitrate up link(kbits/s) 0 - subscribed value 11520
<b>&lt;Guaranteed bitrate DL&gt;</b>	the guaranteed bitrate down link(kbits/s) 0 - subscribed value 42200
<b>&lt;Delivery order&gt;</b>	SDU Delivery order 0 - no 1 - yes 2 - subscribed value

<b>&lt;Maximum SDU size&gt;</b>	Maximum SDU size in octets 0 - subscribed value 1...1520
<b>&lt;SDU error ratio&gt;</b>	SDU error ratio - mEe mean $m \cdot 10^{-e}$ , for example 1E2 mean $1 \cdot 10^{-2}$ "0E0" "1E1" "1E2" "7E3" "1E3" "1E4" "1E5" "1E6"
<b>&lt;Residual bit error ratio&gt;</b>	Residual bit error ratio - mEe mean $m \cdot 10^{-e}$ , for example 1E2 mean $1 \cdot 10^{-2}$ "0E0" "5E2" "1E2" "5E3" "4E3" "1E3" "1E4" "1E5" "1E6" "6E8"
<b>&lt;Delivery of erroneous SDUs&gt;</b>	Delivery of erroneous SDUs 0 - no 1 - yes 2 - no detect 3 - subscribed value
<b>&lt;Transfer delay&gt;</b>	Transfer delay(milliseconds) 0- subscribed value 100...4000
<b>&lt;Traffic handling priority&gt;</b>	Traffic handling priority 0 - subscribed value 1...3

### 3.3.3.7.12 AT+CGQREQ Quality of Service Profile (Requested)

Quality of Service Profile (Requested)



Test Command	Response
<b>AT+CGQREQ=?</b>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p><b>+CGQREQ: &lt;PDP_Type&gt;,(list of supported &lt;precedence&gt;s),(list of supported &lt;delay&gt;s),(list of supported &lt;reliability&gt;s),(list of supported &lt;peak&gt;s),(list of supported &lt;mean&gt;s)</b></p> <p>Note:    is supported.</p>
Read Command	Response
<b>AT+CGQREQ?</b>	<p>Read command returns the current settings for each defined context in the format:</p> <p><b>+CGQREQ:&lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[&lt;CR&gt;&lt;LF&gt;+CGQREQ:&lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;[...]]</b></p> <p>If no PDP context defined, it has no effect and OK result code returned.</p>
Write Command	Response
<b>AT+CGQREQ=[&lt;cid&gt;[,&lt;precedence&gt;[,&lt;delay&gt;[,&lt;reliability&gt;[,&lt;peak&gt; [,&lt;mean&gt;]]]]]]</b>	<p>Set command allows to specify a Quality of Service Profile that is used when the terminal sends an Activate PDP Context Request message to the network.</p> <p>It specifies a profile for the context identified by the (local) context identification parameter, &lt;cid&gt;.</p> <p>If a value is omitted for a particular class then this class is not checked.</p>
Reference	Note
3GPP TS 27.007; 3GPP TS 03.60/23.060(3GPP Only)	a special form of the Set command, +CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined.

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	PDP context identification (see +CGDCONT command).
<b>&lt;precedence&gt;</b>	precedence class
<b>&lt;delay&gt;</b>	delay class
<b>&lt;reliability&gt;</b>	reliability class
<b>&lt;peak&gt;</b>	peak throughput class
<b>&lt;mean&gt;</b>	mean throughput class

Example:

Commands	Response
<b>AT+CGQREQ?</b>	<b>+CGQREQ: 1,0,0,3,0,0</b> <b>OK</b>
<b>AT+CGQREQ=1,0,0,3,0,0</b>	<b>OK</b>
<b>AT+CGQREQ=?</b>	<b>+CGQREQ: "IP",(0-3),(0-4),(0-5),(0-9),(0-18,31)</b> <b>+CGQREQ: "PPP",(0-3),(0-4),(0-5),(0-9),(0-18,31)</b> <b>+CGQREQ: "IPV6",(0-3),(0-4),(0-5),(0-9),(0-18,31)</b> <b>OK</b>

### 3.3.3.7.13 AT+CGEQREQ 3G Quality of Service Profile (Requested)

3G Quality of Service Profile (Requested)

Test Command	Response
<b>AT+CGEQREQ=?</b>	<p>Test command returns as a compound value the type of the current PDP context and the supported values for the subparameters in the format:</p> <p><b>+CGQREQ: &lt;PDP_Type&gt;,(list of supported &lt;Traffic class&gt;s),(list of supported &lt;Maximum bitrate UL&gt;s),(list of supported &lt;Maximum bitrate DL&gt;s),(list of supported &lt;Guaranteed bitrate UL&gt;s),(list of supported &lt;Guaranteed bitrate DL&gt;s),(list of supported &lt;Delivery order&gt;s),(list of supported&lt;Maximum SDU size&gt;s),(list of supported&lt;SDU error ratio&gt;s),(list of supported &lt;Residual bit error ratio&gt;s),(list of supported &lt;Delivery of erroneous SDUs&gt;s),(list of supported &lt;Transfer delay&gt;s),(list of supported &lt;Traffic handling priority&gt;s,(list of supported &lt;Source statistics descriptor&gt;s)</b></p>

	<p>(list of supported &lt;Signalling indication&gt;s) E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0,1),(0,1)</p> <p>+CGEQREQ:"IPV6",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","4E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0,1),(0,1)</p> <p>+CGEQREQ:"IPV4V6",(0-4),(0-5760),(0-42200),(0-5760),(0-42200),(0-2),(0-1520),("0E0","1E1","1E2","7E3","1E3","1E4","1E5","1E6"),("0E0","5E2","1E2","5E3","1E3","1E4","1E5","1E6","6E8"),(0-3),(0,100-4000),(0-3),(0,1),(0,1)</p> <p>OK</p>
<p>Read Command</p> <p><b>AT+CGEQREQ?</b></p>	<p>Response</p> <p>Read command returns the current settings for each defined context in the format:</p> <p><b>[+CGEQREQ: &lt;cid&gt;,&lt;Traffic class&gt;,&lt;Maximum bitrate UL&gt;,&lt;Maximum bitrate DL&gt;,&lt;Guaranteed bitrate UL&gt;,&lt;Guaranteed bitrate DL&gt;,&lt;Delivery order&gt;,&lt;Maximum SDU size&gt;,&lt;SDU error ratio&gt;,&lt;Residual bit error ratio&gt;,&lt;Delivery of erroneous SDUs&gt;,&lt;Transfer delay&gt;,&lt;Traffic handling&gt;,&lt;Source Statistics Descriptor&gt; ,&lt;Signalling Indication&gt;&lt;CR&gt;&lt;LF&gt;]</b>  <b>[...]</b></p> <p>If no PDP context defined, it has no effect and OK result code returned.</p>

Write Command	Response
<b>AT+CGEQREQ=[&lt;cid&gt;[,&lt;Traffic class&gt; [,&lt;Maximum bit rate UL&gt;[,&lt;Maximum bitrate DL&gt;[,&lt;Guaranteed bitrate UL&gt;[,&lt;Guaranteed bitrate DL&gt;[,&lt;Delivery order&gt;[,&lt;Maximum SDU size&gt;[,&lt;SDU error ratio&gt;[,&lt;Residual bit error ratio&gt;[,&lt;Delivery of erroneous SDUs&gt;[,&lt;Transfer delay&gt;[,&lt;Traffic handling priority&gt;]]]]]]]]]]]]]]]]]]</b>	Set command allows to specify a 3G quality of service profile for the context identified by the(local) context identification parameter <cid> which is used when the MT sends an Activate PDP Context Request message to the network.
Reference	Note
3GPPTS27.007;3GPPTS03.60/23.060;3GPPTS24.008(3 GPP Only)	Note:a special form of the Set command, +CGEQREQ=<cid> causes the requested profile for context number<cid> to become undefined.

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	PDP context identification (see +CGDCONT command).
<b>&lt;Traffic class&gt;</b>	Traffic class 0 - conversational 1 - streaming 2 - interactive 3 - background 4 - subscribedvalue
<b>&lt;Maximum bitrate UL&gt;</b>	Maximum bitrate UpLink(kbits/s) 0 – subscribed value 1...11520
<b>&lt;Maximum bitrate DL&gt;</b>	Maximum bitrate downlink(kbits/s) 0 – subscribed value 1...42200
<b>&lt;Guaranteed bitrate UL&gt;</b>	The guaranteed bitrate uplink(kbits/s) 0 – subscribed value 1...11520
<b>&lt;Guaranteed bitrate DL&gt;</b>	The guaranteed bitrate downlink(kbits/s) 0 - subscribed value 1...42200
<b>&lt;Delivery order&gt;</b>	SDU Delivery order 0 - no 1 - yes 2 - subscribed value

<b>&lt;Maximum SDU size&gt;</b>	Maximum SDU size in ctets 0 – subscribed value 1...1520
<b>&lt;SDU error ratio&gt;</b>	SDU error ratio- $mEe_{mean}m \cdot 10^{-e}$ , For example 1E2 mean1*10-2 "0E0" "1E1" "1E2" "7E3" "1E3" "1E4" "1E5" "1E6"
<b>&lt;Residual bit error ratio&gt;</b>	Residual bit error ratio - $mEe_{mean}m \cdot 10^{-e}$ , for example 1E2 mean 1*10-2 - $mEe_{mean}m \cdot 10^{-e}$ , for example 1E2 mean 1*10-2  "0E0" "5E2" "1E2" "5E3" "4E3" "1E3" "1E4" "1E5" "1E6" "6E8"
<b>&lt;Delivery of erroneous SDUs&gt;</b>	Delivery of erroneous SDUs 0 - no 1 - yes 2 - no detect 3 - subscribed value
<b>&lt;Transfer delay &gt;</b>	Transfer delay (milliseconds) 0 - subscribed value 100...4000
<b>&lt;Traffic handling priority &gt;</b>	Traffic handling priority 1 – subscribed value 1...3
<b>&lt;Source Statistics Descriptor&gt;</b>	A numeric parameter that 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 unknown (default value) 1 - Characteristics of SDUs corresponds to a speech source

<b>&lt;Signalling Indication&gt;</b>	<p>A numeric parameter used to indicate 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).</p> <p>0 - PDP context is not optimized for signalling (default value) 1 - PDP context is optimized for signalling</p>
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### 3.3.3.7.14 AT+CGACT PDP Context Activate or Deactivate

#### PDP Context Activate or Deactivate

Test Command	Response
<b>AT+CGACT=?</b>	<p>Test command reports information on the supported PDP context activation states parameters in the format:</p> <p><b>+CGACT: (0,1)</b></p>
Read Command	Response
<b>AT+CGACT?</b>	<p>Read command returns the current activation state for all the defined PDP contexts in the format:</p> <p><b>+CGACT: &lt;cid&gt;,&lt;state&gt;</b>  <b>[&lt;CR&gt;&lt;LF&gt;</b>  <b>+CGACT:&lt;cid&gt;,&lt;state&gt;[...]]</b></p>
Write Command	Response
<b>AT+CGACT= &lt;state&gt;[,&lt;cid&gt;[,&lt;cid&gt;[,...]]]</b>	<p>Execution command is used to activate or deactivate the specified PDP context(s)</p> <p>Note: if no &lt;cid&gt; are specified the activation form of the command, activated will activate all defined contexts, deactivated will keep one cid activated</p>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
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<b>&lt;state&gt;</b>	indicates the state of PDP context activation 0 - deactivated 1 - activated
<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)

Example:

Commands	Response
<b>AT+CGACT=1,1</b>	<b>OK</b>
<b>AT+CGACT?</b>	<b>+CGACT: 1,1</b> <b>OK</b>

#### 3.3.3.7.15 AT+CGCMOD PDP Context Modify

Action Command Syntax

Test Command	Response
<b>AT+CGCMOD=?</b>	<b>+CGCMOD: (list of &lt;cid&gt;s associated with active contexts)</b>

Write Command	Response
<b>AT+CGCMOD=[&lt;cid&gt;[,&lt;cid&gt;[,...]]]</b>	<p>Possible Response(s):</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p> <p>The execution command used to modify the specified PDP context (s) with respect to QoS profiles and TFTs.</p> <p>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.</p> <p>For EPS, the modification request for an EPS bearer resource will be answered by the network by an EPS bearer modification request. A request must be accepted by the MT, before the PDP context is effectively changed.</p> <p>If no &lt;cid&gt; is specified an activation form of the command modifies all active contexts.</p> <p>The test command returns a list of &lt;cid&gt;s associated with active contexts.</p>
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

### 3.3.3.7.16 AT+CGPADDR Show PDP Address

Show PDP Address



Test Command	Response
<b>AT+CGPADDR=?</b>	Test command returns a list of defined <cid>s.
Write Command	Response
<b>AT+CGPADDR=[&lt;cid&gt;[,&lt;cid&gt;[,...]]]</b>	Execution command returns a list of PDP addresses for the specified context identifiers in the format: <b>+CGPADDR:&lt;cid&gt;[,&lt;PDP_addr_1&gt;[,&lt;PDP_addr_2&gt;]]]</b> <b>+CGPADDR:&lt;cid&gt;[,&lt;PDP_addr_1&gt;[,&lt;PDP_addr_2&gt;]]]</b> <b>[...]</b>
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition (see +CGDCONT command). If no <cid> is specified, the addresses for all defined contexts are returned.
<b>&lt;PDP_addr_1&gt;and &lt;PDP_addr_2&gt;</b>	each is a string type 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>. Both <PDP_addr_1> and <PDP_addr_2>are omitted if none is available. Both <PDP_addr_1> and <PDP_addr_2> are included when both IPv4 and IPv6 addresses are assigned, with <PDP_addr_1> containing the IPv4 address and <PDP_addr_2> containing the IPv6 address.

Example:

Commands	Response
<b>AT+CGPADDR=1</b>	<b>+CGPADDR: 1,0.0.0.0,0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0</b>  <b>OK</b>

<b>AT+CGPADDR=?</b>	<b>+CGPADDR: (1,2,3)</b>
	<b>OK</b>

### 3.3.3.7.17 AT+CGDATA Enter Data State

Enter Data State

Test Command	Response
<b>AT+CGDATA=?</b>	Test command reports information on the supported layer 2 protocols.
Write Command	Response
<b>AT+CGDATA=[&lt;L2P&gt;,[&lt;cid&gt;]]</b>	Execution command causes to perform whatever actions are necessary to establish a communication with the network using one or more GPRS PDP types.  Note: if parameter <L2P> is omitted, the layer 2 protocol is unspecified
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;L2P&gt;</b>	string parameter that indicates the layer 2 protocol to be used "PPP" - PPP Point-to-point protocol
<b>&lt;cid&gt;</b>	numeric parameter which specifies a particular PDP context definition (see +CGDCONT command).

Example:

Commands	Response
<b>AT+CGDATA=?</b>	<b>+CGDATA:["PPP"]</b> <b>OK</b>

### 3.3.3.7.18 AT+CGCONTRDP PDP Context Read Dynamic Parameters

## PDP Context Read Dynamic Parameters

Test Command	Response
<b>AT+CGCONTRDP=?</b>	<b>+CGCONTRDP:</b> (list of <p_cid>s associated with active contexts)
Write Command	Response
<b>AT+CGCONTRDP=[&lt;p_cid&gt; ]</b>	<p>Possible response(s):</p> <p><b>+CGCONTRDP:</b>            &lt;p_cid&gt;,&lt;bearer_id&gt;,&lt;apn&gt;[,&lt;ip_addr&gt;,&lt;subnet_mask&gt;[,&lt;gw_addr&gt;[,&lt;DNS_prim_addr&gt;[,&lt;DNS_sec_addr&gt;[,&lt;P-CSCF_prim_addr&gt;[,&lt;P-CSCF_sec_addr&gt;]]]]]]            [&lt;CR&gt;&lt;LF&gt;  <b>+CGCONTRDP:</b>            &lt;p_cid&gt;,&lt;bearer_id&gt;,&lt;apn&gt;[,&lt;ip_addr&gt;,&lt;subnet_mask&gt;[,&lt;gw_addr&gt;[,&lt;DNS_prim_addr&gt;[,&lt;DNS_sec_addr&gt;[,&lt;PCSCF_prim_addr&gt;[,&lt;PCS</p> <p>Description:            The execution command returns the relevant information: &lt;bearer_id&gt;,&lt;apn&gt;,&lt;ip_addr&gt;,&lt;subnet_mask&gt;,&lt;gw_addr&gt; , &lt;DNS_prim_addr&gt;,&lt;DNS_sec_addr&gt;,&lt;P-CSCF_prim_addr&gt; and &lt;P-CSCF_sec_addr&gt; for a non- secondary PDP Context established by the network with the primary context identifier &lt;p_cid&gt;. If the context can t be found an ERROR response is returned. If the parameter &lt;p_cid&gt; omitted, the relevant information for all established PDP contexts returned.</p> <p>NOTE: The dynamic part of the PDP context will only exist if established by the network.            The test command returns a list of &lt;p_cid&gt;s associated with active contexts.</p>
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
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<b>&lt;p_cid&gt;</b>	a numeric parameter specifies a particular non secondary PDP context definition. The parameter is local to the TE-MT interface and used in other PDP context-related commands.
<b>&lt;bearer_id&gt;</b>	a numeric parameter identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.
<b>&lt;APN&gt;</b>	a string parameter which is a logical name that was used to select the GGSN or the external packet data network.
<b>&lt;ip_addr&gt;</b>	a string parameter shows the IP Address of the MT. The string is given as dot-separated numeric (0-255) parameters in the form: "a1.a2.a3.a4" for IPv4 or "a1.a2.a3.a4.a5.a6.a7.a8" for IPv6. If the MT has dual stack capabilities the string shows first the dot separated IPv4 Address followed by the dot separated IPv6 Global Prefix Address. The IPv4 address and the IPv6 address parameters are separated by one space: "a1.a2.a3.a4 a1:a2:a3:a4:a5:a6:a7:a8"
<b>&lt;subnet_mask&gt;</b>	a string parameter shows the subnet mask for the IP Address of the MT. The string is given as dot-separated numeric (0-255) parameters. If the MT has dual stack capabilities the string shows the dot separated IPV4 subnet mask followed by the dot separated IPV6 subnet mask. The subnet masks are separates by space.
<b>&lt;gw_addr&gt;</b>	a string parameter shows the Gateway Address of the MT. The string is given as dot-separated numeric (0-255) parameters. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Gateway address followed by the dot separated IPV6 Gateway Address. The gateway addresses are separated by one space.
<b>&lt;DNS_prim_addr&gt;</b>	a string parameter which shows the IP Address of the primary DNS Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of DNS Server.
<b>&lt;DNS_sec_addr&gt;</b>	a string parameter which shows the IP address of the secondary DNS Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of DNS Server. primary Address of P-CSCF Server.
<b>&lt;P_CSCF_sec_addr&gt;</b>	a string parameter which shows the IP Address of the secondary P-CSCF Server. If the MT has dual stack capabilities the parameter shows first the dot separated IPV4 Address, followed by the dot separated IPV6 Address of P-CSCF Server.

### 3.3.3.7.19 AT+CGSCONTRDP Secondary PDP Context Read Dynamic Parameters

Secondary PDP Context Read Dynamic Parameters

Test Command	Response
<b>AT+CGSCONTRDP=?</b>	<b>+CGSCONTRDP: (list of &lt;cid&gt;s associated with active contexts)</b> The test command returns a list of <cid>s associated with active contexts.
Write Command	Response
<b>AT+CGSCONTRDP=[&lt;cid&gt;]</b>	Possible response(s): <b>+CGSCONTRDP:&lt;cid&gt;,&lt;p_cid&gt;,&lt;bearer_id&gt;[&lt;CR&gt;&lt;LF&gt;+CGSCONTRDP:&lt;cid&gt;,&lt;p_cid&gt;,&lt;bearer_id&gt;[...]]</b> The execution command returns <p_cid> and <bearer_id> for a given <cid>. If the context cannot be found an ERROR response returned.If the parameter<cid> is omitted, the <cid>, <p_cid> and <bearer_id> are returned for all established PDP contexts. In EPS, the Traffic Flow parameters are returned. NOTE: Parameters for network initiated PDP contexts are returned as well. The dynamic part of the PDP context will only exist if established by the network.
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular PDP context or Traffic Flows definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands.
<b>&lt;p_cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition or default EPS context Identifier which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface.

<b>&lt;bearer_id&gt;</b>	a numeric parameter which identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.
--------------------------	--

### 3.3.3.7.20 AT+CGTFTRDP Traffic Flow Template Read Dynamic Parameters

Parameter Command Syntax

Test Command	Response
<b>AT+ CGTFTRDP =?</b>	<b>+CGTFTRDP: (list of &lt;cid&gt;s associated with active contexts)</b>  The test command returns a list of <cid>s associated with active contexts.

<p>Write Command</p> <p><b>AT+CGTFTRDP=[&lt;cid&gt;]</b></p>	<p>Response</p> <p>Possible Response(s):</p> <p><b>+CGTFTRDP: &lt;cid&gt;, &lt;packet filter identifier&gt;, &lt;evaluation precedence index&gt;, &lt;source address and subnet mask&gt;, &lt;protocol number (ipv4) / next header(ipv6)&gt;, &lt;destination port range&gt;, &lt;source port range&gt;, &lt;ipsec security parameter index (spi)&gt;, &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;, &lt;flow label ipv6)&gt;, &lt;direction&gt;, &lt;NW packet filter Identifier&gt;[&lt;CR&gt;&lt;LF&gt;</b></p> <p><b>+CGTFTRDP: &lt;cid&gt;, &lt;packet filter identifier&gt;, &lt;evaluation precedence index&gt;, &lt;source address and subnet mask&gt;, &lt;protocol number (ipv4) / next header (ipv6)&gt;, &lt;destination port range&gt;, &lt;source port range&gt;, &lt;ipsec security parameter index (spi)&gt;, &lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;, &lt;flow label (ipv6)&gt;, &lt;direction&gt;, &lt;NW packet filter Identifier&gt;[...]]</b></p> <p>The execution command returns the relevant information about Traffic Flow.Template of &lt;cid&gt; together with the additional network assigned values when established by the network. If the context can't be found, an ERROR response is returned.</p> <p>If the parameter &lt;cid&gt; omitted, the Traffic Flow Templates for all established PDP contexts returned.</p> <p>Parameters of both network and MT/TA initiated PDP contexts returned.</p> <p>NOTE: Some of the above listed attributes can coexist in a Packet Filter while others mutually exclude each other. The possible combinations listed on 3GPP TS 23.060 [47].</p>
<p>Reference</p> <p>3GPP Only</p>	<p>Note</p>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular PDP context definition or Traffic Flows definition (see +CGDCONT and +CGDSCONT commands).
<b>&lt;packet filter identifier&gt;</b>	a numeric parameter. The value range is from 1 to 16.
<b>&lt;evaluation precedence index&gt;</b>	a numeric parameter. The value range is from 0 to 255.
<b>&lt;source address and subnet mask&gt;</b>	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.
<b>&lt;protocol number (ipv4) / next header (ipv6)&gt;</b>	a numeric parameter, value range from 0 to 255.
<b>&lt;destination port range&gt;</b>	string type. The string is given as dot-separated numeric (0-65535) parameters in the form "f.t".
<b>&lt;source port range&gt;</b>	string type. The string is given as dot-separated numeric (0-65535) parameters on the form "f.t".
<b>&lt;ipsec security parameter index (spi)&gt;</b>	numeric value in hexadecimal format. The value range is from 00000000 to FFFFFFFF.
<b>&lt;type of service (tos) (ipv4) and mask / traffic class (ipv6) and mask&gt;</b>	string type. The string is given as dot-separated numeric (0-255) parameters in the form "t.m".
<b>&lt;flow label (ipv6)&gt;</b>	numeric value in hexadecimal format. The value range is from 00000 to FFFFF. Valid for IPv6 only.
<b>&lt;direction&gt;</b>	a numeric parameter which 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- Bidirectional (Used for Uplink and Downlink)
<b>&lt;NW packet filter Identifier&gt;</b>	a numeric parameter. The value range is from 1 to 16. In EPS the value is assigned by the network when established



### 3.3.3.7.21 AT+CGEQOS Define EPS Quality of Service

#### Parameter Command Syntax

Test Command	Response
<b>AT+CGEQOS=?</b>	<p>The test command returns the ranges of the supported parameters.</p> <p><b>+CGEQOS:</b> (range of supported &lt;cid&gt;s) ,(list of supported &lt;QCI&gt;s) ,(list of supported &lt;DL_GBR&gt;s), (list of supported &lt;UL_GBR&gt;s), (list of supported &lt;DL_MBR&gt;s) ,(list of supported &lt;UL_MBR&gt;s)</p>
Read Command	Response
<b>AT+CGEQOS?</b>	<p>The read command returns the current settings for each defined QoS.</p> <p><b>+CGEQOS:</b>&lt;cid&gt;,&lt;QCI&gt;,&lt;DL_GBR&gt;,&lt;UL_GBR&gt;],[&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][&lt;CR&gt;&lt;LF&gt;</p> <p><b>+CGEQOS:</b>&lt;cid&gt;,&lt;QCI&gt;,&lt;DL_GBR&gt;,&lt;UL_GBR&gt;],[&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][...]</p>
Write Command	Response
<b>AT+CGEQOS=</b> <b>[&lt;cid&gt; [,&lt;QCI&gt;</b> <b>[,&lt;DL_GBR&gt;</b> <b>&lt;UL_GBR&gt;</b> <b>[,&lt;DL_MBR&gt;,&lt;UL_MBR&gt;]]]</b>	<p>Possible Response(s):</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>The set command allows the TE to specify the EPS Quality of Service parameters &lt;cid&gt;, &lt;QCI&gt;, [&lt;DL_GBR&gt; and &lt;UL_GBR&gt;] and [&lt;DL_MBR&gt; and &lt;UL_MBR&gt;] for a PDP context or Traffic Flows. When in UMTS/GPRS the MT applies a mapping function to UMTS/GPRS Quality of Service. Refer subclause 9.2 for &lt;err&gt; values.</p> <p>A special form of the set command, +CGEQOS= &lt;cid&gt; causes the values for context number &lt;cid&gt; to become undefined.</p>

Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular EPS Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS.
<b>&lt;QCI&gt;</b>	a numeric parameter specifies a class of EPS QoS. (see 3GPP TS 23.203 [85]) 0 - QCI is selected by network [1 4] - value range for guaranteed bit rate Traffic Flows [5 9] - value range for non-guaranteed bit rate Traffic Flows
<b>&lt;DL_GBR&gt;</b>	a numeric parameter that indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])
<b>&lt;UL_GBR&gt;</b>	a numeric parameter that indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])
<b>&lt;DL_MBR&gt;</b>	a numeric parameter, indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])
<b>&lt;UL_MBR&gt;</b>	a numeric parameter, indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])

### 3.3.3.7.22 AT+CGEQOSRDP EPS Quality of Service Read Dynamic Parameters

Parameter Command Syntax

Test Command	Response
<b>AT+CGEQOSRDP=?</b>	<b>+CGEQOSRDP: (list of &lt;cid&gt;s associated with active contexts)</b>  The test command returns a list of <cid>s associated with active contexts. Parameters of both network and MT/TA initiated PDP contexts returned.

Write Command	Response
<b>AT+CGEQOSRDP=</b> <b>[&lt;cid&gt;]</b>	<p>Possible Response(s):</p> <p><b>+CGEQOSRDP:&lt;cid&gt;,&lt;QCI&gt;,[&lt;DL_GBR&gt;,&lt;UL_GBR&gt;],[&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][&lt;CR&gt;&lt;LF&gt;</b></p> <p>or</p> <p><b>+CGEQOSRDP:&lt;cid&gt;,&lt;QCI&gt;,[&lt;DL_GBR&gt;,&lt;UL_GBR&gt;],[&lt;DL_MBR&gt;,&lt;UL_MBR&gt;][...]</b></p> <p>Description: The execution command returns the Quality of Service parameters &lt;QCI&gt;,[&lt;DL_GBR&gt; and &lt;UL_GBR&gt;] and [&lt;DL_MBR&gt; and &lt;UL_MBR&gt;] of the established PDP Context associated to the provided context identifier &lt;cid&gt;. If the context cannot be founded an ERROR response is returned.</p> <p>If the parameter &lt;cid&gt; is omitted, the Quality of Service parameters for all established PDP contexts are returned.</p>
Reference	Note
3GPP Only	

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	a numeric parameter which specifies a particular Traffic Flows definition in EPS and a PDP Context definition in UMTS/GPRS.
<b>&lt;QCI&gt;</b>	<p>a numeric parameter that specifies a class of EPS QoS. (see 3GPP TS 23.203 [85])</p> <p>0 - QCI is selected by network</p> <p>[1 4] - value range for guaranteed bit rate Traffic Flows</p> <p>[5 9] - value range for non-guaranteed bit rate Traffic Flows.</p>
<b>&lt;DL_GBR&gt;</b>	a numeric parameter, which indicates DL GBR in case of GBR QCI. The value is in kbit/s. This parameter is omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])
<b>&lt;UL_GBR&gt;</b>	a numeric parameter indicates UL GBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])

<b>&lt;DL_MBR&gt;</b>	a numeric parameter indicates DL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])
<b>&lt;UL_MBR&gt;</b>	a numeric parameter indicates UL MBR in case of GBR QCI. The value is in kbit/s. This parameter omitted for a non-GBR QCI. (see 3GPP TS 24.301 [83])

### 3.3.3.7.23 AT\$QCPDPP Sets PDP authentication parameters.

This command sets PDP authentication parameters

Test Command	Response
<b>AT\$QCPDPP=?</b>	<b>\$QCPDPP: (1-24,100-179),(0-3),,</b>  <b>OK</b>
Read Command	Response
<b>AT\$QCPDPP ?</b>	list of <cid>s associated with PDP authentication parameter.  <b>\$QCPDPP: &lt;cid&gt;,&lt;type&gt;[,&lt; username&gt;]</b>
Write Command	Response
<b>AT\$QCPDPP=&lt;cid&gt;,&lt;type&gt;[,&lt;password&gt;,&lt;username&gt;]</b>	This command sets PDP authentication parameters.  Note: If the type is set to 0, username and password cannot be set.If the type is set to other values,username and password must be set.

Parameters are defined below:

Parameters	Description
<b>&lt;cid&gt;</b>	(PDPContextIdentifier)numericparameterwhichspecifiesaparticular PDPcontextdefinition.The range is (1-24,100-179).
<b>&lt;type&gt;</b>	(0-3) 0 -- No authentication 1 -- PAP authentication. 2 -- CHAP authentication 3 -- PAP/CHAP authentication
<b>&lt;password&gt;</b>	No quotes strings, length of not more than 132
<b>&lt;username&gt;</b>	No quotes strings, length of not more than 132

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### 3.3.4 3GPP TS 27.005 AT Commands for SMS and CBS

#### 3.3.4.1 General Configuration

##### 3.3.4.1.1 AT+CSMS Select Message Service

Select Message Service

Test Command	Response
<b>AT+CSMS=?</b>	Test command reports the supported value of the parameter <service>.
Read Command	Response
<b>AT+CSMS?</b>	Read command reports current service setting along with supported message types in the format: <b>+CSMS: &lt;service&gt;,&lt;mt&gt;,&lt;mo&gt;,&lt;bm&gt;</b>
Write Command	Response
<b>AT+CSMS=&lt;service&gt;</b>	Set command selects messaging service <service>. It returns the types of messages supported by the ME. Set command returns the types of messages supported by the ME: <b>+CSMS: &lt;mt&gt;,&lt;mo&gt;,&lt;bm&gt;</b>
Reference	Note
3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.41/23.041(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;service&gt;</b>	messaging service 0 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0 (factory default) 1 - The syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version
<b>&lt;mt&gt;</b>	mobile terminated messages support 0 - type not supported 1 - type supported

<b>&lt;mo&gt;</b>	mobile originated messages support 0 - type not supported 1 - type supported
<b>&lt;bm&gt;</b>	broadcast type messages support 0 - type not supported 1 - type supported

Example:

Commands	Response
<b>AT+CSMS=1</b>	<b>+CSMS: 1,1,1</b> <b>OK</b>
<b>AT+CSMS?</b>	<b>+CSMS: 1,1,1,1</b> <b>OK</b>

#### 3.3.4.1.2 AT+CPMS Preferred Message Storage

Preferred Message Storage

Test Command	Response
<b>AT+CPMS=?</b>	Test command reports the supported values for parameters <b>&lt;mem1&gt;</b> , <b>&lt;mem2&gt;</b> and <b>&lt;mem3&gt;</b>
Read Command	Response
<b>AT+CPMS?</b>	Read command reports the message storage status in the format: <b>+CPMS:&lt;mem1&gt;,&lt;usedr&gt;,&lt;totalr&gt;,&lt;mem2&gt;,&lt;usedw&gt;,&lt;totalw&gt;,&lt;mem3&gt;,&lt;useds&gt;,&lt;totals&gt;</b>  Where: <b>&lt;mem1&gt;</b> , <b>&lt;mem2&gt;</b> and <b>&lt;mem3&gt;</b> are the selected storage memories for reading, writing and storing respectively

Write Command	Response
<b>AT+CPMS=&lt;mem1&gt;[,&lt;mem2&gt;[,&lt;mem3&gt;]]</b>	<p>Set command selects memory storages &lt;mem1&gt;, &lt;mem2&gt; and &lt;mem3&gt; to be used for reading, writing, sending and storing SMS.</p> <p>The command returns the memory storage status in the format:</p> <p><b>+CPMS:&lt;usedr&gt;,&lt;totalr&gt;,&lt;usedw&gt;,&lt;totalw&gt;,&lt;useds&gt;,&lt;totals&gt;</b></p>
Reference	Note
3GPP TS 27.005and 3gpp2	

Parameters are defined below:

Parameters	Description
<b>&lt;mem1&gt;</b>	<p>memory from which messages are read and deleted SMS memory storage in Flash</p> <p>"ME" - SMS memory storage in Flash(CDMA default)</p> <p>"MT" - SMS memory storage in Flash</p> <p>"SM" - SMS memory storage (UMTS default)</p>
<b>&lt;mem2&gt;</b>	<p>memory to which writing and sending operations are made</p> <p>"ME" - SMS memory storage in Flash(CDMA default)</p> <p>"MT" - SMS memory storage in Flash</p> <p>"SM" - SIM SMS memory storage (UMTS default)</p>
<b>&lt;mem3&gt;</b>	<p>memory to which received SMS are preferred to be stored</p> <p>"ME" - SMS memory storage in Flash(CDMA default)</p> <p>"SM" - SIM SMS memory storage (UMTS default)</p>
<b>&lt;usedr&gt;</b>	number of SMS stored into <mem1>
<b>&lt;totalr&gt;</b>	max number of SMS that <mem1> can contain
<b>&lt;usedw&gt;</b>	number of SMS stored into <mem2>
<b>&lt;totalw&gt;</b>	max number of SMS that <mem2> can contain
<b>&lt;useds&gt;</b>	number of SMS stored into <mem3>
<b>&lt;totals&gt;</b>	max number of SMS that <mem3> can contain

### 3.3.4.1.3 AT+CMGF Message Format

Message Format



Test Command	Response
<b>AT+CMGF=?</b>	Test command reports the supported value of <mode> parameter.
Read Command	Response
<b>AT+CMGF?</b>	Read command reports the current value of the parameter <mode>.
Write Command	Response
<b>AT+CMGF=[&lt;mode&gt;]</b>	Set command selects the format of messages used with send, list, read and write commands.
Reference	Note
3GPP TS 27.005(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 - PDU mode, as defined in 3GPP TS 3.40/23.040 and 3GPP TS 3.41/23.041 (factory default) 1 - text mode

### 3.3.4.2 Message Configuration

#### 3.3.4.2.1 AT+CSCA Service Center Address

##### Service Center Address

Test Command	Response
<b>AT+CSCA=?</b>	Test command returns the <b>OK</b> result code.
Read Command	Response
<b>AT+CSCA?</b>	<p>Read command reports the current value of the SCA in the format:</p> <p><b>+CSCA: &lt;number&gt;,&lt;type&gt;</b></p> <p>Note: If SCA is not present, the device reports an error message.</p>
Write Command	Response
<b>AT+CSCA=&lt;number&gt;[,&lt;type&gt;e&gt;]</b>	<p>Set command sets the Service Center Address to be used for mobile originated SMS transmissions.</p> <p>Note: to use the SM service, it is mandatory to set a Service Center Address to which service requests are directed.</p> <p>Note: in Text mode the settings are used by send &amp; write commands; in PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the &lt;pdu&gt; parameter equals zero.</p>
Reference	Note
3GPP TS 27.005(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;number&gt;</b>	SC phone number in the format defined by <type>
<b>&lt;type&gt;</b>	<p>the type of number</p> <p>129 - national numbering scheme</p> <p>145 - international numbering scheme (contains the character "+")</p>

### 3.3.4.2.2 AT+CGSMS Select service for MO SMS services

Select service for MO SMS services

Test Command	Response
<b>AT+CGSMS=?</b>	Test command reports the supported range of values for parameter <service>
Read Command	Response
<b>AT+CGSMS?</b>	Read command reports the currently selected service or service preference : <b>+CGSMS: &lt;service&gt;</b>
Write Command	Response
<b>AT+CGSMS=[&lt;service&gt;]</b>	The set command used to specify the service or service preference that the MT will use to send MO SMS messages.  Note: If SMS transfer via Packet Domain fails, <service> parameter automatically reset to Circuit switched.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;service&gt;</b>	a numeric parameter which indicates the service or service preference to be used. 0 - Packet Domain 1 - Circuit switched 2 - Packet Domain preferred (use circuit switched if GRPS is not available) (factory default) 3 - Circuit switched preferred (use Packet Domain if circuit switched not available)

### 3.3.4.2.3 AT+CSMP Set Text Mode Parameters

#### Set Text Mode Parameters

Test Command	Response
<b>AT+CSMP=?</b>	Test command returns the OK result code.
Read Command	Response
<b>AT+CSMP?</b>	Read command reports the current setting in the format: <b>+CSMP: &lt;fo&gt;,&lt;vp&gt;,&lt;pid&gt;,&lt;dc&gt;</b>
Write Command	Response
<b>AT+CSMP=[&lt;fo&gt;[,&lt;vp&gt;[,&lt;pid&gt;[,&lt;dc&gt;]]]]</b>	Set command is used to select values for additional parameters for storing and sending SMs when the text mode is used (AT+CMGF=1)  Note: the current settings are stored through +CSAS
Reference	Note
3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.38/23.038(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;fo&gt;</b>	depending on the command or result code: first octet of 3GPP TS 03.40/23.040 SMS-DELIVER, SMS-SUBMIT (omit17), SMS-STATUS-REPORT, or SMS-COMMAND (omit2) in integer format.
<b>&lt;vp&gt;</b>	depending on SMS-SUBMIT <fo> setting: 3GPP TS 03.40/23.040 TP-Validity-Period either in integer format (omit167) or in quoted time-string format.
<b>&lt;pid&gt;</b>	3GPP TS 03.40/23.040 TP-Protocol-Identifier in integer format.
<b>&lt;dc&gt;</b>	depending on the command or result code: 3GPP TS 03.38/23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme.

Example:

Commands	Response
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<b>AT+CSMP=17,167,0,0</b>	<b>OK</b> Set the parameters for an outgoing message with 24 hours of validity period and default properties
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#### 3.3.4.2.4 AT+CSDH Show Text Mode Parameters

Show Text Mode Parameters

Test Command	Response
<b>AT+CSDH=?</b>	Test command reports the supported range of values for parameter <b>+CSDH: (0-1)</b>
Read Command	Response
<b>AT+CSDH?</b>	Read command reports the current setting in the format: <b>+CSDH: &lt;show&gt;</b>
Write Command	Response
<b>AT+CSDH=[&lt;show&gt;]</b>	Set command controls whether detailed header information is shown in text mode (AT+CMGF=1) result codes.
Reference	Note
3GPP TS 27.005(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;show&gt;</b>	0 - do not show header values defined in commands +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode. For SMS-COMMANDs in +CMGR result code do not show <pid>, <mn>, <da>, <toda>, <length> or <cdata> 1 - show the values in result codes

#### 3.3.4.2.5 AT+CSCB Select Cell Broadcast Message Types

Select Cell Broadcast Message Types

Test Command	Response
<b>AT+CSCB=?</b>	Test command returns the range of values for parameter <mode>.
Read Command	Response
<b>AT+CSCB?</b>	Read command reports the current value of parameters <mode>, <mids> and <dcss>.
Write Command	Response
<b>AT+CSCB=&lt;[&lt;mode&gt;[,&lt;mids&gt;[,&lt;dcss&gt;]]]&gt;</b>	Set command selects which types of Cell Broadcast Messages received by the device.  Note: the current settings are stored through +CSAS
Reference	Note
3GPP TS 27.005, 3GPP TS 03.41/23.041, 3GPP TS 03.38/23.038.(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 - the message types defined by <mids> and <dcss> are accepted (factory default) 1 - the message types defined by <mids> and <dcss> are rejected
<b>&lt;mids&gt;</b>	Message Identifiers, string type: all different possible combinations of the CBM message identifiers; default is empty string ("")
<b>&lt;dcss&gt;</b>	Data Coding Schemes, string type: all different possible combinations of CBM data coding schemes; default is empty string ("")

### 3.3.4.2.6 AT+CSAS Save Settings

Save Settings

Test Command	Response
<b>AT+CSAS=?</b>	Test command returns the possible range of values for the parameter <profile>.
Write Command	Response
<b>AT+CSAS[=&lt;profile&gt;]</b>	<p>Execution command saves settings which have been made by the +CSCA, +CSMP and +CSCB commands in local non volatile memory.</p> <p>Note: Currently only profile 0 is supported.</p> <p>Note: certain settings may not be supported by the SIM. Therefore, the settings are always saved to the NVM, regardless the value of &lt;profile&gt;.</p> <p>Note: If parameter is omitted the settings are parameter is 0</p>
Reference	Note
3GPP TS 27.005(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;profile&gt;</b>	<p>0 - settings saved to NVM (factory default).</p> <p>*1..n - SIM profile number; the value of n depends on the SIM</p>

### 3.3.4.2.7 AT+CRES Restore Settings

Restore Settings

Test Command	Response
<b>AT+CRES=?</b>	Test command returns the possible range of values for the parameter <profile>.

Write Command	Response
<b>AT+CRES[=&lt;profile&gt;]</b>	<p>Execution command restores message service settings saved by +CSAS command from either NVM or SIM.</p> <p>Note: Currently only profile 0 is supported.</p> <p>Note: certain settings may not be support by the SIM and therefore they are always restored from NVM, regardless the value of &lt;profile&gt;.</p> <p>Note: If parameter is omitted the command restores message service settings from NVM.</p>
Reference	Note
3GPP TS 27.005(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;profile&gt;</b>	<p>0 - message service settings are restored from NVM.</p> <p>*1..n - SIM profile number; the value of n depends on the SIM</p>



### 3.3.4.3 Message Receiving and Reading

#### 3.3.4.3.1 AT+CNMI New Message Indications to Terminal Equipment

New Message Indications to Terminal Equipment

Test Command	Response
<b>AT+CNMI=?</b>	Test command reports the supported range of values for the +CNMI command parameters.
Read Command	Response
<b>AT+CNMI?</b>	Read command returns the current parameter settings for +CNMI command in the form: <b>+CNMI: &lt;mode&gt;,&lt;mt&gt;,&lt;bm&gt;,&lt;ds&gt;,&lt;bfr&gt;</b>
Write Command	Response
<b>AT+CNMI=[&lt;mode&gt;[,&lt;mt&gt;[,&lt;bm&gt;[,&lt;ds&gt;[,&lt;bfr&gt;]]]]]</b>	Set command selects the behaviour of the device on how the receiving of new messages from the network is indicated to the DTE.
Reference	Note
3GPP TS 27.005(3GPP Only)	DTR signal is ignored, hence the indication is sent even if the DTE is inactive (DTR signal is Low). In this case the unsolicited result code may be lost so if MODULE remains active while DTE is not, at DTE startup it is suggested to check whether new messages have reached the device meanwhile with command AT+CMGL=0 that lists the new messages received.

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	unsolicited result codes buffering option 0 - Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications may be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications

	<p>1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE.</p> <p>2 - Buffer unsolicited result codes in the TA in case the DTE is busy and flush them to the TE after reservation. Otherwise, forward them directly to the TE.</p> <p>3 - if &lt;mt&gt; is set to 1 an indication by means of a 100 ms break is issued when an SMS is received while the module is in GPRS online mode. It enables the hardware ring line for 1 s. too.</p> <p>Note: In &lt;mode&gt;field,"3" not supported.</p>
<mt>	<p>result code indication reporting for SMS-DELIVER</p> <p>0 - No SMS-DELIVER indications are routed to the TE and message is stored.</p> <p>1 - If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using the following unsolicited result code:  +CMTI: &lt;memr&gt;,&lt;index&gt; where:  &lt;memr&gt; - memory storage where the new message is Stored:  "SM" , "ME"  &lt;index&gt; - location on the memory where SMS is stored.</p> <p>2 - SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group) are routed directly to the TE using the following unsolicited result code:</p> <p>(PDU Mode)  +CMT: &lt;alpha&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;  where:  &lt;alpha&gt; - alphanumeric representation of originator/destination number corresponding to the entry found in MT phonebook. Used character set should be the one selected with command +CSCS.  &lt;length&gt; - PDU length  &lt;pdu&gt; - PDU message</p> <p>(TEXT Mode)  +CMT:&lt;oa&gt;,&lt;alpha&gt;,&lt;scts&gt;[,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt; (the information written in italics will be present depending on +CSDH last setting)</p>

	<p>where:</p> <p>&lt;oa&gt; - originating address, string type converted in the currently selected character set (see +CSCS)</p> <p>&lt;alpha&gt; - alphanumeric representation of &lt;oa&gt;, used character set should be the one selected with command +CSCS</p>
	<p>&lt;scts&gt; - arrival time of the message to the SC</p> <p>&lt;toa&gt;, &lt;tosca&gt; - type of number &lt;oa&gt; or &lt;sca&gt;:</p> <p>129 - number in national format</p> <p>145 - number in international format(contains the "+")</p> <p>&lt;fo&gt; - first octet of 3GPP TS 03.40/23.040</p> <p>&lt;pid&gt; - Protocol Identifier</p> <p>&lt;dcsc&gt; - Data Coding Scheme</p> <p>&lt;sca&gt; - Service Centre address, string type, converted in the currently selected character set (see +CSCS)</p> <p>&lt;length&gt; - text length</p> <p>&lt;data&gt; - TP-User-Data</p> <p>If &lt;dcsc&gt; indicates that GSM03.38/23.038 default alphabet is used and &lt;fo&gt; indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is not set (bit 6 of &lt;fo&gt; is 0), each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)</p> <p>If &lt;dcsc&gt; indicates that 8-bit or UCS2 data coding scheme is used or &lt;fo&gt; indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is set (bit 6 of &lt;fo&gt; is 1), each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)</p> <p>Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in &lt;mt&gt;=1. Acknowledge for the received SMS-DELIVER SM is sent to network immediately when +CSMS &lt;service&gt; is set to '0' or when +CSMS &lt;service&gt; is set to '1'. Acknowledge is sent via +CNMA command during predefine time- out, an error is sent to network in case timeout expire, Next +CMT response depends on acknowledge of current received +CMT response in case +CSMS &lt;service&gt; parameter set to '1'.</p> <p>*3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in &lt;mt&gt;=2. Messages of other data coding schemes result in indication as defined in &lt;mt&gt;=1.</p>

<b>&lt;bm&gt;</b>	<p>broadcast reporting option</p> <p>0 - Cell Broadcast Messages are not sent to the DTE</p> <p>2 - New Cell Broadcast Messages are sent to the DTE with the unsolicited result code:</p> <p>(PDU Mode)</p> <p>+CBM: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;PDU&gt;</p> <p>where:</p> <p>&lt;length&gt; - PDU length</p> <p>&lt;PDU&gt; - message PDU</p> <p>(TEXT Mode)</p> <p>+CBM:&lt;sn&gt;,&lt;mid&gt;,&lt;dc&gt;,&lt;pag&gt;,&lt;pags&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt; where:</p> <p>&lt;sn&gt; - message serial number</p> <p>&lt;mid&gt; - message ID</p> <p>&lt;dc&gt; - Data Coding Scheme</p> <p>&lt;pag&gt; - page number</p> <p>&lt;pags&gt; - total number of pages of the message</p> <p>&lt;data&gt; - CBM Content of Message</p> <p>If &lt;dc&gt; indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)</p> <p>If &lt;dc&gt; indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)</p>
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<b>&lt;ds&gt;</b>	<p>SMS-STATUS-REPORTs reporting option</p> <p>0 - status report receiving is not reported to the DTE and messages are stored</p> <p>1 - the status report is sent to the DTE with the following unsolicited result code:</p> <p>(PDU Mode)</p> <p>+CDS: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;PDU&gt;</p> <p>where:</p> <p>&lt;length&gt; - PDU length</p> <p>&lt;PDU&gt; - message PDU</p> <p>(TEXT Mode)</p> <p>+CDS: &lt;fo&gt;,&lt;mr&gt;,&lt;ra&gt;,&lt;tora&gt;,&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt; where:</p> <p>&lt;fo&gt; - first octet of the message PDU</p> <p>&lt;mr&gt; - message Reference number</p> <p>&lt;ra&gt; - recipient address, string type, represented in the currently selected character set (see +CSCS)</p> <p>&lt;tora&gt; - type of number &lt;ra&gt;</p> <p>&lt;scts&gt; - arrival time of the message to the SC</p> <p>&lt;dt&gt; - sending time of the message</p> <p>&lt;st&gt; - message status as coded in the PDU</p> <p>Acknowledge for the received SMS-STATUS-REPORT SM is sent to network immediately when +CSMS &lt;service&gt; is set to '0' or when +CSMS &lt;service&gt; is set to '1'. Acknowledge is sent via +CNMA command during pre-defined timeout, an error is sent to network in case timeout expire, next +CDS response depends on acknowledge of current received +CDS response in case +CSMS &lt;service&gt; parameter set to '1'.</p> <p>*2 - if a status report is stored, then the following unsolicited result code is sent:</p> <p>+CDSI: &lt;memr&gt;,&lt;index&gt;</p> <p>where:</p> <p>&lt;memr&gt; - memory storage where the new message is stored "SR"</p> <p>&lt;index&gt; - location on the memory where SMS is stored</p>
<b>&lt;bfr&gt;</b>	<p>buffered result codes handling method:</p> <p>0 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when &lt;mode&gt;=1..3 is entered (OK response shall be given before flushing the codes)</p> <p>1 - TA buffer of unsolicited result codes defined within this command is cleared when &lt;mode&gt;=1..3 is entered.</p>

### 3.3.4.3.2 AT+CMGL List Messages

#### List Messages

Test Command	Response
<b>AT+CMGL=?</b>	Test command returns a list of supported <stat>s
Write Command	Response
<b>AT+CMGL[=&lt;stat&gt;]</b>	<p>Execution command reports the list of all the messages with status value &lt;stat&gt; stored into &lt;memr&gt; message storage (&lt;memr&gt; is the message storage for read and deleted SMS as last settings of command +CPMS).</p> <p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p>
Reference	Note
3GPP TS 27.005 and 3GPP2	

Parameters are defined below:

Parameters	Description
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<b>&lt;stat&gt;</b>	<p>0 - new message  1 - read message  2 - stored message not yet sent  3 - stored message already sent  4 - all messages.</p> <p>Each message to be listed is represented in the format:  +CMGL: &lt;index&gt;,&lt;stat&gt;,&lt;[alpha]&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;  where:  &lt;index&gt; - message position in the memory storage list.  &lt;stat&gt; - status of the message  &lt;alpha&gt; - string type alphanumeric representation of &lt;da&gt; or &lt;oa&gt;,  corresponding to an entry found in the phonebook; used character  set is the one selected with command +CSCS.  &lt;length&gt; - the length of the actual TP data unit in octets.(i.e. the RP  layer SMSC address octets are not counted in the length)  &lt;pdu&gt; - message in PDU format according to 3GPP TS  3.40/23.040</p> <p>(Text Mode) Parameter:  &lt;stat&gt;  "REC UNREAD" - new message  "REC READ" - read message  "STO UNSENT" - stored message not yet sent  "STO SENT" - stored message already sent  "ALL" - all messages.</p> <p>Each message to be listed is represented in the format (the  information written in <i>italics</i> will be present depending on +CSDH  last setting):  +CMGL:  &lt;index&gt;,&lt;stat&gt;,&lt;oa/da&gt;,&lt;[alpha]&gt;,&lt;scts&gt;[,&lt;tooa/toda&gt;,  &lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;  Each message to be listed is represented in the format in CDMA  +CMGL:  &lt;index&gt;,&lt;stat&gt;,&lt;oa/da&gt;,&lt;scts&gt;,,&lt;tooa/toda&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;  data&gt;  Where:  &lt;index&gt; - message position in the memory storage list.  &lt;stat&gt; - status of the message  &lt;oa/da&gt; - originator/destination address, string type, represented in  the currently selected character set (see +CSCS)</p>
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<alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.

<scts> - TP-Service Centre Time Stamp in Time String Format

<tooa/toda> - type of number <oa/da>

129 - number in national format

145 - number in international format (contains the "+")

<length> - text length

<data> - TP-User-Data

If <dc> indicates that GSM03.38/23.038 default alphabet is used, each character of GSM/WCDMA alphabet will be converted into current TE

character set (see +CSCS)

If <dc> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

if network is CDMA and <dc> indicate that (see ^HSMSSS)

Unicode data coding scheme is used, the output text is hexadecimal numbers which will be converted into current TE character.

Each message delivery confirm is represented in the format:

+CMGL: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st> Where:

<index> - message position in the storage

<stat> - message status

<fo> - first octet of the message PDU

<mr> - message Reference number

<scts> - arrival time of the message to the SC

<dt> - sending time of the message

<st> - message status as coded in the PDU

### 3.3.4.3.3 AT+CMGR Read Message

Read Message

Test Command	Response
<b>AT+CMGR=?</b>	Test command returns the OK result code



Write Command	Response
<b>AT+CMGR=&lt;index&gt;</b>	Execution command reports the message with location value <index> from<memr> message storage (<memr> is the message storage for read and delete SMS as last settings of command +CPMS).
Reference	Note
3GPP TS 27.005 and 3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	<p>message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used)</p> <p>(PDU Mode)</p> <p>The output has the following format:  +CMGR: &lt;stat&gt;,[&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt; Where:  &lt;stat&gt; - status of the message  0 - new message  1 - read message  2 - stored message not yet sent  3 - stored message already sent  &lt;alpha&gt; - string type alphanumeric representation of &lt;da&gt; or &lt;oa&gt;, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.  &lt;length&gt; - the length of the actual TP data unit in octets.(i.e. the RP layer SMSC address octets are not counted in the length)  &lt;pdu&gt; - message in PDU format according to 3GPP TS 3.40/23.040.  The status of the message and entire message data unit &lt;pdu&gt; returned.</p> <p>(Text Mode)</p> <p>Output format for received messages (the information written in italics will be present depending on +CSDH last setting):  +CMGR: &lt;stat&gt;,&lt;oa&gt;,&lt;alpha&gt;,&lt;scts&gt;,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;  Output format for message delivery confirm:  +CMGR: &lt;stat&gt;,&lt;fo&gt;,&lt;mr&gt;,,,&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;</p>

output format for messages In CDMA

+CMGR:<stat>,<oa/da>,<scts>,,<tooa/toda>,<length><CR><LF><data>

where:

<stat> - status of the message

"REC UNREAD" - new received message unread

"REC READ" - received message read

"STO UNSENT" - message stored not yet sent

"STO SENT" - message stored already sent

<fo> - first octet of the message PDU

<mr> - message Reference number

<scts> - arrival time of the message to the SC

<dt> - sending time of the message

<st> - message status as coded in the PDU

<pid> - Protocol Identifier

<dc> - Data Coding Scheme

<oa> - Originator address, string type represented in the currently selected character set (see +CSCS)

<da> - Destination address, string type represented in the currently selected character set (see +CSCS)

<alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.

<sca> - Service Centre number

<tooa>,<toda>,<tosca> - type of number <oa>,<da>,<sca>

129 - number in national format

145 - number in international format (contains the "+")

<length> - text length

<data> - TP-User\_data

If <dc> indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)

If <dc> indicates that 8-bit or L506 data coding scheme is used, each

8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

if network is CDMA and <dc> indicate that (see ^HSMSSS)

Unicode data coding scheme is used,the output text is hexadecimal numbers which will be converted into current TE character.

Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.

#### 3.3.4.3.4 AT+CNMA New Message Acknowledgement to ME/TA

## New Message Acknowledgement to ME/TA

Execution Command  (Text Mode) <b>AT+CNMA</b>	Response  Only positive acknowledgement to network (RP-ACK) is possible.
Test Command  (PDU Mode) <b>AT+CNMA=?</b>	Response  Test command returns the possible range of values for the parameter <n>
Write Command  (PDU Mode) <b>AT+CNMA[=&lt;n&gt;[,&lt;length&gt;[&lt;CR&gt;PDUisgiven&lt;ctrl-Z/ESC]]]</b>	Response  Execution command confirms correct reception of a new message (SMS- DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE.  WMS has send ACK to network before your +CNMA command, user should not process this command again. If WMS hasn't automatic send ACK to network, acknowledge with +CNMA is possible only if the +CSMS parameter is set to 1(+CSMS=1) when a +CMT or +CDS indication is show.  If no acknowledgement is given within the network timeout, an RP-ERROR is sent to the network, the <mt> and <ds> parameters of the +CNMI command are then reset to zero (do not show new message indication).  Either positive (RP-ACK) or negative (RP-ERROR) acknowledgement to the network is possible.  Note: Refer to 3GPP TS 23.040 Recommendation for other PDU negative acknowledgement codes.
Reference  3GPP TS 27.005(3GPP Only)	Note

Parameters are defined below:

Parameters	Description
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<b>&lt;n&gt;</b>	Type of acknowledgement in PDU mode 0 - send RP-ACK without PDU (same as TEXT mode) 1 - send RP-ACK with optional PDU message. 2 - send RP-ERROR with optional PDU message.
<b>&lt;length&gt;</b>	Length of the PDU message.

### 3.3.4.3.5 AT+CMGLEX List Messages

#### List Messages

Test Command	Response
<b>AT+CMGLEX=?</b>	Test command returns a list of supported <stat>s
Write Command	Response
<b>AT+CMGLEX[=&lt;stat&gt;]</b>	<p>Execution command reports the list of all the messages with status value &lt;stat&gt; stored into &lt;memr&gt; message storage (&lt;memr&gt; is the message storage for read and deleted SMS as last settings of command +CPMS).</p> <p>The parameter type and the command output depend on the last settings of command +CMGF (message format to be used)</p>
Reference	Note
3GPP TS 27.005 and 3GPP2	

Parameters are defined below:

Parameters	Description
(PDU Mode) <b>&lt;stat&gt;</b>	<p>0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages.</p> <p>Each message to be listed is represented in the format: +CMGLEX: &lt;index&gt;,&lt;stat&gt;,&lt;[alpha]&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</p>

	<p>where:</p> <p>&lt;index&gt; - message position in the memory storage list.</p> <p>&lt;stat&gt; - status of the message</p> <p>&lt;alpha&gt; - string type alphanumeric representation of &lt;da&gt; or &lt;oa&gt;, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p>&lt;length&gt; - length of the PDU in bytes</p> <p>&lt;pdu&gt; - message in PDU format according to 3GPP TS 3.40/23.040</p>
(Text Mode)	<p><b>&lt;stat&gt;</b></p> <p>"REC UNREAD" - new message</p> <p>"REC READ" - read message</p> <p>"STO UNSENT" - stored message not yet sent</p> <p>"STO SENT" - stored message already sent</p> <p>"ALL" - all messages.</p> <p>Each message to be listed is represented in the format in UMTS (the information written in italics will be present depending on +CSDH last setting):</p> <p>+CMGLEX:</p> <p>&lt;index&gt;,&lt;stat&gt;,&lt;oa/da&gt;,[&lt;alpha&gt;],&lt;scts&gt;[,&lt;tooa/toda&gt;,&lt;length&gt;],&lt;encode&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p>Each message to be listed is represented in the format in CDMA</p> <p>+CMGLEX:</p> <p>&lt;index&gt;,&lt;stat&gt;,&lt;oa/da&gt;,&lt;scts&gt;,,&lt;tooa/toda&gt;,&lt;length&gt;,&lt;encode&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p> <p>Where:</p> <p>&lt;index&gt; - message position in the storage</p> <p>&lt;stat&gt; - message status</p> <p>&lt;oa/da&gt; - originator/destination address, string type, represented in the currently selected character set (see +CSCS)</p> <p>&lt;alpha&gt; - string type alphanumeric representation of &lt;da&gt; or &lt;oa&gt;, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.</p> <p>&lt;scts&gt; - TP-Service Centre Time Stamp in Time String Format</p> <p>&lt;tooa/toda&gt; - type of number &lt;oa/da&gt;</p> <p>129 - number in national format</p> <p>145 - number in international format (contains the "+")</p> <p>&lt;length&gt; - text length</p> <p>&lt;encode&gt;-encode type of message.</p> <p>2- message is encoded by ascii(Only in CDMA)</p> <p>4- message is encoded by unicode(Only in CDMA)</p> <p>11- message is encoded by gsm(Only in UMTS)</p> <p>12- message is encoded by ASCII(Only in UMTS)</p>

13— message is encoded by ucs2(Only in UMTS)

Note:

If < encode> indicates that gsm data coding scheme is used, each character of GSM/WCDMA alphabet will be converted into ASCII, which cannot support some words that encoding of gsm7bit don't support.

<data> - TP-User-Data

If < dcs> indicates that GSM03.38/23.038 default alphabet is used , each character of GSM/WCDMA alphabet will be converted into current TE

character set (see +CSCS)

If < dcs> indicates that 8-bit or UCS2 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

Each message delivery confirm is represented in the format:

+CMGLEX: <index>,<stat>,<fo>,<mr>,,,<scts>,<dt>,<st>

Where:

<index> - message position in the storage

<stat> - message status

<fo> - first octet of the message PDU

<mr> - message Reference number

<scts> - arrival time of the message to the SC

<dt> - sending time of the message

<st> - message status as coded in the PDU

Note: If parameter is omitted the command returns the list of SMS with REC UNREAD status.

### 3.3.4.3.6 AT+CMGREX Read Message

Read Message

Test Command	Response
<b>AT+CMGREX=?</b>	Test command returns the OK result code

Write Command	Response
<b>AT+CMGREX=&lt;index&gt;</b>	Execution command reports the message with location value <index> from <memr> message storage (<memr> is the message storage for read and delete SMS as last settings of command +CPMS).
Reference	Note
3GPP TS 27.005 and 3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	<p>message index.</p> <p>The output depends on the last settings of command +CMGF (message format to be used) (PDU Mode)</p> <p>The output has the following format:  +CMGREX: &lt;stat&gt;,[&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt; Where:  &lt;stat&gt; - status of the message  0 - new message  1 - read message  2 - stored message not yet sent  3 - stored message already sent  &lt;alpha&gt; - string type alphanumeric representation of &lt;da&gt; or &lt;oa&gt;, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.  &lt;length&gt; - length of the PDU in bytes.  &lt;pdu&gt; - message in PDU format according to 3GPP TS 3.40/23.040.  The status of the message and entire message data unit &lt;pdu&gt; returned.</p> <p>(Text Mode)  Output format for received messages in UMTS (the information written in <i>italics</i> will be present depending on +CSDH last setting):  +CMGREX: &lt;stat&gt;,&lt;oa&gt;,[&lt;alpha&gt;],&lt;scts&gt;[,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcsc&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;],&lt;encode&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;  Output format for sent messages in UMTS:  +CMGREX: &lt;stat&gt;,&lt;da&gt;,[&lt;alpha&gt;][,&lt;toda&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcsc&gt;,,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;],&lt;encode&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p>

Output format for message delivery confirm in UMTS:

+CMGREX: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st>

output format for messages In CDMA

+CMGREX:

<stat>,<oa/da>,<scts>,<tooa/toda>,<length>,<encode><CR><LF>  
<data>

where:

<stat> - status of the message

"REC UNREAD" - new received message unread

"REC READ" - received message read

"STO UNSENT" - message stored not yet sent

"STO SENT" - message stored already sent

<fo> - first octet of the message PDU

<mr> - message Reference number

<scts> - arrival time of the message to the SC

<dt> - sending time of the message

<st> - message status as coded in the PDU

<pid> - Protocol Identifier

<dcsc> - Data Coding Scheme

<oa> - Originator address, string type represented in the currently selected character set (see +CSCS)

<da> - Destination address, string type represented in the currently selected character set (see +CSCS)

<alpha> - string type alphanumeric representation of <da> or <oa>, corresponding to an entry found in the phonebook; used character set is the one selected with command +CSCS.

<sca> - Service Centre number

<tooa>,<toda>,<tosca> - type of number <oa>,<da>,<sca>

129 - number in national format

145 - number in international format (contains the "+")

<length> - text length

<encode>-encode type of message,only in CDMA mode it's effective.

2- message is encoded by ASCII(Only in CDMA)

4- message is encoded by unicode(Only in CDMA)

11- message is encoded by gsm(Only in UMTS)

12- message is encoded by ASCII(Only in UMTS)

13- message is encoded by UCS2(Only in UMTS)

Note:



If <encode> indicates that gsm data coding scheme is used, each character of GSM/WCDMA alphabet will be converted into ASCII, which cannot support some words that encoding of gsm7bit don't support.

<data> - TP-User\_data

If <dc> indicates that GSM03.38/23.038 default alphabet is used, each character of GSM/WCDMA alphabet will be converted into current TE character set (see +CSCS)

If <dc> indicates that 8-bit or L506 data coding scheme is used, each 8-bit octet will be converted into two IRA character long hexadecimal number (e.g. octet 0x2A will be converted as two characters 0x32 0x41)

Note: in both cases if status of the message is 'received unread', status in the storage changes to 'received read'.

### 3.3.4.4 Message Sending and Writing

#### 3.3.4.4.1 AT+CMGS Send Message

Send Message

Test Command	Response
<b>AT+CMGS=?</b>	Test command returns the <b>OK</b> result code.
Write Command	Response
(PDU Mode) <b>AT+CMGS=&lt;length&gt;</b>	<p>(PDU Mode)</p> <p>Execution command sends to the network a message.</p> <p>After command line is terminated with &lt;CR&gt;, the device responds sending a four character sequence prompt: &lt;CR&gt;&lt;LF&gt;&lt;greater_than&gt;&lt;space&gt; (IRA 13, 10, 62, 32) and waits for the specified number of bytes.</p> <p>Note: the DCD signal shall be in ON state while PDU is given.</p> <p>Note: the echoing of received characters back to the TA is controlled by echo command E</p> <p>Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>when the octet length of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used. In this case, the SMSC Type-of-Address octet shall not be present in the PDU.</p> <p>To send the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without sending the message issue ESC char (0x1B hex).</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p>

	<p>Note: Optionally (when +CSMS &lt;service&gt; value is 1 and network supports) &lt;scts&gt; is returned:</p> <p><b>+CMGS: &lt;mr&gt;[, &lt;scts&gt;]</b></p> <p>Note: if message sending fails for some reason, an error code reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>
<p>Write Command</p> <p>(Text Mode)</p> <p><b>AT+CMGS=&lt;da&gt; [,&lt;toda&gt;]</b></p>	<p>Response</p> <p>(Text Mode)</p> <p>Execution command sends to the network a message.</p> <p>After command line is terminated with &lt;CR&gt;, the device responds sending a four character sequence prompt:</p> <p>&lt;CR&gt;&lt;LF&gt;&lt;greater_than&gt;&lt;space&gt; (IRA 13, 10, 62, 32)</p> <p>After this prompt text can be entered; the entered text should be formatted as follows:</p> <p>if current &lt;dc&gt; (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current &lt;fo&gt; (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used.</p> <p>if current &lt;dc&gt; (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current &lt;fo&gt; (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is set, the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the      will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A)</p>

	<p>If current network mode is CDMA and &lt;dc&gt; (see ^HSMSSS) indicates that Unicode data coding scheme is used. the entered text should be hexadecimal numbers which ME/TA converts into 16-bit Unicode without separator.</p> <p>Note: the DCD signal shall be in ON state while text entered.</p> <p>Note: the echoing of entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex).If &lt;dc&gt; indicates that Unicode data coding scheme is used,ME/TA should send 0x00 0x1a to issue the message sending.</p> <p>To exit without sending the message issue ESC char (0x1B hex).if &lt;dc&gt; indicates that Unicode data coding scheme is used, ME/TA should send 0x00 0x1a to issue the message exiting.</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p>Note : Optionally (when +CSMS &lt;service&gt; value is 1 and network supports)&lt;scts&gt; is returned:  <b>+CMGS: &lt;mr&gt;[, &lt;scts&gt;]</b></p> <p>Note: if message sending fails for some reason, an error code reported. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p> <p>Note: it is possible to send a concatenation of at most 10 SMs; the maximum number of chars depends on the &lt;dc&gt;: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used</p>
<p>Reference</p> <p>3GPP TS 27.005 and 3GPP2</p>	<p>Note</p> <p>To avoid malfunctions is suggested to wait for the +CMGS: &lt;mr&gt; or +CMS ERROR: &lt;err&gt; response before issuing further commands.</p>

Parameters are defined below:

Parameters	Description
<b>&lt;length&gt;</b>	length of the PDU to be sent in bytes (excluding the SMSC address octets) 7..164
<b>&lt;mr&gt;</b>	message reference number.
<b>&lt;scts&gt;</b>	TP-Service Centre Time Stamp in Time String Format.
<b>&lt;da&gt;</b>	destination address,string type represented in the currently selected character set (see +CSCS) if the network mode is UMTS,string type is always ASCII when network mode is CDMA
<b>&lt;toda&gt;</b>	type of destination address 129 - number in national format 145 - number in international format(contains the "+")

#### 3.3.4.4.2 AT+CMSS Send Message From Storage

Send Message From Storage

Test Command	Response
<b>AT+CMSS=?</b>	Test command returns the OK result code.
Write Command	Response
<b>AT+CMSS=&lt;index&gt;[,&lt;da&gt;[,&lt;toda&gt;]]</b>	<p>Execution command sends to the network a message which is already stored in the &lt;memw&gt; storage (see +CPMS) at the location &lt;index&gt;.</p> <p>If message is successfully sent to the network then the result is sent in the format: <b>+CMSS: &lt;mr&gt;[, &lt;scts&gt;]</b></p> <p>(Note: Optionally (when +CSMS &lt;service&gt; value is 1 and network supports)&lt;scts&gt; is returned)</p> <p>If message sending fails for some reason, an error code is reported: <b>+CMS ERROR:&lt;err&gt;</b></p>

	Note: to store a message in the <memw> storage see command +CMGW. Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.
Reference	Note
3GPP TS 27.005(3GPP Only)	To avoid malfunctions is suggested to wait for the +CMSS: <mr> or +CMS ERROR: <err> response before issuing further commands.

Parameters are defined below:

Parameters	Description
<index>	location value in the message storage <memw> of the message to send
<da>	destination address - string type represented in the currently selected character set (see +CSCS). if it is given it shall be used instead of the one stored with the message.
<tda>	type of destination address 129 - number in national format 145 - number in international format (contains the "+")
<mr>	message Reference number.
<scts>	TP-Service Centre Time Stamp in Time String Format.

### 3.3.4.4.3 AT+CMGW Write Message to Memory

Write Message to Memory

Test Command	Response
<b>AT+CMGW=?</b>	Test command returns the OK result code.
Write Command	Response
(PDU Mode) <b>AT+CMGW=&lt;length&gt; [,&lt;stat&gt;]</b>	(PDU Mode) Execution command writes in the <memw> memory storage a new message.  The device responds to the command with the prompt '>' and waits for the specified number of bytes.

	<p>To write the message issue Ctrl-Z char (0x1A hex). To exit without writing the message issue ESC char (0x1B hex).</p> <p>If message is successfully written in the memory, then the result is sent in the format: <b>+CMGW: &lt;index&gt;</b></p> <p>If message storing fails for some reason an error code is reported.</p> <p>Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued .</p>
<p>Write Command</p> <p>(Text Mode) <b>AT+CMGW[=&lt;da&gt;[,&lt;toda&gt;[,&lt;stat&gt;]]]</b></p>	<p>Response</p> <p>Text Mode) Execution command writes in the &lt;memw&gt; memory storage a new message.</p> <p>After command line is terminated with &lt;CR&gt;, the device responds by sending a four character sequence prompt: &lt;CR&gt;&lt;LF&gt;&lt;greater_than&gt;&lt;space&gt; (IRA 13, 10, 62, 32)</p> <p>After this prompt, text can be entered; the entered text should be formatted as follows:</p> <p>if current &lt;dc&gt; (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current &lt;fo&gt; (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-Header-Indication is not set, then ME/TA converts the entered text into GSM/WCDMA alphabet, according to 3GPP TS 27.005, Annex A; backspace can be used to delete last character and carriage returns can be used.</p> <p>if current &lt;dc&gt; (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current &lt;fo&gt; (see +CSMP) indicates that 3GPP TS 03.40/23.040 TP-User-Data-</p>

Header-Indication is set , the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into 8-bit octet (e.g. the "asterisk" will be entered as 2A (IRA50 and IRA65) and this will be converted to an octet with integer value 0x2A)

If current network mode is CDMA and <dc> (see ^HSMSSS) indicates that Unicode data coding scheme is used. the entered text should be hexadecimal numbers which ME/TA converts into 16-bit Unicode without separator.

Note: the DCD signal shall be in ON state while text entered.

Note: the echoing of entered characters back from the TA is controlled by echo command E

To send the message issue Ctrl-Z char (0x1A hex).If <dc> indicates that Unicode data coding scheme is used,ME/TA should send 0x00 0x1a to issue the message sending.

To exit without sending the message issue ESC char (0x1B hex).if <dc> indicates that Unicode data coding scheme is used, ME/TA should send 0x00 0x1a to issue the message exiting

If message is successfully written in the memory, then the result is sent in the format:

**+CMGW: <index>**

If message storing fails for some reason, an error code is reported.

Note: care must taken to ensure that during the command execution, no other SIM interacting commands are issued.

Note: it is possible to save a concatenation of at most 10 SMS; the maximum number of chars depends on the <dc>: 1530 chars if 3GPP TS 03.38/23.038 default alphabet is used, 1340 chars if 8-bit is used, 670 chars if UCS2 is used



Reference	Note
3GPP TS 27.005 and 3GPP2	To avoid malfunctions is suggested to wait for the +CMGW: <index> or +CMS ERROR: <err> response before issuing further commands.

Parameters are defined below:

Parameters	Description
<length>	length of the PDU to be sent in bytes (excluding the SMSC address octets) 7..164
(PDU Mode) <stat>	message status. 0 - new message 1 - read message 2 - stored message not yet sent (default) 3 - stored message already sent
<index>	message location index in the memory <memw>
<da>	destination address,string type represented in the currently selected character set (see +CSCS) if the network mode is UMTS,string type is always ASCII when network mode is CDMA
<toda>	type of destination address 129 - number in national format 145 - number in international format(contains the "+")
(Text Mode) <stat>	message status. "REC UNREAD" - new received message unread "REC READ" - received message read "STO UNSENT" - message stored not yet sent (default) "STO SENT" - message stored already sent

#### 3.3.4.4.4 AT+CMGD Delete Message

Delete Message

Test Command	Response
<b>AT+CMGD=?</b>	Test command shows the valid memory locations and optionally the supported values of <delflag>. <b>+CMGD: (supported &lt;index&gt;s list)[,(supported &lt;delflag&gt;s list)]</b>

Write Command	Response
<b>AT+CMGD=[&lt;index&gt;] [,&lt;delflag&gt;]&gt;</b>	<p>Execution command deletes from memory &lt;memr&gt; the message(s).</p> <p>Note: if &lt;delflag&gt; is present and not set to 0 then &lt;index&gt; is ignored and ME shall follow the rules for &lt;delflag&gt; shown above.</p> <p>if the location to be deleted is empty, still return OK.</p>
Reference	Note
3GPP TS 27.005(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	message index in the selected storage <memr>
<b>&lt;delflag&gt;</b>	<p>an integer indicating multiple message deletion request.</p> <p>0 (or omitted) - delete message specified in &lt;index&gt;</p> <p>1 - delete all read messages from &lt;memr&gt; storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched</p> <p>2 - delete all read messages from &lt;memr&gt; storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched</p> <p>3 - delete all read messages from &lt;memr&gt; storage, sent and unsent mobile originated messages, leaving unread messages untouched</p> <p>4 - Delete all messages from &lt;memr&gt; storage.</p>

#### 3.3.4.4.5 AT+CMMS More Message to Send

More Message to Send

Test Command	Response
<b>AT+CMMS=?</b>	Test command reports the supported value of <n> parameter.

Read Command	Response
<b>AT+CMMS?</b>	Read command reports the current value of the parameter<n>.
Write Command	Response
<b>AT+CMMS[=&lt;n&gt;]</b>	<p>Set command controls the continuity of SMS relay protocol link. Multiple messages can be sent much faster when the link is kept open.</p> <p>Use command AT+CMMS will set value to default.</p>
Reference	Note
3GPP TS 27.005(3GPP Only)	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<p>0 - Disable(factory default)</p> <p>1 - Keep Link Opened while messages are sent. If the delay between two messages exceeds 3 seconds , the link is closed and the parameter&lt;n&gt; is automatically reset to 0: the feature is disabled.</p> <p>2 – Keep link opened while messages are sent. If the delay between two messages exceeds 3 seconds, the link is closed but the parameter&lt;n&gt; remains set to 2: the feature is still enabled.</p>

#### 3.3.4.4.6 AT+CMGC Message to Send

Send SMS command

Test Command	Response
<b>AT+CMGC=?</b>	Test command returns the <b>OK</b> result code.

Write Command	Response
<p>(PDU Mode)</p> <p><b>AT+CMGC=&lt;length&gt;&lt;CR&gt;</b></p> <p>PDU is given</p> <p><b>&lt;Ctrl-Z/ESC&gt;</b></p>	<p>(PDU Mode)</p> <p>Execution command sends command message from a TE to the network (SMS-COMMAND).</p> <p>After command line is terminated with &lt;CR&gt;, the device responds sending a four character sequence prompt: &lt;CR&gt;&lt;LF&gt;&lt;greater_than&gt;&lt;space&gt; (IRA 13, 10, 62, 32) and waits for the specified number of bytes.</p> <p>Note: the DCD signal shall be in ON state while PDU is given.</p> <p>Note: echoing given characters back from the TA is controlled by echo command E</p> <p>Note: the PDU shall be hexadecimal format (each octet of the PDU is given as two IRA character long hexadecimal number) and given in one line.</p> <p>Note: when the length octet of the SMSC address (given in the PDU) equals zero, the SMSC address set with command +CSCA is used; in this case the SMSC Type-of-Address octet shall not be present in the PDU.</p> <p>To send the message issue Ctrl-Z char (0x1A hex).</p>
	<p>To exit without sending the message issue ESC char (0x1B hex).</p> <p>Note : Optionally (when +CSMS &lt;service&gt; value is 1 and network supports it)</p> <p>&lt;scts&gt; is returned:</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p><b>+CMGC: &lt;mr&gt;[, &lt;ackpdu&gt;]</b></p> <p>Note: if message sending fails for some reason, an error code reported.</p> <p>Note: care must be taken to ensure that during the command execution, which may take several seconds, no other SIM interacting commands are issued.</p>

<p>Write Command</p> <p>(Text Mode)</p> <p><b>AT+CMGC=&lt;fo&gt;,&lt;ct&gt;[,&lt;pid&gt;[,&lt;mn&gt;[,&lt;da&gt;[,&lt;toda&gt;]]]]&gt;</b>  <b>&lt;CR&gt;</b></p> <p>Text can be entered</p> <p><b>&lt;Ctrl-Z/ESC&gt;</b></p>	<p>Response</p> <p>(Text Mode) Execution command sends to the network a message.</p> <p>After command line is terminated with &lt;CR&gt;, the device responds sending a four character sequence prompt:</p> <p>&lt;CR&gt;&lt;LF&gt;&lt;greater_than&gt;&lt;space&gt; (IRA 13, 10, 62, 32)</p> <p>Note: the DCD signal shall be in ON state while text entered.</p> <p>Note: echoing entered characters back from the TA is controlled by echo command E</p> <p>To send the message issue Ctrl-Z char (0x1A hex).</p> <p>To exit without sending the message issue ESC char (0x1B hex).</p> <p>Note: Optionally (when +CSMS &lt;service&gt; value is 1 and network supports it)&lt;scts&gt; is returned:</p> <p>If message is successfully sent to the network, then the result is sent in the format:</p> <p><b>+CMGC: &lt;mr&gt;[, &lt;scts&gt;]</b></p> <p>Note: if message sending fails for some reason, an error code reported.</p>
<p>Reference</p> <p>3GPP TS 27.005(3GPP Only)</p>	<p>Note</p> <p>To avoid malfunctions is suggested to wait for the +CMGC: &lt;mr&gt; or +CMS ERROR: &lt;err&gt; response before issuing further commands.</p>

Parameters are defined below:

Parameters	Description
<b>&lt;length&gt;</b>	Length of the actual TP data unit in octets. (excluding the SMSC address octets).
<b>&lt;mr&gt;</b>	TP-Message-Reference in integer format.

<b>&lt;ackpdu&gt;</b>	RP-User-Data element of RP-ACK PDU (When +CSMS <service> value is 1 and network supports).
<b>&lt;fo&gt;</b>	First octet of 3GPP TS 23.040 SMS-COMMAND in integer format.
<b>&lt;ct&gt;</b>	TP-Command-Type in integer format specified in 3GPP TS 23.040.
<b>&lt;pid&gt;</b>	TP-Protocol-Identifier in integer format. Range 0-255. Default value is 0.
<b>&lt;mn&gt;</b>	TP-Message-Number in integer format.
<b>&lt;da&gt;</b>	TP-Destination-Address-Value field in string format represented in the currently selected character set (see +CSCS).
<b>&lt;toda&gt;</b>	TP-Destination-Address Type-of-Address octet: 129 - number in national format 145 - number in international format (contains the "+")
<b>&lt;scts&gt;</b>	TP-Service Centre Time Stamp in Time String Format.

## 3.3.5 Mobiletek extended AT Commands

### 3.3.5.1 AT Commands for General

#### 3.3.5.1.1 AT^SYSCONFIG System configuration command

System configuration command

Test Command	Response
<b>AT^SYSCONFIG=?</b>	Test command returns supported values of <reporting> parameter.
Read Command	Response
<b>AT^SYSCONFIG?</b>	<p>Read the system config.</p> <p>&lt;mode&gt; system mode reference:</p> <p>2 – Automatically select</p> <p>13 – GSM ONLY</p> <p>14 – WCDMA only</p> <p>15 – TD-SCDMA only</p> <p>16 – No change</p> <p>17 – Mode unknown</p> <p>18 – LTE only</p> <p>&lt;acqorder&gt; – network accessing order reference</p> <p>0 – Automatically</p> <p>1 – GSM first, UTRAN second</p> <p>2 – UTRAN first, GSM second</p> <p>3 – No change</p> <p>4 – Order unknown</p> <p>&lt;roam&gt; – roaming support</p> <p>0 – Not support</p> <p>1 – Can roam</p> <p>2 – No change</p> <p>3 – Roam unknown</p> <p>&lt;srvdomain&gt; – Domain configuration</p> <p>0 – CS_ONLY</p> <p>1 – PS_ONLY</p> <p>2 – CS_PS</p> <p>3 – ANY</p> <p>4 – No change</p> <p>5 – Domain unknown</p>

Write Command	Response
<b>AT^SYSCONFIG =&lt;mode&gt;, &lt;acqorder&gt;, &lt;roam&gt;, &lt;srvidomain&gt;</b>	This command set system configuration.

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	system mode reference: 2 – Automatically select 13 – GSM ONLY 14 – WCDMA only 15 – TD-SCDMA only 16 – No change 18 – LTE only
<b>&lt;acqorder&gt;</b>	network accessing order reference 0 – Automatically 1 – GSM first, UTRAN second 2 – UTRAN first, GSM second 3 – No change
<b>&lt;roam&gt;</b>	roaming support 0 – Not support 1 – Can roam 2 – No change
<b>&lt;srvidomain&gt;</b>	Domain configuration 0 – CS_ONLY 1 – PS_ONLY 2 – CS_PS 3 – ANY 4 – No change

### 3.3.5.1.2 AT\$QCRMCall Setup RmNet Call

Setup RmNet Call

Read Command	Response
<b>AT\$QCRMCall?</b>	Read the current RmNet type.



Write Command	Response
<b>AT\$QCRMCall =&lt;Action&gt;, &lt;Instance&gt; [,&lt;IP Type&gt; [,&lt;Tech Pref&gt; [,&lt;umts profile number&gt; [,&lt;cdma profile number&gt; [,&lt;APN&gt; ]]]]]</b>	Command triggers an RmNet call based on <Action> parameter which is typically a start of an RmNet Call or stop of a RmNet call.

Parameters are defined below:

Parameters	Description
<b>&lt; Action &gt;</b>	0 – Stop 1 – Start
<b>&lt;Instance&gt;</b>	1 to 8 (2-8 reserved)
<b>&lt;IP Type&gt;</b>	1 – Ipv4 2 – Ipv6 3 – Ipv4v6
<b>&lt;Tech Pref&gt;</b>	1 – 3GPP2 2 – 3GPP
<b>&lt;umts_profile&gt;</b>	1 to 24 (corresponds to the cid(CGDCONT))
<b>*&lt;cdma profile&gt;</b>	100 to 179
<b>&lt;APN &gt;</b>	String type, maximum length is 62

Example:

Commands	Response
<b>AT\$QCRMCall=1, 1,1,2,1,,</b>	<b>OK</b>

### 3.3.5.1.3 AT^SYSINFO Inquires The Current System Message

Inquires The Current System Message

Execution Command	Response
<b>AT^SYSINFO</b>	The command inquires the current system message. Such as system service status, domain, roam, system mode, UIM card status, etc. Execution command responses: <b>^SYSINFO:&lt;srv_status&gt;,&lt;srv_domain&gt;,&lt;roam_status&gt; &lt;sys_mode&gt;,&lt;sim_state&gt;</b>

Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;srv_status&gt;</b>	system service status, values as follows: 0 no service 1 limited service 2 service available 3 limited area service 4 power saving and dormancy status.
<b>&lt;srv_domain&gt;</b>	system service, values as follows: 0 no service 1 only CS service 2 only PS service 3 PS+CS service 4 CS and PS don't register and are in the status of serching. 255 CDMA doesn't support.
<b>&lt;roam_status&gt;</b>	roaming status, values as follows: 0 non-roaming status. 1 roaming status.
<b>&lt;sys_mode&gt;</b>	system mode, values as follows: 0 no service 1 AMPS mode (not use provisionally) 2 CDMA mode 3 GSM/GPRS mode 4 HDR mode 5 WCDMA mode 6 GPS mode 7 GSM/WCDMA 8 CDMA/HDR HYBRID 9 LTE mode 10 GSM, WCDMA, and LTE mode
<b>&lt;sim_stat&gt;</b>	UIM card status, values as follows: 1 UIM card status available 240 ROMSIM version 255 UIM card doesn't exist

Example:

Commands	Response
----------	----------

<b>AT^SYSINFO</b>	<b>^SYSINFO: 2,1,0,3,1</b>
	<b>OK</b>

### 3.3.5.1.4 AT+ESIMS SIM Card HotSwap Control command

SIM Card HotSwap Control command

Test Command	Response
<b>AT+ESIMS=?</b>	Query command is used to query SIM card hotswap range.
Read Command	Response
<b>AT+ESIMS?</b>	Read command is used to query SIM card hotswap status
Write Command	Response
<b>AT+ESIMS=&lt;Action&gt;</b>	This command is used to control SIM card hotswap effective or not.  Note: After execute this command, must reboot device, then SIM card hotswap take effect.

Parameters are defined below:

Parameters	Description
<b>&lt;Action&gt;</b>	0 --> SIM card hotswap is not effective. 1 --> SIM card hotswap is effective.

Example:

Commands	Response
<b>AT+ESIMS?</b>	<b>+ESIMS:0</b> <b>OK</b>
<b>AT+ESIMS=1</b>	<b>OK</b>
<b>AT+ESIMS?</b>	<b>+ESIMS:1</b> <b>OK</b>
<b>AT+ESIMS=?</b>	<b>+ESIMS:(0-1)</b> <b>OK</b>

### 3.3.5.1.5 AT+MTZ Time zone Control command

Time zone Control command

Execution Command	Response
<b>AT+MTZ</b>	<b>OK</b>
Test Command	Response
<b>AT+MTZ=?</b>	Query command is used to query mode range.
Read Command	Response
<b>AT+MTZ?</b>	Read command is used to get current mode and city.  Return: <b>+MTZ:&lt;mode&gt;,&lt;city&gt;</b>
Write Command	Response
<b>AT+MTZ=&lt;mode&gt;[,&lt;city&gt;]</b>	This command is used to set time zone.
Reference	Note
	Using "+MTZ" command to set time zone. And using "+CCLK" command to show current time of this time zone.

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	time zone mode, default value is 0. values as follows: 0     use UTC time. 1     use local time zone. 2     use the time zone of city.

<city>	<p>this value is valid when mode is 2. The length of value is no more than 40. values as follows:</p> <p> Africa/Abidjan Africa/Accra Africa/Addis_Ababa  Africa/Algiers Africa/Asmara Africa/Asmera Africa/Bamako  Africa/Bangui Africa/Banjul Africa/Bissau Africa/Blantyre  Africa/Brazzaville Africa/Bujumbura Africa/Cairo  Africa/Casablanca Africa/Ceuta Africa/Conakry Africa/Dakar  Africa/Dar_es_Salaam Africa/Djibouti Africa/Douala  Africa/El_Aaiun Africa/Freetown Africa/Gaborone  Africa/Harare Africa/Johannesburg Africa/Juba  Africa/Kampala Africa/Khartoum Africa/Kigali Africa/Kinshasa  Africa/Lagos Africa/Libreville Africa/Lome Africa/Luanda  Africa/Lubumbashi Africa/Lusaka Africa/Malabo Africa/Maputo  Africa/Maseru Africa/Mbabane Africa/Mogadishu  Africa/Monrovia Africa/Nairobi Africa/Ndjamena Africa/Niamey  Africa/Nouakchott Africa/Ouagadougou Africa/Porto-Novo  Africa/Sao_Tome Africa/Timbuktu Africa/Tripoli Africa/Tunis  Africa/Windhoek America/Adak America/Anchorage  America/Anguilla America/Antigua America/Araguaina  America/Argentina/Buenos_Aires America/Argentina/Catamarca  America/Argentina/ComodRivadavia America/Argentina/Cordoba  America/Argentina/Jujuy America/Argentina/La_Rioja  America/Argentina/Mendoza America/Argentina/Rio_Gallegos  America/Argentina/Salta America/Argentina/San_Juan  America/Argentina/San_Luis America/Argentina/Tucuman  America/Argentina/Ushuaia America/Aruba America/Asuncion  America/Atikokan America/Atka America/Bahia  America/Bahia_Banderas America/Barbados America/Belem  America/Belize America/Blanc-Sablon America/Boa_Vista  America/Bogota America/Boise America/Buenos_Aires  America/Cambridge_Bay America/Campo_Grande  America/Cancun America/Caracas America/Catamarca  America/Cayenne America/Cayman America/Chicago  America/Chihuahua America/Coral_Harbour America/Cordoba  America/Costa_Rica America/Creston America/Cuiaba  America/Curacao America/Danmarkshavn America/Dawson  America/Dawson_Creek America/Denver America/Detroit </p>
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America/Dominica America/Edmonton America/Eirunepe  
America/El\_Salvador America/Ensenada America/Fortaleza  
America/Fort\_Nelson America/Fort\_Wayne America/Glace\_Bay  
America/Godthab America/Goose\_Bay America/Grand\_Turk  
America/Grenada America/Guadeloupe America/Guatemala  
America/Guayaquil America/Guyana America/Halifax  
America/Havana America/Hermosillo  
America/Indiana/Indianapolis America/Indiana/Knox  
America/Indiana/Marengo America/Indiana/Petersburg  
America/Indiana/Tell\_City America/Indiana/Vevay  
America/Indiana/Vincennes America/Indiana/Winamac  
America/Indianapolis America/Inuvik America/Iqaluit  
America/Jamaica America/Jujuy America/Juneau  
America/Kentucky/Louisville America/Kentucky/Monticello  
America/Knox\_IN America/Kralendijk America/La\_Paz  
America/Lima America/Los\_Angeles America/Louisville  
America/Lower\_Princes America/Maceio America/Managua  
America/Manaus America/Marigot America/Martinique  
America/Matamoros America/Mazatlan America/Mendoza  
America/Menominee America/Merida America/Metlakatla  
America/Mexico\_City America/Miquelon America/Moncton  
America/Monterrey America/Montevideo America/Montreal  
America/Montserrat America/Nassau America/New\_York  
America/Nipigon America/Nome America/Noronha  
America/North\_Dakota/Beulah America/North\_Dakota/Center  
America/North\_Dakota/New\_Salem America/Ojinaga  
America/Panama America/Pangnirtung America/Paramaribo  
America/Phoenix America/Port-au-Prince America/Porto\_Acre  
America/Port\_of\_Spain America/Porto\_Velho  
America/Puerto\_Rico America/Rainy\_River  
America/Rankin\_Inlet America/Recife America/Regina  
America/Resolute America/Rio\_Branco America/Rosario  
America/Santa\_Isabel America/Santarem America/Santiago  
America/Santo\_Domingo America/Sao\_Paulo  
America/Scoresbysund America/Shiprock America/Sitka  
America/St\_Barthelemy America/St\_Johns America/St\_Kitts  
America/St\_Lucia America/St\_Thomas America/St\_Vincent  
America/Swift\_Current America/Tegucigalpa America/Thule  
America/Thunder\_Bay America/Tijuana America/Toronto  
America/Tortola America/Vancouver America/Virgin  
America/Whitehorse America/Winnipeg America/Yakutat  
America/Yellowknife Antarctica/Casey Antarctica/Davis  
Antarctica/DumontDURville Antarctica/Macquarie  
Antarctica/Mawson Antarctica/McMurdo Antarctica/Palmer

Antarctica/Rothera Antarctica/South\_Pole Antarctica/Syowa  
 Antarctica/Troll Antarctica/Vostok Arctic/Longyearbyen  
 Asia/Aden Asia/Almaty Asia/Amman Asia/Anadyr  
 Asia/Aqtau Asia/Aqtobe Asia/Ashgabat Asia/Ashkhabad  
 Asia/Baghdad Asia/Bahrain Asia/Baku Asia/Bangkok  
 Asia/Beirut Asia/Bishkek Asia/Brunei Asia/Calcutta  
 Asia/Chita Asia/Choibalsan Asia/Chongqing Asia/Chungking  
 Asia/Colombo Asia/Dacca Asia/Damascus Asia/Dhaka  
 Asia/Dili Asia/Dubai Asia/Dushanbe Asia/Gaza Asia/Harbin  
 Asia/Hebron Asia/Ho\_Chi\_Minh Asia/Hong\_Kong Asia/Hovd  
 Asia/Irkutsk Asia/Istanbul Asia/Jakarta Asia/Jayapura  
 Asia/Jerusalem Asia/Kabul Asia/Kamchatka Asia/Karachi  
 Asia/Kashgar Asia/Kathmandu Asia/Katmandu  
 Asia/Khandyga Asia/Kolkata Asia/Krasnoyarsk  
 Asia/Kuala\_Lumpur Asia/Kuching Asia/Kuwait Asia/Macao  
 Asia/Macau Asia/Magadan Asia/Makassar Asia/Manila  
 Asia/Muscat Asia/Nicosia Asia/Novokuznetsk  
 Asia/Novosibirsk Asia/Omsk Asia/Oral Asia/Phnom\_Penh  
 Asia/Pontianak Asia/Pyongyang Asia/Qatar Asia/Qyzylorda  
 Asia/Rangoon Asia/Riyadh Asia/Saigon Asia/Sakhalin  
 Asia/Samarkand Asia/Seoul Asia/Shanghai Asia/Singapore  
 Asia/Srednekolymysk Asia/Taipei Asia/Tashkent Asia/Tbilisi  
 Asia/Tehran Asia/Tel\_Aviv Asia/Thimbu Asia/Thimphu  
 Asia/Tokyo Asia/Ujung\_Pandang Asia/Ulaanbaatar  
 Asia/Ulan\_Bator Asia/Urumqi Asia/Ust-Nera Asia/Vientiane  
 Asia/Vladivostok Asia/Yakutsk Asia/Yekaterinburg  
 Asia/Yerevan Atlantic/Azores Atlantic/Bermuda  
 Atlantic/Canary Atlantic/Cape\_Verde Atlantic/Faeroe  
 Atlantic/Faroe Atlantic/Jan\_Mayen Atlantic/Madeira  
 Atlantic/Reykjavik Atlantic/South\_Georgia Atlantic/Stanley  
 Atlantic/St\_Helena Australia/ACT Australia/Adelaide  
 Australia/Brisbane Australia/Broken\_Hill Australia/Canberra  
 Australia/Currie Australia/Darwin Australia/Eucla  
 Australia/Hobart Australia/LHI Australia/Lindeman  
 Australia/Lord\_Howe Australia/Melbourne Australia/North  
 Australia/NSW Australia/Perth Australia/Queensland  
 Australia/South Australia/Sydney Australia/Tasmania  
 Australia/Victoria Australia/West Australia/Yancowinna  
 Brazil/Acre Brazil/DeNoronha Brazil/East Brazil/West  
 Canada/Atlantic Canada/Central Canada/Eastern  
 Canada/East-Saskatchewan Canada/Mountain  
 Canada/Newfoundland Canada/Pacific Canada/Saskatchewan  
 Canada/Yukon Chile/Continental Chile/EasterIsland

	Europe/Amsterdam Europe/Andorra Europe/Athens Europe/Belfast Europe/Belgrade Europe/Berlin Europe/Bratislava Europe/Brussels Europe/Bucharest Europe/Budapest Europe/Busingen Europe/Chisinau Europe/Copenhagen Europe/Dublin
	Europe/Gibraltar Europe/Guernsey Europe/Helsinki Europe/Isle_of_Man Europe/Istanbul Europe/Jersey Europe/Kaliningrad Europe/Kiev Europe/Lisbon Europe/Ljubljana Europe/London Europe/Luxembourg Europe/Madrid Europe/Malta Europe/Mariehamn Europe/Minsk Europe/Monaco Europe/Moscow Europe/Nicosia Europe/Oslo Europe/Paris Europe/Podgorica Europe/Prague Europe/Riga Europe/Rome Europe/Samara Europe/San_Marino Europe/Sarajevo Europe/Simferopol Europe/Skopje Europe/Sofia Europe/Stockholm Europe/Tallinn Europe/Tirane Europe/Tiraspol Europe/Uzhgorod Europe/Vaduz Europe/Vatican Europe/Vienna Europe/Vilnius Europe/Volgograd Europe/Warsaw Europe/Zagreb Europe/Zaporozhye Europe/Zurich Indian/Antananarivo Indian/Chagos Indian/Christmas Indian/Cocos Indian/Comoro Indian/Kerguelen Indian/Mahe Indian/Maldives Indian/Mauritius Indian/Mayotte Indian/Reunion Mexico/BajaNorte Mexico/BajaSur Mexico/General Pacific/Apia Pacific/Auckland Pacific/Bougainville Pacific/Chatham Pacific/Chuuk Pacific/Easter Pacific/Efate Pacific/Enderbury Pacific/Fakaofu Pacific/Fiji Pacific/Funafuti Pacific/Galapagos Pacific/Gambier Pacific/Guadalcanal Pacific/Guam Pacific/Honolulu Pacific/Johnston Pacific/Kiritimati Pacific/Kosrae Pacific/Kwajalein Pacific/Majuro Pacific/Marquesas Pacific/Midway Pacific/Nauru Pacific/Niue Pacific/Norfolk Pacific/Noumea Pacific/Pago_Pago Pacific/Palau Pacific/Pitcairn Pacific/Pohnpei Pacific/Ponape Pacific/Port_Moresby Pacific/Rarotonga Pacific/Saipan Pacific/Samoa Pacific/Tahiti Pacific/Tarawa Pacific/Tongatapu Pacific/Truk Pacific/Wake Pacific/Wallis Pacific/Yap US/Alaska US/Aleutian US/Arizona US/Central US/Eastern US/East-Indiana US/Hawaii US/Indiana-Starke US/Michigan US/Mountain US/Pacific US/Pacific-New US/Samoa

Example:

Commands	Response
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<b>AT+MTZ?</b>	<b>+MTZ=1,""</b> <b>OK</b>
<b>AT+CCLK?</b>	<b>+ CCLK:"17/02/15,17:17:13+32"</b> <b>OK</b>
<b>AT+MTZ=2,"America/New_York"</b>	<b>OK</b>
<b>AT+CCLK?</b>	<b>+ CCLK:"17/02/15,04:17:16-20"</b> <b>OK</b>

### 3.3.5.1.6 AT+MCFGUART2 Config for Uart2 Port

Config for Uart2 Port

Test Command	Response
<b>AT+MCFGUART2=?</b>	<b>+MCFGUART2: (0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+MCFGUART2?</b>	<b>+MCFGUART2: &lt;enable&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MCFGUART2=&lt;enable&gt;</b>	<b>OK</b>  Note: After Set 0 or 1, need to restart device to take effect. Uart2 does not support CMUX and PPP dialing. If enable = 1, can't set AT+CSCLK=1 Successfully. If there is an operation on Uart2 before setting AT+CSCLK=1, set AT+CSCLK after restart.

Parameters are defined below:

Parameters	Description
<b>&lt;enable&gt;</b>	0: Close Uart2 to support AT Command 1: Open Uart2 to support AT Command

### 3.3.5.1.7 AT+MCBC Read battery voltage command

Read battery voltage

Test Command	Response
<b>AT+MCBC=?</b>	<b>OK</b>
Execution Command	Response
<b>AT+MCBC</b>	Read battery voltage <b>+MCBC: &lt;voltage&gt;</b>  <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;voltage&gt;</b>	Battery voltage value is millivolts

Example:

Commands	Response
<b>AT+MCBC</b>	<b>+MCBC:3945</b>  <b>OK</b>
<b>AT+MCBC=?</b>	<b>OK</b>
<b>AT+MCBC?</b>	<b>ERROR</b>

### 3.3.5.1.8 AT+MNTP Synchronous server time

Synchronous server time

Test Command	Response
<b>AT+MNTP=?</b>	<b>+MNTP: ,(0-65535)</b>  <b>OK</b>
Write Command	Response
<b>AT+MNTP=</b> <b>&lt;serverAddr&gt;,&lt;port&gt;</b>	<b>+MNTP: "serverAddr",port</b>  <b>OK</b> <b>ERROR</b>

Execution Command	Response
<b>AT+MNTP</b>	Synchronous server time <b>OK</b>  <b>+MNTP: &lt;result&gt;</b> <b>Note:</b> <b>The maximum response time is 120 seconds, which is affected by the network status.</b>

Parameters are defined below:

Parameters	Description
<b>&lt;serverAddr&gt;</b>	NTP server IP address or domain name. Note: The default value is "120.25.155.20".
<b>&lt;port&gt;</b>	NTP server port, from 0 to 65535. Note: The default Value is 123.
<b>&lt;result&gt;</b>	0: Synchronization time is successful. 1: Synchronization time failed, unknown error. 2: Time server is not responding. 3: The protocol stack is busy. 4: DNS resolution error. 5: Network error

Example:

Commands	Response
<b>AT+MNTP</b>	<b>OK</b>  <b>+MNTP:0</b>
<b>AT+MNTP=?</b>	<b>+MNTP: ,(0-65535)</b>  <b>OK</b>
<b>AT+MNTP?</b>	<b>+MNTP: "120.25.155.20",123</b>  <b>OK</b>

### 3.3.5.1.9 AT+MUSBCFG Config for nmea2 Port

Config for nmea2 Port

Test Command	Response
<b>AT+MUSBCFG=?</b>	<b>+MUSBCFG: (0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+MUSBCFG?</b>	<b>+MUSBCFG: &lt;enable&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MUSBCFG=&lt;enable&gt;</b>	<b>OK</b>  Note: It requires restarting the machine and replacing the driver to take effect. L506X and L506SC modules currently does not support.

Parameters are defined below:

Parameters	Description
<b>&lt;enable&gt;</b>	0: Close nmea2 to support AT Command 1: Open nmea2 to support AT Command

### 3.3.5.2 AT Commands for HTTP

#### 3.3.5.2.1 AT\$HTTPOPEN Open HTTP Service

Open HTTP Service

Execution Command	Response
<b>AT\$HTTPOPEN</b>	<b>OK</b> The command is used to open HTTP service. To use HTTP, you must execute the command in the first. In the last, execute \$HTTPCLOSE to close HTTP service.
Read Command	Response
<b>AT\$HTTPOPEN?</b>	<b>\$HTTPOPEN:&lt;opened_or_not&gt;</b> <b>OK</b> Return HTTP service is opened or not. 1: HTTP service is opened. 0: HTTP service is not opened.

Example:

Commands	Response
<b>AT\$HTTPOPEN</b>	<b>OK</b>

### 3.3.5.2.2 AT\$HTTPCLOSE Close HTTP Service

Close HTTP Service

Execution Command	Response
<b>AT\$HTTPCLOSE</b>	<b>OK</b> The command is used to close HTTP service. After executing this command, HTTP will be closed after 1 minute and the http will be unavailable.
Read Command	Response
<b>AT\$HTTPCLOSE?</b>	<b>\$HTTPCLOSE:&lt;closed_or_not&gt;</b> <b>OK</b> Return HTTP service is closed or not. 1: HTTP service is closed. 0: HTTP service is not closed.

Example:

Commands	Response
<b>AT\$HTTPCLOSE</b>	<b>OK</b>

### 3.3.5.2.3 AT\$HTTQRQH Set HTTP header fields

Set HTTP header fields

Test Command	Response
<b>AT\$HTTQRQH=?</b>	<b>\$HTTQRQH="", ""</b> <b>OK</b>
Read Command	Response
<b>AT\$HTTQRQH?</b>	Return current HTTP request header fields and entity header fields.
Write Command	Response
<b>AT\$HTTQRQH=&lt;ParamKey&gt;,&lt;ParamValue&gt;</b>	<p>The command is used to set HTTP request header fields and entity header fields.</p> <p>The common request header:</p> <p>"Host" : The server's host. Must be matched with URL, If not set, will get from URL.</p> <p>"Content-Length" : The content length which will be send. This only for POST.</p> <p>"Range": Support for file upload from break</p> <p>Note: The segmentation method is recommended for downloading big data.</p> <p>Refer to : " IETP-RFC 2616 "</p>

Parameters are defined below:

Parameters	Description
<b>&lt;ParamKey&gt;</b>	<p>HTTP request or entity header field's Key. If there are special characters, please add quotes. The max length is 50.</p> <p>Support parameter:</p> <p>"accept", "accept-charset", "accept-encoding", "accept-language", "authorization", "expect", "from", "host", "if-match", "if-modified-since", "if-none-match", "if-range", "if-unmodified-since", "max-forwards", "proxy-authorization", "range", "referer", "te", "user-agent", "allow", "content-encoding", "content-language", "content-length", "content-location", "content-md5", "content-range", "content-type", "expires", "last-modified", "user-agent", "connection"</p>
<b>&lt;ParamValue&gt;</b>	<p>HTTP request or entity header field's Value. If there are special characters, please add quotes. The max length is 255. If the ParamKey is host, the value max length is 128.</p>

Example:

Commands	Response
Example 1: <b>AT\$HTTQRQH=Host</b> <b>,182.150.28.206</b>  <b>AT\$HTTQRQH=Con</b> <b>nection,keep-alive</b>	<b>OK</b>   <b>OK</b>
Example 2: <b>AT\$HTTQRQH?</b>	<b>Host:182.150.28.206</b> <b>Connection :keep-alive</b>  <b>OK</b>
Example 3: <b>AT\$HTTQRQH=User</b> <b>-Agent,"Mozilla/5.0</b> <b>(X11;Ubuntu; Linux</b> <b>x86_64; rv:38.0)</b> <b>Gecko/20100101</b> <b>Firefox/38.0"</b>	<b>OK</b>
Example 4: <b>AT\$HTTQRQH=Ran</b> <b>ge,bytes=0-999</b>	<b>OK</b>

#### 3.3.5.2.4 AT\$HTTQPARA Set HTTP Request URL And Port

Set HTTP Request URL And Port

Test Command	Response
<b>AT\$HTTQPARA=?</b>	<b>\$HTTQPARA="", (0-65535), (0-1), (0-1)</b>  <b>OK</b>

Read Command	Response
<b>AT\$HTTTPARA?</b>	Return current HTTP request's host,uri,and port,such as: <b>AT\$HTTTPARA?</b> <b>Host : "182.150.28.206"</b> <b>URI : "/httpdemo/http"</b> <b>Port : 8182.</b> <b>Cert : 1</b>
Write Command	Response
<b>AT\$HTTTPARA=&lt;url&gt;,&lt;port&gt; &gt;[,&lt;type&gt;][,&lt;cert&gt;]</b>	The command is used to set HTTP request url and port.

Parameters are defined below:

Parameters	Description
<b>&lt;url&gt;</b>	The HTTP request's url, such as "http://182.150.28.206:8182/httpdemo/http". The URL has a maximum length of 384 and contains host with a maximum length of 128 bytes.
<b>&lt;port&gt;</b>	The HTTP request's port.The HTTP default port is 80,and HTTPS is 443.
<b>&lt;type&gt;</b>	HTTP request type.Default is HTTP. 0: HTTP request 1: HTTPS request
<b>&lt;cert&gt;</b>	Indicates whether the SSL connection ignores the certificate,and default is 0. 0 - ignores certificate 1 - use certificate

Example:

Commands	Response
Example 1: <b>AT\$HTTTPARA=http://182.150.28.206:8182/httpdemo/http,8182</b>	<b>OK</b>



Example 2: <b>AT\$HTTTPARA=ww w.baidu.com,80,0</b>	<b>OK</b>
Example 3: <b>AT\$HTTTPARA=ww w.baidu.com,443,1</b>	<b>OK</b>
Example 4: <b>AT\$HTTTPARA=ww w.baidu.com,443,1, 1</b>	<b>OK</b>
Example 5: <b>AT\$HTTTPARA=htt p://182.150.28.206:8 182/httpdemo/http? name=mobiletek&amp;p ass=123456,8182,0</b>	<b>OK</b>

### 3.3.5.2.5 AT\$HTTPCLEAR Clear HTTP Related parameters

Clear HTTP Related parameters

Execution Command	Response
<b>AT\$HTTPCLEAR</b>	<b>OK</b> The command is used to clear HTTP parameters. Such as HTTP header fields ,URL and port.
Read Command	Response
<b>AT\$HTTPCLEAR?</b>	<b>\$HTTPCLEAR:&lt;cleared_or_not&gt; OK</b>  Return HTTP parameters is cleared or not. 1: HTTP parameters is cleared. 0: HTTP parameters is not cleared.

Example:

Commands	Response
Example 1: <b>AT\$HTTPCLEAR</b>	<b>OK</b>
Example 2: <b>AT\$HTTPCLEAR</b>	<b>\$HTTPERROR:&lt;errno&gt;</b>  <b>ERROR</b>

### 3.3.5.2.6 AT\$HTTPACTION Send HTTP Request

The command is used to send HTTP Request. Support request include GET, POST and HEAD

Test Command	Response
<b>AT\$HTTPACTION=?</b>	<b>\$HTTPACTION:(0-3),(0-1)</b> <b>OK</b>
Write Command	Response
<b>AT\$HTTPACTION=&lt;request &gt;[,ignore_head]</b>	<b>\$HTTPRECV:DATA,&lt;len&gt;</b> ..... <b>\$HTTPRECV:DATA,2</b> <b>&lt;lr&gt;&lt;ln&gt;</b> <b>\$HTTPRECV:DATA,&lt;len&gt;</b> or <b>\$HTTPERROR:&lt;errno&gt;</b>  <b>ERROR</b>  This command will return HTTP response header fields and file path which storage HTML text or download file if request success. If request fail ,this command just return response header fields. Specially, the HEAD request only return response header fields. For POST,must set Conten-Length header item and POST's content data.

Reference	<p>Note</p> <p>If a 202 error code appears and the request fails, execute the AT\$HTTPOPEN instruction after the AT\$HTTPCLOSE command.</p> <p>If AT\$HTTPTYPE=1 and irequest success, Only return OK.If irequest fail, will be delete efs file.</p> <p>For the serial port baud rate lower than 115200, it is recommended to save the content in a local file.( Only used for 506X/506SC).</p>
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Parameters are defined below:

Parameters	Description
<b>&lt;request&gt;</b>	HTTP request type ,available data include 0,1,2,3. 0: GET request 1: POST request 2: HEAD request 3: POST request (Content length must be less than 500 and set content in the first.)
<b>&lt;ignore_head&gt;</b>	Whether to return response header fields. 0: Return response header fields. 1: Do not return response header fields. Note: The default value is 0.

Example:

Commands	Response
----------	----------

Example 1:

```

AT$HTTPACTION=0 $HTTPRECV:DATA,153
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Content-Type: text/html;charset=ISO-8859-1
Transfer-Encoding: chunked
Date: Tue, 20 Sep 2016 05:27:29 GMT

$HTTPRECV:DATA,2

$HTTPRECV:DATA,178
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01
Transitional//EN">
<HTML>
<HEAD><TITLE>A Servlet</TITLE></HEAD>
<BODY>
GET:Name or pass is wrong.
</BODY>
</HTML>

$HTTPRECV:DATA,5

OK

```

Example 2:

```

AT$HTTPACTION=1 OK

AT$HTTPDATA=13 >> name=mobilete
OK

AT$HTTPSEND OK

AT$HTTPDATA=13 >> k&pass=123456
OK

AT$HTTPSEND OK

AT$HTTPDATA=0 OK

```

<b>AT\$HTTPSEND</b>	<pre> \$HTTPRECV:DATA,153 HTTP/1.1 200 OK Server: Apache-Coyote/1.1 Content-Type: text/html;charset=ISO-8859-1 Transfer-Encoding: chunked Date: Tue, 20 Sep 2016 05:37:48 GMT  \$HTTPRECV:DATA,2  \$HTTPRECV:DATA,195 &lt;!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"&gt; &lt;HTML&gt; &lt;HEAD&gt;&lt;TITLE&gt;A Servlet&lt;/TITLE&gt;&lt;/HEAD&gt; &lt;BODY&gt; POST: Name is mobiletek,pass is 123456 &lt;/BODY&gt; &lt;/HTML&gt;  OK </pre>
<p>Example 3:</p> <b>AT\$HTTPACTION=2</b>	<pre> HTTP/1.1 200 OK Server: Apache-Coyote/1.1 Content-Type: text/html Content-Length: 172 Date: Tue, 20 Sep 2016 05:29:33 GMT  OK </pre>
<p>Example 4:</p> <b>AT\$HTTPOPEN</b>	<pre> OK </pre>
<b>AT\$HTTTPARA=htt p://182.150.28.206:8 182/httpdemo/http, 8182</b>	<pre> OK </pre>
<b>AT\$HTTPRQH=Con tent-Length,26</b>	<pre> OK </pre>

<b>AT\$HTTPDATAEX=26,"name=mobiletek&amp;pass=123456"</b>	<b>OK</b>
<b>AT\$HTTPACTION=3</b>	<b>OK</b> <b>AT\$HTTPACTION=3</b> <b>\$HTTPRECV:DATA,153</b> <b>.....</b> <b>\$HTTPRECV:DATA,2</b>  <b>\$HTTPRECV:DATA,195</b> <b>.....</b> <b>OK</b>
<b>AT\$HTTPCLEAR</b>	<b>OK</b>

### 3.3.5.2.7 AT\$HTTPDATA Set HTTP Post Request's Data

Set HTTP Post Request's Data

Test Command	Response
<b>AT\$HTTPDATA=?</b>	<b>\$HTTPDATA:(0-1024)</b> <b>OK</b>
Read Command	Response
<b>AT\$HTTPDATA?</b>	<b>\$HTTPDATA:&lt;data_len&gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$HTTPDATA=&lt;data_len&gt;</b>	The command is used to set HTTP post request's content. This command is effective only to POST.

Parameters are defined below:

Parameters	Description
<b>&lt;data_len&gt;</b>	The post request's content length. The length is between 0 and 1024. 0 mean data write end. When data length reach <data_len>, it's auto exit inputing. After this, must use \$HTTPSEND to send data every time.

### 3.3.5.2.8 AT\$HTTPDATAEX Set HTTP Post Request's Data

Set HTTP Post Request's Data

Test Command	Response
<b>AT\$HTTPDATAEX=?</b>	<b>\$HTTPDATAEX:(0-500) ,"" OK</b>
Read Command	Response
<b>AT\$HTTPDATAEX?</b>	<b>\$HTTPDATAEX:&lt;data_len&gt; OK</b>
Write Command	Response
<b>AT\$HTTPDATAEX=&lt;data_len&gt;,&lt;data&gt;</b>	The command is used to set HTTP post request's content. This command is effective only to POST.

Parameters are defined below:

Parameters	Description
<b>&lt;data_len&gt;</b>	The post request's content length. The length is between 0 and 500. Before this must be set "Content-Length" request head, and must be the same as the value.
<b>&lt;data&gt;</b>	The post request's content. The length must be same as the <data_len>.

Example:

Commands	Response
<b>AT\$HTTPOPEN</b>	<b>OK</b>
<b>AT\$HTTTPARA=http://182.150.28.206:8182/httpdemo/http,8182</b>	<b>OK</b>
<b>AT\$HTTPRQH=Content-Length,26</b>	<b>OK</b>

<b>AT\$HTTPDATAEX=26,"name=mobiletek&amp;pass=123456"</b>	<b>OK</b>
<b>AT\$HTTPACTION=3</b>	<b>\$HTTPRECV:DATA,153</b> ..... <b>\$HTTPRECV:DATA,2</b>  <b>\$HTTPRECV:DATA,195</b> <b>&lt;!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"&gt;</b> <b>&lt;HTML&gt;</b> <b>&lt;HEAD&gt;&lt;TITLE&gt;A Servlet&lt;/TITLE&gt;&lt;/HEAD&gt;</b> <b>&lt;BODY&gt;</b> <b>POST: Name is mobiletek,pass is 123456</b> <b>&lt;/BODY&gt;</b> <b>&lt;/HTML&gt;</b> <b>OK</b>
<b>AT\$HTTPCLEAR</b>	<b>OK</b>

### 3.3.5.2.9 AT\$HTTPSEND Send HTTP Post Content Data

Send HTTP Post Content Data

Execution Command	Response
<b>AT\$HTTPSEND</b>	The command is used to send HTTP post request's content. This command effective only to POST.After data send complete,will receive response. <b>OK</b>

Example:

Commands	Response
<b>AT\$HTTPOPEN</b>	<b>OK</b>
<b>AT\$HTTTPARA=htt p://182.150.28.206:8 182/httpdemo/http, 8182</b>	<b>OK</b>



<b>AT\$HTTPRQH=Content-Length,26</b>	<b>OK</b>
<b>AT\$HTTPACTION=1</b>	<b>OK</b>
<b>AT\$HTTPDATA=13</b>	<b>&gt;&gt; name=mobilete OK</b>
<b>AT\$HTTPSEND</b>	<b>OK</b>
<b>AT\$HTTPDATA=13</b>	<b>&gt;&gt; k&amp;pass=123456 OK</b>
<b>AT\$HTTPDATA=0</b>	<b>OK</b>
<b>AT\$HTTPSEND</b>	<b>\$HTTPRCV:DATA,153</b> <b>.....</b> <b>\$HTTPRCV:DATA,2</b>  <b>\$HTTPRCV:DATA,195</b> <b>.....</b> <b>POST: Name is mobiletek,pass is 123456</b> <b>&lt;/BODY&gt;</b> <b>&lt;/HTML&gt;</b> <b>OK</b>
<b>NOTE</b>	If AT\$HTTPTYPE=1 and irequest success, Only return OK.If irequest fail, will be delete efs file.

### 3.3.5.2.10 AT\$HTTPTYPE Set HTTP Recv Content Data Save Location

Set HTTP Recv Content Data Save In Local File Or Output To Te. This command is only supported by L506X and L506SC.

Test Command	Response
<b>AT\$HTTPTYPE=?</b>	<b>\$HTTPTYPE:(0-1) OK</b>
Read Command	Response
<b>AT\$HTTPTYPE?</b>	<b>\$HTTPTYPE:&lt;type&gt; OK</b>

Write Command	Response
<b>AT\$HTTPTYPE =&lt;type&gt;</b>	The command is used to set HTTP recv content data save In local file or output to Te.

Parameters are defined below:

Parameters	Description
<b>&lt;type&gt;</b>	HTTP recv data set save the way ,available data include 0,1 0: data output to Te. 1: data save to efs. Note: set value after open HTTP service,and set value before AT\$HTTPACTION. Its default value is 0.

Example:

Commands	Response
Example 1: <b>AT\$HTTPTYPE=1</b>	<b>OK</b>
Example 2: <b>AT\$HTTPTYPE=0</b>	<b>OK</b>

### 3.3.5.2.11 AT\$HTTPREAD Read Content Data from Local File

This command is used to read file content from local file.but AT\$HTTPTYPE=1 effective.  
This command is only supported by L506X and L506SC.

Test Command	Response
<b>AT\$HTTPREAD=?</b>	<b>\$HTTPREAD:(0-1),(0-4294967295)</b>  <b>OK</b>

Write Command	Response
<b>AT\$HTTPREAD</b> <b>=&lt;read_type&gt;[,&lt;offset&gt;]</b>	<b>\$HTTPREAD: &lt;offset&gt;,&lt;data_size&gt;</b> <b>&lt;data&gt;</b> <b>OK</b> Or <b>\$HTTPREAD: &lt;read_type&gt;,&lt;file_size&gt;</b> <b>OK</b> Or <b>ERROR</b> Or <b>\$HTTPERROR:&lt;errno&gt;</b>  <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;read_type&gt;</b>	0    Read File 1    File size
<b>&lt;offset&gt;</b>	Start read file position,The range is from 0 to 4294967295,Its value should less than file size. <b>Note:</b> when <b>&lt;read_type&gt;=1</b> ,set <b>&lt;offset&gt;</b> value will return error. when <b>&lt;read_type&gt;=0</b> , <b>&lt;offset&gt;</b> default value is 0.
<b>&lt;data_size&gt;</b>	Every time the length of the read from local file .Its valule is 1024 byte.

Read Command	Response
<b>AT\$HTTPREAD?</b>	<b>\$HTTPREAD: &lt;read_type&gt;,&lt;offset&gt;</b> <b>OK</b> <b>Note:</b> when <b>&lt;read_type&gt;=1</b> , <b>&lt;offset&gt;</b> value is 0.

Example:

Commands	Response
<b>AT\$HTTPREAD=?</b>	<b>\$HTTPREAD:(0-1),(0-4294967295)</b>  <b>OK</b>
<b>AT\$HTTPREAD</b> <b>=1,2</b>	<b>ERROR</b>

<b>AT\$HTTPREAD=1</b>	<b>AT\$HTTPREAD:1,159349</b>  OK
<b>AT\$HTTPREAD=0,1025</b>	<b>\$HTTPREAD:1025,1024</b> 櫛鑼倅嬰鑄ゆ害鑰?鋤 舛鋤板泥,鋤伴?佗?胯硯,鋤伴搨涓撻 ,鋤伴 搨鑼規 ,鋤伴搨继尤环,鋤伴搨鑰墮梲,鋤伴搨鋸 簞"/> <meta http-equiv="imagetoolbar" content="no" /> <meta property="wb:webmaster" content="10fd28588b2f9686" /> <meta name="sogou_site_verification" content="Mtd2Wlt6Ne"/> <meta name="msvalidate.01" content="2D36557CC0E331F85475A3B85DAAA4FC" /> <meta http-equiv="X-UA-Compatible" content="IE=Edge,chrome=1" /> <meta name="renderer" content="webkit" /> <title>鑄惧害鋤板泥</title> <script type="text/javascript"> if ('http:' === window.location.protocol && window.location.port === ") { var curLocation = window.location.href; window.location = curLocation.replace('http://', 'https://'); } </script> <script> var corePerfMonitor={pageStartTime:+new Date,firstRender:true,components:{"CityIndex":1,"PoiSearch":1,"Bu sTrans":1,"NavWalk":1,"NavTrans":1},componentName:"CityIndex" ,data:{},timer:null,onTilesLoaded:function(){var mapType=this.getMapType();var tileLoadedTime=(+new Date)-corePerfMonitor.pageStartT OK 
<b>AT\$HTTPREAD?</b>	<b>\$HTTPREAD:0,1025</b>  OK

### 3.3.5.2.12 HTTP Error Code

Numeric Format	Verbose Format General errors:
200	Subsystem established and available
201	Subsystem establishment in progress.
202	Network subsystem unavailable.
203	PPP is closing.

204	Existing net subsystem resources.
205	Physlink going dormant.
300	HTTP service is not opened.
301	HTTP service has opened.
302	URL resolve fail.
303	DNS error.
304	Action error.
305	Request timeout.
306	Downloading file.
307	URL not set.
308	Header fields's number exceeds the limit.
309	Header fields error,such as not set "Content-Length" for POST request.
310	Header response error(Exception).
311	Is sending post data.
312	Post request not started,only for \$HTTPACTION=1.
313	The value of "Content-Length" not same as the content's length.
314	Request fail and should close socket.
315	Connection to server failed
316	EFS not enough space
317	EFS operation failed
350	Unknown HTTP error

### 3.3.5.3 AT Commands for EMAIL

#### 3.3.5.3.1 AT+SMTPSRV Set SMTP Server Address And Port Number

Set SMTP Server Address And Port Number

Execution Command	Response
<b>AT+SMTPSRV</b>	Execute command will set SMTP server address and port and cert to default value.
Test Command	Response
<b>AT+SMTPSRV=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPSRV?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+SMTPSRV=&lt;s_addr&gt;,&lt;n_port&gt;,[n_type],[ignore_cert&gt;]]</b>	This synchronous command is used to set SMTP server address and port number and server type.If the process of sending an Email is ongoing, the command will return FAIL directly.SMTP server address and port number will not be cleared until execute AT+SMTPSRV command with empty parameter.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
<b>&lt;s_addr&gt;</b>	Mandatory parameter. SMTP server address, non empty string, ASCII text string up to 128 characters.
<b>&lt;n_port&gt;</b>	Mandatory parameter. Port number of SMTP server in decimal format, from 1 to 65535, and default port is 25 for SMTP.

<b>&lt;n_type&gt;</b>	Optional parameter. SMTP connect type, and default type is 1. SMTP server: n_type=1 SMTP server with SSL/TLS: n_type=2 SMTP server with STARTTLS: n_type=3
<b>&lt;ignore_cert&gt;</b>	Optional parameter, Indicates whether the SSL connection ignores the certificate, and default is 0. 0 - ignores certificate 1 - use certificate

Example:

Commands	Response
<b>AT+SMTPSRV=?</b>	<b>+SMTPSRV:"",(1-65535),(1-3),(0-1)</b> <b>OK</b>
<b>AT+SMTPSRV="smtp.126.com",25,1</b>	<b>OK</b>
<b>AT+SMTPSRV?</b>	<b>+SMTPSRV:"smtp.126.com",25,1,0</b> <b>OK</b>
<b>AT+SMTPSRV="smtp.126.com",465,2,1</b>	<b>OK</b>
<b>AT+SMTPSRV?</b>	<b>+SMTPSRV:"smtp.126.com",465,2,1</b>  <b>OK</b>
<b>AT+SMTPSRV</b>	<b>OK</b>
<b>AT+SMTPSRV="smtp.126.com"</b>	<b>+SMTPSRV:FAIL,INVALID PARAM</b>  <b>ERROR</b>

### 3.3.5.3.2 AT+SMTPAUTH SMTP Server Authentication

SMTP Server Authentication

Execution Command	Response
<b>AT+SMTPAUTH</b>	Execute command will set SMTP server address and port number to default value.

Test Command	Response
<b>AT+SMTPAUTH=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPAUTH?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+SMTPAUTH=&lt;n_type&gt;,&lt;s_name&gt;,&lt;s_pass&gt;</b>	<p>This synchronous command is used to control SMTP authentication during connection with SMTP server. If the process of sending an Email is ongoing, the command will return FAIL directly. Authentication type, username, password will not be cleared until execute AT+SMTPAUTH command with empty parameter.</p> <p>Note: If you want to change another type to authenticate with SMTP server, need to do the following:</p> <ol style="list-style-type: none"> <li>1. AT+SMTPSTOP</li> <li>2. AT+SMTPSRV=&lt;s_addr&gt;[,&lt;n_port&gt;]</li> <li>3. AT+SMTPAUTH=&lt;n_type&gt;,&lt;s_name&gt;,&lt;s_pass&gt;</li> </ol>
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
<b>&lt;n_type&gt;</b>	<p>Mandatory parameter. SMTP server authentication type, currently support below authentication types:</p> <p>AUTH LOGIN: n_type=0</p> <p>AUTH PLAIN: n_type=1</p> <p>AUTH NTLM: n_type=2</p> <p>AUTH CRAM_MD5: n_type=3</p>
<b>&lt;s_name&gt;</b>	<p>Mandatory parameter. Username to be used for SMTP authentication, non empty string and up to 128 characters.</p>
<b>&lt;s_pass&gt;</b>	<p>Mandatory parameter. Password to be used for SMTP authentication, non empty string and up to 128 characters.</p>

Example:



Commands	Response
<b>AT+SMTPAUTH=?</b>	<b>+SMTPAUTH:(0-3),"", ""</b> <b>OK</b>
<b>AT+SMTPAUTH=0,"</b> <b>user name","user</b> <b>password"</b>	<b>OK</b>
<b>AT+SMTPAUTH?</b>	<b>+SMTPAUTH:0,"user name ", " user password "</b> <b>OK</b>

### 3.3.5.3.3 AT+SMTPFROM Set Sender Address And Name

Set Sender Address And Name

Execution Command	Response
<b>AT+SMTPFROM</b>	Execute command will set sender address and sender name to default value.
Test Command	Response
<b>AT+SMTPFROM=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPFROM?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+SMTPFROM=&lt;s_addr&gt;[</b> <b>,&lt;s_name&gt;]</b>	This synchronous command is used to set sender's address and name, which are used to construct e-mail header. If the process of sending an Email is ongoing, the command will return FAIL directly. Sender address and name will not be cleared until execute AT+SMTPFROM command with empty parameter.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
<b>&lt;s_addr&gt;</b>	Mandatory parameter. Email sender address, non empty string, ASCII text up to 128 characters.eg:address@xx.com.
<b>&lt;s_name&gt;</b>	Optional parameter. E-mail sender name, non empty string and alphanumeric ASCII text up to 64 characters.

Example:

Commands	Response
<b>AT+SMTPFROM=?</b>	<b>+SMTPFROM:"",""</b> <b>OK</b>
<b>AT+SMTPFROM="email_test@126.com", "test name"</b>	<b>OK</b>
<b>AT+SMTPFROM?</b>	<b>+SMTPFROM:"email_test @126.com", "test name"</b> <b>OK</b>
<b>AT+SMTPFROM="email address", "test name"</b>	<b>+SMTPFROM:FAIL,INVALID PARAM</b> <b>ERROR</b>

#### 3.3.5.3.4 AT+SMTPRCPT Set Recipient Type(TO/CC/BCC), Address And Name

Set Recipient Type(TO/CC/BCC), Address And Name

Execution Command	Response
<b>AT+SMTPRCPT</b>	Execute command will clear all recipient list.
Test Command	Response
<b>AT+SMTPRCPT=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPRCPT?</b>	Read command returns the current configuration value of the parameter

Write Command	Response
<b>AT+SMTPRCPT=&lt;n_type&gt;,&lt;s_addr&gt;[,&lt;s_name&gt;]</b>	This synchronous command is used to set recipient address/name/type (TO/CC/BCC) and up to 5 for each type. If the process of sending an Email is ongoing, the command will return FAIL directly. After an Email is sent, all recipient list will be cleared, or execute AT+SMTPRCPT with empty parameter can clear all recipient list.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
<b>&lt;n_type&gt;</b>	Mandatory parameter. Recipient type: TO: n_type=0 CC: n_type=1 BCC: n_type=2
<b>&lt;s_addr&gt;</b>	Mandatory parameter. Recipient address, non empty string, ASCII text up to 128 characters.
<b>&lt;s_name&gt;</b>	Optional parameter. Recipient name, non empty string and alphanumeric ASCII text up to 64 characters.

Example:

Commands	Response
<b>AT+SMTPRCPT=?</b>	<b>+SMTPRCPT:(0-2),"", ""</b> <b>OK</b>
<b>AT+SMTPRCPT=0,"ToAddrees@qq.com","tester_to"</b>	<b>OK</b>
<b>AT+SMTPRCPT=1,"CcAddrees@qq.com","tester_cc"</b>	<b>OK</b>

<b>AT+SMTPRCPT=2,"BccAddrees@qq.com","tester1_bcc"</b>	<b>OK</b>
<b>AT+SMTPRCPT?</b>	<b>+SMTPRCPT:0,"ToAddrees@qq.com","tester_to"</b> <b>+SMTPRCPT:1,"CcAddrees@qq.com","tester_cc"</b> <b>+SMTPRCPT:2,"BccAddrees@qq.com","tester1_bcc"</b> <b>OK</b>

### 3.3.5.3.5 AT+SMTPSUB Set Email Subject

Set Email Subject

Execution Command	Response
<b>AT+SMTPSUB</b>	Execute command will clear Email subject.
Test Command	Response
<b>AT+SMTPSUB=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPSUB?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+SMTPSUB=&lt;s_subject&gt;</b>	This synchronous command is used to set the subject of e-mail, which is used to construct e-mail header. If the process of sending an Email is ongoing, the command will return FAIL directly. After an Email is sent, Email subject will be cleared, or execute AT+SMTPSUB with empty parameter can clear Email subject.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
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<b>&lt;s_subject&gt;</b>	Mandatory parameter. Email subject, non empty string and ASCII text up to 512 characters. Currently, it only support ASCII code characters.
--------------------------	---

Example:

Commands	Response
<b>AT+SMTPSUB=?</b>	<b>+SMTPSUB:""</b> <b>OK</b>
<b>AT+SMTPSUB="smtp email test 0412"</b>	<b>OK</b>
<b>AT+SMTPSUB?</b>	<b>+SMTPSUB:"smtp email test 0412"</b> <b>OK</b>
<b>AT+SMTPSUB="=?gb2312?B?08q8/rHqzOKy4srUDQo=?="</b>	<b>OK</b>

### 3.3.5.3.6 AT+SMTPBODY Set Email Body

Set Email Body

Execution Command	Response
<b>AT+SMTPBODY</b>	Execute command can input non-ASCII character string, and CTRL-Z (ESC) is used to finish (cancel) the input operation. More than 2048 input data will be intercepted.
Test Command	Response
<b>AT+SMTPBODY=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPBODY?</b>	Read command returns the current configuration value of the parameter

Write Command	Response
<b>AT+SMTPBODY=&lt;s_body&gt;</b>	This synchronous command is used to set the body of e-mail, If the process of sending an Email is ongoing, the command will return FAIL directly. After an Email is sent, Email body will be cleared, or execute AT+SMTPBODY with empty parameter can clear Email body.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
<b>&lt;s_body&gt;</b>	Mandatory parameter. E-mail body, non empty string ASCII text up to 2048 characters, more than 2048 input data will be intercepted. Currently, it only support ASCII code characters.

Example:

Commands	Response
<b>AT+SMTPBODY=?</b>	<b>+SMTPBODY:""</b> <b>OK</b>
<b>AT+SMTPBODY="this is an email test body"</b>	<b>OK</b>
<b>AT+SMTPBODY?</b>	<b>+SMTPBODY:this is an email test body</b> <b>OK</b>
<b>AT+SMTPBODY</b>	<b>&gt;&gt; content of body</b>  <b>OK</b>

### 3.3.5.3.7 AT+SMTPBCH Set Email Body Character set

Set Email Body Character set

Execution Command	Response
<b>AT+SMTPBCH</b>	Execute command will set Email body character set to default
Test Command	Response
<b>AT+SMTPBCH=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPBCH?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+SMTPBCH=&lt;s_bch&gt;</b>	This synchronous command is used to set the body character set of e-mail. If the process of sending an Email is ongoing, the command will return FAIL directly.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
<b>&lt;s_bch&gt;</b>	Mandatory parameter. Email body character set, non empty string with double quotes. By default, it is "utf-8". The maximum length is 32 bytes.

Example:

Commands	Response
<b>AT+SMTPBCH=?</b>	<b>+SMTPBCH:"CHARSET"</b> <b>OK</b>
<b>AT+SMTPBCH?</b>	<b>+SMTPBCH:"utf-8"</b> <b>OK</b>
<b>AT+SMTPBCH="gb 2312"</b>	<b>OK</b>

<b>AT+SMTPBCH?</b>	<b>+SMTPBCH:"gb2312"</b> <b>OK</b>
<b>AT+SMTPBCH="err or"</b>	<b>+SMTPBCH:FAIL,CHARSET NOT SUPPORT ERROR</b>

### 3.3.5.3.8 AT+SMTPFILE Add Email Attachment File

Add Email Attachment File

Execution Command	Response
<b>AT+SMTPFILE</b>	Execute command will clear all attachment file list
Test Command	Response
<b>AT+SMTPFILE=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+SMTPFILE?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+SMTPFILE=&lt;n_index&gt;, &lt;s_filename&gt;</b>	This synchronous command is used to add Email attachment files. If the process of sending an Email is ongoing, the command will return FAIL directly. After an Email is sent, all attachment files will be cleared, or clear all attachment file list by execute AT+SMTPFILE with empty parameter.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Parameters are defined below:

Parameters	Description
<b>&lt;n_index&gt;</b>	Mandatory parameter. Index for attachment files, from 1 to 10.



<b>&lt;s_filename&gt;</b>	Mandatory parameter, the name of a file which is under current directory. SMTP client doesn't allow two attachments with the same file name. The total size of all attachments can't exceed 10MB.
---------------------------	---

Example:

Commands	Response
<b>AT+SMTPFILE=?</b>	<b>+SMTPFILE:(1-10),""</b> <b>OK</b>
<b>AT+SMTPFILE=1,"/email/parsed/Email20170115055323001.html"</b>	<b>+SMTPFILE:FAIL,FILE NOT FOUND</b> <b>ERROR</b>
<b>AT+SMTPFILE=1,"/email/parsed/Email20160412030509000.txt"</b>	<b>OK</b>
<b>AT+SMTPFILE?</b>	<b>+SMTPFILE:"/email/parsed/Email20160412030509000.txt"</b> <b>OK</b>

### 3.3.5.3.9 AT+SMTPSEND Send an Email

Send an Email

Execution Command	Response
<b>AT+SMTPSEND</b>	This asynchronous command is used to initiate TCP session with SMTP server and send an Email after all mandatory parameters have been set correctly. If the process of sending an Email is ongoing, the command will return FAIL directly.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Example:

Commands	Response
<b>AT+SMTPSEND</b>	<b>OK</b> <b>+SMTPSEND:SUCCESS</b>

### 3.3.5.3.10 AT+SMTPSTOP Close SMTP connection.

Close SMTP connection.

Execution Command	Response
<b>AT+SMTPSTOP</b>	The synchronous command is used to force to stop sending Email and close the TCP session while sending an Email is ongoing.
Reference	Note
RFC821 SIMPLE MAIL TRANSFER PROTOCOL	

Example:

Commands	Response
<b>AT+SMTPSTOP</b>	<b>OK</b>

### 3.3.5.3.11 AT+POP3SRV Set POP3 Server Address, Username, Password, Port

Set POP3 Server Address, Username, Password, Port

Execution Command	Response
<b>AT+POP3SRV</b>	Execute command will set POP3 server address, username, password, port number to default value.
Test Command	Response
<b>AT+POP3SRV=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+POP3SRV?</b>	Read command returns the current configuration value of the parameter

Write Command	Response
<b>AT+POP3SRV=&lt;s_server&gt;,&lt;s_username&gt;,&lt;s_password&gt;[,&lt;n_port&gt;]</b>	The synchronous command is used to set POP3 server address, username, password, port number. All parameters will not be cleared until execute AT+POP3SRV command with empty parameter.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Parameters are defined below:

Parameters	Description
<b>&lt;s_server&gt;</b>	Mandatory parameter. POP3 server address, non empty string ,ASCII text string up to 128 characters.
<b>&lt;s_username&gt;</b>	Mandatory parameter. Username to log in POP3 server, non empty string , and up to 128 characters.
<b>&lt;s_password&gt;</b>	Mandatory parameter. Password to log in POP3 server, non empty string and up to 128 characters.
<b>&lt;n_port&gt;</b>	Optional parameter. Port number of POP3 server in decimal format, from 1 to 65535, and default port is 110 for POP3.

Example:

Commands	Response
<b>AT+POP3SRV=?</b>	<b>+POP3SRV:"","", "(1-65535) OK</b>
<b>AT+POP3SRV="pop3.126.com","user name","user password",110</b>	<b>OK</b>
<b>AT+POP3SRV?</b>	<b>+POP3SRV:"pop3.126.com","user name","user password",110 OK</b>

### 3.3.5.3.12 AT+POP3SSL POP3SSL support switch

This command is used to switch SSL support for POP3.

Test Command	Response
<b>AT+POP3SSL=?</b>	<b>+POP3SSL: (0-1),(0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+POP3SSL?</b>	<b>+POP3SSL: &lt;action&gt;,&lt;cert&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+POP3SSL=&lt;action&gt;[,&lt;cert&gt;]</b>	<b>OK</b> or <b>ERROR</b> NOTE: The command must be used before AT+POP3IN
	Note: this command is only supported by L506X.

Parameters are defined below:

Parameters	Description
<b>&lt;action&gt;</b>	The switch for SSL support. 0    close SSL support 1    open SSL support The default value is 0.
<b>&lt;cert&gt;</b>	Whether to use the certificate. 0    Ignore the certificate 1    Use the certificate

Example:

Commands	Response
<b>AT+POP3SSL=1,1</b>	<b>OK</b>

### 3.3.5.3.13 AT+POP3IN Login POP3 Server

Login POP3 Server

Execution Command	Response
<b>AT+POP3IN</b>	This synchronous command is used to login POP3 server and establish a session after POP3 server and account information are set rightly. If the other POP3 operation is ongoing, will return FAIL directly. If no POP3 operation for a long time after the session is ready, POP3 server may release the session.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Example:

Commands	Response
<b>AT+POP3IN</b>	<b>OK</b>

#### 3.3.5.3.14 AT+POP3NUM Get Email Number And Total Size

Get Email Number And Total Size

Execution Command	Response
<b>AT+POP3NUM</b>	This synchronous command is used to get e-mail number and total size on the specified POP3 server after the POP3 client logs in POP3 server successfully and no other POP3 operation is ongoing.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Example:

Commands	Response
<b>AT+POP3NUM</b>	<b>4,63368</b> <b>OK</b>

#### 3.3.5.3.15 AT+POP3LIST List Email ID And Size

## List Email ID And Size

Execution Command	Response
<b>AT+POP3LIST</b>	Execute command will list all Email ID and size.
Write Command	Response
<b>AT+POP3LIST[=&lt;n_msgID&gt; ]</b>	This synchronous command is used to get e-mail number and size on the specified POP3 server after the POP3 client logs in POP3 server successfully and no other POP3 operation is ongoing.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Parameters are defined below:

Parameters	Description
<b>&lt;n_msgID&gt;</b>	Optional parameter. The Email ID.

Example:

Commands	Response
<b>AT+POP3LIST=?</b>	<b>+POP3LIST: (1-65535)</b> <b>OK</b>
<b>AT+POP3LIST</b>	<b>1,3526</b> <b>2,45579</b> <b>3,10826</b> <b>4,3437</b> <b>OK</b>
<b>AT+POP3LIST=3</b>	<b>3,10826</b> <b>OK</b>

### 3.3.5.3.16 AT+POP3HDR Get an Email Header

Get an Email Header

Test Command	Response
<b>AT+POP3HDR=?</b>	Test command returns range of the parameters.
Write Command	Response
<b>AT+POP3HDR=&lt;n_msgID&gt;</b>	This synchronous command is used to retrieve Email's sender address, date and subject, which are present in the mail's header. If the other POP3 operation is ongoing, will return FAIL directly.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Parameters are defined below:

Parameters	Description
<b>&lt;n_msgID&gt;</b>	Mandatory parameter. The Email ID.

Example:

Commands	Response
<b>AT+POP3HDR=?</b>	<b>+POP3HDR: (1-65535) OK</b>
<b>AT+POP3HDR=1</b>	<b>date: Wed, 21 Dec 2016 10:31:08 +0800 from: "xxxx@yyy.com" &lt;xxxx@yyy.com&gt; subject: =?GB2312?B?16q3ojogMTExMQ==?= FAIL</b>

### 3.3.5.3.17 AT+POP3GET Get an Email

Get an Email

Test Command	Response
<b>AT+POP3GET=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+POP3GET?</b>	Read command returns the current configuration value of the parameter

Write Command	Response
<b>AT+POP3GET=&lt;n_msgID&gt;[,&lt;n_gettype&gt;][,&lt;subpackage&gt;]</b>	This asynchronous command is used to retrieve an Email from server and save it to local file system or print the Email to TE. If the other POP3 operation is ongoing, will return FAIL directly.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Parameters are defined below:

Parameters	Description
<b>&lt;n_msgID&gt;</b>	Mandatory parameter. The Email ID.
<b>&lt;n_gettype&gt;</b>	Optional parameter. The type to save when getting message from POP3 server: - Save parsed body file and attachments: n_gettype=1 - Save the whole message as a ".eml" file: n_gettype=2
<b>&lt;subpackage&gt;</b>	Optional parameter. This parameter is used to determine whether to save the file or terminal display. - subpackage=0: Print the Email to TE, but the <n_gettype> parameter is no effect. - subpackage=1: Save the Email to local file system with <n_gettype> value.

Example:

Commands	Response
<b>AT+POP3GET=?</b>	<b>+POP3GET: (1-65535),(1-2),(0-1)</b> <b>OK</b>
<b>AT+POP3GET?</b>	<b>+POP3GET: 1,1,0</b> <b>OK</b>
<b>AT+POP3GET=1,1,1</b>	<b>OK</b> <b>+POP3GET:SUCCESS</b> <b>/email/received/Email20170119084633.txt</b> <b>/email/parsed/Email20170119084633000.txt</b> <b>/email/parsed/Email20170119084633001.html</b>



<b>AT+POP3GET=1,1,0</b>	<b>OK</b> <b>+POP3GET:SUCCESS</b> <b>+OK 3526 octets</b> <b>Received: from m97139.mail.qiye.163.com (unknown</b> <b>[220.181.97.139])</b> <b>by mx23 (Coremail) with SMTP id</b> <b>KcmowAAXDu9s6VIY76rqBg--.65532S2;</b> <b>.....</b>
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### 3.3.5.3.18 AT+POP3DEL Mark an Email to Delete from POP3 Server

Mark an Email to Delete from POP3 Server

Test Command	Response
<b>AT+POP3DEL=?</b>	Test command returns range of the parameters.
Write Command	Response
<b>AT+POP3DEL=&lt;n_msgID&gt;</b>	This synchronous command is used to mark an e-mail to delete from POP3 server. The operation only marks an e-mail on the server to delete it, and after POP3 client logs out POP3 server and closes the session normally, the marked e-mail is deleted on the server. If the other POP3 operation is ongoing, will return FAIL directly.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Parameters are defined below:

Parameters	Description
<b>&lt;n_msgID&gt;</b>	Mandatory parameter. The Email ID.

Example:

Commands	Response
<b>AT+POP3DEL=?</b>	<b>+POP3DEL: (1-65535)</b> <b>OK</b>
<b>AT+POP3DEL=5</b>	<b>OK</b>

### 3.3.5.3.19 AT+POP3OUT Logout POP3 Server

Logout POP3 Server

Execution Command	Response
<b>AT+POP3OUT</b>	This synchronous command is used to log out the POP3 server and close the session, and if there are some Emails which are marked to delete, it also informs POP3 server to delete the marked Emails. If the other POP3 operation is ongoing, will return FAIL directly.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Example:

Commands	Response
<b>AT+POP3OUT</b>	<b>OK</b>

### 3.3.5.3.20 AT+POP3STOP Force to Stop POP3 Session

Force to Stop POP3 Session

Execution Command	Response
<b>AT+POP3STOP</b>	This synchronous command is used to force to close the session
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Example:

Commands	Response
<b>AT+POP3STOP</b>	<b>OK</b>

### 3.3.5.3.21 AT+POP3READ Read an Email from File System

Read an Email from File System

Execution Command	Response
<b>AT+POP3READ</b>	Execute command will set the parameters to default value.
Test Command	Response
<b>AT+POP3READ=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT+POP3READ?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+POP3READ=&lt;n_location&gt;,&lt;s_filename&gt;[,&lt;n_startpos&gt;,&lt;n_size&gt;]</b>	<p>This synchronous command is used to read an e-mail from file system. If the process of receiving Email is ongoing, the command can't read an Email.</p> <p>Note: Error code: INVALID PARAM: The input parameter is invalid EFS ERROR: File operation is abnormal</p>
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Parameters are defined below:

Parameters	Description
<b>&lt;n_location&gt;</b>	<p>Mandatory parameter. The location from which TE reads an e-mail. Currently, only support Local system.</p> <p>-Local system: n_location=0 -SD card:n_location=1,NOT Support.</p>
<b>&lt;s_filename&gt;</b>	<p>Mandatory parameter. The Email file name, non empty string type with double quotes and including a directory name and a text file name separated by the list separator "/".</p>
<b>&lt;n_startpos&gt;</b>	<p>Optional parameter. The start position of the file to read</p>

<b>&lt;n_size&gt;</b>	Optional parameter. The num of bytes to read from file. Note: If n_size is equal to 0, or greater than the remaining length of the file, it will be read from the starting position to the end of the file.
-----------------------	---

Example:

Commands	Response
<b>AT+POP3READ=?</b>	<b>+POP3READ:(0-1),"",(0-65535),(0-65535)</b> <b>OK</b>
<b>AT+POP3READ=0,"/email/received/Email20160412015207.txt",0,256</b>	<b>+OK 4204 octets</b> <b>Received: from m97135.qiye.163.com (unknown [220.181.97.135])</b> <b>by mx6 (Coremail) with SMTP id JmmowABnXha4XAtXt3GaAA--.1945S2;</b> <b>Mon, 11 Apr 2016 16:13:44 +0800 (CST)</b> <b>Received: from Windows-Build3 (unknown [182.150.28.206])</b> <b>by smtp1 (C</b> <b>OK</b>
<b>AT+POP3READ?</b>	<b>+POP3READ:"0","/email/received/Email20160412015207.txt",0,256</b> <b>OK</b>

### 3.3.5.3.22 AT+EMAIENC Translate Input String to Base64 Character

Translate Input String to Base64 Character

Write Command	Response
<b>AT+EMAIENC=&lt;s_charset&gt;</b>	This synchronous command is used to translate input string(specially non-ASCII character string,and the input string will not be echoed) to BASE64 character string.
Reference	Note
RFC1939 Post Office Protocol - Version 3	

Parameters are defined below:

Parameters	Description
<b>&lt;s_charset &gt;</b>	Mandatory parameter. Input string charset.

Example:

Commands	Response
<b>AT+EMAIENC="GB2312"</b>	<b>&gt;&gt;</b> <b>=?GB2312?B?1tDOxLLiytTTyrz+?=</b> //中文测试邮件  <b>OK</b>

### 3.3.5.3.23 AT+POP3REMOVE Delete Email file from File System

Delete Email file from File System

Execution Command	Response
<b>AT+POP3REMOVE</b>	Execute command will delete all the email files from file system.
Read Command	Response
<b>AT+POP3REMOVE?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+POP3REMOVE=&lt;s_path&gt;</b>	This asynchronous command is used to delete the file from file system. If the process of receiving Email is ongoing, the command can't delete Email file.
Reference	Note
None	

Parameters are defined below:

Parameters	Description
<b>&lt;s_path&gt;</b>	Mandatory parameter.The Email file path, non empty string type and including a directory name and a text file name separated by the list separator "/",the path up to 256 characters.

Example:

Commands	Response
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<b>AT+POP3REMOVE=</b> "/email/received/E mail2017031005131 1.txt"	<b>OK</b> <b>+POP3REMOVE:SUCCESS</b>
<b>AT+POP3REMOVE?</b>	<b>+POP3REMOVE: "/email/received/Email20170310051311.txt"</b>  <b>OK</b>
<b>AT+POP3REMOVE</b>	<b>OK</b> <b>+POP3REMOVE:SUCCESS</b>

### 3.3.5.3.24 EMAIL AT Command Response Error Definition

Numeric Format	Verbose Format General errors:
SUCCESS	Email operation succeeded.
ONGOING	System busy.
INVALID PARAM	Mandatory parameter isn't set or set error.
PDP NOT ACTIVED	PDP is not activated.
DNS ERROR	DNS parsing error.
NETWORK ERROR	Network is bad for server.
SERVER ERROR	Server released the session. Server rejects the operation with wrong response. Server doesn't give client a response in time
ALREADY CONNECTED	Server already connected.
SEND FAILED	Email send failed.
AUTH ERROR	Server rejects the session because of bad user name and password combination.
DUPLICATE RECIPIENTS	Recipient repeats.
DUPLICATE FILE	Attachment duplicate file.
TIME OUT	Email operation time out.
EFS ERROR	EFS operation error.
FILE NOT FOUND	File not found.
OVER SIZE	Email over size.
MEMORY ERROR	Memory error.
CHARSET NOT SUPPORT	The charset is not support.
LIFETIME STATE ERROR	POP3 server lifetime is incorrect.
USER CANCEL	User called AT+SMTPSTOP or AT+POP3STOP
JUNK MAIL	Server consider this e-mail is junk mail
UNKNOWN ERROR	Unknown error.

### 3.3.5.4 AT Commands for Network

#### 3.3.5.4.1 AT+CNMP Preferred Mode Selection

Preferred Mode Selection

Test Command	Response
<b>AT+CNMP=?</b>	<b>+CNMP: (list of supported &lt;mode&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CNMP?</b>	<b>+CNMP:&lt;mode&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CNMP=&lt;mode&gt;</b>	This command is used to select or set the state of the mode preference, The read command return the current preferred mode that may differ from the setting because of other network operations. <b>OK</b> If <mode> not supported by module, this command will return ERROR: <b>ERROR</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	2 – Automatic 9 – CDMA only 13 – GSM Only 14 – WCDMA Only 17 – Any modes but HDR 19 – GSM+WCDMA Only 20 –Acquire digital, non-HDR mode, systems only (CDMA, GSM, or WCDMA)

22 – CDMA+EVDO Only  
38 – LTE Only  
39 – GSM, WCDMA or LTE  
40 – HDR or LTE only  
41 – CDMA, HDR or LTE only  
42 – CDMA, HDR, GSM or WCDMA  
43 – CDMA, GSM or WCDMA  
46 – CDMA and LTE  
47 – Except HDR and LTE  
48 – Any modes but LTE  
51 – GSM and LTE only  
52 – CDMA, GSM and LTE only  
53 – HDR, GSM and LTE only  
54 – WCDMA and LTE only  
55 – CDMA, WCDMA and LTE only  
56 – HDR, WCDMA and LTE only  
57 – CDMA, HDR and GSM  
58 – CDMA and GSM  
59 – TDS-CDMA Only  
60 – GSM+TDSCDMA Only  
61 – TD-SCDMA, GSM or LTE Only  
62 – TD-SCDMA, GSM, WCDMA or LTE only  
63 – GSM+WCDMA+TDSCDMA Only  
65 – TD-SCDMA and LTE  
66 – CDMA,GSM,WCDMA&TD-SCDMA  
67 – CDMA+EVDO+GSM+WCDMA+TDSCDMA Only  
68 – CDMA, HDR, GSM, WCDMA and LTE  
69 – CDMA, GSM, WCDMA and LTE  
70 – TD-SCDMA and WCDMA  
73 – TD-SCDMA,WCDMA and LTE  
74 – Except TD-SCDMA  
75 – Except HDR and TDS(TD-SCDMA)  
76 – Except LTE and TDS  
77 – Except HDR, LTE and TDS  
82 – CDMA, GSM, TDS, HDR, LTE  
87 – Except for CDMA and HDR



Example:

Commands	Response
<b>AT+CNMP=62</b>	<b>OK</b>
<b>AT+CNMP?</b>	<b>+CNMP:62</b> <b>OK</b>
<b>AT+COPS=1,2,"46000",2</b>	<b>OK</b>
<b>AT+CNMP?</b>	<b>+CNMP:70</b> <b>OK</b>
<b>AT+CNMP=?</b>	<b>+CNMP:</b> <b>(2,9,13-14,17,19-20,22,38-43,46-48,51-63,65-70,73-77,82,87)</b> <b>OK</b>

### 3.3.5.4.2 AT+CNBP Preferred Band Selection

Preferred Band Selection

Read Command	Response
<b>AT+CNBP?</b>	<b>+CNBP: &lt;mode&gt;[,&lt;lte_mode&gt;][,&lt;tds_mode&gt;]</b> <b>OK</b>
Write Command	Response
<b>AT+CNBP=&lt;mode&gt;[,&lt;lte_mode&gt;][,&lt;tds_mode&gt;]</b>	<b>OK</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Mandatory parameter. 64bit number, the value is "1" << "<pos>"(see Defined < pos > values for details), then or by bit. Some special mode value declared below: 0x40000000      BAND_PREF_NO_CHANGE

<b>&lt;lte_mode&gt;</b>	Optional parameter. 64bit number, the value is "1" << "<lte_pos>" (see Defined < lte_pos > values for details), then or by bit.
<b>&lt;tds_mode&gt;</b>	Optional parameter. 64bit number, the value is "1" << "<tds_pos>" (see Defined < tds_pos > values for details), then or by bit.
<b>&lt; pos &gt;</b>	<p>0xFFFFFFFF7FFFFFFF Any (any value)</p> <p>7 GSM_DCS_1800</p> <p>8 GSM_EGSM_900</p> <p>9 GSM_PGSM_900</p> <p>16 GSM_450</p> <p>17 GSM_480</p> <p>18 GSM_750</p> <p>19 GSM_850</p> <p>20 GSM_RGSM_900</p> <p>21 GSM_PCS_1900</p> <p>22 WCDMA_IMT_2000</p> <p>23 WCDMA_PCS_1900</p> <p>Defined &lt; pos &gt; values:</p> <p>24 WCDMA_III_1700</p> <p>25 WCDMA_IV_1700</p> <p>26 WCDMA_850</p> <p>27 WCDMA_800</p> <p>48 WCDMA_VII_2600</p> <p>49 WCDMA_VIII_900</p> <p>50 WCDMA_IX_1700</p>

<b>&lt; lte_pos &gt;</b>	0x000007FF3FDF3FFF	Any (any value)
0	EUTRAN_BAND1(UL:1920-1980; DL:2110-2170)	
1	EUTRAN_BAND2(UL:1850-1910; DL:1930-1990)	
2	EUTRAN_BAND3(UL:1710-1785; DL:1805-1880)	
3	EUTRAN_BAND4(UL:1710-1755; DL:2110-2155)	
4	EUTRAN_BAND5(UL: 824-849; DL: 869-894)	
5	EUTRAN_BAND6(UL: 830-840; DL: 875-885)	
6	EUTRAN_BAND7(UL:2500-2570; DL:2620-2690)	
7	EUTRAN_BAND8(UL: 880-915; DL: 925-960)	
8	EUTRAN_BAND9(UL:1749.9-1784.9; DL:1844.9-1879.9)	
9	EUTRAN_BAND10(UL:1710-1770; DL:2110-2170)	
10	EUTRAN_BAND11(UL:1427.9-1452.9; DL:1475.9-1500.9)	
11	EUTRAN_BAND12(UL:698-716; DL:728-746)	
12	EUTRAN_BAND13(UL: 777-787; DL: 746-756)	
13	EUTRAN_BAND14(UL: 788-798; DL: 758-768)	
16	EUTRAN_BAND17(UL: 704-716; DL: 734-746)	
17	EUTRAN_BAND18(UL: 815-830; DL: 860-875)	
18	EUTRAN_BAND19(UL: 830-845; DL: 875-890)	
19	EUTRAN_BAND20(UL: 832-862; DL: 791-821)	
20	EUTRAN_BAND21(UL: 1447.9-1462.9; DL: 1495.9-1510.9)	
22	EUTRAN_BAND23(UL: 2000-2020; DL: 2180-2200)	
23	EUTRAN_BAND24(UL: 1626.5-1660.5; DL: 1525 -1559)	
24	EUTRAN_BAND25(UL: 1850-1915; DL: 1930 -1995)	
<b>&lt; tds_pos &gt;</b>	0x0000000000000003F	Any (any value)
0	TDS Band A (1900-1920 MHz, 2010-2020 MHz)	
1	TDS Band B (1850-1910 MHz, 1930-1990 MHz)	
2	TDS Band C (1910-1930 MHz)	
3	TDS Band D (2570-2620 MHz)	
4	TDS Band E (2300-2400 MHz)	
5	TDS Band F (1880-1920 MHz)	

### 3.3.5.4.3 AT+CNAOP Acquisition Order Preference

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

Test Command	Response
<b>AT+CNAOP=?</b>	<b>+CNAOP: (list of supported &lt;mode&gt;s)</b> <b>OK</b>

Read Command	Response
<b>AT+CNAOP?</b>	<b>+CNAOP:&lt;mode&gt;[,&lt;sys_mode1&gt;[,&lt;sys_mode2&gt;[...[,&lt;sys_mode7&gt;]]]]</b> <b>OK</b>
Write Command	Response
<b>AT+CNAOP=&lt;mode&gt;[,&lt;sys_mode1&gt;[,&lt;sys_mode2&gt;[...[,&lt;sys_mode7&gt;]]]]</b>	<b>OK</b> or <b>ERROR</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Mandatory parameter. Defined mode values: 0 – Automatic 1 – GSM,WCDMA 2 – WCDMA,GSM 7 – Acquisition by priority order list <sys_moden>s.
<b>&lt;sys_moden&gt;</b>	Optional parameter,n belongs to 1 ~ 7 Defined sys_mode values: 2 – CDMA 3 – GSM 4 – HDR 5 – WCDMA 9 – LTE 10 – GWL(GSM, WCDMA, and LTE) 11 – TDSCDMA

Example:

Commands	Response
<b>AT+CNAOP=?</b>	<b>+CNAOP:</b> <b>(0-2,7),(2-5,9-11),(2-5,9-11),(2-5,9-11),(2-5,9-11),</b> <b>(2-5,9-11),(2-5,9-11)</b> <b>OK</b>

<b>AT+CNAOP=7,9,5,1 1,3</b>	<b>OK</b>
<b>AT+CNAOP?</b>	<b>+CNAOP:7,9,5,11,3,2,4 OK</b>
<b>AT+CNAOP=2</b>	<b>OK</b>
<b>AT+CNAOP?</b>	<b>+CNAOP:2 OK</b>

#### 3.3.5.4.4 AT+CNSDP Preferred Service Domain Selection

This command is used to reset the state of the service domain preference.

Test Command	Response
<b>AT+CNSDP=?</b>	<b>+CNSDP: (list of supported &lt;mode&gt;s) OK</b>
Read Command	Response
<b>AT+CNSDP?</b>	<b>+CNSDP:&lt;mode&gt; OK</b>
Write Command	Response
<b>AT+CNSDP=&lt;mode&gt;</b>	<b>OK</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Mandatory parameter. Defined mode values: 0 – CS Only 1 – PS Only 2 – CS + PS

Example:

Commands	Response
<b>AT+CNSDP=?</b>	<b>+CNSDP: (0-2)</b>  <b>OK</b>
<b>AT+CNSDP?</b>	<b>+CNSDP:2</b>  <b>OK</b>
<b>AT+CNSDP=2</b>	<b>OK</b>

#### 3.3.5.4.5 AT+CPSI Inquiring UE System Information

This command is used to return the UE system information.

Test Command	Response
<b>AT+CPSI=?</b>	<b>+CPSI: (scope of &lt;time&gt;)</b> <b>OK</b>

Read Command	Response
<b>AT+CPSI?</b>	<p>If camping on a GSM cell:</p> <p><b>+CPSI:&lt;System Mode&gt;,&lt;Operation Mode&gt;,&lt;MCC&gt;-&lt;MNC&gt;,&lt;LAC&gt;,&lt;Cell ID&gt;,&lt;Absolute RF Ch Num&gt;,&lt;RxLev&gt;,&lt;Track LO Adjust &gt;,&lt;C1-C2&gt;</b>  <b>OK</b></p> <p>If camping on a WCDMA cell:</p> <p><b>+CPSI:&lt;System Mode&gt;,&lt;Operation Mode&gt;,&lt;MCC&gt;-&lt;MNC&gt;,&lt;LAC&gt;,&lt;CellID&gt;,&lt;FrequencyBand&gt;,&lt;PSC&gt;,&lt;Freq&gt;,&lt;SSC&gt;,&lt;EC/IO&gt;,&lt;RSCP&gt;,&lt;Qual&gt;,&lt;RxLev&gt;,&lt;TX PWR&gt;</b>  <b>OK</b></p> <p>If camping on a TDS-CDMA cell:</p> <p><b>+CPSI:&lt;System Mode&gt;,&lt;Operation Mode&gt;,&lt;MCC&gt;-&lt;MNC&gt;,&lt;LAC&gt;,&lt;Cell ID&gt;,&lt;Frequency Band&gt;,&lt;Uarfcn&gt;,&lt;Cpid&gt;,&lt;RSCP&gt;,&lt;Pathloss&gt;,&lt;TimingAdvance&gt;</b>  <b>OK</b></p> <p>If camping on a LTE cell:</p> <p><b>+CPSI:&lt;System Mode&gt;,&lt;Operation node&gt;,&lt;MCC&gt;,&lt;MNC&gt;,&lt;TAC&gt;,&lt;SCellID&gt;,&lt;PCellID&gt;,&lt;Frequency Band&gt;,&lt;earfcn&gt;,&lt;dlbw&gt;,&lt;ulbw&gt;,&lt;RSRQ&gt;,&lt;RSRP&gt;,&lt;RSSI&gt;,&lt;RSSNR&gt;,&lt;SINR&gt;</b>  <b>OK</b></p> <p>If camping on a cdma cell:</p> <p><b>+CPSI: CDMA,&lt;Operation Mode&gt;[,&lt;MCC&gt;-&lt;MNC&gt;,&lt;CDMA ch num&gt;,&lt;CDMA pilot PN&gt;,&lt;CDMA RX Chain 0 AGC&gt;,&lt;CDMA RX Chain 1 AGC&gt;,&lt;CDMA TX AGC&gt;,&lt;SID&gt;,&lt;NID&gt;,&lt;CDMA EC/IO&gt;]</b>  <b>OK</b></p> <p>If camping on a evdo cell:</p> <p><b>+CPSI: EVDO,&lt;Operation Mode&gt;[,&lt;MCC&gt;-&lt;MNC&gt;,&lt;EVDO ch num&gt;,&lt;EVDO RX Chain 0 AGC&gt;,&lt;EVDO RX Chain 1 AGC&gt;,&lt;EVDO TX AGC&gt;,&lt;EVDO Serving PN&gt;,&lt;EVDO Rel0 SCI&gt;,&lt;EVDO RelA SCI&gt;,&lt;EVDO EC/IO&gt;]</b>  <b>OK</b></p>

Write Command	Response
<b>AT+CPSI=&lt;time&gt;</b>	<b>OK</b> or <b>ERROR</b>  Note: When AT + CPSI = 0 is executed or AT + CPSI=? is executed Or AT + CPSI ? is executed, will stop reporting.
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;time&gt;</b>	Mandatory parameter. The range is 0-255, unit is second, after set <time> will report the system information every the seconds.

AT+CPSI? Defined values:

Parameters	Description
<b>&lt;System Mode&gt;</b>	System mode, values: "NO SERVICE", "GSM", "WCDMA", "LTE", "TDS", "ERROR"...
<b>&lt;Operation Mode&gt;</b>	UE operation mode, values: "Online", "Offline", "Factory Test Mode", "Reset", "Low Power Mode".
<b>&lt;MCC&gt;</b>	Mobile Country Code (first part of the PLMN code)
<b>&lt;MNC&gt;</b>	Mobile Network Code (second part of the PLMN code)
<b>&lt;LAC&gt;</b>	Location Area Code (hexadecimal digits)
<b>&lt;Cell ID&gt;</b>	Service-cell ID.
<b>&lt;Absolute RF Ch Num&gt;</b>	AFRCN for service-cell.
<b>&lt;Track LO Adjust&gt;</b>	Track LO Adjust
<b>&lt;C1&gt;</b>	Coefficient for base station selection
<b>&lt;C2&gt;</b>	Coefficient for Cell re-selection
<b>&lt;Frequency Band&gt;</b>	Frequency Band of active set
<b>&lt;PSC&gt;</b>	Primary synchronization code of active set.
<b>&lt;Freq&gt;</b>	Downlink frequency of active set.
<b>&lt;SSC&gt;</b>	Secondary synchronization code of active set
<b>&lt;EC/IO&gt;</b>	Ec/Io value, The value is always >= 0; in 0.5dB steps from 0 (0dB) 15 to 63 (-31.5dB).



<RSCP>	Received Signal Code Power
<Qual>	Quality value for base station selection
<RxLev>	RX level value for base station selection
<TXPWR>	UE TX power in dBm. If no TX, the value is 500.
<Cpid>	Cell Parameter ID
<Pathloss>	Path loss
<TimingAdvance>	Timing advance
<TAC>	Tracing Area Code
<PCellID>	Physical Cell ID
<earfcn>	E-UTRA absolute radio frequency channel number for searching LTE cells
<dlbw>	Transmission bandwidth configuration of the serving cell on the downlink
<ulbw>	Transmission bandwidth configuration of the serving cell on the uplink
<RSRP>	Current reference signal receive power in dBm x10, Range: -44 to -140.
<RSRQ>	Current reference signal receive quality, The quantities are in dB x10. Range: -20.0 to -3.0 dB.
<RSSNR>	Average reference signal signal-to-noise ratio of the serving cell over the last measurement period in decibels. Range: -10 to 30.
<RSSI>	Received signal strength indicator, values are in dBm x10. Range: -120.0 to 0.
<SINR>	Serving cell SINR information, Values are in 1/5th of a dB. Range 0-250 which translates to -20dB - +30dB.

Example:

Commands	Response
<b>AT+CPSI=?</b>	<b>+CPSI: (0-255)</b> <b>OK</b>
<b>AT+CPSI=5</b>	<b>OK</b>
<b>AT+CPSI?</b>	<b>+CPSI:LTE,Online,460-01,0x811b,117812513,54,EUTRAN-BAN</b> <b>D3,1650,5,5,-84,-1086,-816,13,166</b> <b>OK</b>

### 3.3.5.4.6 AT+CNSMOD Show Network System Mode

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

Test Command	Response
<b>AT+CNSMOD=?</b>	<b>+CNSMOD: (list of supported &lt;n&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+ CNSMOD?</b>	<b>+CNSMOD: &lt;n&gt;,&lt;stat&gt;</b> <b>OK</b>  Other: <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b>
Write Command	Response
<b>AT+CNSMOD=&lt;n&gt;</b>	<b>OK</b>  Other: <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	Mandatory parameter. 0 – disable auto report the network system mode information 1 – auto report the network system mode information, command: +CNSMOD:<stat>

<b>&lt; stat &gt;</b>	0 – No service
	1 – GSM
	2 – GPRS
	3 – EGPRS (EDGE)
	4 – WCDMA
	5 – HSDPA only(WCDMA)
	6 – HSUPA only(WCDMA)
	7 – HSPA (HSDPA and HSUPA, WCDMA)
	8 – LTE
	9 – TDS-CDMA
	10 – TDS-HSDPA only
	11 – TDS-HSUP only
	12 – TDS-HSPA(HSDPA and HSUPA)
	13 – CDMA
	14 – EVDO
	15 – HYBRID(CDMA and EVDO)
	16 – 1XLTE(CDMA and LTE)

Example:

Commands	Response
<b>AT+CNSMOD=?</b>	<b>+CNSMOD: (0-1)</b> <b>OK</b>
<b>AT+CNSMOD?</b>	<b>+CNSMOD: 0,8</b> <b>OK</b>
<b>AT+CNSMOD=1</b>	<b>OK</b>

#### 3.3.5.4.7 AT+CCINFO Show Cell System Information

This command is used to inquire serving cell and neighbors cell system information for GSM.

Execution Command	Response
<b>AT+ CCINFO</b>	<p>When ME in idle mode for GSM:</p> <p><b>+CCINFO: [&lt;SCELL&gt;],ARFCN: &lt;arfcn&gt;,MCC:&lt;mcc&gt;,MNC: &lt;mnc&gt;,LAC: &lt;lac&gt;,ID: &lt;id&gt;,BSIC: &lt;bsic&gt;,RXLev: &lt;rxlev&gt;,C1: &lt;c1&gt;,C2: &lt;c2&gt;,TA: &lt;TA&gt;,TXPWR: &lt;TXPWR&gt;</b></p> <p><b>[+CCINFO: [&lt;NCELLn&gt;],ARFCN: &lt;arfcn&gt;,MCC: &lt;mcc&gt;,MNC:&lt;mnc&gt;,LAC: &lt;lac&gt;,ID:&lt;d&gt;,BSIC: &lt;bsic&gt;,RXLev: &lt;rxlev&gt;,C1: &lt;c1&gt;,C2: &lt;c2&gt; [...]]</b></p> <p><b>OK</b></p> <p>When ME in dedicated mode for GSM:</p> <p><b>+CCINFO: [&lt;SCELL&gt;],ARFCN: &lt;arfcn&gt;,MCC: &lt;mcc&gt;,MNC: &lt;mnc&gt;,LAC: &lt;lac&gt;,ID: &lt;id&gt;,BSIC: &lt;bsic&gt;,RXLev: &lt;rxlev&gt;,C1: &lt;c1&gt;,C2: &lt;c2&gt;,TA: &lt;TA&gt;,TXPWR: &lt;TXPWR&gt;</b></p> <p><b>+CCINFO: [&lt;NCELLn&gt;],ARFCN: &lt;arfcn&gt;,BSIC: &lt;bsic&gt;,RXLev: &lt;rxlev&gt; [...]</b></p> <p><b>OK</b></p> <p>When ME in CDMA/HDR mode for modem:</p> <p><b>+CCINFO: [&lt;SCELL&gt;], MCC: &lt;mcc&gt;,MNC:&lt;mnc&gt;,SID:&lt;sid&gt;,NID:&lt;nid&gt;,BID:&lt;bid&gt;,SCYC:&lt;scyc&gt;,PREV:&lt;prev&gt;,BC:&lt;band class&gt;,CH:&lt;CDMA ch num&gt;,PN:&lt;CDMA pilot PN&gt;, ECIO:&lt;CDMA EC/IO&gt;,RXAGC:&lt;CDMA RX Chain 0 AGC&gt;dbm,&lt;CDMA RX Chain 1 AGC&gt;dbm,TXAGC:&lt;CDMA TX AGC&gt;dbm</b></p> <p><b>&lt;CR&gt;&lt;LF&gt;</b></p> <p><b>[&lt;CR&gt;&lt;LF&gt;</b></p> <p><b>+CCINFO:[&lt;NCelln&gt;]BC:&lt;band class&gt;,CH:&lt;CDMA ch num&gt;,PN:&lt;CDMA pilot PN&gt;&lt;CR&gt;&lt;LF&gt;[...]]</b></p> <p><b>OK</b></p> <p>When not in GSM or CDMA/HDR for modem:</p> <p><b>+CCINFO: NOT IN GSM or CDMA</b></p> <p><b>OK</b></p> <p>Other:</p> <p><b>ERROR</b></p>

Test Command	Response
<b>AT+CCINFO=?</b>	<b>OK</b> Other: <b>ERROR</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;SCELL&gt;</b>	indicate serving cell
<b>&lt;NCELLn&gt;</b>	available neighbour cell index
<b>&lt;arfcn&gt;</b>	assigned radio channel
<b>&lt;mcc&gt;</b>	mobile country code
<b>&lt;mnc&gt;</b>	mobile network code
<b>&lt;lac&gt;</b>	localization area code
<b>&lt;id&gt;</b>	cell identifier
<b>&lt;bsic&gt;</b>	base station identification code
<b>&lt;rxlev&gt;</b>	received signal strength in dBm
<b>&lt;TA&gt;</b>	timing advance
<b>&lt;c1&gt;</b>	Coefficient for base station selection
<b>&lt;c2&gt;</b>	Coefficient for Cell re-selection
<b>&lt;TXPWR&gt;</b>	UE TX power in dBm. If no TX, the value is 0.
<b>&lt;sid&gt;</b>	Current system ID
<b>&lt;nid&gt;</b>	Current network ID
<b>&lt;bid&gt;</b>	Current base ID
<b>&lt;scyc&gt;</b>	Slot cycle index.
<b>&lt;prev&gt;</b>	Protocol revision number of the mobile station.
<b>&lt;band class&gt;</b>	CDMA band class
<b>&lt;CDMA ch num&gt;</b>	CDMA channel number
<b>&lt;CDMA pilot PN&gt;</b>	CDMA pilot PN offset
<b>&lt;CDMA EC/IO&gt;</b>	CDMA EC/IO in dB
<b>&lt;CDMA RX Chain 0 AGC&gt;</b>	CDMA RX Chain 0 AGC dBm
<b>&lt;CDMA RX Chain 1 AGC&gt;</b>	CDMA RX Chain 1 AGC dBm
<b>&lt;CDMA TX AGC&gt;</b>	CDMA TX AGC dBm

### 3.3.5.4.8 AT+CMGSI Inquiring Mobile Phone System Information

This command is used to inquire mobile phone system information.

Test Command	Response
<b>AT+CMGSI=?</b>	<b>+CMGSI: (list of supported &lt;mode&gt;s)</b> <b>OK</b>

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Write Command	Response
<b>AT+CMGSI=&lt;mode&gt;</b>	<p>If &lt;mode&gt;=2, get GSM signal info:</p> <p><b>+CMGSI:Main_Info,&lt;mode&gt;,&lt;service_available&gt;,&lt;band&gt;,&lt;channel&gt;</b>  <b>+CMGSI:RX_Power,0x&lt;rx_div_ind&gt;,RX_Chain0,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;,RX_Chain1,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;</b>  <b>+CMGSI: TX_Power,Not Supported</b>  <b>+CMGSI: Phy_Cellid,&lt;cellid_valid&gt;,&lt;cellid&gt;</b>  <b>+CMGSI: Log_Sinr10xdb,&lt;sinr_valid&gt;,&lt;sinr&gt;</b>  <b>OK</b></p> <p>If &lt;mode&gt;=3, get WCDMA signal info:</p> <p><b>+CMGSI:Main_Info,&lt;mode&gt;,&lt;service_available&gt;,&lt;band&gt;,&lt;channel&gt;</b>  <b>+CMGSI:RX_Power,0x&lt;rx_div_ind&gt;,RX_Chain0,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;,&lt;ecio&gt;,&lt;rscp&gt;,RX_Chain1,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;,&lt;ecio&gt;,&lt;rscp&gt;</b>  <b>+CMGSI:TX_Power,&lt;is_in_traffic&gt;,&lt;tx_pwr&gt;,&lt;pa_gain_state&gt;</b>  <b>+CMGSI: Phy_Cellid,&lt;cellid_valid&gt;,&lt;cellid&gt;</b>  <b>+CMGSI: Log_Sinr10xdb,&lt;sinr_valid&gt;,&lt;sinr&gt;</b>  <b>OK</b></p> <p>If &lt;mode&gt;=4, get LTE signal info:</p> <p><b>+CMGSI:Main_Info,&lt;mode&gt;,&lt;service_available&gt;,&lt;band&gt;,&lt;channel&gt;</b>  <b>+CMGSI:RX_Power,0x&lt;rx_div_ind&gt;,RX_Chain0,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;,&lt;ecio&gt;,&lt;rsrp&gt;,&lt;phase&gt;,RX_Chain1,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;,&lt;ecio&gt;,&lt;rsrp&gt;,&lt;phase&gt;</b>  <b>+CMGSI:TX_Power,&lt;is_in_traffic&gt;,&lt;tx_pwr&gt;,&lt;pa_gain_state&gt;</b>  <b>+CMGSI: Phy_Cellid,&lt;cellid_valid&gt;,&lt;cellid&gt;</b>  <b>+CMGSI: Log_Sinr10xdb,&lt;sinr_valid&gt;,&lt;sinr&gt;</b>  <b>OK</b></p> <p>If &lt;mode&gt;=5, get TDS-CDMA signal info:</p> <p><b>+CMGSI:Main_Info,&lt;mode&gt;,&lt;service_available&gt;,&lt;band&gt;,&lt;channel&gt;</b>  <b>+CMGSI:RX_Power,0x&lt;rx_div_ind&gt;,RX_Chain0,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;,&lt;ecio&gt;,&lt;rscp&gt;,RX_Chain1,&lt;is_radio_tuned&gt;,&lt;rx_pwr&gt;,&lt;ecio&gt;,&lt;rscp&gt;</b>  <b>+CMGSI:TX_Power,&lt;is_in_traffic&gt;,&lt;tx_pwr&gt;,&lt;pa_gain_state&gt;</b>  <b>+CMGSI: Phy_Cellid,&lt;cellid_valid&gt;,&lt;cellid&gt;</b>  <b>+CMGSI: Log_Sinr10xdb,&lt;sinr_valid&gt;,&lt;sinr&gt;</b>  <b>+CMGSI:Freq_DwPTSRSsi,&lt;pri_freq&gt;,&lt;scell_pri_freq_rssi_ch0&gt;,&lt;scell_pri_freq_rssi_ch1&gt;</b></p>

Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Mandatory parameter. 2 – GSM 3 – WCDMA 4 – LTE 5 – TDS
<b>&lt;service_available&gt;</b>	0 – service not available 1 – service is available
<b>&lt;band&gt;</b>	Active band of the current system
<b>&lt;channel&gt;</b>	Active channel of the current system.
<b>&lt;rx_div_ind&gt;</b>	Diversity bitmask to show which Rx chain has valid signal information. 0x00000000 – NO Rx chain available 0x00000001 – Rx chain 0 available 0x00000002 – Rx chain 1 available 0x00000003 – Rx chain 0 and Rx chain 1 available
<b>&lt; is_radio_tuned &gt;</b>	Indicates whether the Rx is tuned to a channel 0 – radio is not tuned, delayed or invalid values are set depending on each technology 1 – radio is tuned, instantaneous values are set for the signal information fields
<b>&lt; rx_pwr &gt;</b>	Rx power value in 1/10 dBm resolution
<b>&lt; ecio &gt;</b>	Ec/Io in -1/10 dBm
<b>&lt; is_in_traffic &gt;</b>	Indicates whether the device is in traffic
<b>&lt; tx_pwr &gt;</b>	Tx power value in 1/10 dBm. only meaningful when the device is in traffic. When there is no traffic, tx_pwr is invalid
<b>&lt; pa_gain_state &gt;</b>	Power amplifier gain state
<b>&lt; cellid_valid &gt;</b>	Serving cell physical ID is valid 0 – cell ID is invalid 1 – cell ID is valid
<b>&lt; cellid &gt;</b>	Serving cell physical ID
<b>&lt; sinr_valid &gt;</b>	Serving cell SINR information measured in decibels 0 – SINR is invalid 1 – SINR is valid
<b>&lt; sinr &gt;</b>	Serving cell SINR information
<b>&lt; rscp &gt;</b>	Received signal code power in -1/10 dBm. Available for WCDMA



<b>&lt; rsrp &gt;</b>	Current reference signal received power in -1/10 dBm. Available for LTE
<b>&lt; phase &gt;</b>	Current phase in 1/100 degrees. Range: 0.00 to 360.00. Available for LTE only

#### 3.3.5.4.9 AT+CMGRMI Gets the Neighbor Measurement Information

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

Test Command	Response
<b>AT+ CMGRMI =?</b>	<b>+CMGRMI: (list of supported &lt;mode&gt;s)</b> <b>OK</b>

Write Command	Response
<b>AT+CMGRMI=&lt;mode&gt;,&lt;info_type&gt;]</b>	<p>If &lt;mode&gt;=4, get LTE signal info:</p> <p>[+CMGRMI:Main_Info,&lt;mode&gt;,&lt;service_available&gt;,&lt;valid&gt;,&lt;idle&gt;,&lt;ra_rnti&gt;,&lt;c_rnti&gt;,&lt;cqi_wb&gt;,&lt;enb_num_tx_antenna&gt;]</p> <p>[+CMGRMI:Serving_Cell,&lt;earfcn&gt;,&lt;mcc&gt;,&lt;mnc&gt;,&lt;tac&gt;,&lt;num_mnc_digits&gt;,&lt;serving_cell_id&gt;,&lt;freq_band_ind&gt;,&lt;dl_bandwidth&gt;,&lt;ul_bandwidth&gt;,&lt;serv_rssnr&gt;,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]</p> <p>[+CMGRMI:LTE_Intra,&lt;sib3_received&gt;,&lt;earfcn&gt;,&lt;serving_cell_id&gt;,&lt;num_lte_cells&gt;]</p> <p>[+CMGRMI:LTE_Intra_Cell1,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]</p> <p>[+CMGRMI:LTE_Intra_Cell2,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]</p> <p>[...]</p> <p>[+CMGRMI:LTE_Intra_Cell8,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]]]]]</p> <p>[+CMGRMI:LTE_Inter,&lt;num_freqs&gt;,&lt;freq1&gt;,&lt;earfcn&gt;,&lt;num_lte_cells&gt;,&lt;idle_threshX_low&gt;,&lt;idle_threshX_high&gt;,&lt;idle_cell_resel_priority&gt;,&lt;freq2&gt;,&lt;earfcn&gt;,&lt;num_lte_cells&gt;,&lt;idle_threshX_low&gt;,&lt;idle_threshX_high&gt;,&lt;idle_cell_resel_priority&gt;]</p> <p>[+CMGRMI:LTE_InterFreq1_Cell1,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]</p> <p>[+CMGRMI:LTE_InterFreq1_Cell2,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]</p> <p>[...]</p> <p>[+CMGRMI:LTE_InterFreq1_Cell8,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]]]]]</p> <p>[+CMGRMI:LTE_InterFreq2_Cell1,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]</p> <p>[+CMGRMI:LTE_InterFreq2_Cell2,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]</p> <p>[...]</p> <p>[+CMGRMI:LTE_InterFreq2_Cell8,&lt;cell_pci&gt;,&lt;cell_rsrq&gt;,&lt;cell_rsrp&gt;,&lt;cell_rssi&gt;,&lt;cell_idle_srxlev&gt;]]]]]</p> <p>[+CMGRMI:GSM_Info,&lt;num_freq_groups&gt;,&lt;freq_group1&gt;,&lt;num_gsm_arfcn&gt;,&lt;idle_cell_resel_priority&gt;,&lt;idle_thresh_gsm_high&gt;,&lt;idle_thresh_gsm_low&gt;,&lt;idle_ncc_permitted&gt;,&lt;freq_group2&gt;,&lt;num_gsm_arfcn&gt;,&lt;idle_cell_resel_priority&gt;,&lt;idle_thresh_gsm_high&gt;,&lt;idle_thresh_gsm_low&gt;,&lt;idle_ncc_permitted&gt;]</p>

Reference	Note
Vendor	

Example:

Commands	Response
<b>AT+CMGRMI=?</b>	<b>+CMGRMI: (3-5),""</b>  <b>OK</b>
<b>AT+CMGRMI=4</b>	<b>+CMGRMI: Main_Info,4,1,1,1,3,25978,15,1</b> <b>+CMGRMI: Serving_Cell,38950,1120,15,33033,2,136335367,40,5,5,27,305,-47,-715,-468,56</b> <b>+CMGRMI: LTE_Intra,1,38950,305,1</b> <b>+CMGRMI: LTE_Intra_Cell1: LTE_Intra,305,-47,-715,-468,56</b> <b>+CMGRMI:</b> <b>LTE_Inter,2,Freq1,37900,0,0,22,6,Freq2,38098,0,0,22,6</b> <b>+CMGRMI: GSM_Info,1,Freq_Group1,8,1,14,26,255</b> <b>+CMGRMI: GSM_InfoFreq1_Cell1: 1,0,0,0,-1920,0</b> <b>+CMGRMI: GSM_InfoFreq1_Cell2: 598,0,0,0,-1920,0</b> <b>+CMGRMI: GSM_InfoFreq1_Cell3: 595,0,0,0,-1920,0</b> <b>+CMGRMI: GSM_InfoFreq1_Cell4: 592,0,0,0,-1920,0</b> <b>+CMGRMI: GSM_InfoFreq1_Cell5: 589,0,0,0,-1920,0</b> <b>+CMGRMI: GSM_InfoFreq1_Cell6: 586,0,0,0,-1920,0</b> <b>+CMGRMI: GSM_InfoFreq1_Cell7: 580,0,0,0,-1920,0</b> <b>+CMGRMI: GSM_InfoFreq1_Cell8: 576,0,0,0,-1920,0</b> <b>+CMGRMI: WCDMA_Info,0</b> <b>+CMGRMI: CDMA1x_Info,0</b> <b>+CMGRMI: CDMAprpd_Info,0</b> <b>+CMGRMI: CDrx_Cfg,0,0,0,0,0,0,0,0,0</b> <b>+CMGRMI: Cqi_Cfg,1,1,3,0,1,1,0,138,0,0,0,0,0,0,0</b> <b>+CMGRMI: Ant_Cfg,1,0x0000000000000000,0,0</b> <b>+CMGRMI: Idle_Drx_Cfg,1280,2,340</b>  <b>OK</b>  Oher: <b>ERROR</b> <b>+CME ERROR: no network service</b> <b>+CME ERROR: unknown</b>

Parameters are defined below:

Parameters	Description
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<b>&lt;mode&gt;</b>	Mandatory parameter. 3 – WCDMA 4 – LTE 5 – TDS
<b>&lt;info_type&gt;</b>	Optional parameter. 32bit number, the value is "1" << "<pos>"(see subclause 1.9.1 for details),then or by bit. If <mode> is TDS, returned into will be as WCDMA.

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<pos>	<p>Value:</p> <p>0xFFFFFFFF Any (any value)</p> <p>0 Main info for WCDMA/LTE, if this bit set, the related info returned as</p> <p>"+ CMGRMI: Main_Info, ..."</p> <p>1 WCDMA intra info for WCDMA mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: WCDMA_Intra, ..."</p> <p>"+ CMGRMI: WCDMA_Intra_Nbr1, ..."</p> <p>"+ CMGRMI: WCDMA_Intra_Serv1, ..."</p> <p>2 WCDMA inter info for WCDMA mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: WCDMA_Inter, ..."</p> <p>"+ CMGRMI: WCDMA_InterFreq1_Cell1, ..."</p> <p>3 GSM info for WCDMA mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: GSM_Info, ..."</p> <p>"+ CMGRMI: GSM_Info_Cell1, ..."</p> <p>4 LTE info for WCDMA mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: LTE_Info, ..."</p> <p>"+ CMGRMI: LTE_InfoFreq1_Cell1, ..."</p> <p>5 Serving cell info for LTE mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: Serving_Cell, ..."</p> <p>7 LTE intra info for LTE mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: LTE_Intra, ..."</p> <p>"+ CMGRMI: LTE_Intra_Cell1, ..."</p> <p>8 LTE inter info for LTE mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: LTE_Inter, ..."</p> <p>"+ CMGRMI: LTE_InterFreq1_Cell1, ..."</p> <p>9 GSM info for LTE mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: GSM_Info, ..."</p> <p>"+ CMGRMI: GSM_InfoFreq1_Cell1, ..."</p> <p>10 WCDMA info for LTE mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: WCDMA_Info, ..."</p> <p>"+ CMGRMI: WCDMA_InfoFreq1_Cell1, ..."</p> <p>11 CDMA1x info for LTE mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: CDMA1x_Info, ..."</p> <p>"+ CMGRMI: CDMA1x_InfoFreq1_Cell1, ..."</p> <p>12 CDMA high-rate packet data cell info for LTE mode, if this bit set, the related info returned as</p> <p>"+ CMGRMI: CDMAprpd_Info, ..."</p> <p>"+ CMGRMI: CDMAprpd_InfoFreq1_Cell1, ..."</p>
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<b>&lt;service_available&gt;</b>	0 – service not available 1 – service is available
<b>&lt;is_data_valid &gt;</b>	Indicates whether the fields in the following are valid 0 – None of the fields are valid 1 – One or more of the fields is valid
<b>&lt;s_intra_search &gt;</b>	Cell selection parameter for the intrafrequency cell
<b>&lt;s_inter_search &gt;</b>	Cell selection parameter for the interfrequency cell
<b>&lt; s_search_RAT &gt;</b>	Cell selection parameter for the GSM cell
<b>&lt; freq &gt;</b>	Camped cell frequency
<b>&lt; rxagc &gt;</b>	Receiver automatic gain control on the camped frequency
<b>&lt; num_nbr_cells &gt;</b>	Number of intrafrequency neighbor cells reported
<b>&lt;num_serv_cells &gt;</b>	Number of serving cells (cells when in a soft handover) reported
<b>&lt; cell_psc &gt;</b>	Primary scrambling code
<b>&lt; cell_ecio &gt;</b>	Instantaneous cell received energy per chip and interference level
<b>&lt; cell_rscp &gt;</b>	Instantaneous cell received signal code power
<b>&lt; cell_set &gt;</b>	Intrafrequency cell type
<b>&lt; cell_rank &gt;</b>	Intrafrequency cell type
<b>&lt;num_freq &gt;</b>	Number of frequencies
<b>&lt; cell_arfcn &gt;</b>	Absolute radio frequency channel number. Range: 0 to 1023
<b>&lt; cell_bsid_id &gt;</b>	Base station identity code. Base station color code in least significant bit (or byte). Network color code in most significant bit (or byte)
<b>&lt; cell_rssi &gt;</b>	Received signal strength indicator. Range: 0 to -120
<b>&lt; cell_s_rxlev &gt;</b>	cell suitable receive level
<b>&lt; num_earfcn &gt;</b>	Number of LTE EARFCNs
<b>&lt; earfcn &gt;</b>	E-UTRA absolute radio frequency channel number for searching LTE cells
<b>&lt;priority&gt;</b>	Priority information. Invalid priority is -1
<b>&lt;cell_id&gt;</b>	Physical cell ID of the detected cell
<b>&lt; cell_rsrp &gt;</b>	Maximum reference signal received power combined across Tx-Rx pairs. In linear scale
<b>&lt; cell_rsrq &gt;</b>	Maximum reference signal received quality value combined across Tx-Rx pairs. In linear scale
<b>&lt; valid &gt;</b>	Indicates the validity of the structure fields 0 – None of the fields are valid 1 – One or more of the fields is valid

<b>&lt; idle &gt;</b>	Indicates whether the UE is in Idle mode 0 – All Idle mode substructs are considered invalid, except for serving cell information 1 – UE is in Idle mode. All Idle mode substructs are considered valid
<b>&lt; ra_rnti &gt;</b>	Random access radio network temporary ID
<b>&lt; c_rnti &gt;</b>	Connected state, common, and UE-specific search space radio network temporary identification
<b>&lt; cqi_wb &gt;</b>	Wideband CQI information
<b>&lt;enb_num_tx_antenna&gt;</b>	Number of Tx antenna on an LTE base station
<b>&lt; mcc &gt;</b>	Mobile country code
<b>&lt; mnc &gt;</b>	Mobile network code
<b>&lt; tac &gt;</b>	Total access communication
<b>&lt;num_mnc_digits &gt;</b>	Number of digits in mobile network code
<b>&lt; serving_cell_id &gt;</b>	LTE serving cell ID. This is the cell ID of the serving cell and can be found in the cell list. Range: 0 to 503
<b>&lt; freq_band_ind &gt;</b>	Operating band of the serving cell. Range: 1 to 64
<b>&lt; dl_bandwidth &gt;</b>	Transmission bandwidth configuration of the serving cell on the downlink. Range: 0 to 5
<b>&lt; ul_bandwidth &gt;</b>	Transmission bandwidth configuration of the serving cell on the uplink. Range: 0 to 5
<b>&lt; serv_rssnr &gt;</b>	Average reference signal signal-to-noise ratio of the serving cell over the last measurement period in decibels. Range: -10 to 30
<b>&lt;cell_pci&gt;</b>	Physical cell ID
<b>&lt;cell_idle_srxlev&gt;</b>	Suitable receive level
<b>&lt; scell_deact_timer &gt;</b>	SCell deactivation timer
<b>&lt; serving_cell_id &gt;</b>	LTE serving cell ID
<b>&lt; num_lte_cells &gt;</b>	Number of LTE cells
<b>&lt; idle_threshX_low &gt;</b>	To be considered for reselection, the suitable receive level value of an evaluated lower priority cell must be greater than this value
<b>&lt;idle_threshX_high &gt;</b>	To be considered for reselection, the suitable receive level value of an evaluated higher priority cell must be greater than this value
<b>&lt;idle_cell_resel_priority &gt;</b>	Cell reselection priority
<b>&lt; num_freq_groups &gt;</b>	Number of GSM frequency groups and the size of the frequency group array
<b>&lt;num_gsm_arfcn &gt;</b>	Number of GSM ARFCNs indicated, and the size of the GSM array

<b>&lt;idle_thresh_gsm_high &gt;</b>	Reselection threshold for high priority layers
<b>&lt;idle_thresh_gsm_low&gt;</b>	Reselection threshold for low priority layers
<b>&lt;idle_ncc_permitte&gt;</b>	Bitmask that specifies whether a neighbor with a particular network color code is to be reported. Bit n set to 1 means that a neighbor with NCC n is to be included in the report
<b>&lt;num_wcdma_freq&gt;</b>	Number of WCDMA frequencies and the size of the freq array
<b>&lt; uarfcn &gt;</b>	WCDMA layer frequency
<b>&lt;num_wcdma_cells&gt;</b>	Number of WCDMA cells indicated and the size of the WCDMA array
<b>&lt;idle_thresh_Xhigh &gt;</b>	Cell reselection priority. Range: 0 to 7
<b>&lt;idle_thresh_Xlow &gt;</b>	Reselection threshold for high priority layers
<b>&lt;num_cdma_freqs &gt;</b>	Number of CDMA frequencies and the size of the freq array
<b>&lt; channel_num &gt;</b>	Channel number
<b>&lt; band_class &gt;</b>	Band class
<b>&lt; num_cdma_cells &gt;</b>	Number of CDMA cells indicated and the size of the CDMA array
<b>&lt; pilot_pn_offset &gt;</b>	Neighbor cell pilot PN offset. Range: 0 to 511
<b>&lt; pilot_pn_phase &gt;</b>	Neighbor cell pilot PN phase. Range: 0 to 32767
<b>&lt; pilot_strength &gt;</b>	Neighbor cell pilot Ec/Io. Range: 1 to 63
<b>&lt; drx_enable &gt;</b>	Indicates whether to enable the Dedicate mode DRX 0 – drx is not enabled 1 – drx is enabled
<b>&lt;on_duration_timer &gt;</b>	On Duration timer. The value is the number of PDCCH subframes. The psf1 value corresponds to one PDCCH subframe, psf2 corresponds to two PDCCH subframes, etc. Default: FFS
<b>&lt; inactivity_timer &gt;</b>	DRX Inactivity timer. The value is the number of PDCCH subframes. The psf1 value corresponds to one PDCCH subframe, psf2 corresponds to two PDCCH subframes, etc. Default: FFS
<b>&lt; retx_timer &gt;</b>	DRX Retransmission timer. The value is the number of PDCCH subframes
<b>&lt; long_drx_cycle &gt;</b>	DRX cycle
<b>&lt;long_drx_cycle_offset &gt;</b>	DRX start offset
<b>&lt;short_drx_cycle_enabled &gt;</b>	Indicates whether short_drx_cycle is enabled
<b>&lt; short_drx_cycle &gt;</b>	Short DRX cycle.
<b>&lt;short_drx_cycle_timer &gt;</b>	DRX short cycle timer. The value is in multiples of short_drx_cycle. A value of 1 corresponds to one short_drx_cycle value, 2 corresponds to two short_drx_cycle values, etc.



<b>&lt; cqi_enable &gt;</b>	Indicates whether CQI reporting is enabled 0 – cqi is not enabled 1 – cqi is enabled
<b>&lt;cqi_reporting_mode_aperiodic_enable &gt;</b>	Indicates whether the CQI aperiodic reporting mode is enabled 0 – cqi aperiodic is not enabled 1 – cqi aperiodic is enabled
<b>&lt;cqi_reporting_mode_aperiodic &gt;</b>	CQI aperiodic reporting mode
<b>&lt;nom_pdsch_rs_epr_e_offset &gt;</b>	Provides the nominal measurement offset in dB between the physical downlink shared channel and the reference signal energy per resource block used by the UE when computing CQI
<b>&lt;cqi_reporting_periodic_present &gt;</b>	Indicates whether the reporting periodic information is present
<b>&lt;cqi_periodic_enable&gt;</b>	Indicates whether periodic reporting is enabled
<b>&lt;cqi_periodic_pucch_resource_index &gt;</b>	Physical uplink control channel resource index. Range: 0 to 767.
<b>&lt;cqi_periodic_cqi_pmi_cfg_index &gt;</b>	CQI/PMI periodicity and offset configuration index. Range: 0 to 511
<b>&lt;cqi_periodic_format_indicator &gt;</b>	PUCCH CQI feedback type
<b>&lt;cqi_periodic_subband_cqi_k &gt;</b>	Parameter K. Used only if the CQI format indicator is set to CMAPI_LTE_L1_CQI_FORMAT_INDICATOR_PERIODIC_SUBBAND. Range: 1 to 4
<b>&lt;cqi_periodic_ri_cfg_index_enable&gt;</b>	Indicates whether the rank indicator configuration index is enabled
<b>&lt;cqi_periodic_ri_cfg_index &gt;</b>	Rank indicator configuration index.
<b>&lt;cqi_periodic_sim_ack_nak_cqi &gt;</b>	Indicates whether the simultaneous transmission of ACK/NACK and CQI is allowed
<b>&lt;cqi_rel9_param_present &gt;</b>	Indicates whether the CQI Release 9 parameters are present
<b>&lt;cqi_rel9_param_cqi_mask_enable &gt;</b>	Indicates whether the CQI mask is enabled
<b>&lt;cqi_rel9_param_pmi_ri_report_configured &gt;</b>	Indicates whether the Precoding Matrix Indicator and Rank Indicator report is configured
<b>&lt;transmission_mode &gt;</b>	Antenna transmission mode for the PDSCH

<b>&lt;codebook_subset_restriction &gt;</b>	Bitmask of the codebook restriction. The bitmask is placed in the lower order bits The number of bits are: 2 – n2TxAntenna-tm3 4 – n4TxAntenna-tm3 6 – n2TxAntenna-tm4 64 – n4TxAntenna-tm4 4 – n2TxAntenna-tm5 16 – n4TxAntenna-tm5 4 – n2TxAntenna-tm6 16 – n4TxAntenna-tm6
<b>&lt;tx_antenna_selection_enabled &gt;</b>	Indicates whether the UE transmit antenna selection is enabled
<b>&lt;tx_antenna_selection_ctrl &gt;</b>	Indicates whether the UE transmit antenna selection control is closed loop or open loop
<b>&lt; paging_cycle &gt;</b>	UE paging cycle in milliseconds
<b>&lt; nb &gt;</b>	Used to derive the number of paging groups
<b>&lt; ue_id &gt;</b>	UE identity (IMSI) mod 1024

#### 3.3.5.4.10 AT+MONI Show Cell System Information in GSM

This command is used to inquiring serving cell and neighbour cell system information in GSM

Execution Command	Response
<b>AT+MONI</b>	Execution command responses is the same as read command.
Test Command	Response
<b>AT+MONI=?</b>	<b>+MONI: &lt;CellNo&gt;, &lt;CellSet&gt;</b> <b>OK</b>  Other: <b>+MONI: Not in GSM mode</b>

Read Command	Response
<b>AT+MONI?</b>	<p>When extracting data for the serving cell and the network name is known:</p> <p><b>+MONI:&lt;netname&gt;,BSIC:&lt;bsic&gt;,RxQual:&lt;qual&gt;,LAC:&lt;lac&gt;,Id:&lt;id&gt;,ARFCN:&lt;arfcn&gt;,PWR:&lt;dBm&gt;dBm,C1:&lt;C1&gt;-C2: &lt;C2&gt;</b></p> <p>When extracting data for an adjacent cell:</p> <p><b>+MONI:Adj Cell&lt;n&gt;,[LAC:&lt;lac&gt;,Id:&lt;id&gt;],ARFCN:&lt;arfcn&gt;,PWR: &lt;dBm&gt;dBm, C1: &lt;C1&gt;-C2: &lt;C2&gt;</b></p> <p><b>[...]</b></p> <p><b>OK</b></p> <p>When the network name is unknown:</p> <p><b>+MONI:Cc:&lt;cc&gt;,Nc&lt;nc&gt;,BSIC:&lt;bsic&gt;,RxQual:&lt;qual&gt;,LAC:&lt;lac&gt;,Id:&lt;id&gt;,ARFCN:&lt;arfcn&gt;,PWR:&lt;dBm&gt;dBm,C1: &lt;C1&gt;-C2: &lt;C2&gt;</b></p> <p>When extracting data for an adjacent cell:</p> <p><b>+MONI:Adj Cell&lt;n&gt;,[LAC:&lt;lac&gt;,Id:&lt;id&gt;],ARFCN:&lt;arfcn&gt;,PWR: &lt;dBm&gt;dBm, C1: &lt;C1&gt;-C2: &lt;C2&gt;</b></p> <p><b>[...]</b></p> <p><b>OK</b></p> <p>When not in GSM mode</p> <p><b>OK</b></p>

Write Command	Response
<b>AT+MONI=&lt;CellSet&gt;</b>	<p>When CellSet = 0:  <b>+MONI:&lt;netname&gt;,BSIC:&lt;bsic&gt;,RxQual:&lt;qual&gt;,LAC:&lt;lac&gt;,Id:&lt;id&gt;,ARFCN:&lt;arfcn&gt;,PWR:&lt;dBm&gt;dBm,C1:&lt;C1&gt;-C2: &lt;C2&gt;</b>  <b>OK</b></p> <p>When chosen in the range 1-6:  <b>+MONI:Adj Cell&lt;n&gt;,[LAC:&lt;lac&gt;,Id:&lt;id&gt;],ARFCN:&lt;arfcn&gt;,PWR: &lt;dBm&gt;dBm, C1: &lt;C1&gt;-C2: &lt;C2&gt; [...]</b>  <b>OK</b></p> <p>When = 7: it is a special request to obtain information from the whole set of cells, just like AT+MONI?  When requested cell number less than actual existed:  <b>+MONI: no cell</b>  <b>OK</b></p> <p>When not in GSM mode:  <b>OK</b></p>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt; CellSet &gt;</b>	Mandatory parameter. range is 0-7

Example:

Commands	Response
<b>AT+MONI=?</b>	<b>+MONI: Not in GSM mode</b>
<b>AT+MONI=?</b>	<b>+MONI: 4,0</b>  <b>OK</b>

AT+MONI?	+MONI:CMCC,BSIC:0,RxQual:0,LAC:33033,Id:183,ARFCN:53, PWR:-6 7dBm,C1:30-C2:140 +MONI:Adj Cell1,[LAC:33033,Id:182],ARFCN:49,PWR:-73dBm, C1:23-C2:133 +MONI: Adj Cell2,[LAC:33033,Id:181],ARFCN:47,PWR:-90dBm, C1:6-C2:116 +MONI: Adj Cell3,[LAC:33033,Id:40581],ARFCN:44,PWR:-102dBm, C1:-3-C2:107 +MONI: Adj Cell4,[LAC:33033,Id:36193],ARFCN:46,PWR:-104dBm, C1:-3-C2:107  OK
AT+MONI=0	+MONI: CMCC,BSIC:0,RxQual:0,LAC:33033,Id:183,ARFCN:53, PWR:-65dBm,C1:32-C2:142  OK
AT+MONI=3	+MONI: Adj Cell3,[LAC:33033,Id:40581],ARFCN:44,PWR:-104dBm, C1:-5-C2:105  OK
AT+MONI	+MONI: CMCC,BSIC:0,RxQual:0,LAC:33033,Id:183,ARFCN:53, PWR:-67dBm,C1:30-C2:140 +MONI: Adj Cell1,[LAC:33033,Id:182],ARFCN:49,PWR:-74dBm, C1:22-C2:132 +MONI: Adj Cell2,[LAC:33033,Id:181],ARFCN:47,PWR:-90dBm, C1:6-C2:116 +MONI: Adj Cell3,[LAC:33033,Id:40581],ARFCN:44,PWR:-103dBm, C1:-4-C2:106 +MONI: Adj Cell4,[LAC:33033,Id:36193],ARFCN:46,PWR:-104dBm, C1:-3-C2:107  OK

AT+MONI Execution command responses:

Parameters	Description
<CellNo >	available neighbour cells number currently received
< CellSet >	the last setting done with command, range is 0-7
<netname>	name of network operator
<cc>	country code
<nc>	network operator code
<n>	progressive number of adjacent cell
<bsic>	base station identification code
<qual>	quality of reception
<lac>	localization area code
<id>	cell identifier
<arfcn>	assigned radio channel
<dBm>	received signal strength in dBm

#### 3.3.5.4.11 AT+MCSQ System Information in LTE

System Information in LTE

Execution Command	Response
<b>AT+MCSQ</b>	<b>+MCSQ: &lt;RSRQ&gt;,&lt;RSRP&gt;,&lt;RSSI&gt;,&lt;RSSNR&gt;,&lt;SINR&gt;</b>
Test Command	Response
<b>AT+MCSQ=?</b>	<b>OK</b>
Read Command	Response
<b>AT+MCSQ?</b>	<b>+MCSQ: &lt;sys_mode&gt;</b> <b>OK</b>

Parameters are defined below:

Parameters	Description
<RSRQ>	Current reference signal receive quality, The quantities are in dB x10. Range: -20.0 to -3.0 dB
<RSRP>	Current reference signal receive power in dBm x10, Range: -44 to -140.
<RSSI>	Received signal strength indicator, values are in dBm x10. Range: -120.0 to 0.

<b>&lt; RSSNR &gt;</b>	Average reference signal signal-to-noise ratio of the serving cell over the last measurement period in decibels. Range: -10 to 30.
<b>&lt;SINR&gt;</b>	Serving cell SINR information, Values are in 1/5th of a dB. Range 0-250 which translates to -20dB - +30dB.
<b>&lt;sys_mode&gt;</b>	Current network mode

Example:

Commands	Response
<b>AT+MCSQ?</b>	<b>+MCSQ: LTE</b>  <b>OK</b>
<b>AT+MCSQ</b>	<b>+MCSQ: -107,-1178,-873,7,138</b>  <b>OK</b>
<b>AT+MCSQ=?</b>	<b>OK</b>

### 3.3.5.4.12 AT+MDNSGIP Query the IP address of given domain name

Query the IP address of given domain name

Test Command	Response
<b>AT+MDNSGIP=?</b>	<b>OK</b> or <b>ERROR</b>
Write Command	Response
<b>AT+MDNSGIP=&lt;domain name&gt;</b>	<p>If successful, return: <b>+MDNSGIP: 1,&lt;domain name&gt;,&lt;IP address&gt;</b> <b>OK</b></p> <p>If fail, return: <b>+MDNSGIP: 0,&lt;dns error code&gt;</b> <b>ERROR</b></p>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;domain name&gt;</b>	A string parameter (string should be included in quotation marks) which indicates the domain name.
<b>&lt;IP address&gt;</b>	A string parameter (string should be included in quotation marks) which indicates the IP address corresponding to the domain name.
<b>&lt;dns error code&gt;</b>	A numeric parameter which indicates the error code. 10 DNS GENERAL ERROR

Example:

Commands	Response
<b>AT+MDNSGIP=?</b>	<b>OK</b>
<b>AT+MDNSGIP="www.google.com"</b>	<b>+MDNSGIP:1,www.google.com,243.185.187.39</b> <b>OK</b>

### 3.3.5.4.13 AT+MPING Ping destination address

Ping destination address

Test Command	Response
<b>AT+MPING=?</b>	<b>+MPING:IPaddress, (list of supported&lt;dest_addr_type&gt;s)</b> <b>,(1-100),(4-256),(1000-10000),(10000-1 00000), (16-255)</b> <b>OK</b>  <b>ERROR</b>
Write Command	Response
<b>AT+MPING=&lt;dest_addr&gt;,&lt;dest_addr_type&gt;</b> <b>[,&lt;num_pings&gt;,&lt;data_packet_size&gt;,&lt;interval_time&gt;,&lt;wait_time&gt; [&lt;TTL&gt;]]]</b>	<b>OK</b>  If ping's result_type = 1 <b>+MPING:&lt;result_type&gt;,&lt;resolved_ip_addr&gt;,&lt;data_packet_size&gt;,&lt;rtt&gt;,&lt;TTL&gt;</b> If ping's result_type = 2 <b>+MPING: &lt;result_type&gt;</b> If ping's result_type = 3 <b>+MPING:</b> <b>&lt;result_type&gt;,&lt;num_pkts_sent&gt;,&lt;num_pkts_rcvd&gt;,&lt;num_pkts_lost&gt;,&lt;min_rtt&gt;</b> <b>,&lt;max_rtt&gt;,&lt;avg_rtt&gt;</b> <b>or</b> <b>ERROR</b>



Parameters are defined below:

Parameters	Description
<b>&lt;dest_addr&gt;</b>	The destination is to be pinged; it can be an IP address or a domain name.
<b>&lt;dest_addr_type&gt;</b>	Integer type. Address family type of the destination address 1 – IPv4. 2 – IPv6(reserved)
<b>&lt;num_pings&gt;</b>	Integer type. The num_pings specifies the number of times the ping request (1-100) is to be sent. The default value is 4.
<b>&lt;data_packet_size&gt;</b>	Integer type. Data byte size of the ping packet (4-256). The default value is 64 bytes.
<b>&lt;interval_time&gt;</b>	Integer type. Interval between each ping. Value is specified in milliseconds (1000ms-10000ms). The default value is 2000ms.
<b>&lt;wait_time&gt;</b>	Integer type. Wait time for ping response. An ping response received after the timeout shall not be processed. Value specified in milliseconds (10000ms-100000ms). The default value is 10000ms.
<b>&lt;TTL&gt;</b>	Integer type. TTL(Time-To-Live) value for the IP packet over which the ping(ICMP ECHO Request message) is sent (16-255), the default value is 255.
<b>&lt;result_type&gt;</b>	1 – Ping success 2 – Ping time out 3 – Ping result
<b>&lt;num_pkts_sent&gt;</b>	Indicates the number of ping requests that were sent out.
<b>&lt;num_pkts_recvd&gt;</b>	Indicates the number of ping responses that were received.
<b>&lt;num_pkts_lost&gt;</b>	Indicates the number of ping requests for which no response was received.
<b>&lt;min_rtt&gt;</b>	Indicates the minimum Round Trip Time(RTT).
<b>&lt;max_rtt&gt;</b>	Indicates the maximum RTT.
<b>&lt;avg_rtt&gt;</b>	Indicates the average RTT.
<b>&lt;resolved_ip_addr&gt;</b>	Indicates the resolved ip address.
<b>&lt; rtt&gt;</b>	Round Trip Time.

Example:

Commands	Response
<b>AT+MPING=?</b>	<b>+MPING:IP address,(1,2), (1-100), (4-256),(1000-10000),(10000-100000), (16-255) OK</b>

<b>AT+MPING="www.baidu.com",1,4,64,1000,10000,255</b>	<b>OK</b>
	<b>+MPING:1,119.75.217.56,64,410,255</b>
	<b>+MPING:1,119.75.217.56,64,347,255</b>
	<b>+MPING:1,119.75.217.56,64,346,255</b>
	<b>+MPING:1,119.75.217.56,64,444,255</b>
	<b>+MPING:3,4,4,0,346,444,386</b>

#### 3.3.5.4.14 AT+MPINGSTOP Stop an ongoing ping session

Stop an ongoing ping session

Execution Command	Response
<b>AT+MPINGSTOP</b>	<b>+MPING:</b> <b>OK</b> <b>or</b> <b>ERROR</b> <b>&lt;result_type&gt;,&lt;num_pkts_sent&gt;,&lt;num_pkts_rcvd&gt;,&lt;num_pkts_lost&gt;,&lt;min_rtt&gt;,&lt;max_rtt&gt;,&lt;avg_rtt&gt;</b>
Test Command	Response
<b>AT+MPINGSTOP=?</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;result_type&gt;</b>	1 – Ping success 2 – Ping time out 3 – Ping result
<b>&lt;num_pkts_sent&gt;</b>	Indicates the number of ping requests that were sent out.
<b>&lt;num_pkts_rcvd&gt;</b>	Indicates the number of ping responses that were received.
<b>&lt;num_pkts_lost&gt;</b>	Indicates the number of ping requests for which no response was received.
<b>&lt;min_rtt&gt;</b>	Indicates the minimum Round Trip Time(RTT).
<b>&lt;max_rtt&gt;</b>	Indicates the maximum RTT.
<b>&lt;avg_rtt&gt;</b>	Indicates the average RTT.

<b>&lt;resolved_ip_addr&gt;</b>	Indicates the resolved ip address.
<b>&lt; rtt&gt;</b>	Round Trip Time.

Example:

Commands	Response
<b>AT+MPINGSTOP</b>	<b>OK</b>

LYNQ  
CONFIDENTIAL

### 3.3.5.4.15 AT+MSCANBS Get base station information

Scan base station information

Execution Command	Response
<b>AT+MSCANBS</b>	<p>For GSM:</p> <p><b>GSM:</b>&lt;cell_id&gt;,&lt;mccmnc&gt;,&lt;lac&gt;,&lt;arfcn&gt;,&lt;bsic&gt;,&lt;timing_advance&gt;,&lt;rx_lev&gt;</p> <p><b>GSM-NBR:</b>&lt;cell_id&gt;,&lt;mccmnc&gt;,&lt;lac&gt;,&lt;arfcn&gt;,&lt;bsic&gt;,&lt;rx_lev&gt;,&lt;c1&gt;,&lt;c2&gt;</p> <p>For CDMA:</p> <p><b>CDMA:</b>&lt;mccmnc&gt;,&lt;sid&gt;,&lt;nid&gt;,&lt;bsic&gt;,&lt;reg_zone&gt;,&lt;channel&gt;,&lt;band_class&gt;,&lt;pilot_pn&gt;,&lt;pilot_strength&gt;,&lt;base_lat&gt;,&lt;base_long&gt;,&lt;time_stamp&gt;</p> <p><b>CDMA-NBR:</b>&lt;sid&gt;,&lt;nid&gt;,&lt;bsic&gt;,&lt;pilot_pn&gt;,&lt;pilot_strength&gt;,&lt;base_lat&gt;,&lt;base_long&gt;,&lt;time_stamp&gt;</p> <p>For WCDMA:</p> <p><b>WCDMA:</b>&lt;cell_id&gt;,&lt;mccmnc&gt;,&lt;lac&gt;,&lt;uarfcn&gt;,&lt;psc&gt;,&lt;rscp&gt;,&lt;ecio&gt;,&lt;squal&gt;,&lt;srxlev&gt;</p> <p><b>WCDMA-Monitored:</b>&lt;uarfcn&gt;,&lt;psc&gt;,&lt;rscp&gt;,&lt;ecio&gt;,&lt;squal&gt;,&lt;srxlev&gt;,&lt;rank&gt;,&lt;set&gt;</p> <p><b>WCDMA-GSM-NBR:</b>&lt;arfcn&gt;,&lt;ncc&gt;,&lt;bcc&gt;,&lt;rssi&gt;,&lt;rank&gt;</p> <p><b>WCDMA-LTE-NBR:</b>&lt;earfcn&gt;,&lt;pci&gt;,&lt;rsrp&gt;,&lt;rsrq&gt;,&lt;srxlev&gt;,&lt;cell_is_tdd&gt;</p> <p><b>WCDMA-Active-Set:</b>&lt;psc&gt;,&lt;cell_id&gt;,&lt;rscp&gt;,&lt;ecio&gt;,&lt;uarfcn&gt;,&lt;sf&gt;,&lt;slot_format&gt;,&lt;is_compressed&gt;</p> <p>For LTE:</p> <p><b>LTE:</b>&lt;cell_id&gt;,&lt;mccmnc&gt;,&lt;tac&gt;,&lt;earfcn&gt;,&lt;freq_band&gt;,&lt;pci&gt;,&lt;rsrq&gt;,&lt;rsrp&gt;,&lt;rssi&gt;,&lt;sinr&gt;</p> <p><b>LTE-NBR:</b>&lt;pci&gt;,&lt;rsrq&gt;,&lt;rsrp&gt;,&lt;rssi&gt;,&lt;srxlev&gt;</p> <p><b>OK</b></p> <p><b>or</b></p> <p><b>ERROR</b></p> <p>Note:</p> <p>-NBR indicates neighboring cell information,it is an option.</p>

Parameters are defined below:

Parameters	Description
<b>&lt;cell_id&gt;</b>	cell ID
<b>&lt;mccmnc&gt;</b>	Mobile Country Code, Mobile Network Code
<b>&lt;lac&gt;</b>	Location area code
<b>&lt;arfcn&gt;</b>	Absolute RF channel number
<b>&lt;bsic&gt;</b>	Base station identity code
<b>&lt;timing_advance&gt;</b>	Measured delay (in bit periods; 1 bit period = 48/13 microsecond) of an access burst transmission on the RACH or PRACH to the expected signal from an MS at zero distance under static channel conditions.
<b>&lt;rx_lev&gt;</b>	cell Rx measurement. Values range between 0 and 63. - Rxlev 0 is a signal strength less than -110 dBm - Rxlev 1 is -110 dBm to -109 dBm - Rxlev 2 is -109 dBm to -108 dBm - ... - Rxlev 62 is -49 dBm to -48 dBm - Rxlev 63 is greater than -48 dBm
<b>&lt;c1&gt;</b>	Coefficient for base station selection. Defined in 3GPP TS 45.008 Section 6.4. Default: 0.
<b>&lt;c2&gt;</b>	Coefficient for Cell re-selection Defined in 3GPP TS 45.008 Section 6.4. Default: 0.
<b>&lt;sid&gt;</b>	System ID. Range: 0 to 32767
<b>&lt;nid&gt;</b>	Network ID. Range: 0 to 65535
<b>&lt;reg_zone&gt;</b>	Registration zone
<b>&lt;channel&gt;</b>	Channel number
<b>&lt;band_class&gt;</b>	Band class
<b>&lt;pilot_pn&gt;</b>	Pilot PN sequence offset index. Range: 0 to 511.
<b>&lt;pilot_strength&gt;</b>	Strength of the pilot (in dB). Range: 0 to 64.
<b>&lt;base_lat&gt;</b>	Latitude of the current base station in units of 0.25 sec.
<b>&lt;base_long&gt;</b>	Longitude of the current base station in units of 0.25 sec.
<b>&lt;time_stamp&gt;</b>	Time (in milliseconds) from the start of GPS time when the measurement was taken.
<b>&lt;uarfcn&gt;</b>	UTRA absolute RF channel number
<b>&lt;psc&gt;</b>	Primary scrambling code
<b>&lt;rscp&gt;</b>	Received signal code power
<b>&lt;ecio&gt;</b>	the received energy per chip divided by the power density in the band measured in dBm on the primary CPICH channel of the serving cell
<b>&lt;squal&gt;</b>	cell selection quality value in dB
<b>&lt;srxlev&gt;</b>	cell selection Rx level value in dB.

<b>&lt;rank&gt;</b>	Rank of the cell
<b>&lt;set&gt;</b>	Set of the cell
<b>&lt;ncc&gt;</b>	Base station identity code network color code
<b>&lt;bcc&gt;</b>	Base station identity code base station color code
<b>&lt;rssi&gt;</b>	Received signal strength indicator
<b>&lt;earfcn&gt;</b>	E-UTRA absolute RF channel number
<b>&lt;pci&gt;</b>	Physical cell ID
<b>&lt;rsrp&gt;</b>	received signal strength indication
<b>&lt;rsrq&gt;</b>	reference signal received quality
<b>&lt;cell_is_tdd&gt;</b>	TRUE if the cell is TDD; FALSE if the cell is FDD
<b>&lt;sf&gt;</b>	Spreading factor of the channel
<b>&lt;slot_format&gt;</b>	Indicates slot format. Values range between 0 and 6
<b>&lt;is_compressed&gt;</b>	Indicates whether the compressed mode is ON or OFF
<b>&lt;tac&gt;</b>	Tracking area code
<b>&lt;freq_band&gt;</b>	Operating band of the serving cell. Range: 1 to 64.
<b>&lt;sinr&gt;</b>	Logarithmic value of SINR Values are in 1/5th of a dB. Range 0-250 which translates to -20dB - +30dB

Example:

Commands	Response
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<b>AT+MSCANBS</b>	<b>AT+MSCANBS</b> <b>GSM:42860,46000,33033,612,21,0,56</b> <b>GSM-NBR:42840,46000,33033,623,36,35,23,139</b> <b>GSM-NBR:182,46000,33033,34,39,43,31,133</b> <b>GSM-NBR:185,46000,33033,620,0,27,15,131</b> <b>GSM-NBR:184,46000,33033,615,8,24,12,128</b> <b>GSM-NBR:181,46000,33033,24,29,24,12,114</b>  <b>OK</b>  <b>AT+MSCANBS</b> <b>CDMA:46003,13898,12,9291,21,283,0,438,6,439968,1498372,12</b> <b>48587191760</b>  <b>OK</b>  <b>AT+MSCANBS</b> <b>WCDMA:40952,46001,61728,10663,12,-88,-9,8,27</b> <b>WCDMA-Monitored:10663,20,-94,-15,2,20,-31,2</b> <b>WCDMA-Monitored:10663,188,-97,-19,-1,17,-32768,2</b>  <b>OK</b>  <b>AT+MSCANBS</b> <b>LTE:444,46011,39698,100,1,444,-53,-915,-663,170</b> <b>LTE-NBR:444,-53,-915,-663,36</b> <b>LTE-NBR:146,-162,-1073,-799,20</b> <b>LTE-NBR:72,-137,-1121,-895,15</b> <b>LTE-NBR:143,-178,-1162,-894,11</b>  <b>OK</b>
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### 3.3.5.5 AT Commands for GPS

#### 3.3.5.5.1 AT+ CGPS Start/Stop GPS Position Session

Start/Stop GPS Position Session

Test Command	Response
<b>AT+ CGPS=?</b>	<b>+CGPS:(0,1)[,(1-3)]</b>
Read Command	Response
<b>AT+ CGPS?</b>	Get current GPS status and current mode return: <b>+CGPS:&lt;on/off&gt;,&lt;mode&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+ CGPS=</b> <b>&lt;on/off&gt;[,&lt;mode&gt;]</b>	start/stop GPS position session attention: UE-based and UE-assisted mode depend on URL (AT+CGPSURL) and certificate (AT+CGPSSSL). when UE-based mode failed, will switch to Standalone mode.(if CGPSMSB=1)

Parameters are defined below:

Parameters	Description
<b>&lt;on/off&gt;</b>	0 – stop GPS session 1 – start GPS session
<b>&lt;mode&gt;</b>	ignore - Standalone mode 1 – standalone mode 2 – UE-based mode 3 – UE-assisted mode

Example:

Commands	Response
<b>AT+CGPS?</b>	<b>OK</b>
<b>AT+CGPS=1,1</b>	<b>OK</b>

#### 3.3.5.5.2 AT+CGPSINFO Get Current GPS Position Information



## Get Current GPS Position Information

Execution Command	Response
<b>AT+CGPSINFO</b>	<b>+CGPSINFO:[&lt;lat&gt;],[&lt;N/S&gt;],[&lt;log&gt;],[&lt;E/W&gt;],[&lt;date&gt;],[&lt;UTC time&gt;],[&lt;alt&gt;],[&lt;speed&gt;],[&lt;course&gt;],[&lt;time&gt;] OK</b>
Test Command	Response
<b>AT+CGPSINFO=?</b>	<b>+CGPSINFO:(0-255)  OK</b>
Read Command	Response
<b>AT+CGPSINFO?</b>	<b>+CGPSINFO:&lt;time&gt;  OK</b>
Write Command	Response
<b>AT+CGPSINFO= &lt;time&gt;</b>	<b>OK ERROR</b>  Information report every time seconds is: <b>+CGPSINFO:&lt;lat&gt;,&lt;N/S&gt;,&lt;log&gt;,&lt;E/W&gt;,&lt;date&gt;,&lt;UTC time&gt;,&lt;alt&gt;,&lt;speed&gt;,&lt;course&gt;,&lt;time&gt; OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;time&gt;</b>	Range is (0-255) seconds, report the GPS information every time seconds. When time is 0, cancel reporting.
<b>&lt;lat&gt;</b>	Latitude of current position.
<b>&lt;N/S&gt;</b>	N/S Indicator, N=north or S=south
<b>&lt;log&gt;</b>	Longitude of current position.
<b>&lt;E/W&gt;</b>	E/W Indicator, E=east or W=west
<b>&lt;date&gt;</b>	Date. Output format is ddmmyyyy
<b>&lt;UTC time&gt;</b>	UTC Time. Output format is hhmmss.ss
<b>&lt;alt&gt;</b>	MSL Altitude. Unit is meters
<b>&lt;speed&gt;</b>	Speed Over Ground. Unit is knots
<b>&lt;course&gt;</b>	Course. Degrees

Example:

Commands	Response
<b>AT+CGPSINFO?</b>	<b>+CGPSINFO:5</b> <b>OK</b>
<b>AT+CGPSINFO=3</b>	<b>OK</b>

### 3.3.5.5.3 AT+CGPSCOLD Cold Start GPS

Cold Start GPS

Execution Command	Response
<b>AT+ CGPSCOLD</b>	cold start GPS  return: <b>OK</b> <b>ERROR</b>
Test Command	Response
<b>AT+ CGPSCOLD=?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+CGPSCOLD=?</b>	<b>OK</b>
<b>AT+CGPSCOLD</b>	<b>OK</b>

### 3.3.5.5.4 AT+CGPSHOT Hot Start GPS

Hot Start GPS

Execution Command	Response
<b>AT+CGPSHOT</b>	hot start GPS  return: <b>OK</b> <b>ERROR</b>

Test Command	Response
<b>AT+CGPSHOT=?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+CGPSHOT=?</b>	<b>OK</b>
<b>AT+CGPSHOT</b>	<b>OK</b>

### 3.3.5.5.5 AT+CGPSURL Set AGPS Default Server URL

This command is used to set AGPS server URL. Effective after restart.

Test Command	Response
<b>AT+CGPSURL=?</b>	<b>OK</b>
Read Command	Response
<b>AT+CGPSURL?</b>	<b>+CGPSURL:&lt;url &gt; OK</b>
Write Command	Response
<b>AT+CGPSURL=&lt;URL&gt;</b>	<b>OK ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;URL&gt;</b>	APGS server URL. It needs double quotation marks. Maximum length 127.

Example:

Commands	Response
<b>AT+CGPSURL=?</b>	<b>OK</b>
<b>AT+CGPSURL="supl-test.qxwz.com:275"</b>	<b>OK</b>

### 3.3.5.5.6 AT+CGPSSSL Select Transport Security

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

Test Command	Response
<b>AT+CGPSSSL=?</b>	<b>+CGPSSSL:(0,1)</b>  <b>OK</b>
Read Command	Response
<b>AT+CGPSSSL?</b>	<b>+CGPSSSL:&lt;SSL&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+CGPSSSL=&lt;SSL&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;SSL&gt;</b>	0 disable SSL 1 enable SSL

Example:

Commands	Response
<b>AT+CGPSSSL=0</b>	<b>OK</b>

### 3.3.5.5.7 AT+CGPSAUTO Auto Start GPS When Module Powers On

This command is used to start GPS automatically when module power on, default value is disable. It will take effect only after restarting

Test Command	Response
<b>AT+CGPSAUTO=?</b>	<b>+CGPSAUTO:(0,1)</b>  <b>OK</b>
Read Command	Response
<b>AT+CGPSAUTO?</b>	<b>+CGPSAUTO:&lt;auto&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+CGPSAUTO=&lt;auto&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; auto &gt;</b>	0 disable 1 enable

Example:

Commands	Response
<b>AT+CGPSAUTO=0</b>	<b>OK</b>

### 3.3.5.5.8 AT+CGPSNMEA Configure NMEA Output Sentences

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

Test Command	Response
<b>AT+CGPSNMEA=?</b>	<b>+CGPSNMEA:(0-8191)</b> <b>OK</b>
Read Command	Response
<b>AT+CGPSNMEA?</b>	<b>+CGPSNMEA:&lt;nmea&gt;</b> <b>OK</b>

Write Command	Response
<b>AT+CGPSNMEA=&lt;nmea&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; nmea &gt;</b>	<p>Each bit enables an NMEA sentence output as follows:</p> <p>Bit 0 – GPGLL (global positioning system fix data)</p> <p>Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data)</p> <p>Bit 2 – GPGSV (GPS satellites in view)</p> <p>Bit 3 – GPGSA (GPS DOP and active satellites)</p> <p>Bit 4 – GPVTG (track made good and ground speed)</p> <p>Bit 5 – PQXFI (Global Positioning System Extended Fix Data.)</p> <p>Bit 6 – GLGSV (GLONASS satellites in view GLONASS fixes only)</p> <p>Bit 7 – GNGSA (DOP and GLONASS satellites; GPS+GLONASS or GLONASS-only fixes. Contains DOP information for all active satellites, but other information is GLONASS-only)</p> <p>Bit 8 – GNGNS (fix data for GNSS receivers; output for GPS-only, GLONASS-only, hybrid GLONASS+GPS fixes, or even AFLT fixes)</p> <p>Bit 9 - PQGSA (bds qzss DOP and active satellites)</p> <p>Bit 10 - PQGSV (bds qzss satellites in view)</p> <p>Bit 11 - GPGLL (Geographic Position – Latitude/Longitude)</p> <p>Bit 12 - GPZDA (Time &amp; Date – UTC, Day, Month, Year and Local Time Zone)</p>

Example:

Commands	Response
<b>AT+CGPSNMEA=8191</b>	<b>OK</b>

### 3.3.5.5.9 AT+CGPSMD Specifies GPS Session

This command specifies if the Mobile-Originated (MO) GPS session should use the control plane session or user plane session. Default value is user plane. Only can be used when gps is off.

Test Command	Response
<b>AT+CGPSMD=?</b>	<b>+CGPSMD:(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT+CGPSMD?</b>	<b>+CGPSMD:&lt;mo&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CGPSMD=&lt;mo&gt;</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt; mo &gt;</b>	0 - control plane 1 - user plane Note: if set to control plane, only standalone mode can be used.

Example:

Commands	Response
<b>AT+CGPSMD=1</b>	<b>OK</b>

### 3.3.5.5.10 AT+CGPSDEL Delete the GPS Information

This command is to delete GPS information. After executing this command, GPS start is cold start. This command only can be used when gps is off.

Execution Command	Response
<b>AT+CGPSDEL</b>	<b>OK</b> <b>ERROR</b>
Read Command	Response
<b>AT+CGPSDEL?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+CGPSDEL=?</b>	<b>OK</b>
<b>AT+CGPSDEL</b>	<b>OK</b>

### 3.3.5.5.11 AT+CGPSXE Enable/Disable GPS XTRA Function

Enable/Disable GPS XTRA function,if set to off ,xtra related operation will not take effect

Test Command	Response
<b>AT+CGPSXE=?</b>	<b>+CGPSXE:(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT+CGPSXE?</b>	<b>+CGPSXE:&lt;on/off&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CGPSXE =&lt;on/off&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; on/off &gt;</b>	1 - Enable GPS XTRA 0 - Disable GPS XTRA

Example:

Commands	Response
<b>AT+CGPSXE=1</b>	<b>OK</b>

### 3.3.5.5.12 AT+ CGPSXD Download XTRA Assistant file

This command is to download the GPS XTRA assistant file from network by http protocol.Module will download the latest assistant file form server and write the file into fpsone engine.

Test Command	Response
<b>AT+CGPSXD=?</b>	<b>+CGPSXD: (0-2)</b>  <b>OK</b>



Read Command	Response
<b>AT+CGPSXD?</b>	<b>+CGPSXD:&lt;server&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+ CGPSXD=&lt;server&gt;</b>	<b>OK</b> <b>ERROR</b> <b>+CGPSXD: status</b>

Parameters are defined below:

Parameters	Description
<b>&lt; server&gt;</b>	0 - xtra server 1 1 - xtra server 2 2 - xtra server 3
<b>&lt; status&gt;</b>	1 start download xtra file 2 download xtra file successful

Example:

Commands	Response
<b>AT+CGPSXD=0</b>	<b>OK</b> <b>+CGPSXD: 1</b> <b>+CGPSXD: 2</b>

### 3.3.5.5.13 AT+CGPSXDAUTO Download XTRA Assistant File Auto

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

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

Test Command	Response
<b>AT+CGPSXDAUTO =?</b>	<b>+CGPSXDAUTO:(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT+CGPSXDAUTO?</b>	<b>+CGPSXDAUTO:&lt;on/off&gt;</b>

Write Command	Response
<b>AT+CGPSXDAUTO</b> <b>=&lt;on/off&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; on/off &gt;</b>	1 - on 0 - off

Example:

Commands	Response
<b>AT+CGPSXDAUTO</b> <b>=1</b>	<b>OK</b>

#### 3.3.5.5.14 AT+CGPSINFOCFG Report NMEA-0183 Sentences

This command is used to report NMEA-0183 sentences. First parameter will be take effect at any time. Second parameter can be ignore, and only can be set when gps is off, otherwise will return ERROR.

Test Command	Response
<b>AT+CGPSINFOCFG =?</b>	<b>+CGPSINFOCFG:(0-255),(0-8191)</b> <b>OK</b>
Read Command	Response
<b>AT+CGPSINFOCFG?</b>	<b>+CGPSINFOCFG:&lt;time&gt;,&lt;nmea&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CGPSINFOCFG</b> <b>=&lt;time&gt;[,&lt;nmea&gt;]</b>	<b>OK</b> <b>ERROR</b> (NMEA-0183 Sentence)

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;time&gt;</b>	Range is 0-255, after set <time> will report the GPS NMEA sentences every time seconds. If time=0, or nmea=0 module will stop reporting the NMEA sentences
<b>&lt;nmea&gt;</b>	<p>can be ignore</p> <p>Each bit enable an NMEA sentence output as follows:</p> <p>Bit 0 – GPGLL (global positioning system fix data)</p> <p>Bit 1 – GPRMC (recommended minimum specific GPS/TRANSIT data)</p> <p>Bit 2 – GPGSV (GPS satellites in view)</p> <p>Bit 3 – GPGSA (GPS DOP and active satellites)</p> <p>Bit 4 – GPVTG (track made good and ground speed)</p> <p>Bit 5 – PQXFI (Global Positioning System Extended Fix Data.)</p> <p>Bit 6 – GLGSV (GLONASS satellites in view GLONASS fixes only)</p> <p>Bit 7 – GNGSA (DOP and GLONASS satellites; GPS+GLONASS or GLONASS-only fixes. Contains DOP information for all active satellites, but other information is GLONASS-only)</p> <p>Bit 8 – GNGNS (fix data for GNSS receivers; output for GPS-only, GLONASS-only, hybrid GLONASS+GPS fixes, or even AFLT fixes)</p> <p>Bit 9 - PQGSA (bds qzss DOP and active satellites)</p> <p>Bit 10 - PQGSV (bds qzss satellites in view)</p> <p>Bit 11 - GPGLL (Geographic Position – Latitude/Longitude)</p> <p>Bit 12 - GPZDA (Time &amp; Date – UTC, Day, Month, Year and Local Time Zone)</p> <p>Range is 0-8191</p>

Example:

Commands	Response
<b>AT+CGPSINFOCFG=5,63</b>	<p><b>OK</b></p> <p><b>\$GPGSV,4,1,16,04,53,057,44,02,55,334,44,10,61,023,44,05,45,253,43*7D</b></p> <p><b>\$GPGSV,4,2,16,25,10,300,40,17,25,147,40,12,22,271,38,13,28,053,38*77</b></p> <p><b>\$GPGSV,4,3,16,26,09,187,35,23,06,036,34,24,,,,,27,,,*7A</b></p> <p><b>\$GPGSV,4,4,16,09,,,,,31,,,,,30,,,,,29,,,*7D</b></p> <p><b>\$GPGGA,051147.0,3113.320991,N,12121.248076,E,1,10,0.8,47.5,M,0.0,M,,*45</b></p> <p><b>\$GPVTG,NaN,T,,M,0.0,N,0.0,K,A*42</b></p> <p><b>\$GPRMC,051147.0,A,3113.320991,N,12121.248076,E,0.0,0.0,211,211,,,A*66</b></p> <p><b>\$GPGSA,A,3,02,04,05,10,12,13,17,23,25,26,,,1.4,0.8,1.2*3B</b></p>

### 3.3.5.5.15 AT+CGPSPMD Configure Positioning Mode

This command is used to configure the positioning modes support. It only can be set when gps is off.

Test Command	Response
<b>AT+CGPSPMD=?</b>	<b>+CGPSPMD:(0-65535)</b> <b>OK</b>
Read Command	Response
<b>AT+CGPSPMD?</b>	<b>+CGPSPMD:&lt;mode&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CGPSPMD =&lt;mode&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; mode &gt;</b>	Bit 0 – Standalone Bit 1 – UP MS-based Bit 2 – UP MS-assisted Bit 3 – CP MS-based (2G) Bit 4 – CP MS-assisted (2G) Bit 5 – CP UE-based (3G) Bit 6 – CP UE-assisted (3G) Bit 7 – NOT USED Bit 8 – UP MS-based (4G) Bit 9 – UP MS-assisted(4G) Bit 10 – CP MS-based (4G) Bit 11 – CP MS-assisted (4G) Range is 0-65535(bit12- bit15 reserve)

Example:

Commands	Response
<b>AT+CGPSPMD=65535</b>	<b>OK</b>

### 3.3.5.5.16 AT+CGPSMSB Based Mode Switch to Standalone

This command is used to configure if automatically switching to standalone mode when MS-based mode position failed

Test Command	Response
<b>AT+CGPSMSB=?</b>	<b>+CGPSMSB:(0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+CGPSMSB?</b>	<b>+GPSMSB:&lt;mode&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+CGPSMSB =&lt;mode&gt;</b>	<b>OK</b> <b>ERROR</b> note: when insert RUIM card (such like CHINA TELECOM), this command is invalid.

Parameters are defined below:

Parameters	Description
<b>&lt; mode &gt;</b>	0 - Don't switch to standalone mode automatically 1 - switch to standalone mode automatically

Example:

Commands	Response
<b>AT+CGPSMSB=1</b>	<b>OK</b>

### 3.3.5.5.17 AT+CGPSHOR Configure Positioning Desired Accuracy

Configure positioning desired accuracy

Test Command	Response
<b>AT+CGPSHOR=?</b>	<b>+CGPSHOR:(0-1800000)</b>  <b>OK</b>

Read Command	Response
<b>AT+CGPSHOR?</b>	<b>+CGPSHOR:&lt;acc&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CGPSHOR =&lt;acc&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;acc&gt;</b>	positioning desired accuracy Range is 0-1800000, default is 50

Example:

Commands	Response
<b>AT+CGPSHOR=60</b>	<b>OK</b>

### 3.3.5.5.18 AT+CGPSNOTIFY LCS Respond Positioning Request

This command is used to respond to the incoming request for positioning request message. Only takes effect in the NI session, the current GPS uses the SI session.

Test Command	Response
<b>AT+CGPSNOTIFY=?</b>	<b>+CGPSNOTIFY:(0-2)</b> <b>OK</b>
Write Command	Response
<b>AT+CGPSNOTIFY =&lt;resp&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; resp &gt;</b>	0 –LCS notify verify accept 1 –LCS notify verify deny 2 –LCS notify verify no response

Example:

Commands	Response
<b>AT+CGPSNOTIFY=0</b>	<b>OK</b>

### 3.3.5.5.19 AT+GTPOS Get Station Positioning

The command is used to retrieve information base station positioning (not support CDMA network).

Test Command	Response
<b>AT+GTPOS=?</b>	<b>+GTPOS: (list of supported &lt;mode&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+GTPOS?</b>	<b>+GTPOS:&lt;mode&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+GTPOS =&lt;mode&gt;</b>	<b>OK</b> <b>CONNECT OK</b> <b>CONNECT FAILED</b> <b>ERROR</b> <b>+GTPOS:&lt;longitude&gt;,&lt;latitude&gt;</b> <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 - Close the base station positioning function 1 - Open the base station positioning function 2 - Get the base station positioning function. Get longitude and latitude, and Unit is degree.

Example:

Commands	Response
<b>at+gtpos=1</b>	<b>OK</b> <b>CONNECT OK</b>

<b>at+gtpos=2</b>	<b>+GTPOS:104.0553231,30.5497824</b> <b>OK</b>
<b>at+gtpos=0</b>	<b>OK</b>

### 3.3.5.5.20 AT+CGPSNMEATYPE Set Gps Output Port and Position System

Set gps output port and position system. It will take effect only after restarting

Test Command	Response
<b>AT+ CGPSNMEATYPE=?</b>	<b>+CGPSNMEATYPE:(0-5),(0-7)</b>  <b>OK</b>
Read Command	Response
<b>AT+ CGPSNMEATYPE?</b>	<b>+CGPSNMEATYPE:&lt;port&gt;,&lt;system&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CGPSNMEATYPE</b> <b>=&lt;port&gt;[, &lt;system&gt;]</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;port&gt;</b>	<p>can take effect any time</p> <p>0 - output gps data from at port</p> <p>1 - output gps data from uart1 port</p> <p>2 - output gps data from all active port</p> <p>3 - output gps data from nmea port</p> <p>4 - output gps data from uart2 port</p> <p>5 - output gps data from nmea2 port</p> <p>Note:</p> <p>1.&lt;port&gt;=5 only AT+MUSBCFG=1 can be set.</p> <p>2.L506X module currently does not support &lt;port&gt; seting to 5.</p>



<b>&lt;system&gt;</b>	can be ignore, and only will take effect only after restarting
	0. gps、 glo
	1. gps、 glo、 bds
	2. gps、 bds、 gal
	3. gps、 glo、 bds、 gal
	4. gps、 glo、 gal
	5. gps、 gal
	6. gps、 glo、 qzss
	7. gps、 glo、 bds、 qzss

Example:

Commands	Response
<b>AT+CGPSNMEATY PE=1</b>	<b>OK</b>
<b>AT+CGPSNMEATY PE=2,2</b>	<b>OK</b>

### 3.3.5.5.21 Xtra File Download Error Code

Numeric Format	Verbose Format General errors
-1	http session error
-2	http network error
-200	error in ds net
-202	error in DNS query
-203	socket error
-204	ssl error
-207	network error
-208	authentication error

### 3.3.5.5.22 Gps Position Error Code

Numeric Format	Verbose Format General errors
0	Phone Offline
1	No servcie
2	No connection with PDE
4	Session Manager Busy
5	Phone is CDMA locked
6	Phone is GPS locked

7	Connection failure with PDE
8	PDSM Ended session because of Error condition
12	Timeout (viz., for GPS Search)
15	Error in Fix
16	Reject from PDE
18	Ending session due to E911 call
22	Unknown System Error
26	Antenna switch
1007	operation error
1009	Wrong server Information parameters
1010	timeout parameter error
1011	error in QOS accuracy thershold param
1015	phone is offline
1016	phone is CDMA locked
1017	GPS is locked
1018	The command is invalid in this state(Ex When is phone is in E911)
1019	Connection Failure with PDE.
1025	Client Authentication Failure
1027	Feature not enabled
1031	Emergency Call is in Progress

### 3.3.5.6 AT Commands for SMS extended

#### 3.3.5.6.1 AT+CMGRO Read Message Only

Read Message Only

Test Command	Response
<b>AT+CMGRO=?</b>	Test command returns <b>OK</b> .
Write Command	Response
<b>AT+CMGRO=&lt;index&gt;</b>	+CMGRO command is used to return message with location value <index> from message storage <mem1> to the TE, but the message's status does not change.  Refer to command AT+CMGR.
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero.

Example:

Commands	Response
----------	----------

<b>AT+CMGRO=3</b>	<b>+CMGRO: "REC UNREAD","10086",,"16/07/12,11:14:19+32"</b> <b>This a test SMS</b> <b>OK</b>
<b>AT+CMGRO=?</b>	<b>OK</b>

### 3.3.5.6.2 AT+CMGMT Change Message Status

Change Message Status

Test Command	Response
<b>AT+CMGMT=?</b>	<b>OK</b>
Write Command	Response
<b>AT+CMGMT=&lt;index&gt;</b>	+CMGMT command is used to change the message status. If the status is unread, it will be changed read. Other statuses don't change.
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero.

Example:

Commands	Response
<b>AT+CMGMT=3</b>	<b>OK</b>
<b>AT+CMGMT=?</b>	<b>OK</b>

### 3.3.5.6.3 AT+CMVP Set Message Valid Period

Set Message Valid Period

Test Command	Response
<b>AT+CMVP=?</b>	Test command returns range of the parameters.

Read Command	Response
<b>AT+CMVP?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT+CMVP=&lt;vp&gt;</b>	<p>+CMVP command is used to set valid period for sending short message.</p> <p>Note: parameter vp can only be set when &lt;fo&gt; value is SMS-SUBMIT.</p>
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;vp&gt;</b>	<p>Mandatory parameter. Integer type, Validity period value:</p> <p>0 to 143 (&lt;vp&gt;+1) x 5 minutes (up to 12 hours)  144 to 167 12 hours + (&lt;vp&gt;-143) x 30 minutes  168 to 196 (&lt;vp&gt;-166) x 1 day  197 to 255 (&lt;vp&gt;-192) x 1 week</p>

Example:

Commands	Response
<b>AT+CSMP?</b>	<b>+CSMP: „0,0 OK</b>
<b>AT+CMVP=167</b>	<b>ERROR</b>
<b>AT+CSMP=17</b>	<b>OK</b>
<b>AT+CSMP?</b>	<b>+CSMP: 17,,0,0 OK</b>
<b>AT+CMVP=167</b>	<b>OK</b>
<b>AT+CMVP?</b>	<b>+CMVP:167 OK</b>

<b>AT+CMVP=?</b>	<b>+CMVP:(0-255) OK</b>
------------------	-----------------------------

### 3.3.5.6.4 AT+CMGRD Read and Delete Message

Read and Delete Message

Test Command	Response
<b>AT+CMGRD=?</b>	<b>OK</b>
Write Command	Response
<b>AT+CMGRD=&lt;index&gt;</b>	+CMGRD command is used to read message, and delete the message at the same time. It integrate AT+CMGR and AT+CMGD, but it doesn't change the message status.
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero. Refer to command AT+CMGR and AT+CMGD.

Example:

Commands	Response
<b>AT+CMGRD=3</b>	<b>+CMGRD: "REC READ","10086",,"16/07/12,11:14:19+32"</b> <b>This a test SMS</b> <b>OK</b>
<b>AT+CMGRD=?</b>	<b>OK</b>

### 3.3.5.6.5 AT+CMGSO Send Message Quickly

Send Message Quickly

Test Command	Response
<b>AT+CMGSO=?</b>	<b>OK</b>

Write Command	Response
<p>If text mode:  <b>(AT+CMGF=1)</b>  <b>AT+CMGSO=&lt;da&gt;, &lt;text&gt;</b>  <b>[,&lt;toda&gt;]</b></p> <p>If pdu mode:  <b>(AT+CMGF=0)</b>  <b>AT+CMGSO=&lt;length&gt;,&lt;pdu content&gt;</b></p>	<p>+CMGSO command is used to send message from a TE to the network (SMS-SUBMIT). But it's different from AT+CMGS. This command only need one time input, and wait for "&gt;" needless.</p>
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;da&gt;</b>	Mandatory parameter. Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
<b>&lt;text&gt;</b>	Mandatory parameter. Content of message.
<b>&lt;toda&gt;</b>	Optional parameter. TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
<b>&lt;length&gt;</b>	Mandatory parameter. Integer type value indicating in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets.
<b>&lt;pducontent&gt;</b>	Mandatory parameter. Content of message.

Example:

Commands	Response
<b>AT+CMGSO="10086", "CMGSO TEST"</b>	<b>+CMGSO: 122</b> <b>OK</b>
<b>AT+CMGSO=?</b>	<b>OK</b>

### 3.3.5.6.6 AT+CMGWO Write Message to Memory Quickly

Write Message to Memory Quickly

Test Command	Response
<b>AT+CMGWO=?</b>	<b>OK</b>
Write Command	Response
<p>If text mode:  <b>(AT+CMGF=1)</b>  <b>AT+CMGWO=&lt;da&gt;,&lt;text&gt;[,&lt;tda&gt;]</b></p> <p>If pdu mode:  <b>(AT+CMGF=0)</b>  <b>AT+CMGWO=&lt;length&gt;,&lt;pducontent&gt;</b></p>	<p>+CMGWO command stores message (either SMS-DELIVER or SMS-SUBMIT) to memory storage &lt;mem2&gt;. But it's different from AT+CMGW. This command only need one time input, and wait for "&gt;" needless.</p>
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;da&gt;</b>	Mandatory parameter. Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tda>.
<b>&lt;text&gt;</b>	Mandatory parameter. Content of message.
<b>&lt;tda&gt;</b>	Optional parameter. TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
<b>&lt;length&gt;</b>	Mandatory parameter. Integer type value indicating in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets.
<b>&lt;pducontent&gt;</b>	Mandatory parameter. Content of message.

Example:

Commands	Response
<b>AT+CMGWO="10086","CMGWO TEST"</b>	<b>AT+CMGWO="10086","CMGWO TEST"</b>



<b>AT+CMGWO=18,"0891683110801105F011000D91688185630049F40000000366B20C"</b>	<b>AT+CMGWO=18,"0891683110801105F011000D91688185630049F40000000366B20C"</b>
<b>AT+CMGWO=?</b>	<b>OK</b>

### 3.3.5.6.7 AT+CMGSEX Send Message

Send Message

Test Command	Response
<b>AT+CMGSEX=?</b>	<b>OK</b>
Write Command	Response
<b>(AT+CMGF=1)</b> <b>AT+CMGSEX=&lt;da&gt;[,&lt;toda&gt;][,&lt;mr&gt;,&lt;msg_seg&gt;,&lt;msg_total&gt;]</b> <b>&lt;CR&gt;</b> Text is entered. <CTRL-Z/ESC>  If pdu mode: <b>(AT+CMGF=0)</b> <b>AT+CMGSEX=&lt;length&gt;&lt;CR&gt;</b> <b>&gt;</b> PDU is entered <CTRL-Z/ESC>	+CMGSEX is used to send message from a TE to the network (SMS-SUBMIT).  NOTE: In text mode, the maximum length of an SMS depends on the used coding scheme: For single SMS, it is 160 characters if the 7 bit GSM coding scheme is used; For multiple long sms, it is 153 characters if the 7 bit GSM coding scheme is used.
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;da&gt;</b>	Mandatory parameter. Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.

<b>&lt;tda&gt;</b>	Optional parameter. TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129). The range of value is from 128 to 255.
<b>&lt;mr&gt;</b>	Optional parameter. Message Reference. GSM 03.40 TP-Message-Reference in integer format.
<b>&lt;msg_seg&gt;</b>	Optional parameter. The segment number for long sms.
<b>&lt;msg_total&gt;</b>	Optional parameter. The total number of the segments for long sms. Its range is from 2 to 255.
<b>&lt;length&gt;</b>	Mandatory parameter. Integer type value indicating in PDU mode (AT+CMGF=0), the length of the actual TP data unit in octets.

Example:

Commands	Response
<b>AT+CMGSEX="10086",129,1,2&lt;CR&gt;(TEXT MODE)</b>	<b>&gt; CMGSEX part1&lt;ctrl-Z/ESC&gt; +CMGSEX: 129 OK</b>
<b>AT+CMGSEX="10086",129,2,2&lt;CR&gt;(TEXT MODE)</b>	<b>AT+CMGSEX="10086",129,2,2&lt;CR&gt;(TEXT MODE)</b>
<b>AT+CMGSEX="10086",129,2,2&lt;CR&gt;(TEXT MODE)</b>	<b>OK</b>

### 3.3.5.6.8 AT+CMGENREF Generate a New Message Reference

Generate a New Message Reference

Execution Command	Response
<b>AT+CMGENREF</b>	+CMGENREF command is used to generate a new message reference which can be used by AT+CMGSEX.  Note : Message Reference. GSM 03.40 TP-Message-Reference in integer format.
Test Command	Response
<b>AT+CMGENREF=?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+CMGENREF</b>	<b>+CMGENREF:123</b> <b>OK</b>
<b>AT+CMGENREF=?</b>	<b>OK</b>

### 3.3.5.6.9 AT+CMSSEX Send Multi Messages from Storage

Send Multi Messages from Storage

Test Command	Response
<b>AT+CMSSEX=?</b>	<b>OK</b>
Write Command	Response
<b>AT+CMSSEX=</b> <b>&lt;index&gt; [,&lt;index&gt;[,...]]</b>	+CMSSEX command is used to send messages with location value <index1>,<index2>,<index3>... from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).The max count of index is 10 one time.
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero.

Example:

Commands	Response
<b>AT+CMGL="ALL"</b>	<b>+CMGL: 1,"STO UNSENT","10086",,</b> <b>SMS info 1</b> <b>+CMGL: 2,"STO UNSENT","10086",,</b> <b>SMS info 2</b> <b>OK</b>

<b>AT+CMSSEX=1,2,3</b>	<b>+CMSSEX: 124</b>
	<b>+CMSSEX: 125</b>
	<b>+CMS ERROR: 321</b>
	<b>OK</b>

### 3.3.5.6.10 AT+CMSSEXM Send Message from Storage to Multi DA

Send Message from Storage to Multi DA

Test Command	Response
<b>AT+CMSSEXM=?</b>	<b>OK</b>
Write Command	Response
<b>AT+CMSSEXM=</b> <b>&lt;index&gt;,</b> <b>&lt;storage&gt;,&lt;pb_index1&gt;</b> <b>[,&lt;pb_index2&gt;[,&lt;...&gt;]]</b>	+CMSSEXM command is used to send message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).The DA is the PB index in the specified PB storage max to 10.
Reference	Note
3GPP TS 27.005	

Parameters are defined below:

Parameters	Description
<b>&lt;index&gt;</b>	Mandatory parameter. Integer type; value in the range of location numbers supported by the associated memory and start with zero.
<b>&lt;storage&gt;</b>	Mandatory parameter. Values reserved by the present document: "DC" -> ME dialed calls list. Capacity: 100 entries max. "MC" -> ME missed calls list. Capacity: 100 entries max. "RC" -> ME received calls list. Capacity: 100 entries max. "SM" -> SIM phonebook. Capacity: depending on SIM card "ME" -> Mobile Equipment phonebook. Capacity: 500 entries max.
<b>&lt;pb_index&gt;</b>	Mandatory parameter. Integer type value in the range of location numbers of phonebook memory.

Example:

Commands	Response
----------	----------

<b>AT+CMGL="ALL"</b>	<b>+CMGL: 0,"STO UNSENT","10086",, CMGWO TEST OK</b>
<b>AT+CPBS="DC"</b>	<b>OK</b>
<b>AT+CPBR=1,50</b>	<b>+CPBR: 2,"*99#",129,"",",",0,, +CPBR: 3,"",129,"",",",0,, +CPBR: 4,"*99#",129,"",",",0,, +CPBR: 5,"10086",129,"",",",0,, OK</b>
<b>AT+CMSSEX=0,"DC",5,6</b>	<b>+CMSSEX: 126 +CMS ERROR: 313 OK</b>

### 3.3.5.6.11 AT^HSMSSS HSMSSS additional parameters

HSMSSS additional parameters

Test Command	Response
<b>AT^HSMSSS=?</b>	Test command returns range of the parameters.
Read Command	Response
<b>AT^HSMSSS?</b>	Read command returns the current configuration value of the parameter
Write Command	Response
<b>AT^HSMSSS= &lt;ack&gt;[,&lt;pvt&gt;[,&lt;fmt&gt;[,&lt;prv&gt;]]]</b>	Set values for additional parameters needed when a short message is sent to the network or placed in a storage in text mode.
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;ack&gt;</b>	Status Report. 0 Not need statusreport 1 Need status report
<b>&lt;prt&gt;</b>	Priority 0 Normal 1 Interactive 2 Urgent 3 Emergency
<b>&lt;fmt&gt;</b>	Format 1 ASCII 6 UNICODE
<b>&lt;prv&gt;</b>	Privacy 0 Normal 1 Restricted 2 Confidential 3 Secret

Example:

Commands	Response
<b>AT^HSMSSS=0,0,6,0</b>	<b>OK</b>
<b>AT^HSMSSS?</b>	<b>^HSMSSS: 0,0,6,0</b>
<b>AT^HSMSSS=?</b>	<b>^HSMSSS: (0,1),(0,1,2,3),(1,6),(0,1,2,3)</b>
<b>AT^HSMSSS</b>	<b>OK</b>

### 3.3.5.6.12 SMS CMS error code enum:

Error Code	Error information
107	DSAT_CMS_OTHER_GENERAL_PROBLEMS
300	DSAT_CMS_ME_FAILURE
301	DSAT_CMS_SERVICE_RESERVED
302	DSAT_CMS_OP_NOT_ALLOWED
303	DSAT_CMS_OP_NOT_SUPPORTED
304	DSAT_CMS_INVALID_PDU_PARAM
305	DSAT_CMS_INVALID_TXT_PARAM
310	DSAT_CMS_SIM_NOT_INSERTED
311	DSAT_CMS_SIM_PIN_REQ
312	DSAT_CMS_PHSIM_PIN_REQ
313	DSAT_CMS_SIM_FAILURE

314	DSAT_CMS_SIM_BUSY
315	DSAT_CMS_SIM_WRONG
316	DSAT_CMS_SIM_PUK_REQ
317	DSAT_CMS_SIM_PIN2_REQ
318	DSAT_CMS_SIM_PUK2_REQ
320	DSAT_CMS_MEM_FAILURE
321	DSAT_CMS_INVALID_INDEX
322	DSAT_CMS_MEM_FULL
330	DSAT_CMS_SCA_ADDR_UNKNOWN
331	DSAT_CMS_NO_SERVICE
332	DSAT_CMS_NETWORK_TIMEOUT
350/500	DSAT_CMS_UNKNOWN_ERR
510	DSAT_CMS_MSG_BLOCKED

### 3.3.5.7 AT Commands for Status Control

#### 3.3.5.7.1 AT+CICCID Read ICCID from SIM Card

This command is used to Read the ICCID from SIM card

Execution Command	Response
<b>AT+CICCID</b>	<b>+ICCID: &lt;ICCID&gt;</b> <b>OK</b>  <b>ERROR</b> <b>+CME ERROR: &lt;err&gt;</b>
Test Command	Response
<b>AT+CICCID=?</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;ICCID&gt;</b>	Integrate circuit card identity, a standard ICCID is a 20-digit serial number of the SIM card, it presents the publish state, network code, publish area, publish date, publish manufacture and press serial number of the SIM card.

Example:

Commands	Response
<b>AT+CICCID</b>	<b>+ICCID: 898600700907A6019125</b>  <b>OK</b>
<b>AT+CICCID=?</b>	<b>OK</b>
<b>AT+CICCID?</b>	<b>ERROR</b> (not support read command)
<b>AT+CICCID=</b>	<b>ERROR</b> (not support write command)



### 3.3.5.7.2 AT+SPIC Times Remain to Input SIM PIN/PUK

Times Remain to Input SIM PIN/PUK

Execution Command	Response
<b>AT+SPIC</b>	<p>This command is used to inquire times remain to input SIM PIN/PUK.</p> <p><b>+SPIC: &lt;pin1&gt;,&lt;puk1&gt;,&lt;pin2&gt;,&lt;puk2&gt;</b></p> <p><b>OK</b></p>
Test Command	Response
<b>AT+SPIC=?</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;pin1&gt;</b>	Times remain to input PIN1 code.
<b>&lt;puk1&gt;</b>	Times remain to input PUK1 code
<b>&lt;pin2&gt;</b>	Times remain to input PIN2 code.
<b>&lt;puk2&gt;</b>	Times remain to input PUK2 code.

Example:

Commands	Response
<b>AT+SPIC</b>	<p><b>+SPIC: 3,10,0,10</b></p> <p><b>OK</b></p>
<b>AT+SPIC=?</b>	<b>OK</b>
<b>AT+SPIC?</b> (not support read command)	<b>ERROR</b>
<b>AT+SPIC=0,0,0,0</b> (not support write command)	<b>ERROR</b>

### 3.3.5.7.3 AT+CSPN Get Service Provider Name from SIM

Get Service Provider Name from SIM

Execution Command	Response
<b>AT+CSPN</b>	<p>This command is used to get service provider name from SIM card.</p> <p><b>+CSPN:&lt;display mode&gt;,&lt;encoding_type&gt;,&lt;spn&gt;</b></p> <p><b>OK</b> or <b>ERROR</b> <b>+CME ERROR: &lt;err&gt;</b></p> <p>Note: When the data format is encoded as UCS2 Unicode, the data format is converted by the developer. Not modem data issue.</p>
Read Command	Response
<b>AT+CSPN=?</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;display mode&gt;</b>	0 - doesn't display PLMN. Already registered on PLMN. 1 - display PLMN
<b>&lt;encoding_type&gt;</b>	1 - GSM 7 bit alphabet 2 - UCS2 Unicode
<b>&lt;spn&gt;</b>	String type; service provider name on SIM

Example:

Commands	Response
<b>AT+CSPN</b>	<b>+CSPN: 0,1,"CMCC"</b>  <b>OK</b>
<b>AT+CSPN=?</b>	<b>OK</b>
<b>AT+CSPN?</b> (not support read command)	<b>ERROR</b>
<b>AT+CSPN=</b> (not support write command)	<b>ERROR</b>

### 3.3.5.7.4 AT+AUTOCSQ Set CSQ Report

Set CSQ report

Test Command	Response
<b>AT+AUTOCSQ=?</b>	<p>Test command reports the the range of setting values for the parameter &lt; auto &gt;and&lt;mode&gt;</p> <p><b>+AUTOCSQ: (list of supported&lt;auto&gt;s),(list of supported&lt;mode&gt;s)</b></p> <p><b>OK</b></p>
Read Command	Response
<b>AT+AUTOCSQ?</b>	<p><b>+AUTOCSQ: 1,1</b></p> <p><b>OK</b></p>
Write Command	Response
<b>AT+AUTOCSQ=&lt;auto&gt;,&lt;mode&gt;</b>	<p>This command is used to enable or disable automatic report CSQ information, when automatic report enabled, the module reports CSQ information every five seconds or only after &lt;rsi&gt; or &lt;ber&gt; is changed, the format of automatic report is "+CSQ: &lt;rsi&gt;,&lt;ber&gt;".</p> <p><b>OK</b></p>

Parameters are defined below:

Parameters	Description
<b>&lt;auto&gt;</b>	<p>0 – disable automatic report</p> <p>1 – enable automatic report</p>
<b>&lt;mode&gt;</b>	<p>0 – CSQ automatic report every five seconds</p> <p>1 – CSQ automatic report only after &lt;rsi&gt; or &lt;ber&gt; is changed</p>

Example:

Commands	Response
<b>AT+AUTOCSQ=1,1</b>	<p><b>OK</b></p> <p><b>+CSQ: 23,0 (when &lt;rsi&gt; or &lt;ber&gt; changing)</b></p>

<b>AT+AUTOCSQ?</b>	<b>+AUTOCSQ: 1,1</b>  <b>OK</b>
<b>AT+AUTOCSQ=?</b>	<b>+AUTOCSQ: (0-1),(0-1)</b>  <b>OK</b>
<b>AT+AUTOCSQ</b>	<b>ERROR</b>

### 3.3.5.7.5 AT+CPOF Power Down the Module

Power Down the Module

Execution Command	Response
<b>AT+CPOF</b>	This command is used to power off the module. Once the AT+CPOF command is executed, The module will store user data and deactivate from network, and then shutdown. <b>OK</b>
Test Command	Response
<b>AT+CPOF=?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+CPOF</b>	<b>OK</b>
<b>AT+CPOF=?</b>	<b>OK</b>
<b>AT+CPOF?</b> (not support read command)	<b>ERROR</b>

### 3.3.5.7.6 AT+CRESET Reset the Module

This command is used to reset the module.

Execution Command	Response
<b>AT+CRESET</b>	This command is used to reset the module. <b>OK</b>
Test Command	Response
<b>AT+CRESET=?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+CRESET</b>	<b>OK</b>
<b>AT+CRESET=?</b>	<b>OK</b>
<b>AT+CRESET?</b> (not support read command)	<b>ERROR</b>

### 3.3.5.7.7 AT+SIMEI Set IMEI for the Module

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

Execution Command	Response
<b>AT+SIMEI</b>	<b>+SIMEI: &lt;imei&gt;</b>  <b>OK</b>
Test Command	Response
<b>AT+SIMEI=?</b>	<b>OK</b>
Read Command	Response
<b>AT+SIMEI?</b>	<b>+SIMEI: &lt;imei&gt;</b>  <b>OK</b>

Write Command	Response
<b>AT+SIMEI=&lt;imei&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;imei&gt;</b>	The 15-digit IMEI value.

Example:

Commands	Response
<b>AT+SIMEI=357396012183170</b>	<b>OK</b>
<b>AT+SIMEI?</b>	<b>+SIMEI: 357396012183170</b> <b>OK</b>
<b>AT+SIMEI</b>	<b>+SIMEI: 357396012183170</b> <b>OK</b>
<b>AT+SIMEI=?</b>	<b>OK</b>

### 3.3.5.7.8 AT+CSQDELTA Set RSSI Delta Change Threshold

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

Test Command	Response
<b>AT+CSQDELTA=?</b>	<b>+CSQDELTA: (list of supported &lt;delta&gt;s)</b> <b>OK</b>

Read Command	Response
<b>AT+CSQDELTA?</b>	<b>+CSQDELTA: &lt;delta&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+CSQDELTA=&lt;delta&gt;</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;delta&gt;</b>	Range: from 0 to 5

Example:

Commands	Response
<b>AT+CSQDELTA=3</b>	<b>OK</b>
<b>AT+CSQDELTA?</b>	<b>+CSQDELTA: 3</b>  <b>OK</b>
<b>AT+CSQDELTA=?</b>	<b>+CSQDELTA: (0-5)</b>  <b>OK</b>
<b>AT+CSQDELTA</b>	<b>ERROR</b>

### 3.3.5.8 AT Commands for GPIO Control

#### 3.3.5.8.1 AT+CGDRT Set the Direction of Specified GPIO

Set the direction of specified GPIO

Test Command	Response
<b>AT+CGDRT=?</b>	<b>+CGDRT: (list of supported&lt; gpio_num &gt;s),(list of supported&lt; gpio_io &gt;s)</b>  <b>OK</b> L506SC only support GPIO 75
Write Command	Response
<b>AT+CGDRT=&lt;gpio_num&gt;,&lt;gpio_io&gt;</b>	This command is used to set the specified GPIO to input or output state. If setting to input state, then this GPIO can not be set to high or low value.  <b>OK</b>
Write Command	Response
<b>AT+CGDRT=&lt;gpio_num&gt;</b>	When only one parameter is used to read the configuration of the current GPIO port  <b>+CGDRT: &lt;gpio_num&gt;,&lt;gpio_io&gt;</b>  <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;gpio_num&gt;</b>	supported operating gpio num
<b>&lt;gpio_io&gt;</b>	0 – in 1 – out

Example:

Commands	Response
<b>AT+CGDRT=?</b>	<b>+CGDRT: (11,75),(0-1)</b>  <b>OK</b>
<b>AT+CGDRT=75,1</b>	<b>OK</b>



<b>AT+CGDRT=75</b>	<b>+CGDRT: 75,1</b>  <b>OK</b>
<b>AT+CGDRT?</b> (not support)	<b>ERROR</b>
<b>AT+CGDRT</b> (not support)	<b>ERROR</b>

### 3.3.5.8.2 AT+CGSETV Set the Value of Specified GPIO

Set the Value of Specified GPIO

Test Command	Response
<b>AT+CGSETV=?</b>	<b>+CGSETV: (list of supported&lt; gpio_num &gt;s),(list of supported&lt; gpio_hl &gt;s)</b>  <b>OK</b>
Write Command	Response
<b>AT+CGSETV=&lt;gpio_num&gt;,&lt;gpio_hl&gt;</b>	This command is used to set the value of the specified GPIO to high or low. GPIO should first be set to output mode with +CGDRT <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;gpio_num&gt;</b>	supported operating gpio num
<b>&lt;gpio_hl&gt;</b>	0 – low 1 – high

Example:

Commands	Response
<b>AT+CGSETV=?</b>	<b>+CGSETV: (11,75),(0-1)</b>  <b>OK</b>

<b>AT+CGSETV=75,1</b>	<b>OK</b>
<b>AT+CGSETV?</b> (not support)	<b>ERROR</b>
<b>AT+CGSETV</b> (not support)	<b>ERROR</b>

### 3.3.5.8.3 AT+CGGETV Get the Value of Specified GPIO

Get the Value of Specified GPIO

Test Command	Response
<b>AT+ CGGETV =?</b>	<b>+CGDRT: list of supported&lt; gpio_num &gt;s</b>  <b>OK</b>
Write Command	Response
<b>AT+CGGETV=&lt;gpio_num&gt;</b>	This command is used to get the value (high or low) of the specified GPIO. GPIO should first be set to input mode with +CGDRT <b>+CGGETV: &lt;gpio_num&gt;,&lt;gpio_hl&gt;</b> <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;gpio_num&gt;</b>	supported operating gpio num
<b>&lt;gpio_hl&gt;</b>	0 – low 1 – high

Example:

Commands	Response
<b>AT+CGGETV=?</b>	<b>+CGGETV: (11,75)</b>  <b>OK</b>
<b>AT+CGGETV=75</b>	<b>+CGGETV: 75,0</b>  <b>OK</b>

<b>AT+CGGETV?</b> (not support)	<b>ERROR</b>
<b>AT+CGGETV</b> (not support)	<b>ERROR</b>

#### 3.3.5.8.4 AT+CGFLY Flight Mode Control

##### Flight Mode Control

Test Command	Response
<b>AT+CGFLY=?</b>	<b>+CGFLY: (list of supported &lt;mode&gt;s)</b>  <b>OK</b>
Read Command	Response
<b>AT+ CGFLY?</b>	<b>+CGFLY: &lt;mode&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+CGFLY=&lt;mode&gt;</b>	This command is used to enable or disable FLIGHT GPIO port state, When enabled, the gpio port can control entry or exit flight mode  <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 – disable 1 – enable

Example:

Commands	Response
<b>AT+CGFLY=1</b>	<b>OK</b>

<b>AT+CGFLY?</b>	<b>+CGFLY: 1</b>  <b>OK</b>
<b>AT+CGFLY=?</b>	<b>+CGFLY: (0-1)</b>  <b>OK</b>
<b>AT+CGFLY</b> (not support)	<b>ERROR</b>

### 3.3.5.8.5 AT+CGNETLED Network LED Control

This command is used to set the Network LED state to enable or disable

Test Command	Response
<b>AT+CGNETLED=?</b>	<b>+CGNETLED: (list of supported &lt;mode&gt;s)</b>  <b>OK</b>
Read Command	Response
<b>AT+CGNETLED?</b>	<b>+CGNETLED: &lt;mode&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+CGNETLED=&lt;mode&gt;</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 – disable 1 – enable

Example:

Commands	Response
<b>AT+CGNETLED=1</b>	<b>OK</b>

<b>AT+CGNETLED?</b>	<b>+CGNETLED: 1</b>  <b>OK</b>
<b>AT+CGNETLED=?</b>	<b>+CGNETLED: (0-1)</b>  <b>OK</b>
<b>AT+CGNETLED</b> (not support)	<b>ERROR</b>

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### 3.3.5.9 AT Commands for LOCK

#### 3.3.5.9.1 AT+MLKSTA Get Lock State

This command is used to get lock state.

Read Command	Response
<b>AT+MLKSTA?</b>	<b>+MLKSTA:0    // No lock</b> <b>OK</b> or <b>+MLKSTA:1,&lt;lock_type&gt;    // Lock to &lt;lock_type&gt;</b> <b>OK</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;lock_type&gt;</b>	+MLKBAND    Lock band +MLKNET    Lock network +MLKSIM    Lock Sim card +MLKCELL    Lock cell

Example:

Commands	Response
<b>AT+MLKSTA?</b>	<b>+MLKSTA:0            // Lock is closed</b> <b>OK</b>
<b>AT+MLKSTA?</b>	<b>+MLKSTA:1,+MLKBAND            // Lock band</b> <b>OK</b>

#### 3.3.5.9.2 AT+CELLINFO Get Nearby Cell Information

Get Nearby Cell Information

Read Command	Response
<b>AT+CELLINFO?</b>	<b>+CELLINFO:&lt;net_mode&gt;,&lt;net&gt;</b> <b>&lt;n timer_1&gt;...&lt;n timer_n&gt;</b> <b>&lt;n timer_1&gt;...&lt;n timer_n&gt;</b> ..... <b>OK</b>  Nearby cell information for GSM For current and nearby cell <lac>,<cell_id>,<rsi> Nearby cell information for TDS-CDMA For current cell: <lac>,<cell_id>,<rsi> For nearby cell: <uarfcn>,<cpid>,<rsi> Nearby cell information for WCDMA For current cell: <lac>,<cell_id>,<rsi>,<ecio> For nearby cell: <uarfcn>,<psc>,<rsi>,<ecio> Nearby cell information for CDMA Only for current cell <sid>,<n timer_1>,<bid>,<refpn> Nearby cell information for LTE For current cell: <tac>,<cell_id>,<rsi> For nearby cell: <earfcn>,<pci>,<rsi>

Parameters are defined below:

Parameters	Description
<b>&lt;net_mode&gt;</b>	Current network mode 0 GSM 1 TDS-CDMA 2 WCDMA 3 CDMA 4 LTE

### 3.3.5.9.3 AT+MLKBAND Lock To Band

## Lock to band

Execution Command	Response
<b>AT+MLKBAND</b>	<p>This command is used to get current support's bands.</p> <p><b>AT+MLKBAND</b>  <b>+MLKBAND</b>  <b>0:&lt;band_1&gt;, ... ,&lt;band_n&gt;    // Support general bands</b>  <b>1:&lt;band_1&gt;, ... ,&lt;band_n&gt;    // Support LTE bands</b>  <b>2:&lt;band_1&gt;, ... ,&lt;band_n&gt;    // Support TDS bands</b></p> <p><b>OK</b></p>
Read Command	Response
<b>AT+MLKBAND?</b>	<p>This command is used to get current locked bands. Must lock to band in the first.</p> <p><b>AT+MLKBAND?</b>  <b>+MLKBAND</b>  <b>0:&lt;band_1&gt;, ... ,&lt;band_n&gt;    // Locked general bands</b>  <b>1:&lt;band_1&gt;, ... ,&lt;band_n&gt;    // Locked LTE bands</b>  <b>2:&lt;band_1&gt;, ... ,&lt;band_n&gt;    // Locked TDS bands</b></p> <p><b>OK</b>  or  <b>AT+MLKBAND?</b>  <b>+MLKBAND:0    // Band lock is closed</b>  <b>OK</b></p>
Write Command	Response
<b>AT+MLKBAND=&lt;state&gt;[,&lt;band_type&gt;,&lt;band_1&gt;...&lt;band_n&gt;]</b>	<p>This command is used to lock to band. The max bands number is 10 for every command.</p> <p><b>OK</b>  <b>ERROR</b></p>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
------------	-------------



<state>	0	Unlock from band
	1	Lock to band
<band_type>	0	Generalband
	1	LTE band
	2	TDS band
<band_1>...<band_n>	The band number for add/remove. The max number is 10.	

Example:

Commands	Response
AT+MLKBAND?	+MLKBAND:0 OK
AT+MLKBAND	+MLKBAND 0:8,9,20,22,23,24,27,31,44 1:1,3,5,7,8,18,23,35,36,37,38 2:1,6 OK
AT+MLKBAND=1,1,5	OK
AT+MLKBAND?	+MLKBAND 0:8,9,23,44 1:5 2:1,6 OK

#### 3.3.5.9.4 AT+MLKNET Lock To Network

Lock To Network

Read Command	Response
<b>AT+MLKNET?</b>	<b>AT+MLKNET?</b> <b>+MLKNET:0 // Network lock is closed</b> <b>OK</b>  or  <b>AT+MLKNET?</b> <b>+MLKNET:1,&lt;net_1&gt;, ... ,&lt;net_n&gt; // Locked networks</b> <b>OK</b>
Write Command	Response
<b>AT+MLKNET=&lt;state1&gt;</b>	This command is used to lock to network. Take effect after reboot +CFUN. <b>OK</b> <b>ERROR</b>
Write Command	Response
<b>AT+MLKNET=&lt;state2&gt;,&lt;net_1&gt;...&lt;net_n&gt;</b>	This command is used to add or remove networks which will be locked. The max networks number is 20 .Only can set less than 10 networks for every time. Must lock to network in the first. <b>OK</b> <b>ERROR</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;state1&gt;</b>	0    Unlock from network 1    Lock to network
<b>&lt;state2&gt;</b>	2    Add networks 3    Remove networks
<b>&lt;net_1&gt;...&lt;net_n&gt;</b>	The networks for add/remove. The max number is 10 for every time.

Example:

Commands	Response
----------	----------

<b>AT+MLKNET?</b>	<b>+MLKNET:0</b> <b>OK</b>
<b>AT+MLKNET=1</b>	<b>OK</b>
<b>AT+MLKNET?</b>	<b>+MLKNET:1</b> <b>OK</b>
<b>AT+MLKNET=2,46001,46002,46003</b>	<b>OK</b>
<b>AT+MLKNET?</b>	<b>+MLKNET:1,46001,46002,46003</b> <b>OK</b>
<b>AT+MLKNET=3,46002</b>	<b>OK</b>
<b>AT+MLKNET?</b>	<b>+MLKNET:1,46001,46003</b> <b>OK</b>

### 3.3.5.9.5 AT+MLKSIM Lock To Sim Card

Lock To Sim Card

Read Command	Response
<b>AT+MLKSIM?</b>	<b>AT+MLKSIM?</b> <b>+MLKSIM:0 // SIM lock is closed</b> <b>OK</b> or <b>AT+MLKSIM?</b> <b>+MLKSIM:1,&lt;imsi&gt; // Locked sim card by IMSI</b> <b>OK</b>
Write Command	Response
<b>AT+MLKSIM=&lt;state&gt;[,&lt;imsi&gt;]</b>	This command is used to lock to sim card. Take effect after reboot +CFUN.  <b>OK</b> <b>ERROR</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;state&gt;</b>	0    Unlock from sim.
	1    Lock to sim,must set <imsi> for this.
<b>&lt;imsi&gt;</b>	The IMSI of sim card.The length of IMSI is 15.This only set when <state> is 1

Example:

Commands	Response
<b>AT+MLKSIM?</b>	<b>+MLKSIM:0</b> <b>OK</b>
<b>AT+MLKSIM=1,460011234567890</b>	// Lock to sim which IMSI is "460011234567890 " <b>OK</b>
<b>AT+MLKSIM?</b>	<b>+MLKSIM:1,460011234567890</b> <b>OK</b>

#### 3.3.5.9.6 AT+MLKCELL Lock To Cell

Lock To Cell

Execution Command	Response
<b>AT+MLKCELL</b>	<b>+MLKCELL:&lt;net_type&gt;,&lt;net_string&gt;</b> <b>&lt;data_1_1&gt;[,&lt;data_1_2&gt;]; ... ;&lt;data_n_1&gt;[,&lt;data_n_2&gt;]</b> <b>OK</b> or <b>ERROR</b>

Read Command	Response
<b>AT+MLKCELL?</b>	<b>+MLKCELL:0</b> // Lock cell is closed <b>OK</b> or <b>+MLKCELL:1</b> // Lock cell is opened <b>1,0/arfcn</b> // GSM <b>2,0/uarfcn</b> // WCDMA <b>3,0/earfcn,pci</b> // LTE <b>OK</b>
Write Command	Response
<b>AT+MLKCELL=&lt;state&gt;[,&lt;net_type&gt;[,&lt;data1&gt;[,&lt;data2&gt;]]]</b>	This command is used to lock to cell. Take effect after reboot Modem.  <b>OK</b> <b>ERROR</b>
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<b>&lt;state&gt;</b>	0 Unlock from cell, If not set <net_type> means unlock all. 1 Lock to cell, must set <data1> and may be set <data2>
<b>&lt;net_type&gt;</b>	1 GSM 2 WCDMA 3 LTE (Take effect only for "LTE only" mode)
<b>&lt;data1&gt;/&lt;data2&gt;</b>	Different networks for different parameters For GSM: <data1> is arfcn, not set <data2> (0 < arfcn < 65536) For WCDMA: <data1> is uarfcn, not set <data2> (0 < uarfcn < 65536) For LTE: <data1> is earfcn, <data2> is pci. The earfcn must be in the range of support, otherwise the feature will be invalidated. (0 < earfcn < 65536 0 <= pci <= 503)
<b>&lt;net_string&gt;</b>	1 GSM 2 WCDMA 3 LTE

<b>&lt;data_n_1&gt;/&lt;data_n_2&gt;</b>	Different networks for different parameters For GSM: <data_n_1> is arfcn,no <data_n_2> For WCDMA:<data_n_1> is uarfcn,no <data_n_2> For LTE:<data_n_1> is earfcn,<data_n_2> is pci
--	---

Example:

Commands	Response
<b>AT+MLKCELL?</b>	<b>+MLKCELL:0</b> // Lock cell is closed.  <b>OK</b>
<b>AT+MLKCELL</b>	<b>+MLKCELL:3,LTE</b> // Current network is LTE  <b>1650,54;1650,411;1650,56;1650,80;1506,80;1506,337</b> // There are 6 available cells,and the first cell's earfcn is 1650,pci is 54 ...  <b>OK</b>
<b>AT+MLKCELL=1,3,1650,56</b>	// Lock to LTE cell which earfcn is 1650,pci is 56 <b>OK</b>
<b>AT+MLKCELL?</b>	<b>+MLKCELL:1</b> <b>1,0</b> // Not lock to GSM <b>2,0</b> // Not lock to WCDMA <b>3,1650,56</b> // Locked to LTE cell and the cell's earfcn is 1650,pci is 56  <b>OK</b>
<b>AT+MLKCELL</b>	<b>+MLKCELL:2,WCDMA</b> // Current network is WCDMA 10713;10714 // There are 2 available cells,and the first cell's uarfcn is 10713 <b>OK</b>
<b>AT+MLKCELL=1,2,10714</b>	// Lock to WCDMA cell which uarfcn is 10714 <b>OK</b>
<b>AT+MLKCELL?</b>	<b>+MLKCELL:1</b> <b>1,0</b> <b>2,10714</b> //Locked to WCDMA cell and the cell's uarfcn is 10714 <b>3,0</b> <b>OK</b>

### 3.3.5.9.7 Bands Lists

Parameters	General Bands
1	BC0_A      /**< Band Class 0      A-System. */
2	BC0_B      /**< Band Class 0      B-System. */
3	BC1      /**< Band Class 1      all blocks. */
4	BC2      /**< Band Class 2 place holder. */
5	BC3      /**< Band Class 3      A-System. */
6	BC4      /**< Band Class 4      all blocks. */
7	BC5      /**< Band Class 5      all blocks. */
8	GSM_DCS_1800      /**< GSM Digital Cellular Standard (DCS) band. */
9	GSM_EGSM_900      /**< GSM Extended GSM (E-GSM) band. */
10	GSM_PGSM_900      /**< GSM Primary GSM (P-GSM) band. */
11	BC6      /**< Band Class 6. */
12	BC7      /**< Band Class 7. */
13	BC8      /**< Band Class 8. */
14	BC9      /**< Band Class 9. */
15	BC10      /**< Band Class 10. */
16	BC11      /**< Band Class 11. */
17	GSM_450      /**< GSM 450 band. */
18	GSM_480      /**< GSM 480 band. */
19	GSM_750      /**< GSM 750 band. */
20	20      GSM_850      /**< GSM 850 band. */
21	GSM_RGSM_900      /**< GSM Railways GSM Band. */
22	GSM_PCS_1900      /**< GSM PCS band. */
23	WCDMA_I_IMT_2000      /**< WCDMA EuropeJapanand China IMT 2100 band. */
24	WCDMA_II_PCS_1900      /**< WCDMA US PCS 1900 band. */

25	WCDMA_III_1700	/**< WCDMA Europe and China DCS 1800 band. */
26	WCDMA_IV_1700	/**< WCDMA US 1700 band. */
27	WCDMA_V_850	/**< WCDMA US850 band. */
28	WCDMA_VI_800	/**< WCDMA Japan 800 band. */
29	BC12	/**< Band Class 12. */
30	BC14	/**< Band Class 14. */
31	RESERVED_2	/**< Reserved 2. */
32	BC15	/**< Band Class 15. */
33	WLAN_US_2400	/**< WLAN US 2400 band. */
34	WLAN_EUROPE_2400	/**< WLAN ETSI 2400 band. */
35	WLAN_FRANCE_2400	/**< WLAN France 2400 band. */
36	WLAN_SPAIN_2400	/**< WLAN Spain 2400 band. */
37	WLAN_JAPAN_2400	/**< WLAN Japan 2400 band. */
38	WLAN_US_5000	/**< WLAN US 2400 band. */
39	WLAN_EUROPE_5000	/**< WLAN Europe 5000 band. */
40	WLAN_FRANCE_5000	/**< WLAN France 5000 band. */
41	WLAN_SPAIN_5000	/**< WLAN Spain 5000 band. */
42	WLAN_JAPAN_5000	/**< WLAN Japan 5000 band. */
43	WCDMA_VII_2600	/**< WCDMA Europe 2600 band. */
44	WCDMA_VIII_900	/**< WCDMA Europe and Japan 900 band. */
45	WCDMA_IX_1700	/**< WCDMA Japan 1700 band. */
46	BC17	/**< Band Class 17. */
47	BC18	/**< Band Class 18. */
48	BC19	/**< Band Class 19. */
49	WCDMA_XIX_850	/**< WCDMA Japan 850 band. */
50	WCDMA_XI_1500	/**< WCDMA 1500 band. */

Parameters

LTE Bands



1	BAND1	/**< UL:1920-1980; DL:2110-2170. */
2	BAND2	/**< UL:1850-1910; DL:1930-1990. */
3	BAND3	/**< UL:1710-1785; DL:1805-1880. */
4	BAND4	/**< UL:1710-1755; DL:2110-2155. */
5	BAND5	/**< UL: 824-849; DL: 869-894. */
6	BAND6	/**< UL: 830-840; DL: 875-885. */
7	BAND7	/**< UL:2500-2570; DL:2620-2690. */
8	BAND8	/**< UL: 880-915; DL: 925-960. */
9	BAND9	/**< UL:1749.9-1784.9; DL:1844.9-1879.9. */
10	BAND10	/**< UL:1710-1770; DL:2110-2170. */
11	BAND11	/**< UL:1427.9-1452.9; DL:1475.9-1500.9. */
12	BAND12	/**< UL:698-716; DL:728-746. */
13	BAND13	/**< UL: 777-787; DL: 746-756. */
14	BAND14	/**< UL: 788-798; DL: 758-768. */
15	BAND17	/**< UL: 704-716; DL: 734-746. */
16	BAND18	/**< UL: 815-830; DL: 860-875. */
17	BAND19	/**< UL: 830-845; DL: 875-890. */
18	BAND20	/**< UL: 832-862; DL: 791-821. */
19	BAND21	/**< UL: 1447.9-1462.9; DL: 1495.9-1510.9. */
20	BAND23	/**< UL: 2000-2020; DL: 2180-2200 */
21	BAND24	/**< UL: 1626.5-1660.5; DL: 1525 -1559. */
22	BAND25	/**< UL: 1850-1915; DL: 1930 -1995 . */
23	BAND26	/**< UL: 814-849; DL: 859 -894 . */
24	BAND27	/**< UL: 807.5 - 824; DL: 852 - 869 */
25	BAND28	/**< UL: 703-748; DL: 758-803 . */
26	BAND29	/**< UL: 1850-1910 or 1710 - 1755; DL: 716-728. */
27	BAND30	/**< UL: 2305 - 2315 ; DL: 2350 - 2360 */
28	BAND31	/**< UL: 452.5 - 457.5 ; DL: 462.5 - 467.5 */
29	BAND32	/**< DL: 9920 - 10359 */

30	BAND33	/**< UL: 1900-1920; DL: 1900-1920. */
31	BAND34	/**< UL: 2010-2025; DL: 2010-2025. */
32	BAND35	/**< UL: 1850-1910; DL: 1850-1910. */
33	BAND36	/**< UL: 1930-1990; DL: 1930-1990. */
34	BAND37	/**< UL: 1910-1930; DL: 1910-1930. */
35	BAND38	/**< UL: 2570-2620; DL: 2570-2620. */
36	BAND39	/**< UL: 1880-1920; DL: 1880-1920. */
37	BAND40	/**< UL: 2300-2400; DL: 2300-2400. */
38	BAND41	/**< UL: 2496-2690; DL: 2496-2690 */
39	BAND42	/**< UL: 3400-3600; DL: 3400-3600 */
40	BAND43	/**< UL: 3600-3800; DL: 3600-3800 */
41	BAND125	/**< DL: 64835 - 64859 */
42	BAND126	/**< DL: 64860 - 64974 */
43	BAND127	/**< DL: 64975 - 64999 */

Parameters	TDS Bands
1	BANDA /**< TDS Band A 1900-1920 MHz, 2010-2020 MHz */
2	BANDB /**< TDS Band B 1850-1910 MHz, 1930-1990 MHz */
3	BANDC /**< TDS Band C 1910-1930 MHz */
4	BANDD /**< TDS Band D 2570-2620 MHz */
5	BANDE /**< TDS Band E 2300-2400 MHz */
6	BANDF /**< TDS Band F 1880-1920 MHz */

### 3.3.5.10 AT Commands for FTP

#### 3.3.5.10.1 AT+CFTPPORT Set FTP Server Port

Set FTP Server Port

Test Command	Response
<b>AT+CFTPPORT=?</b>	<b>+CFTPPORT: (list of supported &lt;port&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CFTPPORT?</b>	<b>+CFTPPORT: &lt;port&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPPORT=&lt;port&gt;</b>	This command is used to set FTP server port. <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;port&gt;</b>	The FTP server port, from 1 to 65535, and default value is 21.

Example:

Commands	Response
<b>AT+CFTPPORT=21</b>	<b>OK</b>
<b>AT+CFTPPORT?</b>	<b>+CFTPPORT: 21</b> <b>OK</b>
<b>AT+CFTPPORT=?</b>	<b>+CFTPPORT: (1-65535)</b> <b>OK</b>

#### 3.3.5.10.2 AT+CFTPMODE Set FTP Mode

Set FTP Mode

Test Command	Response
<b>AT+CFTPMODE=?</b>	<b>+CFTPMODE: (list of supported &lt;mode&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CFTPMODE?</b>	<b>+CFTPMODE: &lt;mode&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPMODE=&lt;mode&gt;</b>	This command is used to set FTP passive/proactive mode. Default is passive mode. <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	The FTP access mode:(now only support 0 – passive mode) 0 – passive mode. 1 – proactive mode

Example:

Commands	Response
<b>AT+CFTPMODE=1</b>	<b>OK</b>
<b>AT+CFTPMODE?</b>	<b>+CFTPMODE: 1</b> <b>OK</b>
<b>AT+CFTPMODE=?</b>	<b>+CFTPMODE: (0-1)</b> <b>OK</b>

### 3.3.5.10.3 AT+CFTPTLS Set FTP Security Mode

Set FTP Security Mode

Test Command	Response
<b>AT+CFTPTLS=?</b>	<b>+CFTPTLS: (0-2),(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT+CFTPTLS?</b>	<b>+ CFTPSERV: &lt; mode&gt;,&lt;cert&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPTLS=&lt;mode&gt;[,&lt;cert&gt;]</b>	This command is used to set FTP Security Mode. <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Default is 0. When mode is non 0, FTP will over TLS use SSL. 0 - None 1 - Implicit 2 - Explicit
<b>&lt;cert&gt;</b>	Whether to ignore a certificate, Default is 0 0 - Ignore 1 - Don't ignore

Example:

Commands	Response
<b>AT+ CFTPTLS=2,0</b>	<b>OK</b>
<b>AT+ CFTPTLS?</b>	<b>+ CFTPTLS: 2,0</b> <b>OK</b>
<b>AT+ CFTPTLS=?</b>	<b>+CFTPTLS: (0-2),(0-1)</b> <b>OK</b>

#### 3.3.5.10.4 AT+CFTPTYPE Set FTP Type

Set FTP Type

Test Command	Response
<b>AT+CFTPTYPE=?</b>	<b>+CFTPPORT: (list of supported &lt;type&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CFTPTYPE?</b>	<b>+CFTPPORT: &lt;type&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPTYPE=&lt;type&gt;</b>	This command is used to set FTP type. Default is binary type. <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;type&gt;</b>	I – binary type.      A – ASCII type.

Example:

Commands	Response
<b>AT+CFTPTYPE="A"</b>	<b>OK</b>
<b>AT+CFTPTYPE=I</b>	<b>OK</b>
<b>AT+CFTPTYPE?</b>	<b>+CFTPTYPE: A</b> <b>OK</b>
<b>AT+CFTPTYPE=?</b>	<b>+CFTPTYPE: ("I","A")</b> <b>OK</b>

### 3.3.5.10.5 AT+CFTPSERV Set FTP Server Domain Name or IP Address

Set FTP Server Domain Name or IP Address

Test Command	Response
<b>AT+CFTPSERV=?</b>	<b>OK</b>

Read Command	Response
<b>AT+CFTPSERV?</b>	<b>+ CFTPSERV: "&lt;address&gt;"</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPSERV =</b> <b>"&lt;address&gt;"</b>	This command is used to set FTP server domain name or IP address. <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;address&gt;</b>	The FTP server domain name or IP address. The maximum length is 100.

Example:

Commands	Response
<b>AT+CFTPSERV="www.mydomain.com"</b>	<b>OK</b>
<b>AT+CFTPSERV?</b>	<b>+CFTPSERV: "www.mydomain.com"</b> <b>OK</b>
<b>AT+CFTPSERV=?</b>	<b>OK</b>
<b>AT+CFTPSERV="10.0.0.127"</b>	<b>OK</b>

### 3.3.5.10.6 AT+CFTPUN Set User Name for FTP Access

Set User Name for FTP Access

Test Command	Response
<b>AT+CFTPUN=?</b>	<b>OK</b>

Read Command	Response
<b>AT+CFTPUN?</b>	<b>+CFTPUN: "&lt;name&gt; "</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPUN="&lt;name&gt;"</b>	This command is used to set user name for FTP server access. <b>OK</b> Note: A single input no more than 1535 bytes

Parameters are defined below:

Parameters	Description
<b>&lt;name&gt;</b>	The user name for FTP server access. The maximum length is 30.

Example:

Commands	Response
<b>AT+CFTPUN="myname"</b>	<b>OK</b>
<b>AT+CFTPUN="anonymous"</b>	<b>OK</b>
<b>AT+CFTPUN?</b>	<b>+CFTPUN: "myname"</b> <b>OK</b>
<b>AT+CFTPUN=?</b>	<b>OK</b>

### 3.3.5.10.7 AT+CFTPPW Set User Password for FTP Access

Set User Password for FTP Access

Test Command	Response
<b>AT+CFTPPW=?</b>	<b>OK</b>



Read Command	Response
<b>AT+CFTPPW?</b>	<b>+ CFTPPW: "&lt;password&gt;"</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPPW=</b> <b>"&lt;password&gt;"</b>	This command is used to set user password for FTP server access. <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;password&gt;</b>	The user password for FTP server access. The maximum length is 40.

Example:

Commands	Response
<b>AT+CFTPPW="mypass"</b>	<b>OK</b>
<b>AT+CFTPPW?</b>	<b>+CFTPPW: "mypass"</b> <b>OK</b>
<b>AT+CFTPPW=?</b>	<b>OK</b>

### 3.3.5.10.8 AT+CFTPGETFILE Get a File from FTP Server to EFS

Get a File from FTP Server to EFS

Test Command	Response
<b>AT+CFTPGETFILE=?</b>	<b>+CFTPGETFILE: „(0-2147483647)</b> <b>OK</b>

Read Command	Response
<b>AT+CFTPGETFILE?</b>	<b>+CFTPGETFILE: "remote_path", "local_path" ,&lt;rest_size&gt; OK</b>
Write Command	Response
<b>AT+CFTPGETFILE= "&lt; remote_path&gt;"," &lt;local_path&gt;" [,&lt;rest_size&gt;]</b>	<p>This command is used to download a file from FTP server to module EFS.</p> <p><b>OK</b></p> <p><b>+CFTPGETFILE:SUCCESS,&lt;length&gt;</b></p> <p><b>or</b></p> <p><b>OK</b></p> <p><b>+CFTPGETFILE:FAIL,&lt;err&gt;</b></p> <p><b>or</b></p> <p><b>+CFTPGETFILE:FAIL,&lt;err&gt;</b></p> <p><b>ERROR</b></p>

Parameters are defined below:

Parameters	Description
<b>&lt; remote_path &gt;</b>	The remote file path. The maximum length is 512. If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt; local_path &gt;</b>	The efs file path. The maximum length is 512. Local file name string not support non-ascii and cannot contain: / \ : , * ? " > <   Note : local_path root directory "/" is default "C: / " in EFS
<b>&lt;rest_size&gt;</b>	The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<b>&lt;err&gt;</b>	The error code of FTP operation.
<b>&lt;length&gt;</b>	The size of the download file

Example:

Commands	Response
----------	----------

<b>AT+CFTPGETFILE=</b> "/test/CXL/abc.txt", "/mydir/test1.txt"	<b>OK</b> ... <b>+CFTPGETFILE:SUCCESS,10245</b> <b>AT+CFTPGETFILE=</b> "/test/CXL/abc.txt", "/mydir/test1.txt",10 <b>AT+CFTPGETFILE={non-ascii}"2F746573742F63584C2F616263</b> <b>2E747874"</b> , "/mydir/test1.txt",10 <b>OK</b> ... <b>+CFTPGETFILE:SUCCESS,10235</b>
--	---

### 3.3.5.10.9 AT+CFTPPUTFILE Upload a File from Module EFS to FTP Server

Upload a File from Module EFS to FTP Server

Test Command	Response
<b>AT+CFTPPUTFILE=?</b>	<b>+CFTPPUTFILE: ,(0-2147483647)</b> <b>OK</b>
Read Command	Response
<b>AT+CFTPPUTFILE?</b>	<b>+CFTPGETFILE:"remote_path",</b> <b>"local_path" ,&lt;rest_size&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPPUTFILE="&lt;remote_path&gt;","&lt;local_path&gt;"</b> <b>[,&lt;rest_size&gt;]</b>	This command is used to upload a file from module EFS to FTP server. <b>OK</b> <b>+CFTPPUTFILE:SUCCESS</b> <b>or</b> <b>OK</b> <b>+CFTPPUTFILE:FAIL,&lt;err&gt;</b> <b>or</b> <b>+ CFTPPUTFILE:FAIL,&lt;err&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;remote_path&gt;</b>	The remote file path. The maximum length is 512. If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt;local_path&gt;</b>	The efs file path. The maximum length is 512. Note : local_path root directory "/" is default "C: / " in EFS
<b>&lt;rest_size&gt;</b>	The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<b>&lt;err&gt;</b>	The error code of FTP operation.

Example:

Commands	Response
<b>AT+CFTPPUTFILE ="/test/CXL/abc.txt" ,"/mydir/test1.txt"</b>	<b>OK</b> ... <b>+CFTPPUTFILE:SUCCESS</b>
<b>AT+CFTPPUTFILE= {non-ascii}"2F7465 73742F63584C2F61 62632E747874", "/mydir/test1.txt",10</b>	<b>OK</b> ... <b>+CFTPPUTFILE:SUCCESS</b>

### 3.3.5.10.10 AT+CFTPGET Get a File from FTP Server and Output it to SIO

Get a File from FTP Server and Output it to SIO

Test Command	Response
<b>AT+CFTPGET=?</b>	<b>+CFTPGET: ,(0-2147483647) OK</b>
Read Command	Response
<b>AT+CFTPGET?</b>	<b>+CFTPGETFILE:"remote_path", &lt;rest_size&gt; OK</b>

Write Command	Response
<b>AT+CFTPGET =</b> <b>"&lt;remote_path&gt;"</b> <b>[,&lt;rest_size&gt;]</b>	<p>This command is used to get a file from FTP server and output it to serial port.</p> <p><b>OK</b>  <b>+CFTPGET:DATA,&lt;len&gt;</b>  ...  <b>+CFTPGET:DATA, &lt;len&gt;</b>  ...  <b>+CFTPGET:SUCCESS, &lt;length&gt;</b></p> <p>or</p> <p><b>OK</b>  <b>+CFTPPUTFILE:FAIL,&lt;err&gt;</b>  or  <b>+CFTPGET:FAIL,&lt;err&gt;</b>  <b>ERROR</b></p>

Parameters are defined below:

Parameters	Description
<b>&lt;remote_path&gt;</b>	The remote file path. The maximum length is 512. If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt;rest_size&gt;</b>	The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<b>&lt;err&gt;</b>	The error code of FTP operation.
<b>&lt;len&gt;</b>	Every time the length of the read from the server
<b>&lt;length&gt;</b>	The size of the download file

Example:

Commands	Response
----------	----------

<b>AT+CFTPGET="/tes t/CXL/abc.txt", 10</b>	<b>OK</b> <b>+CFTPGET:DATA, 1020</b> <b>AT+CFTPGET={non-ascii}"2F746573742F63584C2F6162632E7 47874", 10</b> <b>OK</b> <b>+CFTPGET:DATA, 1058</b> <b>...</b> <b>+CFTPGET:SUCCESS,1246792</b>
--	---

### 3.3.5.10.11 AT+CFTPPUT Upload the DATA from SIO to FTP Server

Upload the DATA from SIO to FTP Server

Test Command	Response
<b>AT+CFTPPUT=?</b>	<b>+CFTPPUT: ,(0-2147483647), (1-1500)</b> <b>OK</b>
Read Command	Response
<b>AT+CFTPPUT?</b>	<b>+ CFTPPUT:"remote_path", &lt;rest_size&gt;,&lt;put_len&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPPUT="&lt;remote_pa th&gt;"</b> <b>[,&lt;rest_size&gt;,&lt;put_len&gt;] ]</b>	This command is used to upload the DATA from serial port to FTP server as a file . Single <Ctrl+Z> means end of the FTP data. <Ctrl+Z> is 0x1A. Note: A single input no more than 1500 bytes Note: In <put_len> mode, all characters can be transferred  <b>+CFTPPUT: BEGIN</b> <b>...</b> <b>OK</b> <b>+CFTPPUT:SUCCESS</b>  <b>or</b> <b>OK</b> <b>+CFTPPUT: FAIL,&lt;err_code&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt; remote_path &gt;</b>	The remote file path. The maximum length is 512.  If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt;rest_size&gt;</b>	The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<b>&lt;put_len&gt;</b>	The length is 1~1500. In this mode, all characters can be transferred. Must enter the specified data length before exiting the mode.
<b>&lt;err&gt;</b>	The error code of FTP operation.

Example:

Commands	Response
<b>AT+CFTPPUT="/test/CXL/abc.txt", 20</b>	<b>+CFTPPUT: BEGIN</b> .....<Ctrl+Z> <b>OK</b> <b>+CFTPPUT:SUCCESS</b>
<b>AT+CFTPPUT={non-ascii}"2F746573742F63584C2F6162632E747874", 20</b>	<b>+CFTPPUT: BEGIN</b> .....<Ctrl+Z> <b>OK</b> <b>+CFTPPUT:SUCCESS</b>
<b>AT+CFTPPUT="/test/test.txt",0,16</b>	<b>+CFTPPUT: BEGIN</b> .....<000102030405060708090a0b0c0d0e0f> <b>OK</b> <b>+CFTPPUT:SUCCESS</b>

### 3.3.5.10.12 AT+CFTPPUTEX Upload the DATA from SIO to FTP Server

Upload the DATA from SIO to FTP Server

Test Command	Response
<b>AT+CFTPPUTEX=?</b>	<b>+CFTPPUTEX: ,(0-2147483647),(0-1),(1-1024)</b> <b>OK</b>

Read Command	Response
<b>AT+CFTPPUTEX?</b>	<b>+CFTPPUTEX:"remote_path", &lt;rest_size&gt;, &lt;status&gt;, &lt;input_size&gt;</b> <b>OK</b>
Excute Command	Response  The command is used to continue the process of uploading files from the port to the FTP server. Single <Ctrl+Z> means end of the FTP data. <Ctrl+Z> is 0x1A. Note: A single input no more than 1024 bytes  <b>+CFTPPUTEX: BEGIN</b> <b>+CFTPPUTEX:DATA,5</b> <b>OK</b>  <b>[+CFTPPUTEX: BEGIN]</b> <b>+CFTPPUTEX: FAIL,&lt;err_code&gt;</b> <b>+CFTPPUTEX: &lt;sent_size&gt;</b> <b>ERROR</b>
Write Command	Response  The command is used to open a process for uploading files from the port to the FTP server. Single <Ctrl+Z> means end of the FTP data. <Ctrl+Z> is 0x1A. Note: A single input no more than 1024 bytes,The data end with Ctrl+Z or auto exit when data length reach < len> or timeout for 30 seconds.If the input_size parameter is set,the data input will only automatically exit when the input length reaches the length set by input_size.  <b>+CFTPPUTEX: BEGIN</b> <b>+CFTPPUTEX:DATA,5</b> <b>OK</b>  <b>[+CFTPPUTEX: BEGIN]</b> <b>+CFTPPUTEX: FAIL,&lt;err_code&gt;</b> <b>+CFTPPUTEX: &lt;sent_size&gt;</b> <b>ERROR</b>
	Note: this command is only supported by L506X and L506SC.



Parameters are defined below:

Parameters	Description
<b>&lt; remote_path &gt;</b>	The remote file path. The maximum length is 512.  If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.should contain a prefix of {non-ascii}.
<b>&lt;rest_size&gt;</b>	The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<b>&lt;status&gt;</b>	Determine if there is subsequent data uploaded to the server.default is 0. 0 - Data is not the last frame 1 - End of FTP data upload
<b>&lt;input_size&gt;</b>	The length of the input data, only after the data input length reaches the specified length
<b>&lt;err&gt;</b>	The error code of FTP operation.
<b>&lt;sent_size&gt;</b>	The length of the data that has been sent.

Example:

Commands	Response
----------	----------

AT+CFTPPUTEX="/test/1.txt",0,0	<b>+CFTPPUTEX: BEGIN</b> .....<Ctrl+Z> <b>+CFTPPUTEX: DATA,5</b> <b>OK</b> <b>AT+CFTPPUTEX</b> <b>+CFTPPUTEX: BEGIN</b> .....<Ctrl+Z> <b>+CFTPPUTEX: DATA,15</b> <b>OK</b> <b>AT+CFTPPUTEX=,,1</b> <b>+CFTPPUTEX: SUCCESS,20</b> <b>OK</b>
--------------------------------	---

AT+CFTPPUTEX={non-ascii}"2F746573742F63584C2F6162632E747874", 0,1	<b>+CFTPPUTEX: BEGIN</b> .....<Ctrl+Z> <b>+CFTPPUTEX: DATA,5</b> <b>OK</b> <b>AT+CFTPPUTEX</b> <b>+CFTPPUTEX: BEGIN</b> .....<Ctrl+Z> <b>+CFTPPUTEX: DATA,15</b> <b>OK</b> <b>AT+CFTPPUTEX=,,1</b> <b>+CFTPPUTEX: SUCCESS,20</b> <b>OK</b>
---	---

### 3.3.5.10.13 AT+CFTPLIST List the Items in the Directory on FTP Server

List the Items in the Directory on FTP Server

Test Command	Response
<b>AT+CFTPLIST=?</b>	<b>OK</b>

Read Command	Response
<b>AT+CFTPLIST?</b>	<b>+CFTPGETFILE:"dir"</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPLIST="&lt;dir&gt;"</b>	This command is used to list the items in the specified directory on FTP server  <b>OK</b> <b>+CFTPLIST:</b> <b>...]</b> <b>+CFTPLIST:SUCCESS</b> or <b>OK</b> <b>CFTPLIST:FAIL,&lt;err&gt;</b> or <b>CFTPLIST:FAIL,&lt;err&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;dir&gt;</b>	The directory to be listed, The maximum length is 128. If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt;err&gt;</b>	The result code of the listing

Example:

Commands	Response
<b>AT+CFTPLIST="/test/CXL"</b>	<b>OK</b> <b>+CFTPLIST:</b>  <b>drw-rw-rw- 1 user group 0 Sep 1 18:01 .</b> <b>drw-rw-rw- 1 user group 0 Sep 1 18:01 ..</b> <b>-rw-rw-rw- 1 user group 2017 Sep 1 17:24</b> <b>19800106_000128.jpg</b> <b>+CFTPLIST:SUCCESS</b>

<b>AT+CFTPLIST={non-ascii}"2F746573742F43584C"</b>	<b>OK</b> <b>+CFTPLIST:</b> drw-rw-rw- 1 user group 0 Sep 1 18:01 . drw-rw-rw- 1 user group 0 Sep 1 18:01 .. -rw-rw-rw- 1 user group 2017 Sep 1 17:24 19800106_000128.jpg <b>+CFTPLIST:SUCCESS</b>
--	---

### 3.3.5.10.14 AT+CFTPMKD Create a New Directory on FTP Server

Create a New Directory on FTP Server

Test Command	Response
<b>AT+CFTPMKD=?</b>	<b>OK</b>
Read Command	Response
<b>AT+CFTPMKD?</b>	<b>+ CFTPMKD:"dir"</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPMKD="&lt;dir&gt;"</b>	This command is used to create a new directory on the FTP server. <b>OK</b> <b>+CFTPMKD:FAIL,&lt;err&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;dir&gt;</b>	The directory to be created, The maximum length is 128. If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt;err&gt;</b>	The result code of the listing

Example:

Commands	Response
----------	----------

<b>AT+CFTPMKD="/test/CXL"</b>	<b>OK</b>
<b>AT+CFTPMKD={non-ascii}"2F746573742F43584C"</b>	<b>OK</b>

### 3.3.5.10.15 AT+CFTPRMD Delete a Directory on FTP Server

Delete a Directory on FTP Server

Test Command	Response
<b>AT+CFTPRMD =?</b>	<b>OK</b>
Read Command	Response
<b>AT+CFTPRMD?</b>	<b>+ CFTPRMD:"dir"</b> <b>OK</b>
Write Command	Response
<b>AT+CFTPRMD ="&lt;dir&gt;"</b>	This command is used to delete directory on the FTP server. <b>OK</b> <b>+ CFTPRMD:FAIL,&lt;err&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;dir&gt;</b>	The directory to be deleted, The maximum length is 128. If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt;err&gt;</b>	The result code of the listing

Example:

Commands	Response
<b>AT+CFTPRMD="/test/CXL"</b>	<b>OK</b>

**AT+CFTPRMD={no  
n-ascii}"2F7465737  
42F43584C"**

**OK**

### 3.3.5.10.16 AT+CFTPDELE Delete a File on FTP Server

Delete a File on FTP Server

Test Command	Response
<b>AT+CFTPDELE=?</b>	<b>OK</b>
Read Command	Response
<b>AT+CFTPDELE?</b>	<b>+ CFTPDELE:"filename" OK</b>
Write Command	Response
<b>AT+CFTPDELE="&lt;filename &gt;"</b>	This command is used to delete file on the FTP server. <b>OK</b> <b>+ CFTPDELE:FAIL,&lt;err&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; filename &gt;</b>	The file to be deleted, The maximum length is 128. If the directory contains non-ASCII characters, the < remote_path > parameter should contain a prefix of {non-ascii}.
<b>&lt;err&gt;</b>	The result code of the listing

Example:

Commands	Response
<b>AT+ CFTPDELE="/test/C XL/abc.txt"</b>	<b>OK</b>
<b>AT+CFTPDELE={no n-ascii}"2F7465737 42F63584C2F61626 32E747874"</b>	<b>OK</b>

### 3.3.5.10.17 AT+CFTPDELFILE Delete a Local File

Delete a Local File

Test Command	Response
<b>AT+CFTPDELFILE=?</b>	<b>OK</b>
Read Command	Response
<b>AT+CFTPDELFILE?</b>	<b>+CFTPDELFILE: "filename"</b>  <b>OK</b>
Write Command	Response
<b>AT+CFTPDELFILE=</b> <b>"&lt;filename&gt;"</b>	This command is used to delete a local FTP file. <b>OK</b> <b>+CFTPDELFILE: FAIL,&lt;err&gt;</b> <b>ERROR</b>  Note : file local path root directory "/" is default "C: / " in EFS

Parameters are defined below:

Parameters	Description
<b>&lt; filename &gt;</b>	The file to be deleted, The maximum length is 128.
<b>&lt;err&gt;</b>	The result code of the listing

Example:

Commands	Response
<b>AT+CFTPDELFILE=</b> <b>"/testdir/test.txt"</b>	<b>OK</b>
<b>AT+CFTPDELFILE?</b>	<b>+CFTPDELFILE: "/testdir/test.txt"</b>  <b>OK</b>
<b>AT+CFTPDELFILE=</b> <b>?</b>	<b>OK</b>

### 3.3.5.10.18 AT+CFTPRDFILE Read File from Local File to SIO

Read File from Local File to SIO

Test Command	Response
<b>AT+CFTPRDFILE=?</b>	<b>+CFTPRDFILE: ,(0-2147483647),(1-2147483647)</b> <b>OK</b>
Read Command	Response
<b>AT+CFTPRDFILE?</b>	<b>+CFTPRDFILE: "local_file",read_pos,read_len</b>
Write Command	Response
<b>AT+CFTPRDFILE=</b> <b>"&lt;local_file&gt;" ,&lt;read_pos&gt; ,</b> <b>&lt;read_len&gt;</b>	This command is used to read file from local file to SIO. <b>+ CFTPRDFILE:DATA,&lt;len&gt;</b> <b>+ CFTPRDFILE:SUCCESS,&lt;length&gt;</b> <b>+ CFTPRDFILE: FAIL,&lt;err_code&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;local_file&gt;</b>	The local file name. The maximum length is 512. Note : local path root directory "/" is default "C: / " in EFS
<b>&lt;read_pos&gt;</b>	Start read file position, The range is from 0 to 2147483647.
<b>&lt;read_len&gt;</b>	Read file length, The range is from 1 to 2147483647.
<b>&lt;len&gt;</b>	Every time the length of the read from the server
<b>&lt;length&gt;</b>	The size of the download file

Example:

Commands	Response
<b>at+CFTPRDFILE="/</b> <b>p.txt",10,100</b>	<b>+CFTPRDFILE:DATA,100</b> <b>aa</b> <b>aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa</b> <b>aaaaaaaaaaaaaaaaaaaaa</b> <b>+CFTPRDFILE:SUCCESS,100</b>



**3.3.5.10.19 Unsolicited FTP Codes (Summary of CME ERROR codes)**

Parameters	Description
201	Unknown error for FTP
202	FTP task is busy
203	Failed to resolve server address
204	FTP timeout
205	Failed to read file
206	Failed to write file
207	Not allowed in current state
208	Failed to login
209	Failed to logout
210	Failed to transfer data
211	FTP command rejected by server
212	Memory error
213	Invalid parameter
214	Network error
215	Failed to connect socket
216	Failed to send data using socket
217	Failed to receive data using socket
218	Failed to verify user name and password
219	Socket connect timeout
220	File does not exist

### 3.3.5.11 AT Commands for TCP/IP

#### 3.3.5.11.1 AT+CIPTIMEOUT Select TCP/IP Timeout Value

This command is used to set timeout value

Execution Command	Response
<b>AT+CIPTIMEOUT</b>	Execute command will set the parameters to default value.
Test Command	Response
<b>AT+CIPTIMEOUT=?</b>	<b>+CIPTIMEOUT:</b> (list of supported < netopen_timeout >),(list of supported < cipopen_timeout >),(list of supported < cipsend_timeout >),(list of supported < dnsquery_timeout >) <b>OK</b>
Read Command	Response
<b>AT+CIPTIMEOUT?</b>	<b>+CIPTIMEOUT:</b> <netopen_timeout>,<cipopen_timeout>,<cipsend_timeout>,< dnsquery_timeout>
Write Command	Response
<b>AT+CIPTIMEOUT=[ &lt; netopen_timeout &gt;][, [&lt; cipopen_timeout &gt;] [,&lt;cipsend_timeout &gt;] [,&lt;dnsquery_timeout&gt;]]]</b>	<b>OK</b> <b>ERROR</b>  for AT+NETOPEN/AT+CIPOPEN/AT+CIPSEND, before execute all of them.  < netopen_timeout >

Parameters are defined below:

Parameters	Description
<b>&lt; netopen_timeout &gt;</b>	Timeout value for AT+NETOPEN, from 3000 to 120000 milliseconds, and default value is 120000.
<b>&lt; cipopen_timeout &gt;</b>	Timeout value for AT+CIPOPEN, from 3000 to 120000 milliseconds, and default value is 120000.

<b>&lt; cipsend_timeout &gt;</b>	Timeout value for AT+CIPSEND, from 3000 to 120000 milliseconds, and default value is 120000.
<b>&lt; dnsquery_timeout&gt;</b>	Timeout value for AT+CIOPEN when use domain name, from 3000 to 120000 milliseconds, and default value is 10000

Example:

Commands	Response
<b>AT+CIPTIMEOUT=3000,20000,40000,10000</b>	<b>OK</b>
<b>AT+CIPTIMEOUT?</b>	<b>+CIPTIMEOUT: 30000,20000,40000,10000</b> <b>OK</b>
<b>AT+CIPTIMEOUT=?</b>	<b>+CIPTIMEOUT: (3000-120000),(3000-120000),(3000-120000), (3000-120000)</b> <b>OK</b>

### 3.3.5.11.2 AT+CIPMODE Select TCP/IP Application Mode

This command is used to select transparent mode (data mode) or non-transparent mode (command mode ) before network open.

Execution Command	Response
<b>AT+CIPMODE</b>	Execute command will set the parameter to default value.
Test Command	Response
<b>AT+CIPMODE=?</b>	<b>+ CIPMODE: (list of supported&lt;mode&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CIPMODE?</b>	<b>+ CIPMODE: &lt;mode&gt;</b> <b>OK</b>

Write Command	Response
<b>AT+CIPMODE=</b> <b>&lt;mode&gt;</b>	<b>OK</b> <b>ERROR</b>  Note1: when set to transparent mode, the ACK and HEX set by MCIPCFGPL will not take effect. Note2: supported as a client only Note3: connect to the server in transparent mode and the data receive mode will become automatic

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Indicates to select transparent mode or non-transparent mode. from 0 to 2, and default value is 0.  0: non-transparent mode 1: transparent mode(similar to the data entry pattern) 2: transparent mode //Only L506X support  Ps: transparent mode It is recommended to send less than 5000 bytes each time, and the interval is greater than 100ms.

Example:

Commands	Response
<b>AT+CIPMODE=1</b>	<b>OK</b>
<b>AT+CIPMODE?</b>	<b>+ CIPMODE: 1</b> <b>OK</b>
<b>AT+CIPMODE=?</b>	<b>+ CIPMODE: (0-1)</b> <b>OR</b> <b>+ CIPMODE: (0-2) // L506X or L506SC</b> <b>OK</b>

### 3.3.5.11.3 AT+NETOPEN Open packet network

This command is used to open packet network, before execute this command we should be execute AT+CIPTIMEOUT command and AT+CIPMODE first.

Execution Command	Response
<b>AT+NETOPEN</b>	<b>OK</b> <b>+NETOPEN:&lt;err&gt;</b>  <b>ERROR</b>
Read Command	Response
<b>AT+NETOPEN?</b>	<b>+ NETOPEN:&lt;net_state&gt;</b> <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;err&gt;</b>	Indicate the result of operation. SUCCESS: is success ONGOING: is open in progress FAIL: is failure
<b>&lt;net_state&gt;</b>	Indicate the current network state 0: network close (deactivated) 1: network open(activated)

Example:

Commands	Response
<b>AT+NETOPEN</b>	<b>OK</b> <b>+NETOPEN:SUCCESS</b>
<b>AT + NETOPEN?</b>	<b>+NETOPEN:1</b> <b>OK</b>

#### 3.3.5.11.4 AT+NETCLOSE Close Network

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

Execution Command	Response
<b>AT+NETCLOSE</b>	<b>OK</b>
Read Command	Response
<b>AT+ NETCLOSE?</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;err&gt;</b>	Indicate the result of operation. SUCCESS: is success ONGOING: is close in progress FAIL: is failure

Example:

Commands	Response
<b>AT+NETCLOSE</b>	<b>OK</b> <b>+NETCLOSE:SUCCESS</b>
<b>AT+NETCLOSE?</b>	<b>OK</b>

### 3.3.5.11.5 AT+IPADDR Inquire Socket PDP Address

This command inquires the IP address of current active socket PDP  
Before calling this command, AT+NETOPEN have been execute first.  
PS:When multi-APN(MCIPSPDP) is called, the IPADDR is invaild.

Execution Command	Response
<b>AT+IPADDR</b>	<b>+IPADDR:&lt;err&gt;,&lt;ip_address&gt;</b> <b>OK</b> <b>ERROR</b>
Read Command	Response
<b>AT+IPADDR?</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;err&gt;</b>	Indicate the result of operation. SUCCESS: is success FAIL: is failure
<b>&lt;ip_address&gt;</b>	This command inquires the IP address of current active socket PDP.

Example:

Commands	Response
<b>AT+IPADDR</b>	<b>+IPADDR: SUCCESS ,10.97.210.19</b> <b>OK</b>
<b>AT+ IPADDR?</b>	<b>OK</b>

### 3.3.5.11.6 AT+SERVERSTART Startup TCP/UDP Server

This command starts up TCP/UDP server, and the server can receive the request of TCP/UDP client.

Test Command	Response
<b>AT+SERVERSTART=?</b>	<b>+SERVERSTART: (list of supported &lt;port&gt;),(list of supported &lt; server_index &gt;),( list of supported &lt; backlog &gt;),(list of supported &lt;serverType&gt;)</b> <b>OK</b>
Read Command	Response
<b>AT+SERVERSTART?</b>	<b>+ SERVERSTART: &lt; server_index &gt; ,&lt;port&gt;,&lt;serverType&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+SERVERSTART=</b> <b>&lt; port&gt; ,</b> <b>&lt; server_index&gt; ,</b> <b>&lt; backlog&gt; ,</b> <b>&lt; servreType&gt;</b>	<b>OK</b>  <b>+SERVERSTART: SUCCESS,&lt; server_index&gt;</b> <b>or</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;port&gt;</b>	The server port, from 1 to 65535, and default value is 1.
<b>&lt; server_index &gt;</b>	The TCP/UDP server index, from 0 to 5, and default value is 0.
<b>&lt; backlog &gt;</b>	The maximum connections can be queued in listen queue, from 1 to 3, and default value is 3.
<b>&lt; serverType&gt;</b>	The server type,TCP or UDP

Example:

Commands	Response
<b>AT+SERVERSTART =8082,2,3,"TCP"</b>	<b>OK</b> <b>+SERVERSTART: SUCCESS,2</b>
<b>AT+SERVERSTART =8083,3,3,"UDP"</b>	<b>OK</b> <b>+SERVERSTART:SUCCESS,3</b>
<b>AT+SERVERSTART ?</b>	<b>+SERVERSTART:2,8082,TCP</b> <b>+SERVERSTART:3,8083,UDP</b> <b>OK</b>
<b>AT+SERVERSTART =?</b>	<b>+SERVERSTART: (1-65535),(0-5),(1-3),("TCP","UDP")</b> <b>OK</b>

### 3.3.5.11.7 AT+SERVERSTOP Stop TCP/UDP Server

This command stops TCP/UDP server. Before stopping a TCP/UDP server, all sockets with <server\_index> equals to the closing TCP/UDP server index must be closed and the TCP/UDP server have been started first.

Read Command	Response
<b>AT+SERVERSTOP=?</b>	<b>+SERVERSTOP: (list of supported &lt;server_index&gt;)</b>  <b>OK</b>



Write Command	Response
<b>AT+SERVERSTOP=</b> <b>&lt;server_index&gt;</b>	<b>OK</b>  <b>+SERVERSTOP: &lt;err&gt;,&lt;server_index&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;server_index&gt;</b>	Indicates the TCP server index, from 0 to 5, and default value is 0.
<b>&lt;err&gt;</b>	Indicate the result of operation. SUCCESS: is success FAIL: is failure

Example:

Commands	Response
<b>AT+SERVERSTOP=</b> <b>0</b>	<b>OK</b> <b>+SERVERSTOP: SUCCESS,0</b>
<b>AT+SERVERSTOP=</b> <b>?</b>	<b>+SERVERSTOP: (0-5)</b> <b>OK</b>

### 3.3.5.11.8 AT+CIOPEN Establish Connection in Multi-socket Mode

This command is used to establish a connection with TCP server and UDP server, The sum of all of connections is 10.

Test Command	Response
<b>AT+CIOPEN=?</b>	<b>+CIOPEN: (list of supported &lt;link_num&gt;s), (list of supported &lt;type&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CIOPEN?</b>	<b>+CIOPEN: &lt;link_num&gt;[,&lt;type&gt;,&lt;serverIP&gt;,&lt;serverPort&gt;,&lt;index&gt;]</b> <b>OK</b> <b>ERROR</b>

Write Command	Response
<b>AT+CIOPEN=</b> <b>&lt; link_num&gt;</b> , <b>&lt;type&gt;</b> , <b>&lt; serverIP&gt;</b> , <b>&lt;serverPort&gt;</b> [, <b>&lt; localPort&gt;</b> ]	<b>OK</b> <b>+CIOPEN: &lt;err&gt;,&lt;link_num&gt;</b>  <b>&gt;</b> <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;link_num&gt;</b>	Identifies a connection , from 0 to 9, and default value is 0. If AT+CIPMODE=<mode> is set, the <link_num> is restricted to be only 0, +++ is exit send and receive mode.
<b>&lt; type &gt;</b>	Identifies the type of transmission protocol. TCP: Transfer Control Protocol UDP: User Datagram Protocol If AT+CIPMODE=<mode> is set, the <type> is restricted to be only "TCP".
<b>&lt; serverIP &gt;</b>	Identifies the IP address of server. If type is UDP serverIP set to empty
<b>&lt;serverPort&gt;</b>	Identifies the port of TCP server, from 0 to 65535, and default value is 0. If type is UDP serverPort set to empty
<b>&lt;localPort&gt;</b>	Identifies the port of local socket, from 0 to 65535, and default value is 0.
<b>&lt;index&gt;</b>	Identifies the server index that the client linked when as a TCP server. -1: Not as a TCP server 0-2: TCP server index
<b>&lt;err&gt;</b>	Indicate the result of operation. SUCCESS: is success FAIL: is failure if AT+CIPMODE=1: >: connect establish and can be send or receive data. OK: exit online data send and receive mode. if AT+CIPMODE=2: // only L506X support CONNECT: connect establish and can be send or receive data. OK: exit online data send and receive mode

Example:

Commands	Response
----------	----------

<b>AT+CIOPEN=1,"TCP",182.150.28.206,6988,0</b>	<b>OK</b> <b>+CIOPEN: SUCCESS,1</b>
<b>AT+CIOPEN=2,"UDP",,,8080</b>	<b>OK</b> <b>+CIOPEN: SUCCESS,2</b>
<b>AT+CIOPEN?</b>	<b>+CIOPEN:0, "TCP",,0,-1</b> <b>+CIOPEN:1, "TCP",182.150.28.206,6988,-1</b> <b>+CIOPEN:2, "UDP",,0,-1</b> <b>+CIOPEN:3, "TCP",,0,-1</b> <b>+CIOPEN:4, "TCP",,0,-1</b> <b>+CIOPEN:5, "TCP",,0,-1</b> <b>+CIOPEN:6, "TCP",,0,-1</b> <b>+CIOPEN:7, "TCP",,0,-1</b> <b>+CIOPEN:8, "TCP",,0,-1</b> <b>+CIOPEN:9, "TCP",,0,-1</b> <b>OK</b>
<b>AT+CIOPEN=?</b>	<b>+CIOPEN:(0-9),(TCP, UDP)</b> <b>OK</b>

### 3.3.5.11.9 AT+CIPSEND Send Data Through TCP or UDP Connection

Send data through TCP or UDP connection on non\_transparent mode

Test Command	Response
<b>AT+CIPSEND=?</b>	<b>+CIPSEND: (list of supported &lt;link_num&gt;s), (list of supported &lt;length&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CIPSEND?</b>	<b>OK</b> <b>ERROR</b>

Write Command	Response
<b>AT+CIPSEND=</b> <b>&lt;link_num&gt;,</b> <b>[&lt;length&gt;]</b>  <b>AT+CIPSEND=</b> <b>&lt;link_num&gt;,,,,</b> <b>&lt;data&gt;</b>  <b>AT+CIPSEND=</b> <b>&lt;link_num&gt;,</b> <b>[&lt;length&gt;],</b> <b>&lt;serverIP&gt;,</b> <b>&lt;serverPort&gt;</b>  (This format is for UDP connect)	<b>OK</b>  <b>+CIPSEND:</b> <b>&lt;err&gt;,&lt;link_num&gt;,&lt;reqSendLength&gt;,&lt;cnfSendLength&gt;</b>  <b>ERROR</b>  This command is used to send data to remote side on non_transparent mode. Single <Ctrl+Z>is start send. Single <ESC> is used to cancel the sending. Single<Ctrl+D>means exit the sending mode. <Ctrl+Z> is 0x1A, <ESC> is 0x1B, <Ctrl+D> is x04. These signals take effect when no length is specified  <b>NOTE</b> 1.In transparent mode <length> will be ignore or the <length> is empty, when input data length reach to 1500 will trigger send out. 2.Small data can be sent as follows: TCP type: AT+CIPSEND=<link_num>,,,,<data> UDP type: AT+CIPSEND=<link_num>,,<serverIP>,<serverPort>,<data>

Parameters are defined below:

Parameters	Description
<b>&lt;link_num&gt;</b>	Identifies a connection , from 0 to 9, and default value is 0.
<b>&lt;length&gt;</b>	Indicates the length of sending data, from 1 to 1500, and default value is 0. TCP: Transfer Control Protocol UDP: User Datagram Protocol Identifies the IP address of server.The IP address format consists of 4 octets,separated by decimal point:"AAA.BBB.CCC.DDD".
<b>&lt;serverPort&gt;</b>	Identifies the port of UDP server, from 0 to 65535, and default value is 0.
<b>&lt;data&gt;</b>	Identifies the contents for sending,and The maximum length is 512.
<b>&lt;reqSendLength&gt;</b>	a numeric parameter that requested number of data bytes to be transmitted.

<b>&lt;cnfSendLength&gt;</b>	a numeric parameter that confirmed number of data bytes to be transmitted. PS: When set to hexadecimal by the MCIPCFGPL, <b>&lt;cnfSendLength&gt;=&lt;reqSendLength&gt;/2</b> .
<b>&lt;err&gt;</b>	Indicate the result of operation.  SUCCESS: is success      FAIL: is failure

Example:

Commands	Response
<b>AT+CIPSEND=1,20</b>	<b>&gt;2233</b>  <b>OK</b>  <b>+CIPSEND: SUCCESS ,1,20,4</b>
<b>AT+CIPSEND=2,5,"182.150.28.206",6988</b>	<b>&gt;33</b>  <b>OK</b>  <b>+CIPSEND: SUCCESS ,2,5,2</b>
<b>AT+CIPSEND?</b>	<b>OK</b>
<b>AT+CIPSEND=?</b>	<b>+CIPSEND:(0-9),(1-1500)</b>  <b>OK</b>

### 3.3.5.11.10 AT+CIPRXGET Get the Network Data Manually

Get the Network Data Manually

Test Command	Response
<b>AT+CIPRXGET=?</b>	<b>+CIPRXGET: (list of supported &lt;mode &gt;s), (list of supported &lt;cid&gt;s), (list of supported&lt;len&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+CIPRXGET?</b>	<b>+CIPRXGET:&lt;link0_mode&gt;...,&lt;link9_mode&gt;</b> <b>OK</b> <b>ERROR</b>

Write Command	Response
<b>AT+CIPRXGET= &lt;mode &gt;, &lt;cid&gt;[,&lt;len&gt;]</b>	<b>&lt;mode&gt; = 2:</b> <b>+CIPRXGET:SUCCESS,&lt;mode&gt;,&lt;cid&gt;,&lt;read_len&gt;,&lt;re maining data len&gt;, &lt;data&gt;</b>  <b>OK</b>  <b>Others:</b> <b>+CIPRXGET:SUCCESS,&lt;mode&gt;,&lt;cid&gt;[,&lt;read_len&gt;, &lt;data&gt;]</b>  <b>OK</b>  <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode &gt;</b>	Indicate how to get the network data , from 0 to 4, and default value is 0. 0: set the way to get the network data automatically. 1: set the way to get the network data manually. 2: read data, the max read length is 1500. 3: read data in HEX form, the max read length is 750. 4: get the rest data length
<b>&lt;cid&gt;</b>	Identifies a connection, from 0 to 9, and default value is 0.
<b>&lt; len &gt;</b>	The data length to be read.
<b>&lt;read_len&gt;</b>	The length of the data that have read.
<b>&lt;remaining data len&gt;</b>	The length of remaining data.
<b>&lt;data&gt;</b>	The read data.
<b>&lt;err&gt;</b>	Indicate the result of operation. SUCCESS: is success FAIL: is failure

Example:

Commands	Response
<b>AT+CIPRXGET=0,1</b>	<b>OK</b> <b>+CIPRXGET: SUCCESS,0,1,11,ddddddddddd</b>
<b>AT+CIPRXGET=1,9</b>	<b>OK</b> <b>+CIPRXGET: SUCCESS,1,9</b>
<b>AT+CIPRXGET=2,9,3</b>	<b>+CIPRXGET: SUCCESS,2,9,3,7,333</b> <b>OK</b>
<b>AT+CIPRXGET=4,9</b>	<b>+CIPRXGET: SUCCESS,4,9,7,</b> <b>OK</b>

#### 3.3.5.11.11 AT+ CIPCLOSE Close TCP or UDP Socket

Close TCP or UDP Socket

Test Command	Response
<b>AT+CIPCLOSE=?</b>	<b>+CIPCLOSE: (list of supported &lt;link_num&gt;s)</b> <b>OK</b>
Write Command	Response
<b>AT+CIPCLOSE=&lt;link_num&gt;</b>	<b>OK</b> <b>+CIPCLOSE: &lt;err&gt;,&lt;link_num&gt;</b> <b>ERROR</b>
	<p><b>NOTE</b></p> <p>When link was closed by server will popup notify:  <b>+SERVER DISCONNECTED:&lt;link_num&gt;</b></p> <p>When link was closed by network will popup notify:  <b>+NETWORK DISCONNECTED:&lt;link_num&gt;</b></p>

Parameters are defined below:

Parameters	Description
<b>&lt;link_num&gt;</b>	Identifies a connection . from 0 to 9, and default value is 0. Indicate the result of operation. SUCCESS: is success FAIL: is failure

Example:

Commands	Response
<b>AT+CIPCLOSE=1</b>	<b>OK</b> <b>+CIPCLOSE: SUCCESS,1</b>
<b>AT+CIPCLOSE?</b>	<b>+CIPCLOSE:0,0</b> <b>+CIPCLOSE:1,0</b> <b>+CIPCLOSE:2,0</b> <b>+CIPCLOSE:3,0</b> <b>+CIPCLOSE:4,0</b> <b>+CIPCLOSE:5,0</b> <b>+CIPCLOSE:6,0</b> <b>+CIPCLOSE:7,0</b> <b>+CIPCLOSE:8,0</b> <b>+CIPCLOSE:9,0</b>  <b>OK</b>
<b>AT+CIPCLOSE=?</b>	<b>+CIPCLOSE: (0-9)</b> <b>OK</b>

### 3.3.5.11.12 AT+CIPSTAT Inquire the Total Size of Data Sent or Received Recently

This command is used to inquire the total size of data sent or received for a socket in multiple socket modes (Only valid for client TCP socket mode ).

Test Command	Response
<b>AT+CIPSTAT=?</b>	<b>+CIPSTAT: (list of supported &lt;link_num&gt;s)</b> <b>OK</b>
Write Command	Response
<b>AT+CIPSTAT=&lt;link_num&gt;</b>	<b>+CIPSTAT: &lt;sent_size&gt;, &lt;recv_size&gt;</b> <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
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<b>AT+CIPOPQUERY=1,3</b>	<b>+CIPOPQUERY:1,0</b> <b>OK</b>
<b>AT+CIPOPQUERY?</b>	<b>+CIPOPQUERY:1,0,0,0,0,0,0,0,0,0</b> <b>OK</b>
<b>AT+CIPOPQUERY=?</b>	<b>+CIPOPQUERY:(0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9)</b> <b>OK</b>

### 3.3.5.11.14 AT+MCIPCFG Configure parameters of TCP/IP

Configure parameters of TCP/IP

Test Command	Response
<b>AT+MCIPCFG=?</b>	<b>+MCIPCFG: (list of supported &lt;heartbeat_time&gt;s), (list of supported &lt;delay_time&gt;ms)</b> <b>OK</b>
Read Command	Response
<b>AT+MCIPCFG?</b>	<b>+MCIPCFG: &lt;heartbeat_time&gt;&lt;,delay_time&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+MCIPCFG=[&lt;heartbeat_time&gt;], [&lt;delay_time&gt;]</b>	<b>OK or ERROR</b>  Ps.If need to read/write value of heartbeat/delay time, all sockets must be disconnected before.

Parameters are defined below:

Parameters	Description
<b>&lt;heartbeat_time&gt;</b>	Indicates keepalive time,the time depends on the network(test eg:GSM can not exceed 10min . It takes at least about 12 minutes to recognize that TCP has been disconnected.). Range:0-7200 sendcod, and default value is 0 sendcod . Ps. When heartbeat_time set to 0, the function of keepalive will be closed.

<b>&lt;DelayTm&gt;</b>	a numeric parameter which is number of milliseconds to delay to output data of Receiving. The default value is 0.
------------------------	---

Example:

Commands	Response
<b>AT+MCIPCFG=0,1</b>	<b>OK</b> <b>AT+MCIPCFG?</b> <b>+MCIPCFG:0,1</b>
<b>AT+MCIPCFG=?</b>	<b>+MCIPCFG: (0-7200)s,(0-30000)ms</b>  <b>OK</b>

### 3.3.5.11.15 AT+MCIPCFGPL Configure parameters of TCP/IP

This command is used to configure parameters of socket.

Test Command	Response
<b>AT+MCIPCFGPL=?</b>	<b>+MCIPCFGPL:(list of supported &lt;link_num&gt;s), (list of supported &lt;hex_support &gt;s), (list of supported &lt;ack_support &gt;s), (list of supported &lt;ssl_support &gt;s, (list of supported &lt;ignore_cert &gt;s)</b>  <b>OK</b>
Read Command	Response
<b>AT+MCIPCFGPL?</b>	<b>+MCIPCFGPL:</b> <b>(&lt;hex_support&gt;,&lt;ack_support&gt;,&lt;ssl_support&gt;,&lt;ignore_cert&gt;),...</b>  <b>OK</b>
Write Command	Response
<b>AT+MCIPCFGPL=&lt;link_num&gt;,[&lt;hex_support&gt;],[&lt;ack_support&gt;],[&lt;ssl_support&gt;],[&lt;ignore_cert&gt;]]</b>	<b>OK or ERROR</b>  Ps. If would like to change hex/ack/ssl/ support,the corresponding socket port must be disconnected before.

Parameters are defined below:

Parameters	Description
<b>&lt;link_num&gt;</b>	Identifies a connection. The range of permitted values is 0 to 9.

<b>&lt;hex_support&gt;</b>	Indicates the form of sending data, 0 - normal, 1 – HEX.
<b>&lt;ack_support&gt;</b>	Indicates the form of sending ACK, default ACK function is not supported. 0 – not wait for server ACK, 1 – need to wait for server ACK
<b>&lt;ssl_support&gt;</b>	Indicates used to set the SSL function for TCP connection only, maximum support three SSL TCP connections, and default SSL function is not supported. 0: Not support SSL, 1: Support SSL Note: Supported as a client only
<b>&lt;ignore_cert&gt;</b>	Indicates whether the SSL connection ignores the certificate, and default is 0.  0 - ignores certificate 2 - use certificate Note: Supported as a client only

Example:

Commands	Response
<b>AT+MCIPCFGPL=0,1,0,0,0</b>	<b>OK</b>
<b>AT+MCIPCFGPL?</b>	<b>+MCIPCFGPL:(1,0,0,0),(0,0,0,0),(0,0,0,0),(0,0,0,0),(0,0,0,0),(0,0,0,0),(0,0,0,0),(0,0,0,0),(0,0,0,0)</b>  <b>OK</b>
<b>AT+MCIPCFGPL=?</b>	<b>+MCIPCFGPL: (0-9),(0-1),(0-1),(0-1) ,(0-1)</b>  <b>OK</b>

### 3.3.5.11.16 AT+MIPSSL Set the SSL function for TCP connection

This command is used to set the SSL function for TCP connection only, maximum support three SSL TCP connections, and default SSL function is not supported.

Execution Command	Response
<b>AT+MIPSSL</b>	<b>OK</b>

Test Command	Response
<b>AT+MIPSSL=?</b>	<b>+MIPSSL: (list of supported &lt;link_num&gt;s),(list of supported &lt;status&gt;s),(list of supported &lt;ignore_cert&gt;s)</b> <b>OK</b>
Read Command	Response
<b>AT+MIPSSL?</b>	<b>+MIPSSL:(&lt;link0_ssl_state&gt;,&lt;ignore_cert0&gt;),...,&lt;link9_ssl_state&gt;,&lt;ignore_cert9&gt;)</b> <b>OK</b>
Write Command	Response
<b>AT+MIPSSL= &lt; link_num&gt;,&lt;ssl_state&gt;[,&lt;ignore_cert&gt;]</b>	<b>OK</b> or <b>ERROR</b> <b>Note:Supported as a client only</b>

Parameters are defined below:

Parameters	Description
<b>&lt;link_num&gt;</b>	Identifies a connection from 0 to 9, and default value is 0.
<b>&lt; ssl_state &gt;</b>	Identifies the state of TCP connection, and default value is 0. 0: Not support SSL 1: Support SSL
<b>&lt;ignore_cert&gt;</b>	Optional parameter, Indicates whether the SSL connection ignores the certificate,and default is 0. 0 - ignores certificate 1 - use certificate

### 3.3.5.11.17 AT+MCIPSPDP Set multi-APN function for TCP connection

This command is used to set a particular PDP context definition (see +CGDCONT command) for TCP or UDP links before at+netopen, Only supports up to 3 different pdp channels, If set more than 3 different pdp channels, revert to default value.

Execution Command	Response
<b>AT+MCIPSPDP</b>	<b>OK</b>

Test Command	Response
<b>AT+MCIPSPDP?</b>	<b>+MCIPSPDP: (list of setting a particular PDP context definition)</b> <b>OK</b>
Read Command	Response
<b>AT+MCIPSPDP=?</b>	<b>+MCIPSPDP: (list of supported ranges for every link)</b> <b>OK</b>
Write Command	Response
<b>AT+MCIPSPDP=&lt;link0&gt;,&lt;link1&gt;[,&lt;link2&gt;,&lt;link3&gt;,&lt;link4&gt;,&lt;link5&gt;,&lt;link6&gt;,&lt;link7&gt;,&lt;link8&gt;,&lt;link9&gt;]</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;link0&gt;,&lt;link1&gt;[,&lt;link2&gt;,&lt;link3&gt;,&lt;link4&gt;,&lt;link5&gt;,&lt;link6&gt;,&lt;link7&gt;,&lt;link8&gt;,&lt;link9&gt;]</b>	Each link range is 1-24 and 100-179, default value is 0.

Example:

Commands	Response
<b>AT+CGPADDR</b>	<b>+CGPADDR: 1,10.214.118.36</b> <b>+CGPADDR: 2,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0</b> <b>+CGPADDR: 3,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0</b> <b>OK</b>
<b>AT+MCIPSPDP=1,2,3</b>	<b>OK</b>
<b>AT+MCIPSPDP?</b>	<b>+MCIPSPDP: 1,2,3,0,0,0,0,0,0,0</b> <b>OK</b>

### 3.3.5.12 AT Commands for WIFI

#### 3.3.5.12.1 AT\$MWIFI Open or close WIFI.

Open or close WIFI.

Test Command	Response
<b>AT\$MWIFI=?</b>	<b>\$MWIFI:(0-2)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFI?</b>	<b>\$MWIFI:&lt;state&gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$MWIFI=&lt;enable&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;enable&gt;</b>	Open or Close wifi. 0 Close Wifi 1 Open with AP 2 Open with STA

Example:

Commands	Response
<b>AT\$MWIFI?</b>	<b>\$MWIFI: 0</b> //Wifi is closed. <b>OK</b>
<b>AT\$MWIFI=1</b>	<b>OK</b> <b>\$MWIFI:SUCCESS</b> //Open wifi with AP.

#### 3.3.5.12.2 AT\$MWIFISSID Set/Get AP's SSID

This command is used to set/get AP's SSID. The max length is 32. The command takes effect after rebooting wifi.

Test Command	Response
<b>AT\$MWIFISSID=?</b>	<b>\$MWIFISSID: (0-1),""</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFISSID?</b>	<b>\$MWIFISSID?</b> <b>\$MWIFISSID:&lt;master_ssid &gt;,&lt;guest_ssid&gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$MWIFISSID=&lt;AP_NUM&gt; ,&lt;SSID&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;AP_NUM&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.
<b>&lt;SSID&gt;</b>	Specific AP's SSID.

Example:

Commands	Response
<b>AT\$MWIFISSID=0," abc"</b>	<b>OK</b> //Set master AP's SSID to "abc".
<b>AT\$MWIFISSID?</b>	<b>\$MWIFISSID:"abc","123"</b> <b>OK</b> // Master AP's SSID is "abc",Guest AP's SSID is "123".

### 3.3.5.12.3 AT\$MWIFIAUTH Set/Get AP's Authentication And Encryption type

This command is used to set/get AP's authentication and encryption type.The command take effect after reboot wifi.



Test Command	Response
<b>AT\$MWIFIAUTH=?</b>	<b>\$MWIFIAUTH:(0-1),(0-5),(0-4),""</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFIAUTH?</b>	<b>\$MWIFIAUTH:&lt;master_auth&gt;,&lt;master_encrypt&gt;,&lt;master_pass&gt;;&lt;guest_auth&gt;,&lt;guest_encrypt&gt;,&lt;guest_pass&gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$MWIFIAUTH=&lt;AP_NUM&gt;,&lt;auth&gt;,&lt;encrypt&gt;,&lt;PASS&gt;</b> <b>&gt;</b>	<b>OK</b> or <b>ERROR</b>  Notice: If <auth> is 0,<encrypt> must be 0,<PASS> must be null. If <auth> is 1,<encrypt> must be 1, The <PASS> length should be 5/13 characters, or 10/26 hexadecimal digits. If <auth> is 2,<encrypt> must be 0 or 1, The <PASS> same as above. If <auth> is 3/4/5,<encrypt> must be 2,3 or 4,The <PASS> max lenght is 63,min lenght is 8.

Parameters are defined below:

Parameters	Description
<b>&lt;AP_NUM&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.
<b>&lt;auth&gt;</b>	Authentication type. 0 Open System Authentication 1 Shared Key Authentication 2 OSA/SKA 3 WPA 4 WPA2 5 WPA/WPA2

<b>&lt;encrypt&gt;</b>	Encryption type. 0 NULL 1 WEP 2 TKIP 3 AES 4 TKIP-AES
<b>&lt;PASS&gt;</b>	Specific AP's PASS.

Example:

Commands	Response
<b>AT\$MWIFIAUTH=0,0,""</b>	<b>OK</b> //Set master AP's auth is open
<b>AT\$MWIFIAUTH=0,3,2,"12345678"</b>	<b>OK</b> //Set master AP's auth is WPA,encrypt is TKIP,password is // "12345678"
<b>AT\$MWIFIAUTH?</b>	<b>\$MWIFIAUTH:3,2,"12345678";4,3,"1234567890"</b> <b>OK</b> // Master AP's auth is WPA,encrypt is TKIP,password is // "12345678";Guest AP's auth is WPA2,encrypt is AES,password // is "1234567890"

### 3.3.5.12.4 AT\$MWIFIBCAST Open or Close AP's Broadcast

This command is used to open or close specific AP's broadcast. While the broadcast is closed, will not receive AP's signal. The command take effect after reboot wifi.

Test Command	Response
<b>AT\$MWIFIBCAST=?</b>	<b>\$MWIFIBCAST:(0-1),(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFIBCAST?</b>	<b>\$MWIFIBCAST:</b> <b>&lt;master_broadcast &gt;,&lt;guest_broadcast&gt;</b> <b>OK</b>

Write Command	Response
<b>AT\$MWIFIBCAST=&lt;AP_NUM&gt;,&lt;broadcast&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;AP_NUM&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.
<b>&lt;broadcast&gt;</b>	Open or close specific AP's broadcast.. 0 The broadcast is off. 1 The broadcast is on.

Example:

Commands	Response
<b>AT\$MWIFIBCAST?</b>	<b>\$MWIFIBCAST:1,0</b> // Master AP's broadcast is on,Guest AP's broadcast is off. <b>OK</b>
<b>AT\$MWIFIBCAST=1,0</b>	<b>OK</b> // Close Guest AP's broadcast.
<b>AT\$MWIFIBCAST=0,1</b>	<b>OK</b> // Open Master AP's broadcast.

### 3.3.5.12.5 AT\$MWIFICHAN Set WIFI Channel

This command is used to set WIFI channel. The command take effect after reboot wifi.

Test Command	Response
<b>AT\$MWIFICHAN=?</b>	<b>\$MWIFICHAN:(0-1),(0-13)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFICHAN?</b>	<b>\$MWIFICHAN: &lt;master_channel &gt;,&lt;guest_channel&gt;</b> <b>OK</b>

Write Command	Response
<b>AT\$MWIFICHAN=&lt;AP_NUM&gt; &gt;,&lt;channel&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;AP_NUM&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.
<b>&lt;channel&gt;</b>	0 Auto. 1 - 13 : The channel number. The best channel is 1/6/11

Example:

Commands	Response
<b>AT\$MWIFICHAN?</b>	<b>\$MWIFICHAN:6,11</b> // Master AP's channel is 6,Guest AP's channel is 11. <b>OK</b>
<b>AT\$MWIFICHAN=1,6</b>	<b>OK</b> // Set Guest AP's channel to 6.
<b>AT\$MWIFICHAN=0,11</b>	<b>OK</b> // Set Master AP's channel to 11.

### 3.3.5.12.6 AT\$MWIFIMAXCLI Set Max Number Of Wifi Client

Set Max Number Of Wifi Client

Test Command	Response
<b>AT\$MWIFIMAXCLI=?</b>	<b>\$MWIFIMAXCLI:(0-1),(1-10)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFIMAXCLI?</b>	<b>\$MWIFIMAXCLI: &lt;master_num&gt;,&lt;guest_num&gt;</b> <b>OK</b>

Write Command	Response
<b>AT\$MWIFIMAXCLI</b> <b>=&lt;AP_NUM&gt;,&lt;cli_num&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;AP_NUM&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.
<b>&lt;cli_num&gt;</b>	The max client number. 1 - 10 : Max client number.The default number is 10.

Example:

Commands	Response
<b>AT\$MWIFIMAXCLI?</b>	<b>\$MWIFIMAXCLI:6,10</b> // Master AP's max client number is 6, Guest AP's max client number is 10. <b>OK</b>
<b>AT\$MWIFIMAXCLI=1,6</b>	<b>OK</b> //Set Guest AP's max client number to 6.

### 3.3.5.12.7 AT\$MWIFIDHCP Set DHCP Parameter

This command is used to set DHCP parameter.

Test Command	Response
<b>AT\$MWIFIDHCP=?</b>	<b>\$MWIFIDHCP:"","",(120-31536000)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFIDHCP?</b>	<b>\$MWIFIDHCP:&lt;host_ip&gt;,&lt;start_ip&gt;,&lt;end_ip&gt;,&lt;time&gt;</b> <b>OK</b>

Write Command	Response
<b>AT\$MWIFIDHCP=&lt;host_ip&gt; ,&lt;start_ip&gt;,&lt;end_ip&gt;,&lt;time &gt;</b>	<b>OK</b> <b>ERROR</b>
	NOTE: The IP address must in the same network segment and start_ip less than end_ip.

Parameters are defined below:

Parameters	Description
<b>&lt;host_ip&gt;</b>	The gateway's IPv4 address.
<b>&lt;start_ip&gt;</b>	The client's start IPv4 address.
<b>&lt;end_ip&gt;</b>	The client's end IPv4 address.
<b>&lt;time&gt;</b>	The hire time (second).

Example:

Commands	Response
<b>AT\$MWIFIDHCP=19 2.168.1.1,192.168.1. 20,192.168.1.60,432 00</b>	<b>OK</b> <b>\$MWIFIDHCP:SUCCESS</b> // Set host IP is "192.168.1.1",start ip is "192.168.1.20",end ip is "192.168.1.60".
<b>AT\$MWIFIDHCP?</b>	<b>\$MWIFIDHCP:192.168.1.1,192.168.1.20,192.168.1.60,43200</b> <b>OK</b>

### 3.3.5.12.8 AT\$MWIFINAT Set AP's NAT Type

This command is used to set AP's NAT type.

Test Command	Response
<b>AT\$MWIFINAT=?</b>	<b>\$MWIFINAT:(0-3)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFINAT?</b>	<b>\$MWIFINAT:&lt;nat_type&gt;</b> <b>OK</b>

Write Command	Response
<b>AT\$MWIFINAT=&lt;nat&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;nat&gt;</b>	NAT type 0 SymmetricNAT 1 PortRestrictedConeNAT 2 FullConeNAT 3 Address RestrictedConeNAT

Example:

Commands	Response
<b>AT\$MWIFINAT?</b>	<b>\$MWIFINAT:0</b> // Current is Symmetric NAT <b>OK</b>

### 3.3.5.12.9 AT\$MWIFIMODE Set WIFI Mode

This command is used to set WIFI mode.

Test Command	Response
<b>AT\$MWIFIMODE=?</b>	<b>\$MWIFIMODE:(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFIMODE?</b>	<b>\$MWIFIMODE:&lt;mode&gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$MWIFIMODE =&lt;mode&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	WIFI mode. 0 AP-only mode. 1 AP-AP mode.

Example:

Commands	Response
<b>AT\$MWIFIMODE?</b>	<b>\$MWIFIMODE:1</b> //Current mode is AP-AP. <b>OK</b>
<b>AT\$MWIFIMODE=0</b>	<b>OK</b> //Set wifi mode to AP-only.

### 3.3.5.12.10 AT\$MWIFICLICNT Get WIFI Client Number

This command is used to get client number.

Read Command	Response
<b>AT\$MWIFICLICNT?</b>	<b>OK</b> <b>ERROR</b>

Example:

Commands	Response
<b>AT\$MWIFICLICNT?</b>	<b>OK</b> <b>\$MWIFICLICNT:SUCCESS</b> <b>1,0</b> // Master AP's client number is 1;Guest AP's client number is 0

### 3.3.5.12.11 AT\$MWIFICLILIST Get WIFI Client Information

This command is used to get wifi client information.

Test Command	Response
<b>AT\$MWIFICLILIST=?</b>	<b>\$MWIFICLILIST:(0-1)</b> <b>OK</b>
Write Command	Response
<b>AT\$MWIFICLILIST=&lt;AP_NUM&gt;</b> <b>M &gt;</b>	<b>Master-AP:&lt;cli_cnt&gt;</b> <b>Index:&lt;index&gt;,&lt;name&gt;,&lt;mac&gt;,&lt;IPv4&gt;</b> ... or <b>Guest-AP:&lt;cli_cnt&gt;</b> <b>Index:&lt;index&gt;,&lt;name&gt;,&lt;mac&gt;,&lt;IPv4&gt;</b> ...



Parameters are defined below:

Parameters	Description
<b>&lt;AP_NUM&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.

Example:

Commands	Response
<b>AT\$MWIFICLILIST=0</b> // Get Master AP's client information.	<b>OK</b> <b>Master-AP:2</b> <b>Index:0,"ATH-TL00H-e044188fddf0ddc","24:df:6a:2d:0c:20","192.168.225.55"</b> <b>Index:1,"android-734a3b83746d8b3f","ac:f7:f3:5d:0b:f6","192.168.225.40"</b>
<b>AT\$MWIFICLILIST=1</b> // Get Guest AP's client information.	<b>OK</b> <b>Guest-AP:0</b> // No client connect into Guest AP.

### 3.3.5.12.12 AT\$MWIFIIND Open/Close STA Connection Indication

This command is used to open or close station connection indication. The default state is open

Test Command	Response
<b>AT\$MWIFIIND=?</b>	<b>\$MWIFIIND:(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFIIND?</b>	<b>\$MWIFIIND:&lt;state&gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$MWIFIIND=&lt;state&gt;</b>	<b>OK</b> <b>ERROR</b>

Write Command	Response
<b>\$MWIFIIND:&lt;ap_num&gt;,&lt;conn_state&gt;,&lt;name&gt;,&lt;mac&gt;,&lt;ip&gt;</b>	The indication when client connect to AP or disconnect from AP.

Parameters are defined below:

Parameters	Description
<b>&lt;state&gt;</b>	The indication state. 0 Close indication state. 1 Open indication state.
<b>&lt;ap_num&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.
<b>&lt;conn_state&gt;</b>	The connection state 0 Disconnect form AP. 1 Connect to AP
<b>&lt;name&gt;</b>	Client's name.
<b>&lt;mac&gt;</b>	Client's Mac address.
<b>&lt;ip&gt;</b>	Client's IPV4 address.

Example:

Commands	Response
<b>AT\$MWIFIIND=1</b>  //Open connection indication	<b>OK</b>
<b>\$MWIFIIND:0,1,"test","f0:79:60:36:ea:d3","192.168.225.29"</b>	// Has a client connect to master AP.

### 3.3.5.12.13 AT\$MWIFIBLKLIST Get/Set WIFI blacklist

This command is used to get or set wifi blacklist.

Test Command	Response
<b>AT\$MWIFIBLKLIST=?</b>	<b>\$MWIFIBLKLIST:(0-1),(0-1),""</b> <b>OK</b>

Write Command	Response
<b>AT\$MWIFIBLKLIST=&lt;AP_NUM&gt;[,&lt;mode&gt;][,&lt;mac&gt;]</b>	<b>\$MWIFIBLKLIST:SUCCESS</b> <b>\$WIFIBLACKLIST:&lt;mac_num&gt;(mac_num &lt;= 10)</b> <b>&lt;mac_1&gt;,&lt;mac_2&gt;, ... , &lt;mac_num&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;AP_NUM&gt;</b>	The AP's ID. 0 The master AP. 1 The Guest AP.
<b>&lt;mode&gt;</b>	Add/Remove mac into/from blacklist. 0 Add into blacklist. 1 Remove from blacklist.
<b>&lt;mac&gt;</b>	The client's mac address.

Example:

Commands	Response
<b>AT\$MWIFIBLKLIST=0,0,24:df:6a:2d:0c:24</b>	<b>OK</b> // Add "24:df:6a:2d:0c:24" into Master AP's blacklist.
<b>AT\$MWIFIBLKLIST=0</b> // Get macs from Master AP's blacklist.	<b>OK</b> <b>\$MWIFIBLKLIST:SUCCESS</b> <b>\$WIFIBLACKLIST:10</b> // There are 10 macs <b>24:df:6a:2d:0c:20,24:df:6a:2d:0c:21,24:df:6a:2d:0c:22,24:df:6a:2d:0c:23,24:df:6a:2d:0c:24,24:df:6a:2d:0c:25,24:df:6a:2d:0c:26,24:df:6a:2d:0c:27,24:df:6a:2d:0c:28,24:df:6a:2d:0c:29</b>  <b>\$WIFIBLACKLIST:9</b> <b>24:df:6a:2d:0c:30,24:df:6a:2d:0c:31,24:df:6a:2d:0c:32,24:df:6a:2d:0c:33,24:df:6a:2d:0c:34,24:df:6a:2d:0c:35,24:df:6a:2d:0c:36,24:df:6a:2d:0c:37,24:df:6a:2d:0c:38</b>
<b>AT\$MWIFIBLKLIST=1</b> // Get macs from Guest AP's blacklist.	<b>OK</b> <b>\$MWIFIBLKLIST:SUCCESS</b> <b>\$WIFIBLACKLIST:0</b>

### 3.3.5.12.14 AT\$MWIFIRSTD Reset WIFI Setting

This command is used to reset WIFI settings. After this command, the devices will reboot. This command is unavailable for STA mode.

Execution Command	Response
<b>AT\$MWIFIRSTD</b>	<b>OK</b> <b>ERROR</b>

Example:

Commands	Response
<b>AT\$MWIFIRSTD</b>	<b>OK</b>

### 3.3.5.12.15 AT\$MNETSWITCH Enable Or Unable Network For WIFI

This command is used to enable or disable network for WIFI.

Test Command	Response
<b>AT\$MNETSWITCH =?</b>	<b>\$MNETSWITCH:(0-1)</b> <b>OK</b>
Read Command	Response
<b>AT\$MNETSWITCH?</b>	<b>\$MNETSWITCH:&lt;open&gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$MNETSWITCH=&lt;open&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;open&gt;</b>	0   WIFI can not surf the Internet. 1   WIFI can surf the Internet.

Example:

Commands	Response
<b>AT\$MNETSWITCH?</b>	<b>\$MNETSWITCH:0    // Prohibit WIFI Internet access.</b> <b>OK</b>

<b>AT\$MNETSWITCH=</b> <b>1</b>	<b>OK</b> // Allows WIFI Internet access.
------------------------------------	--

### 3.3.5.12.16 AT\$MWIFIPROID Get/Set Profile ID For AP

This command is used to set profile id for AP.

Test Command	Response
<b>AT\$MWIFIPROID =?</b>	<b>\$MWIFIPROID:(0-1),(0-255)</b> <b>OK</b>
Read Command	Response
<b>AT\$MWIFIPROID?</b>	<b>\$MWIFIPROID:&lt;3gpp_profile_id&gt;,&lt;3gpp2_profile_id &gt;</b> <b>OK</b>
Write Command	Response
<b>AT\$MWIFIPROID</b> <b>=&lt;type&gt;,&lt;profile_id&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;type&gt;</b>	0 Set profile ID for 3GPP 1 Set profile ID for 3GPP2
<b>&lt;profile_id&gt;</b>	The profile ID is between 0 and 24 for 3GPP,and between 0 and 255 for 3GPP2.The default value is 0.

Example:

Commands	Response
<b>AT\$MWIFIPROID?</b>	<b>\$MWIFIPROID:3,0</b> <b>OK</b> // The profile id for 3GPP is 3 and the id for 3GPP2 is // default.
<b>AT\$MWIFIPROID=0,</b> <b>1</b>	<b>OK</b> // Set the profile ID for 3GPP is 1.

### 3.3.5.12.17 AT\$MWSTASCAN Scan The Usable Networks

Scan The Usable Networks

Execution Command	Response
<b>AT\$MWSTASCAN</b>	<b>OK</b>  <b>\$MWSTASCAN:SUCCESS</b> <mac>,<freq>,<rssi>,<tag>,<ssid>\r\n <mac>,<freq>,<rssi>,<tag>,<ssid>\r\n ...  <mac>    AP's MAC address. <freq> The frequency of AP. <rssi>    The signal strength of AP. <tag>    The type of authentication/encryption,and so on. <ssid>    The ssid of AP.

Example:

Commands	Response
<b>AT\$MWSTASCAN</b>	<b>OK</b>  <b>\$MWSTASCAN:SUCCESS</b> 6e:59:40:58:7e:ba,2417,-55,[WPA-PSK-CCMP][WPA2-PSK-CCMP][ESS],Mobiletek_Guest 6c:59:40:48:7e:ba,2417,-54,[WPA-PSK-CCMP][WPA2-PSK-CCMP][ESS],Mobiletek_2.4G 6c:59:40:48:7e:bb,5785,-76,[WPA-PSK-CCMP][WPA2-PSK-CCMP][ESS],Mobiletek_5G ec:6c:9f:27:84:b0,2462,-76,[WPA2-PSK-CCMP+TKIP][ESS],WX-zykq d4:68:ba:10:fe:54,2412,-79,[WPA-PSK-CCMP][WPA2-PSK-CCMP][ESS],DYJK_TV d4:68:ba:08:fe:54,2412,-80,[ESS],THM

### 3.3.5.12.18 AT\$MWSTASTATUS Get The Status Of STA

This command is used to get the status of STA. In the first,must open wifi as STA.

Execution Command	Response
<b>AT\$MWSTASTATUS</b>	<b>OK</b>  <b>\$MWSTASTATUS:SUCCESS</b> <b>&lt;state&gt;,&lt;mac_own&gt;,&lt;net_id&gt;,&lt;ssid&gt;,&lt;channel&gt;,&lt;freq&gt;</b> <b>,&lt;auth&gt;,&lt;mac_ap&gt;,&lt;ip&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;state&gt;</b>	The state of connection. 0 Disconnected. 1 Connected.
<b>&lt;mac_own&gt;</b>	The MAC address of STA.
<b>&lt;net_id&gt;</b>	The network id of connected AP(Only for <state> is 1).
<b>&lt;ssid&gt;</b>	The ssid of connected AP(Only for <state> is 1).
<b>&lt;channel&gt;</b>	The channel of connected AP(Only for <state> is 1).
<b>&lt;freq&gt;</b>	The frequency of connected AP(Only for <state> is 1).
<b>&lt;auth&gt;</b>	The authenticate type (Only for <state> is 1). 0 Open 1 WEP 2 WPA/WPA2
<b>&lt;mac_ap&gt;</b>	The MAC address of connected AP(Only for <state> is 1).
<b>&lt;ip&gt;</b>	The ip address(Only for <state> is 1).

Example:

Commands	Response
<b>AT\$MWSTASTATUS</b>	<b>OK</b>  <b>\$MWSTASTATUS:SUCCESS</b> <b>0,00:03:7f:50:00:01,,,,,,,, // Disconnected</b>  <b>\$MWSTASTATUS:SUCCESS</b> <b>1,00:03:7f:50:00:01,2,QSoftAP,6,2437,1,28:3b:4c:5d:6e:7f,192.1</b> <b>68.43.215</b>

### 3.3.5.12.19 AT\$MWSTANETADD Add network with ssid and psk.

This command is used to add network with ssid and psk. In the first,must open wifi as STA.

Test Command	Response
<b>AT\$MWSTANETADD=?</b>	<b>\$MWSTANETADD:"","",(0-1)</b> <b>OK</b>
Write Command	Response
<b>AT\$MWSTANETADD=&lt;ssid&gt; &gt;,&lt;psk&gt;,&lt;type&gt;</b>	<b>ERROR</b> <b>OK</b>  <b>\$MWSTANETADD:SUCCESS</b> <b>\$MWSTANETADD:FAIL</b>

Parameters are defined below:

Parameters	Description
<b>&lt;ssid&gt;</b>	The ssid of network.The length is between 1 to 32 for ASCII,and between 1 to 64 for hexadecimal.
<b>&lt;psk&gt;</b>	The psk(password) of network.The length is between 8 to 64, or 0 for no password and 5 for WEP.The default authenticate is WPA/WPA2.It will fail,if the length is 5 and no such WEP network.
<b>&lt;type&gt;</b>	The character encode of ssid.The default is 0. 0    ASCII 1    Hexadecimal

Example:

Commands	Response
<b>AT\$MWSTANETADD="Mobitek_2.4G", "xxxxxxxxxxxx", 0</b>	<b>OK</b> <b>\$MWSTANETADD:SUCCESS</b> // Will scan available network.If this network is not WEP or no such network,set it as // WPA/WPA2
<b>AT\$MWSTANETADD="Mobitek_2.4G", "", 0</b>	<b>OK</b> <b>\$MWSTANETADD:SUCCESS</b> // Set as open network.
<b>AT\$MWSTANETADD="e6b58be8af95", "", 1</b>	<b>OK</b> <b>\$MWSTANETADD:SUCCESS</b> // Set as open network



### 3.3.5.12.20 AT\$MWSTANETDEL Delete Network

This command is used to delete the specified network. In the first, must open wifi as STA.

Test Command	Response
<b>AT\$MWSTANETDEL =?</b>	<b>\$MWSTANETDEL:(0-65535)</b> <b>OK</b>
Write Command	Response
<b>AT\$MWSTANETDEL=&lt;net_id&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;net_id&gt;</b>	The network's ID which get from \$MWSTANETLIST.

Example:

Commands	Response
<b>AT\$MWSTANETDEL=0</b>	<b>OK</b>
<b>AT\$MWSTANETDEL=99</b>	<b>\$MWSTANETDEL:FAIL,15</b> <b>ERROR</b>

### 3.3.5.12.21 AT\$MWSTANETLIST List the added network

This command is used to list the added network. In the first, must open wifi as STA.

Execution Command	Response
<b>AT\$MWSTANETLIST</b>	<b>OK</b> <b>ERROR</b> <b>\$MWSTANETLIST:SUCCESS</b> <b>&lt;net_id&gt;,&lt;ssid&gt;</b> <b>...</b>  <b>&lt;net_id&gt;      Network's ID.</b> <b>&lt;ssid&gt;        Network's ssid.</b>

Example:

Commands	Response
<b>AT\$MWSTANETLIST</b>	<b>OK</b>
<b>T</b>	<b>\$MWSTANETLIST:SUCCESS</b> <b>1,Mobiletek_Guest</b> <b>2,Mobiletek_2.4G</b> <b>3,abc</b>

### 3.3.5.12.22 AT\$MWSTACONN Connect To Specified Network

This command is used to connect to specified network. In the first,must open wifi as STA.

Test Command	Response
<b>AT\$MWSTACONN =?</b>	<b>\$MWSTACONN:(0-65535)</b> <b>OK</b>
Write Command	Response
<b>AT\$MWSTACONN=&lt;net_id&gt;</b>	<b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;net_id&gt;</b>	The network's ID which get from \$MWSTANETLIST.

Example:

Commands	Response
<b>AT\$MWSTACONN=</b> <b>1</b>	<b>OK</b>
<b>AT\$MWSTACONN=</b> <b>10</b>	<b>\$MWSTACONN:FAIL,15</b>  <b>ERROR</b>

### 3.3.5.12.23 AT\$MWSTADISCONN Disconnect The Network

This command is used to disconnect the current network. In the first,must open wifi as STA.

Execution Command	Response
<b>AT\$MWSTADISCONN</b>	<b>OK</b> <b>ERROR</b>

Example:

Commands	Response
<b>AT\$MWSTADISCONN</b>	<b>OK</b>

#### 3.3.5.12.24 AT\$MWSTARECONN Reconnect the network

This command is used to reconnect the network. In the first, must open wifi as STA. This command will choose the best network to connect.

Execution Command	Response
<b>AT\$MWSTARECONN</b>	<b>OK</b> <b>ERROR</b>

Example:

Commands	Response
<b>AT\$MWSTARECONN</b>	<b>OK</b>

#### 3.3.5.12.25 AT\$MWSTASAVE Save The Network Information

This command is used to save the network information. In the first, must open wifi as STA. If not execute this AT, the change for network will be lost.

Execution Command	Response
<b>AT\$MWSTASAVE</b>	<b>OK</b> <b>ERROR</b>

Example:

Commands	Response
<b>AT\$MWSTASAVE</b>	<b>OK</b>

#### 3.3.5.12.26 AT\$MWSTAIND Notification STA Status Change

Notification STA Status Change.

Write Command	Response
<b>AT\$MWSTAIN:&lt;state&gt;</b>	This command appear when STA status changed.

Parameters are defined below:

Parameters	Description
<b>&lt;state&gt;</b>	<div>CONNECTED      STA connect to network.</div> <div>DISCONNECTED      STA disconnect from network.</div>

### 3.3.5.12.27 Error Code

Parameters	Description
1	Wifi support state unknown
2	Load Wifi driver failed
3	Wifi not open
4	Server not running
5	Data call failed
6	Waiting for the operation to complete
7 - 9	Communication error
10	AT parameter error
11	Guest AP not open
12	Restoring factory settings
13	Wifi mode err
14	STA is process
15	Network ID error
16	Unsupported network parameter
17	STA clients to more
18	Unknown error

### 3.3.5.13 AT Commands for FOTA

#### 3.3.5.13.1 AT+FOTA Detect/Upgrade Software Version

Detect/Upgrade Software Version

Execution Command	Response
<b>AT+FOTA</b>	<p> <b>CHECK_SUCCESS</b>      detect a new version  <b>DOWNLOAD_SUCCESS</b>      download success  <b>REBOOT_AND_UPGRADE</b>      reboot for recovery upgrade  <b>CHECK_FAILURE</b>      the new version is not detected  <b>NET_FAILURE</b>      network error  <b>DOWNLOAD_FAILURE</b>      download error  <b>VERIFY_FAILURE</b>      verify downloaded file error  <b>downloading progress xxx%</b>      download progress </p> <p>This command is used to upgrade software version.</p>
Read Command	Response
<b>AT+ FOTA?</b>	<p> <b>DETECTED</b>      a new version is detected  <b>LATEST</b>      this version is latest  <b>CHECK_FAILURE</b>      detect version error  <b>NET_ERROR</b>      network error </p> <p>This command is used to detect new software version.</p>
Reference	Note
	<p>Please ensure network flow, before upgrade.</p> <p>When using "AT+FOTA" command for upgrade version successfully, machine will reboot to recovery upgrade. Please be waiting patiently, this time will last about 2 minutes. And then it will boot automatically and report the result of upgrade operation.</p> <p>The format of report result is "+FOTA: &lt;result&gt;". The value of "&lt;result&gt;" is:</p> <p>UPGRADE_SUCCESS UPGRADE_FAILURE</p> <p>506X module will not display REBOOT_AND_UPGRADE and OK.</p>

Example:

Commands	Response
Detect: <b>AT+FOTA?</b>	<b>+FOTA: DETECTED</b>  <b>OK</b>

LYNQ  
CONFIDENTIAL

Upgrade:

**AT+FOTA**

**+FOTA: CHECK\_SUCCESS**

**+FOTA: downloading progress 001%**

**+FOTA: downloading progress 002%**

**+FOTA: downloading progress 003%**

**+FOTA: downloading progress 004%**

**+FOTA: downloading progress 005%**

**+FOTA: downloading progress 006%**

**+FOTA: downloading progress 007%**

**+FOTA: downloading progress 008%**

**+FOTA: downloading progress 009%**

**+FOTA: downloading progress 010%**

**+FOTA: downloading progress 011%**

**+FOTA: downloading progress 012%**

**+FOTA: downloading progress 013%**

**+FOTA: downloading progress 014%**

**+FOTA: downloading progress 015%**

**+FOTA: downloading progress 016%**

**+FOTA: downloading progress 017%**

**+FOTA: downloading progress 018%**

**+FOTA: downloading progress 019%**

**+FOTA: downloading progress 020%**

**+FOTA: downloading progress 021%**

**+FOTA: downloading progress 022%**

**+FOTA: downloading progress 023%**

**+FOTA: downloading progress 024%**

**+FOTA: downloading progress 025%**

**+FOTA: downloading progress 026%**

**+FOTA: downloading progress 027%**

**+FOTA: downloading progress 028%**

**+FOTA: downloading progress 029%**

**+FOTA: downloading progress 030%**

**+FOTA: downloading progress 031%**

**+FOTA: downloading progress 032%**

**+FOTA: downloading progress 033%**

**+FOTA: downloading progress 034%**

**+FOTA: downloading progress 035%**

**+FOTA: downloading progress 036%**

+FOTA: downloading progress 037%  
+FOTA: downloading progress 038%  
+FOTA: downloading progress 039%  
+FOTA: downloading progress 040%  
+FOTA: downloading progress 041%  
+FOTA: downloading progress 042%  
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+FOTA: downloading progress 075%  
+FOTA: downloading progress 076%  
+FOTA: downloading progress 077%  
+FOTA: downloading progress 078%  
+FOTA: downloading progress 079%



	<b>+FOTA: downloading progress 080%</b> <b>+FOTA: downloading progress 081%</b> <b>+FOTA: downloading progress 082%</b> <b>+FOTA: downloading progress 083%</b> <b>+FOTA: downloading progress 084%</b> <b>+FOTA: downloading progress 085%</b> <b>+FOTA: downloading progress 086%</b> <b>+FOTA: downloading progress 087%</b> <b>+FOTA: downloading progress 088%</b> <b>+FOTA: downloading progress 089%</b> <b>+FOTA: downloading progress 090%</b> <b>+FOTA: downloading progress 091%</b> <b>+FOTA: downloading progress 092%</b>
	<b>+FOTA: downloading progress 093%</b> <b>+FOTA: downloading progress 094%</b> <b>+FOTA: downloading progress 095%</b> <b>+FOTA: downloading progress 096%</b> <b>+FOTA: downloading progress 097%</b> <b>+FOTA: downloading progress 098%</b> <b>+FOTA: downloading progress 099%</b> <b>+FOTA: downloading progress 100%</b> <b>+FOTA: DOWNLOAD_SUCCESS</b> <b>+FOTA: REBOOT_AND_UPGRADE</b>  <b>OK</b>

### 3.3.5.13.2 AT+MFOTAGCVI Get the publish content of new version

This command is used to get the publish content of new version. This command must be used after "AT+FOTA?" cmd return "+FOTA: DETECTED".

Execution Command	Response
<b>AT+MFOTAGCVI</b>	new version: <version> publish date: <date> publish content: <content>

Parameters are defined below:

Parameters	Description
<b>&lt;version&gt;</b>	the number of new version.
<b>&lt;date&gt;</b>	the publish time of new version. The format is YYYY-MM-DD
<b>&lt;content&gt;</b>	the publish content of new version. This data is encoded by UTF-8.

Example:

Commands	Response
<b>AT+MFOTAGCVI</b>	new version: L506Cv01.05b05_fota.02 publish date: 2017-03-13 publish content: 1.Optimization system,2.Fix bugs.  <b>OK</b>

### 3.3.5.13.3 AT+MOTA Set FTP parameters and start the download

This command is used to Set FTP parameters and start the download.

Test Command	Response
<b>AT+MOTA=?</b>	<b>OK</b>
Read Command	Response
<b>AT+MOTA?</b>	<b>+MOTA: "/fota/update_v1_2_v2-02.zip", "182.150.28.206",6988,"jingbin","jingbin"</b> <b>OK</b>
Write Command	Response
<b>AT+MOTA = "&lt;path&gt;","&lt;host&gt;",&lt;port&gt;"," &lt;username&gt;","&lt;password&gt; "</b>	<b>+MOTA: downloading progress xxx%</b> <b>+MOTA: DOWNLOAD_FAILURE</b> <b>+MOTA: ERROR</b> <b>OK</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;path&gt;</b>	The path of the download file, and The maximum length is 128.
<b>&lt;host&gt;</b>	The server's IP or domain name, and The maximum length is 128.
<b>&lt;port&gt;</b>	The server port, The range is 1-65535
<b>&lt;username&gt;</b>	Login user name, and The maximum length is 28.
<b>&lt;password&gt;</b>	Login password, and The maximum length is 28.

Example:

Commands	Response
----------	----------

<b>AT+MOTA="/fota/update_v1_2_v2-02.zip", "182.150.28.206", 6988, "jingbin", "jingbin"</b>	<b>+MOTA: downloading progress 000%</b> <b>+MOTA: downloading progress 016%</b> <b>+MOTA: downloading progress 031%</b> <b>+MOTA: downloading progress 050%</b> <b>+MOTA: downloading progress 073%</b> <b>+MOTA: downloading progress 097%</b> <b>+MOTA: downloading progress 100%</b> <b>+MOTA: download success</b> <b>OK</b>
--	--

### 3.3.5.13.4 AT+MDELTA Upgrade Software Version

This command is used to Upgrade Software Version.

Execution Command	Response
<b>AT+MDELTA</b>	<b>+MDELTA: REBOOT_AND_UPGRADE</b> <b>+MDELTA: CHECK_FAILURE</b> <b>+ MDELTA: ERROR</b> <b>+FOTA: VERIFY_FAILURE</b> <b>OK</b> <b>ERROR</b>  NOTE: <ul style="list-style-type: none"> <li>● When +MOTAcommand executed successfully after download, can begin to upgrade.</li> <li>● When using "AT+MDELTA" command for upgrade version successfully, machine will reboot to recovery upgrade. Please be waiting patiently, this time will last about 2 minutes. And then it will boot automatically and report the result of upgrade operation.</li> <li>● The format of report result is "+FOTA: &lt;result&gt;". The value of "&lt;result&gt;" is:                UPGRADE_SUCCESS                UPGRADE_FAILURE</li> <li>● 506X module will not display OK.</li> </ul>
Test Command	Response
<b>AT+MDELTA=?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+MDELTA</b>	<b>+MDELTA: REBOOT_AND_UPGRADE</b> <b>OK</b>

### 3.3.5.13.5 AT+MHFOTA Detect/Upgrade Software Version

Detect/Upgrade Software Version

Write Command  <b>AT+MHFOTA=&lt;url_str&gt;[,&lt;ignore_cert&gt; &gt;]</b>	This command is used to download MHFOTA package.  Response:  <CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF> or <CR><LF>BUSY<CR><LF> //Other MHFOTA tasks are in progressing
Read Command  <b>AT+ MHFOTA?</b>	This command is used to query download status.  Response: <CR><LF>+MHFOTA: <status><CR><LF>  <CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF>
Execution Command  <b>AT+ MHFOTA</b>	Response:  OK

Parameters are defined below:

Parameters	Description
<b>&lt;url_str&gt;</b>	String type, the url maximum supported is 256 bytes. this parameter must follow the HTTP protocol format. If no HTTP server port number is specified in <url_str>, the default port 80 is used. When url_strc fails, an error is reported.

<b>&lt;ignore_cert&gt;</b>	Indicates whether the SSL connection ignores the certificate, and default is 1. 1 - ignores certificate 0 - use certificate	
<b>&lt;status&gt;</b>	NONE	//Idle state
	START	//start download
	DOWNLOADING 50%	//Downloading (0 ~ 100)
	SUCCESS	//download successful
	FAILURE	//download failed
Reference	Note:  Only supports L506X	

Example:

Commands	Response
Download: <b>AT+MHFOTA=http://10.10.10.10:88/MHFOTA/L710_B02V01_02.zip</b>	<b>OK</b>
Download status: <b>AT+MHFOTA?</b>	<b>+MHFOTA: SUCCESS</b>  <b>OK</b>

### 3.3.5.13.6 AT+MOTASIO input Software Version

Input Software Version

Write Command  <b>AT+MOTASIO=&lt;length&gt;</b>	This command is used to download package from port.  Response:  <CR><LF>><CR> or ERROR
---	--

Read Command	Response:
<b>AT+ MOTASIO?</b>	OK
Execution Command	Response:
<b>AT+ MOTASIO</b>	OK

Parameters are defined below:

Parameters	Description
<b>&lt;length&gt;</b>	File length of delta file, The length value must be greater than 4096.
Reference	Note: Only supports L506X

Example:

Commands	Response
Download: <b>AT+MOTASIO=12580</b>	>  OK
Qownload status: <b>AT+MOTASIO?</b>	OK
Upgrade: <b>AT+ MOTASIO</b>	OK

### 3.3.5.14 AT Commands for TTS

#### 3.3.5.14.1 AT+MTTS Voice broadcast

This command is used to broadcast text, enter a paragraph of text <text>, the module is broadcast in the form of voice

Test Command	Response
<b>AT+MTTS=?</b>	<b>+MTTS: (1-6),"text"</b>  <b>OK</b>
Write Command	Response
<b>AT+MTTS=&lt;encode&gt;,&lt;text&gt;</b>	<b>OK</b> or <b>+MTTS: FAIL&lt;code&gt;</b> <b>ERROR</b>
Reference	Note:  If there is call incom, TTS command can only be used normally after the call is connected.

Parameters are defined below:

Parameters	Description
<b>&lt;encode&gt;</b>	Text encoding format 1: the beginning of the UNICODE-LIT encoded text broadcast 2: the beginning of the UTF8 encoded text broadcast 3: the beginning of the GBK encoded text broadcast 4: the beginning of the GB2312 encoded text broadcast 5: the beginning of the BIG5 encoded text broadcast 6: the beginning of the GB18030 encoded text broadcast Note: L506SC only support encode format 1 and 2.
<b>&lt;text&gt;</b>	Broadcast text content is encoded format Note: a maximum of 1024 characters can be input, UCS2 to use the small end Little-endian mode coding
<b>&lt;code&gt;</b>	1. err_code < 0 internal error 2. err_code > 10000 is TTS lib running error

Example:

Commands	Response
<b>AT+MTTS=1,"2D4E FD563575E14F"</b>	<b>OK</b>
<b>AT+MTTS=2,"e6889 0e983bde7a7bbe69f af545453e8afade99f b3e7a4bae4be8b"</b>	<b>OK</b>
<b>AT+MTTS?</b>	<b>ERROR</b>
<b>AT+MTTS=?</b>	<b>+MTTS: (1-6),"text"</b>  <b>OK</b>

#### 3.3.5.14.2 AT+MTTSP Set voice broadcast parameters

This command is used to set the parameters of the TTS voice broadcast

Test Command	Response
<b>AT+MTTSP=?</b>	<b>+MTTSP: (0-1),(0-100),(0-100),(0-6)</b>  <b>OK</b>
Read Command	Response
<b>AT+MTTSP?</b>	<b>+MTTSP: &lt;speaker&gt;,&lt;volume&gt;,&lt;speed&gt;,&lt;effect&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MTTSP=[&lt;speaker&gt;,&lt;v olume&gt;,&lt;speed&gt;,&lt;effect&gt;] ]]]</b>	<b>OK/ERROR</b>  Note: L506SC only support <speaker> 1 and <effect> 0 params

Parameters are defined below:

Parameters	Description
------------	-------------



<b>&lt;speaker&gt;</b>	voice speaker 0 - female voice (default 0) 1 - male voice
<b>&lt;volume&gt;</b>	Sound size 0 - 100 (default 50)
<b>&lt;speed&gt;</b>	Broadcast speed 0 - 100 (default 50)
<b>&lt;effect&gt;</b>	voice effect ,default 0 0 No 1 sound, far and near, 2 echo, 3 robots, 4 water, 5 reverb, 6 mystifying

Example:

Commands	Response
<b>AT+MTTSP=1,51,51,3</b>	<b>OK</b>
<b>AT+MTTSP?</b>	<b>+MTTSP: 1,51,51,3</b> <b>OK</b>
<b>AT+MTTSP=?</b>	<b>+MTTSP: (0-1),(0-100),(0-100),(0-6)</b> <b>OK</b>
<b>AT+MTTSP</b>	<b>ERROR</b>

### 3.3.5.15 AT Commands for AUDIO

#### 3.3.5.15.1 AT+MAUDREC Audio function

This command is used to audio function.

Test Command	Response
<b>AT+MAUDREC=?</b>	<b>+MAUDREC: (0-4),"file name"</b>  <b>OK</b>
Read Command	Response
<b>AT+MAUDREC?</b>	<b>+MAUDREC: numbers,</b> <b>&lt;File_name1&gt;, size</b> <b>&lt;File_name2&gt;, size</b> <b>...</b>  <b>OK</b>
Write Command	Response
<b>AT+MAUDREC=</b> <b>&lt;mode&gt;[,&lt;filename&gt;]</b>	<b>OK</b> or <b>BUSY</b> or <b>+MAUDREC: FAIL: &lt;code&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 Start record(Non-telephone recording) 1 Stop record(Non-telephone recording) 2 Play record 3 Stop play record 4 Delete record
<b>&lt;filename&gt;</b>	Record file name, do not need suffix, suffix is wav, if mode is 0, 2, 4, this field is valid, if 0, 2, 4 do not have this field, default name is rec, max length of the file name is 30, File name can only be Ascii code
<b>Error &lt;code&gt;</b>	code < 0 internal error 10 operate error 11 bad parms error 12 FILE error 13 PCM error

Example:

Commands	Response
<b>AT+MAUDREC=0,"test"</b>	<b>OK</b>
<b>AT+MAUDREC=1</b>	<b>OK</b>
<b>AT+MAUDREC=2</b>	<b>OK</b>
<b>AT+MAUDREC?</b>	<b>+MAUDREC: 1, &lt;test.wav&gt;, 32543</b>  <b>OK</b>
<b>AT+MAUDREC=4,"test"</b>	<b>OK</b>
<b>AT+MAUDREC=?</b>	<b>+MAUDREC: (0-4),"file name"</b>  <b>OK</b>
<b>AT+MAUDREC</b>	<b>ERROR</b>

### 3.3.5.15.2 AT+MMICVOL Set MIC volume

This command is used to set the mic volume

Test Command	Response
<b>AT+MMICVOL=?</b>	<b>+MMICVOL: (0-10)</b>  <b>OK</b>
Read Command	Response
<b>AT+MMICVOL?</b>	<b>+MMICVOL: &lt;vol&gt;</b>  <b>OK</b>

Write Command	Response
<b>AT+MMICVOL =&lt;vol&gt;</b>	<b>OK</b> or <b>+MMICVOL: FAIL:&lt;code&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;vol&gt;</b>	volume size, default value 5 0 - 10
<b>Error &lt;code&gt;</b>	code < 0    internal error 10          operate error 11          bad parms error 12          FILE    error 13          PCM    error

Example:

Commands	Response
<b>AT+MMICVOL=2</b>	<b>OK</b>
<b>AT+MMICVOL?</b>	<b>+MMICVOL: 2</b>  <b>OK</b>
<b>AT+MMICVOL=?</b>	<b>+MMICVOL: (0-10)</b>  <b>OK</b>
<b>AT+MMICVOL</b>	<b>ERROR</b>

### 3.3.5.15.3 AT+MSPKVOL Set Speaker Volume

This command is used to set the speaker volume

Test Command	Response
<b>AT+MSPKVOL=?</b>	<b>+MSPKVOL: (0-10)</b>  <b>OK</b>

Read Command	Response
<b>AT+MSPKVOL?</b>	<b>+MSPKVOL: &lt;vol&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MSPKVOL =&lt;vol&gt;</b>	<b>OK</b> or <b>+MSPKVOL: FAIL:&lt;code&gt;</b> <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;vol&gt;</b>	volume size, default value 7 0 - 10
<b>Error &lt;code&gt;</b>	code < 0    internal error 10            operate error 11            bad parms error 12            FILE    error 13            PCM    error

Example:

Commands	Response
<b>AT+MSPKVOL=2</b>	<b>OK</b>
<b>AT+MSPKVOL?</b>	<b>+MSPKVOL: 2</b>  <b>OK</b>
<b>AT+MSPKVOL=?</b>	<b>+MSPKVOL: (0-10)</b>  <b>OK</b>

### 3.3.5.16 AT Commands for Sleep Mode

#### 3.3.5.16.1 AT+CSCLK Sleep mode function

This command is used to change which can trigger sleep mode by type.

Test Command	Response
<b>AT+CSCLK=?</b>	<b>+CSCLK: (0-2)</b>  <b>OK</b>
Read Command	Response
<b>AT+CSCLK?</b>	<b>+CSCLK:&lt;type&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+CSCLK=&lt;type&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; type&gt;</b>	<p>0 AT command mode. For details, please refer to the +MPWRSM command</p> <p>1 DTR pin mode. It is controlled by DTR. When DTR is high, module can enter sleep mode. When DTR changes to low level, module can quit sleep mode. Serial port 2 cannot be used at this time.</p> <p>2 WAKEUP_IN pin mode. It is controlled by WAKEUP_IN. When WAKEUP_IN is high, module can enter sleep mode. When WAKEUP_IN changes to low level, module can quit sleep mode.</p>

#### 3.3.5.16.2 AT+MPWRSM Entry Sleep mode function

This command is used to entry sleep mode. Only can be used when CSCLK=0

Test Command	Response
<b>AT+MPWRSM=?</b>	<b>+MPWRSM: (0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+MPWRSM?</b>	<b>+MPWRSM:&lt;mode&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MPWRSM=&lt;mode&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; mode&gt;</b>	0    quit sleep mode    //Can be used only when system is awake 1    enter sleep mode

### 3.3.5.17 AT Commands for Heartbeat

#### 3.3.5.17.1 AT+MHEARTSRV Heartbeat Service Config

This command is used to set heartbeat server address ,port number , default use TCP protocol

Test Command	Response
<b>AT+MHEARTSRV=?</b>	<b>+MHEARTSRV: "server address",(1-65535)</b>  <b>OK</b>
Read Command	Response
<b>AT+MHEARTSRV?</b>	<b>+MHEARTSRV: &lt;serveraddr&gt;,&lt;port&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MHEARTSRV=&lt;serveraddr&gt;,&lt;port&gt;</b>	<b>OK</b> or <b>ERROR</b>  Note : serveraddrstring minimum length 2 and max length100,Command configuration parameters before start or restart heartbeat pack

Parameters are defined below:

Parameters	Description
<b>&lt;serveraddr&gt;</b>	Range: server ipv4 address or domain address
<b>&lt;port&gt;</b>	Range:1-65535

Example:

Commands	Response
<b>AT+MHEARTSRV="182.150.28.206",6800</b>	<b>OK</b>



<b>AT+MHEARTSRV?</b>	<b>+MHEARTSRV: "182.150.28.206",6800</b>
	<b>OK</b>
<b>AT+MHEARTSRV=?</b>	<b>+MHEARTSRV: "server address", (1-65535)</b>
	<b>OK</b>

### 3.3.5.17.2 AT+MHEARTEN Heartbeat Enable and Disable

This command is used to enable or disable heartbeat function

Test Command	Response
<b>AT+MHEARTEN=?</b>	<b>+MHEARTEN: (0-1)</b>
	<b>OK</b>
Read Command	Response
<b>AT+MHEARTEN?</b>	<b>+MHEARTEN: &lt;state&gt;</b>
	<b>OK</b>
Write Command	Response
<b>AT+MHEARTEN =&lt;state&gt;</b>	<b>OK</b> or <b>BUSY</b> or <b>ERROR</b>
	<b>+MHEARTEN: &lt;code&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;state&gt;</b>	0 : disable heartbeat (default 0) 1 : enable heartbeat

<b>&lt;code&gt;</b>	0 - heartbeat end 1 - heartbeat connected 2 - PDP profile not activated 3 - NETLIB end open error 4 - DNS parsing error 5 - Socket create error 6 - Network connect error 7 - heartbeat send or recv error 8 - heartbeat timeout
---------------------	--

Example:

Commands	Response
<b>AT+MHEARTEN=1</b>	<b>OK</b>  <b>+MHEARTEN: 1</b>
<b>AT+MHEARTEN?</b>	<b>+MHEARTEN: 1</b>  <b>OK</b>
<b>AT+MHEARTEN=?</b>	<b>+MHEARTEN: (0-1)</b>  <b>OK</b>

### 3.3.5.17.3 AT+MHEARTTIME Set Heartbeat Times

This command is used to set the times of heartbeat

Test Command	Response
<b>AT+MHEARTTIME=?</b>	<b>+MHEARTTIME: (1-30),(1-30),(0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+MHEARTTIME?</b>	<b>+MHEARTTIME: &lt;timer&gt;,&lt;timerout&gt;,&lt;reconnect&gt;</b>  <b>OK</b>

Write Command	Response
<b>AT+MHEARTTIME=[&lt;timer&gt; [,&lt;timeout&gt;[,&lt; reconnect&gt;]]]</b>	<b>OK</b> or <b>ERROR</b>
	Note : Command configuration parameters before start or restart heartbeat pack

Parameters are defined below:

Parameters	Description
<b>&lt;timer&gt;</b>	heartbeat interval time (unit 10s) 1 – 30 (default 6)
<b>&lt;timeout&gt;</b>	heartbeat timeout time(unit 10s) 1 – 30 (default 12)
<b>&lt;reconnect&gt;</b>	automatic reconnection 0 – 1 (default 1)

Example:

Commands	Response
<b>AT+MHEARTTIME= 1,3,1</b>	<b>OK</b>
<b>AT+MHEARTTIME?</b>	<b>OK</b>
<b>AT+MHEARTTIME= ?</b>	<b>+MHEARTTIME: (1-30),(1-30),(0-1)</b>  <b>OK</b>

### 3.3.5.17.4 AT+MHEARTMODE Set Heartbeat Mode

This command is used to set Heartbeat mode

Test Command	Response
<b>AT+MHEARTMODE=?</b>	<b>+MHEARTMODE: (0-1)</b>  <b>OK</b>

Read Command	Response
<b>AT+MHEARTMODE?</b>	<b>+MHEARTMODE: &lt;mode&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MHEARTMODE=&lt;mode&gt;</b> <b>&gt;</b>	<b>OK</b> or <b>ERROR</b>  Note : Command configuration parameters before start or restart heartbeat pack

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Heartbeat mode 0 – heartbeat to server ,this mode not support control sleep and wakeup(default 0) 1 – heartbeat from server

Example:

Commands	Response
<b>AT+MHEARTMODE=1</b>	<b>OK</b>
<b>AT+MHEARTMODE?</b>	<b>+MHEARTMODE: 1</b>  <b>OK</b>
<b>AT+MHEARTMODE=?</b>	<b>+MHEARTMODE: (0-1)</b>  <b>OK</b>

### 3.3.5.17.5 AT+MHEARTDATA Set Heartbeat Packet Data

This command is used to set Heartbeat packet data type and data, different types of data can not be the same.

Test Command	Response
<b>AT+MHEARTDATA=?</b>	<b>+MHEARTDATA: (0-2),"data"</b>  <b>OK</b>
Read Command	Response
<b>AT+MHEARTDATA?</b>	<b>+MHEARTDATA: &lt;type&gt;,&lt;data&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MHEARTDATA=&lt;type&gt;,&lt;data&gt;</b>	<b>OK</b> or <b>ERROR</b>  Note : Command configuration parameters before start or restart heartbeat pack The use of sleep and wakeup data should sleep function support

Parameters are defined below:

Parameters	Description
<b>&lt;type&gt;</b>	data type 0 – heart data 1 – sleep data (Sleep module) 2 – wakeup data (Wakeup module)
<b>&lt;data&gt;</b>	heartbeat data Data string can not be empty and max length:100, yes quote, The default values for each type of data are "0","sleep","wakeup"

Example:

Commands	Response
<b>AT+MHEARTDATA=0,"xxx"</b>	<b>OK</b>
<b>AT+MHEARTDATA=1,"sleep"</b>	<b>OK</b>

<b>AT+MHEARTDATA=</b> <b>2,"wake"</b>	<b>OK</b>
<b>AT+MHEARTDATA?</b>	<b>+MHEARTDATA: 0,"xxx"</b> <b>+MHEARTDATA: 1,"sleep"</b> <b>+MHEARTDATA: 2,"wake"</b>  <b>OK</b>
<b>AT+MHEARTDATA=</b> <b>?</b>	<b>+MHEARTDATA: (0-2),"data"</b>  <b>OK</b>
<b>AT+MHEARTDATA</b>	<b>ERROR</b>

### 3.3.5.17.6 AT+MHEARTURC Set Heartbeat Packet DataDisplay

This command is used to control the display of the heartbeat packet data received from the server during the heartbeat packet operation

Test Command	Response
<b>AT+MHEARTURC=?</b>	<b>+MHEARTURC: (0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+MHEARTURC?</b>	<b>+MHEARTURC: &lt;n&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MHEARTURC=&lt;n&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;n&gt;</b>	control Heartbeat data display 0 - not display (default 0) 1 - display
------------------	--

Example:

Commands	Response
<b>AT+MHEARTURC=1</b>	<b>OK</b>
<b>AT+MHEARTURC?</b>	<b>+MHEARTURC: 1</b>  <b>OK</b>
<b>AT+MHEARTURC=?</b>	<b>+MHEARTURC: (0-1)</b>  <b>OK</b>

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### 3.3.5.18 AT Commands for FS

#### 3.3.5.18.1 AT+MFSCD Select directory as current directory

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

Test Command	Response
<b>AT+MFSCD=?</b>	<b>OK</b>
Read Command	Response
<b>AT+MFSCD?</b>	<b>+MFSCD: &lt;curr_path&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MFSCD=&lt;path&gt;</b>	<b>+MFSCD: &lt;curr_path&gt;</b> <b>OK</b> or <b>ERROR</b>  Note : If <path> is "..", it will go back to previous level of directory. Maximum absolute path length 1024, path string not support non-ascii

Parameters are defined below:

Parameters	Description
<b>&lt;path&gt;</b>	String with double quotes, directory for selection.
<b>&lt;curr_path&gt;</b>	current directory without double quotes.

Example:

Commands	Response
<b>AT+MFSCD="C:/test1/test2"</b>	<b>+MFSCD: C:/test1/test2</b>  <b>OK</b>
<b>AT+MFSCD=".."</b>	<b>+MFSCD: C:/test1</b>  <b>OK</b>



<b>AT+MFSCD=?</b>	<b>OK</b>
-------------------	-----------

### 3.3.5.18.2 AT+MFSMKDIR Make new directory in current directory

This command is used to create a new directory in current directory.

Test Command	Response
<b>AT+MFSMKDIR=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSMKDIR=&lt;dirname&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;dirname&gt;</b>	String with double quotes, directory name which does not already exist in current directory. Maximum name length is 255 name string not support non-ascii and cannot contain: / \ : , * ? " > <

Example:

Commands	Response
<b>AT+MFSMKDIR="Test"</b>	<b>OK</b>
<b>AT+MFSL=1</b>	<b>+MFSL: SUBDIRECTORIES:</b> <b>Test</b>  <b>OK</b>
<b>AT+MFSMKDIR=?</b>	<b>OK</b>

### 3.3.5.18.3 AT+MFSL List directories/files in current directory

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

Execution Command	Response
<b>AT+MFSLS</b>	<b>[+MFSLS: SUBDIRECTORIES:&lt;list of subdirectories&gt;  &lt;CR&gt;&lt;LF&gt;]  [+MFSLS: FILES:&lt;list of files&gt;  &lt;CR&gt;&lt;LF&gt;]  OK</b>
Test Command	Response
<b>AT+MFSLS=?</b>	<b>+MFSLS: (list of supported &lt;type&gt;s)    OK</b>
Read Command	Response
<b>AT+MFSLS?</b>	<b>+MFSLS:  SUBDIRECTORIES:&lt;dir_num&gt;,FILES:&lt;file_num&gt;    OK</b>
Write Command	Response
<b>AT+MFSLS=&lt;type&gt;</b>	<b>[+MFSLS: SUBDIRECTORIES:  &lt;list of subdirectories&gt;  &lt;CR&gt;&lt;LF&gt;]  [+MFSLS: FILES:  &lt;list of files&gt;  &lt;CR&gt;&lt;LF&gt;]  OK  or  ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;type&gt;</b>	0 – list both subdirectories and files 1 – list subdirectories only 2 – list files only
<b>&lt;dir_num&gt;</b>	Integer type, the number of subdirectories in current directory.
<b>&lt;file_num&gt;</b>	Integer type, the number of files in current directory.

Example:

Commands	Response
----------	----------

<b>AT+MFSLS?</b>	<b>+MFSLS: SUBDIRECTORIES:2,FILES:2</b>  <b>OK</b>
<b>AT+MFSLS</b>	<b>+MFSLS: SUBDIRECTORIES:</b> <b>FirstDir</b> <b>SecondDir</b>  <b>+MFSLS: FILES:</b> <b>test_0.txt</b> <b>test_1.txt</b>  <b>OK</b>
<b>AT+MFSLS=2</b>	<b>+MFSLS: FILES:</b> <b>test_0.txt</b> <b>test_1.txt</b>  <b>OK</b>

### 3.3.5.18.4 AT+MFSRMDIR Delete directory in current directory

Delete directory in current directory

Test Command	Response
<b>AT+MFSRMDIR =?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSRMDIR=&lt;dirname&gt;</b>	This command is used to delete existing directory and its subdirectories in current directory <b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt; dirname &gt;</b>	String with double quotes. Directory name to be deleted which already exist in current directory. name string not support non-ascii. Maximum name length is 255.

Example:

Commands	Response
<b>AT+MFSLS=1</b>	<b>+MFSLS: SUBDIRECTORIES:</b> <b>Test1</b> <b>Test2</b>  <b>OK</b>
<b>AT+MFSRMDIR="Test2"</b>	<b>OK</b>
<b>AT+MFSLS=1</b>	<b>+MFSLS: SUBDIRECTORIES:</b> <b>Test1</b>  <b>OK</b>
<b>AT+MFSRMDIR=?</b>	<b>OK</b>

### 3.3.5.18.5 AT+MFSDEL Delete file in current directory

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

Test Command	Response
<b>AT+MFSDEL=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSDEL=&lt;filename&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;filename&gt;</b>	String with double quotes, file name which is relative and already existing. If <filename> is *.* , it means delete all files in current directory. Maximum name length is 255, name string not support non-ascii

Example:

Commands	Response
----------	----------

<b>AT+MFSLS=2</b>	<b>+MFSLS: FILES:</b> <b>test_0.txt</b> <b>test_1.txt</b>  <b>OK</b>
<b>AT+MFSDEL="test_0.txt"</b>	<b>OK</b>
<b>AT+MFSLS=2</b>	<b>+MFSLS: FILES:</b> <b>test_1.txt</b>  <b>OK</b>
<b>AT+MFSDEL=?</b>	<b>OK</b>

### 3.3.5.18.6 AT+MFSRENAME Rename file or subdirectory in current directory

This command is used to rename a file or subdirectory in current directory.

Test Command	Response
<b>AT+MFSRENAME=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSRENAME=&lt;old_name&gt;,&lt;new_name&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;old_name&gt;</b>	String with double quotes, name which is existed in current directory.
<b>&lt;new_name&gt;</b>	New name of specified file, string with double quotes. Maximum name string length is 255 name string not support non-ascii and cannot contain: / \ : , * ? " > <

Example:

Commands	Response
<b>AT+MFSRENAME="image_0.jpg", "image_1.jpg"</b>	<b>OK</b>
<b>AT+MFSRENAME=?</b>	<b>OK</b>
<b>AT+MFSRENAME?</b>	<b>ERROR</b>
<b>AT+MFSRENAME</b>	<b>ERROR</b>

### 3.3.5.18.7 AT+MFSATTRI Request file attributes

This command is used to request the attributes of file which exists in current directory.

Test Command	Response
<b>AT+MFSATTRI=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSATTRI=&lt;filename&gt;</b>	<b>+MFSATTRI: &lt;file_size&gt;,&lt;last_modified_timestamp&gt; OK or ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;filename&gt;</b>	String with double quotes, file name which is in current directory. Maximum name length is 255, name string not support non-ascii
<b>&lt;file_size&gt;</b>	The size of specified file, and the unit is in Byte.
<b>&lt;last_modified_timestamp &gt;</b>	Last modified timestamp, the format is YYYY/MM/DD HH/MM/SS Week. Week – Mon, Tue, Wed, Thu, Fri, Sat, Sun

Example:

Commands	Response
<b>AT+MFSATTRI="image_0.jpg"</b>	<b>+MFSATTRI: 8604,2017/04/11 10:24:46 Tue OK</b>

<b>AT+MFSATTRI=?</b>	<b>OK</b>
<b>AT+MFSATTRI?</b>	<b>ERROR</b>

### 3.3.5.18.8 AT+MFSMEM Check the size of available memory

This command is used to check the size of total memory and available memory.

Execution Command	Response
<b>AT+MFSMEM</b>	<b>+MFSMEM: C:(<b>&lt;total&gt;</b>, <b>&lt;available&gt;</b>)</b> <b>OK</b> or <b>ERROR</b>
	NOTE: The unit of storage space size is in Byte.
Test Command	Response
<b>AT+MFSMEM=?</b>	<b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;total&gt;</b>	The total size of local storage space.
<b>&lt;available&gt;</b>	The available size of local storage space.

Example:

Commands	Response
<b>AT+MFSMEM</b>	<b>+MFSMEM: C:(1348480, 221600)</b>  <b>OK</b>
<b>AT+MFSMEM=?</b>	<b>OK</b>
<b>AT+MFSMEM?</b>	<b>ERROR</b>

### 3.3.5.18.9 AT+MFSLOCA Select storage place

This command is used to set the storage place for files.

Test Command	Response
<b>AT+MFSLOCA=?</b>	<b>+MFSLOCA: (list of supported &lt;loca&gt;s)</b>  <b>OK</b>
Read Command	Response
<b>AT+MFSLOCA?</b>	<b>+MFSLOCA: &lt;loca&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MFSLOCA=&lt;loca&gt;</b>	<b>OK</b> or <b>ERROR</b>  Ps: After the restart, the value is reset.(<loca> = 0);

Parameters are defined below:

Parameters	Description
<b>&lt;loca&gt;</b>	0 – store files to local storage space (namely “C:/”) 1 – store files to SD card (namely “SD:/”) 2 – store files to AP side (namely “D:/”) //Only L506X support

Example:

Commands	Response
<b>AT+MFSLOCA=0</b>	<b>OK</b>
<b>AT+MFSLOCA?</b>	<b>+MFSLOCA: 0</b>  <b>OK</b>
<b>AT+MFSLOCA=?</b>	<b>+MFSLOCA: (0-1)</b> <b>OR</b> <b>+MFSLOCA: (0-2) //Only L506X support</b>  <b>OK</b>



<b>AT+MFSLOCA</b>	<b>ERROR</b>
-------------------	--------------

### 3.3.5.18.11 AT+MFSCREATE Create a new file

This command is used to create a file in absolute path or current path

Test Command	Response
<b>AT+MFSCREATE=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSCREATE=&lt;file&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;file&gt;</b>	String with double quotes, file name which does not already exist in directory. Max file name string length is 255 and max whole path length is 1024 name string not support non-ascii and cannot contain: / \ : , * ? " > <

Example:

Commands	Response
<b>AT+MFSCREATE="Testfile"</b>	<b>OK</b>
<b>AT+MFSLS=2</b>	<b>+MFSLS: FILES:</b> <b>Testfile</b>  <b>OK</b>
<b>AT+MFSCREATE=?</b>	<b>OK</b>

### 3.3.5.18.12 AT+MFSWRITE Write data to file

This command is used to write data to file.

Transparent transmission mode will last 5 seconds. Please input data within 5 seconds, or it will be quitted automatically when timeout and return ERROR.

Test Command	Response
<b>AT+MFSWRITE=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSWRITE=&lt;file&gt;,&lt;mode&gt;,&lt;size&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;file&gt;</b>	String with double quotes, files should already exist,.Maximum file name length is 255.
<b>&lt;mode&gt;</b>	0 - write data at the beginning of the file 1 - write data at the end of the file
<b>&lt;size&gt;</b>	1-1024 Size of data to be written

Example:

Commands	Response
<b>AT+MFSWRITE="Testfile",0,10</b>	<b>&gt;&gt;1234567890</b> <b>OK</b>
<b>AT+MFSWRITE=?</b>	<b>OK</b>

### 3.3.5.18.13 AT+MFSREAD Read File content

This command is used to read file content

Test Command	Response
<b>AT+MFSREAD=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSREAD=&lt;file&gt;,&lt;offset&gt;,&lt;size&gt;</b>	<b>+MFSREAD: DATA: &lt;data_size&gt;, &lt;data&gt;</b> <b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;file&gt;</b>	String with double quotes, file should already exist,.Maximum file name length is 255
<b>&lt;offset&gt;</b>	offset from the file beginning,<offset> should less than file size.
<b>&lt;size&gt;</b>	0-10240 Size of data to be read, Reads the entire file when set to 0.

Example:

Commands	Response
<b>AT+MFSREAD="Testfile",0,10</b>	<b>+MFSREAD: DATA: 10, 1234567890</b>  <b>OK</b>
<b>AT+MFSREAD=?</b>	<b>OK</b>

#### 3.3.5.18.14 AT+MFSCHECKSD Check SD card state

This command is used to check the state of SD card

Test Command	Response
<b>AT+MFSCHECKSD=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MFSCHECKSD</b>	<b>+MFSCHECKSD: &lt;state&gt;</b> <b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;state&gt;</b>	"READY" SD card available "No SDcard" SD card not inserted "Unkown" SD card not mounted

Example:

Commands	Response
----------	----------

<b>AT+MFSCHECKSD</b>	<b>+MFSCHECKSD: READY</b>
	<b>OK</b>
<b>AT+MFSCHECKSD=?</b>	<b>OK</b>

### 3.3.5.18.15 AT+MEMMCCFG EMMC Partition Settings

EMMC partition settings. It must be AT+CFUN=5 to execute.

Read Command	Response
<b>AT+MEMMCCFG?</b>	This command is used to print the partition table.  (emmc data)  <b>OK</b> or <b>ERROR</b>
Write Command	Response
<b>AT+MEMMCCFG=&lt;mode_0&gt;</b> <b>&gt;</b>	This command is used to format all data. It must be restarted to take effect.  <b>OK</b> <b>ERROR</b>
<b>AT+MEMMCCFG=&lt;mode_1&gt;</b> <b>&gt;,&lt;area_code&gt;,&lt;create_type&gt;,&lt;start_addr&gt;,&lt;end_addr&gt;</b> <b>&gt;</b>	This command is used to add a new partition.  <b>OK</b> <b>ERROR</b>

<b>AT+MEMMCCFG=&lt;mode_2&gt;,[&lt;area_code&gt;,&lt;change_type&gt;</b>	<p>This command is used to change a partition's system id.</p> <p>If there is only one partition, do the following:  <b>AT+MEMMCCFG=&lt;mode_2&gt;&lt;change_type&gt;</b></p> <p><b>OK</b>  <b>ERROR</b></p> <p>If there is more than one partition, do the following:  <b>AT+MEMMCCFG=&lt;mode_2&gt;,&lt;area_code&gt;,&lt;change_type&gt;</b></p> <p><b>OK</b>  <b>ERROR</b></p>
<b>AT+MEMMCCFG=&lt;mode_3&gt;,&lt;area_code&gt;</b>	<p>This command is used to delete a partition.</p> <p><b>OK</b>  <b>ERROR</b></p>
<p>Reference</p> <p>Vendor</p>	<p>Note</p> <ol style="list-style-type: none"> <li>1. Executing &lt;mode_0&gt;,&lt;mode_2&gt; and &lt;mode_3&gt; will delete the data.</li> <li>2. Executing &lt;mode_0&gt;,&lt;mode_2&gt; and &lt;mode_3&gt; will warning the following:  WARNING: data will be formatted!  YES: continue to execute this command;  NO : execute other mode's command or wait for 10s to expire.</li> </ol> <p>So to implement &lt;mode_0&gt;,&lt;mode_2&gt; and &lt;mode_3&gt; you need to execute the command twice, and only the latest commands are executed.</p> <p>3. All commands will not report errors except for parameter format, such as duplicate partition creation or address error.You can do this by AT+MEMMCCFG? command query sets the result</p> <p>Only L506CF support this command  L506SC and L506XCF not support this command</p>

Parameters are defined below:

Parameters	Description
<b>&lt;mode_0&gt;...&lt;mode_3&gt;</b>	0    format all data 1    add a new partition 2    change a partition's system id 3    delete a partition
<b>&lt;area_code&gt;</b>	Number of partitions (range 1-4).
<b>&lt;create_type&gt;</b>	0    extended 1    primary partition
<b>&lt;start_addr&gt;</b>	The starting address for creating the partition(range 1- 120831).
<b>&lt;end_addr&gt;</b>	The ending address for creating the partition(range 2- 120832).

<change_type>	0	Empty
	1	FAT12
	2	FAT16 <32M
	3	Extended
	4	FAT16
	5	HPFS/NTFS
	6	OS/2 Boot Manager
	7	Win95 FAT32
	8	Win95 FAT32 (LBA)
	9	Win95 FAT16 (LBA)
	10	Win95 Ext'd (LBA)
	11	Hidden FAT12
	12	Compaq diagnostics
	13	Hidden FAT16 <32M
	14	Hidden FAT16
	15	Hidden HPFS/NTFS
	16	Hidden Win95 FAT32
	17	Hidden W95 FAT32 (LBA)
	18	Hidden W95 FAT16 (LBA)
	19	Part.Magic recovery
	20	PPC PReP Boot
	21	SFS
	22	GNU HURD or SysV
	23	Old Minix
	24	Minix / old Linux
	25	Linux swap
	26	Linux
	27	OS/2 hidden C: drive
	28	Linux extended
	29	NTFS volume set
	30	NTFS volume set
	31	Linux LVM
	32	BSD/OS
	33	Thinkpad hibernation
	34	FreeBSD
	35	OpenBSD
	36	Darwin UFS
	37	NetBSD
	38	Darwin boot
	39	BSDI fs
	40	BSDI swap
	41	Solaris boot
	42	BeOS fs

- 43 EFI GPT
- 44 EFI (FAT-12/16/32)
- 45 Linux/PA-RISC boot
- 46 DOS secondary
- 47 Linux raid autodetectHex code

Example:

Commands	Response														
AT+CFUN=5	OK														
AT+MEMMCCFG?	Disk /dev/mmcbk0: 3959 MB, 3959422976 bytes 4 heads, 16 sectors/track, 120832 cylinders Units = cylinders of 64 * 512 = 32768 bytes <table><tr><th>Device</th><th>Boot</th><th>Start</th><th>End</th><th>Blocks</th><th>Id</th><th>System</th></tr><tr><td colspan="7">OK</td></tr></table>	Device	Boot	Start	End	Blocks	Id	System	OK						
Device	Boot	Start	End	Blocks	Id	System									
OK															
Format all data example: AT+MEMMCCFG=0	WARNING: data will be formatted! YES: continue to execute this command; NO : execute other mode's command or wait for 10s to expire.														
AT+MEMMCCFG=0	OK														
Add partition example: AT+MEMMCCFG=1, 1,1,1,500	OK														
AT+MEMMCCFG?	Disk /dev/mmcbk0: 3959 MB, 3959422976 bytes 4 heads, 16 sectors/track, 120832 cylinders Units = cylinders of 64 * 512 = 32768 bytes <table><tr><th>Device</th><th>Boot</th><th>Start</th><th>End</th><th>Blocks</th><th>Id</th><th>System</th></tr><tr><td>/dev/mmcbk0p1</td><td></td><td>1</td><td>500</td><td>15992</td><td>83</td><td>Linux</td></tr></table> OK	Device	Boot	Start	End	Blocks	Id	System	/dev/mmcbk0p1		1	500	15992	83	Linux
Device	Boot	Start	End	Blocks	Id	System									
/dev/mmcbk0p1		1	500	15992	83	Linux									



change a partition's  
system id example:

If you only have one  
partition.

**AT+MEMMCCFG=2,  
5**

**WARNING: data will be formatted!**

**YES: continue to execute this command;**

**NO : execute other mode's command or wait for 10s to expire.**

**AT+MEMMCCFG=2, OK  
5**

If there is more than  
one partition .

**AT+MEMMCCFG=2,  
1,5**

**WARNING: data will be formatted!**

**YES: continue to execute this command;**

**NO : execute other mode's command or wait for 10s to expire.**

**AT+MEMMCCFG=2, OK  
1,5**

delete a partition  
example:

**AT+MEMMCCFG=3,  
1**

**WARNING: data will be formatted!**

**YES: continue to execute this command;**

**NO : execute other mode's command or wait for 10s to expire.**

**AT+MEMMCCFG=3, OK  
1**

### 3.3.5.19 AT Commands for MQTT

#### 3.3.5.19.1 AT+MCONFIG Parameters Configuration

This command is used to parameters configuration.

Test Command	Response
<b>AT+MCONFIG=?</b>	<b>+MCONFIG: ,,,(0-1),(0-2),(0-1),,</b>  <b>OK</b>
Read Command	Response
<b>AT+MCONFIG?</b>	<b>+MCONFIG:&lt;clientid&gt;,&lt;username&gt;,&lt;password&gt;</b> <b>[,&lt;will_flag&gt;,&lt;will_qos&gt;,&lt;will_retain&gt;,&lt;will_topic&gt;,&lt;will</b> <b>_message&gt;]]</b>  <b>OK</b>
Write Command	Response
<b>AT+MCONFIG=&lt;clientid&gt;,&lt;username&gt;,&lt;password&gt;,&lt;will_flag&gt;,&lt;will_qos&gt;,&lt;will_retain&gt;,&lt;will_topic&gt;,&lt;will_message&gt;]]</b>	<b>OK</b> // Succeeded in requesting operation <b>BUSY</b> // Busy, please wait for a moment, and then retry. <b>ERROR</b> // Failed configuration parameters <b>+MCONFIG:&lt;result&gt;,&lt;result type&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt; clientid &gt;</b>	This parameter is used to allow the server to identify the client identity information. The maximum length is 256.
<b>&lt;username&gt;</b>	This parameter is used to login server. The maximum length is 256.
<b>&lt;password&gt;</b>	This parameter is used to login server. The maximum length is 256.
<b>&lt;will_flag&gt;</b>	Value of will flag: 1 If the Will flag is set 1, the Will QoS and Will Retain fields must be present in the Connect flags byte, and the Will Topic and Will Message fields must be present in the payload. 0 Without using will Qos, will retain, will topic, will message, please set 0.

<b>&lt;will_qos&gt;</b>	Quality of Service: 0 At most once delivery for will message 1 At least once delivery for will message 2 Exactly once delivery for will message
<b>&lt;will_retain&gt;</b>	Retain Flag: 0 the Server must not store the will message and must not remove or replace any existing retained message. 1 the Server must store the will Message and its QoS.
<b>&lt;will_topic&gt;</b>	The will topic of the will message. The maximum length is 256.
<b>&lt;will_message&gt;</b>	The will message content. The maximum length is 1024.
<b>&lt;result&gt;</b>	The result of connection operation: SUCCESS FAILURE
<b>&lt;result type&gt;</b>	Error result: 0 no error 1 mqtt connection is lost 2 arguments error 3 failed in opening network 4 failed in creating socket 5 failed in connecting to server 6 failed in establishing mqtt connection 7 old connection is not disconnect 8 failed in opening ssl session

Example:

Commands	Response
<b>AT+MCONFIG=client_id_mobiletk,admin,password</b>	<b>+MCONFIG: SUCCESS,0</b>  <b>OK</b>

### 3.3.5.19.2 AT+MIPSTART Set address and port and version

Set TCP parameters to start TCP

Test Command	Response
<b>AT+MIPSTART=?</b>	<b>+MIPSTART: ,(1-65535),(3-4)</b>  <b>OK</b>

Read Command	Response
<b>AT+MIPSTART?</b>	<b>+MIPSTART:&lt;address&gt;,&lt;port&gt;,&lt;version&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MIPSTART=&lt;address&gt;,&lt;port&gt;[,&lt;version&gt;]</b>	<b>OK</b> // Succeeded in requesting operation <b>ERROR</b> // Failed in opening operation <b>BUSY</b> // Busy, please wait for a moment, and then retry. <b>+MIPSTART:&lt;result&gt;,&lt;result type&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;address&gt;</b>	The MQTT server domain name or IP address. The maximum length is 256.
<b>&lt;port&gt;</b>	The MQTT server port. The value is between 1 and 65535, default value is 1.
<b>&lt;version&gt;</b>	The MQTT version. The value is between 3 and 4, default value is 3. 3 stands for mqtt version 3.1, 4 stands for mqtt version 3.1.1.
<b>&lt;result&gt;</b>	The result of connection operation: SUCCESS FAILURE
<b>&lt;result type&gt;</b>	Error result: 0 no error 1 mqtt connection is lost 2 arguments error 3 failed in opening network 4 failed in creating socket 5 failed in connecting to server 6 failed in establishing mqtt connection 7 old connection is not disconnect 8 failed in opening ssl session

Example:

Commands	Response
<b>Domain name:</b> <b>AT+MIPSTART=test.mosquitto.org,1883</b>	<b>OK</b>  <b>+MIPSTART: SUCCESS,0</b>

<b>IP address:</b> <b>AT+MIPSTART=182.</b> <b>150.28.206,8182</b>	<b>OK</b>  <b>+MIPSTART: SUCCESS,0</b>
---	--

### 3.3.5.19.3 AT+MCONNECT Request to connect to server

This command is used to request to connect to server.

Test Command	Response
<b>AT+MCONNECT=?</b>	<b>+MCONNECT: (0-1),(30-1800)</b>  <b>OK</b>
Read Command	Response
<b>AT+MCONNECT?</b>	<b>+MCONNECT:&lt;cleansession&gt;,&lt;keep alive timer&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MCONNECT=&lt;clean_session&gt;,&lt;keepalive&gt;</b>	<b>OK</b> // Succeeded in requesting operation <b>ERROR</b> // Failed in requesting operation <b>BUSY</b> // Busy, please wait for a moment, and then retry. <b>+MCONNECT:&lt;result&gt;,&lt;result type&gt;</b>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;clean_session&gt;</b>	<p>This parameter specifies the handling of the Session state:</p> <ul style="list-style-type: none"> <li>0 If CleanSession is set to 0, the Server must resume communications with the Client based on state from the current Session (as identified by the Client identifier). If there is no Session associated with the Client identifier the Server must create a new Session. The Client and Server MUST store the Session after the Client and Server are disconnected. After the disconnection of a Session that had CleanSession set to 0, the Server MUST store further QoS 1 and QoS 2 messages that match any subscriptions that the client had at the time of disconnection as part of the Session state. It may also store QoS 0 messages that meet the same criteria.</li> <li>1 If CleanSession is set to 1, the Client and Server must discard any previous Session and start a new one. This Session lasts as long as the Network Connection. State data associated with this Session must not be reused in any subsequent Session.</li> </ul> <p>The default value is 1.</p>
<b>&lt;keepalive&gt;</b>	<p>The Keep Alive timer, measured in seconds, defines the maximum time interval between messages received from a client. It enables the server to detect that the network connection to a client has dropped, without having to wait for the long TCP/IP timeout. The actual value is application-specific, but a typical value is a few minutes. The range is 30~1800.</p>
<b>&lt;result&gt;</b>	<p>The result of connection operation:</p> <p>SUCCESS</p> <p>FAILURE</p>
<b>&lt;result type&gt;</b>	<p>Error result:</p> <ul style="list-style-type: none"> <li>0 no error</li> <li>1 mqtt connection is lost</li> <li>2 arguments error</li> <li>3 failed in opening network</li> <li>4 failed in creating socket</li> <li>5 failed in connecting to server</li> <li>6 failed in establishing mqtt connection</li> <li>7 old connection is not disconnect</li> <li>8 failed in opening ssl session</li> </ul>

Example:

Commands	Response
<b>AT+MCONNECT=1,30</b>	<p><b>OK</b></p> <p><b>+MCONNECT: SUCCESS,0</b></p>

### 3.3.5.19.4 AT+MPUB Request to publish message

This command is used to request to publish message. The command is asynchronous.

Test Command	Response
<b>AT+MPUB =?</b>	<b>+MPUB: ,(0-2),(0-1),</b>  <b>OK</b>
Read Command	Response
<b>AT+MPUB?</b>	<b>+MPUB:&lt;topic&gt; ,&lt;qos&gt;,&lt;retain&gt;,&lt;message&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MPUB=&lt;topic&gt;,&lt;qos&gt;,&lt;retain&gt;,&lt;message&gt;</b>	<b>OK</b> // Succeeded in requesting operation <b>ERROR</b> // Failed in requesting operation <b>BUSY</b> // Busy, please wait for a moment, and then retry.  There are two kinds of results depending on the Settings:  a. <b>AT+MQTTMIX=0</b> <b>+MPUB:&lt;result&gt;</b>  b. <b>AT+MQTTMIX=1</b> If qos=0, nothing returned; if qos>0, return +MPUBID: <packetid> first, then return as follows:  <b>+MPUBACK: &lt;packetid&gt;</b> <b>qos = 1</b> <b>+MPUBREC: &lt;packetid&gt;</b> <b>qos = 2</b> <b>+MPUBCOMP: &lt;packetid&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;topic&gt;</b>	The maximum length is 256
<b>&lt;qos&gt;</b>	Quality of Service: 0 At most once delivery for message 1 At least once delivery for message 2 Exactly once delivery for message

<b>&lt;retain&gt;</b>	Retain Flag: 0 the Server must not store the message and must not remove or replace any existing retained message. 1 the Server must store the Message and its QoS.
<b>&lt;message&gt;</b>	The message content. The maximum length is 1024.
<b>&lt;result&gt;</b>	The result of publishing operation: SUCCESS FAILURE
<b>&lt;packetid&gt;</b>	The Packet Identifier field (1~65535) .

Example:

Commands	Response
Publish: If AT+MQTTMIX=0 : <b>AT+MPUB=mobiletek/topic,0,0,12345</b>	<b>OK</b>  <b>+MPUB: SUCCESS</b>
If AT+MQTTMIX=1, The return status varies with the QOS:  qos = 0: <b>AT+MPUB=mobiletek/topic,0,0,12345</b>	<b>OK</b>
qos = 1: <b>AT+MPUB=mobiletek/topic,1,0,12345</b>	<b>OK</b>  <b>+MPUBID: 1</b>  <b>+MPUBACK: 1</b>
qos = 2 : <b>AT+MPUB=mobiletek/topic,2,0,12345</b>	<b>OK</b>  <b>+MPUBID: 2</b>  <b>+MPUBREC: 2</b>  <b>+MPUBCOMP: 2</b>

### 3.3.5.19.5 AT+MPUBEX Request to publish a long message

This command is used to enter the Input mode to publish a long message. The command



is asynchronous.

Test Command	Response
<b>AT+MPUBEX=?</b>	<b>+MPUBEX: ,(0-2),(0-1) ,(1-65535)</b>  <b>OK</b>
Read Command	Response
<b>AT+MPUBEX?</b>	<b>+MPUBEX:&lt;topic&gt;,&lt;qos&gt;,&lt;retain&gt;,&lt;message_length&gt;</b>  <b>OK</b>
Write Command	<p>Response</p> <p><b>AT+MPUBEX=&lt;topic&gt;,&lt;qos&gt;,&lt;retain&gt;,&lt;message_length&gt;</b> <b>h&gt;</b></p> <p><b>OK</b> // Succeeded in requesting operation  <b>ERROR</b> // Failed in requesting operation  <b>BUSY</b> // Busy, please wait for a moment, and then retry.</p> <p>There are two kinds of results depending on the Settings:</p> <p>a. <b>AT+MQTTMIX=0</b>  <b>+MPUBEX:&lt;result&gt;</b></p> <p>b. <b>AT+MQTTMIX=1</b>          If qos = 0, nothing returned; if qos &gt; 0, +MPUBID:          &lt;packetid&gt; return first, then return as follows:</p> <p><b>+MPUBACK: &lt;packetid&gt;</b>      qos = 1  <b>+MPUBREC: &lt;packetid&gt;</b>      qos = 2  <b>+MPUBCOMP: &lt;packetid&gt;</b></p> <p>NOTE:</p> <p>Input mode will not sent keepalive, so the input data interval cannot be longer than keepalive, or the connection may be disconnected.</p> <p>Input mode should not exceed 4096 bytes at a time or some data will be lost, and each input should be at least 25 milliseconds apart.</p>

Parameters are defined below:

Parameters	Description
<b>&lt;topic&gt;</b>	The maximum length is 256

<b>&lt;qos&gt;</b>	Quality of Service: 0 At most once delivery for message 1 At least once delivery for message 2 Exactly once delivery for message
<b>&lt;retain&gt;</b>	Retain Flag: 0 the Server must not store the message and must not remove or replace any existing retained message. 1 the Server must store the Message and its QoS.
<b>&lt;message_length&gt;</b>	The message content length. The maximum length of 65535.
<b>&lt;result&gt;</b>	The result of publishing operation: SUCCESS FAILURE
<b>&lt;packetid&gt;</b>	The Packet Identifier field (1~65535)

Example:

Commands	Response
Publish: If <b>AT+MQTTMIX=0:</b> <b>AT+MPUBEX=mobil</b> <b>etek/topic,0,0,2</b>	<b>&gt;&gt; ab</b>  <b>OK</b>  <b>+MPUBEX: SUCCESS</b>
If <b>AT+MQTTMIX=1,</b> The return status varies with the QOS:	<b>&gt;&gt; ab</b>  <b>OK</b>
<b>qos = 0:</b> <b>AT+MPUBEX=mobil</b> <b>etek/topic,0,0,2</b>	
<b>qos = 1:</b> <b>AT+MPUBEX=mobil</b> <b>etek/topic,1,0,2</b>	<b>&gt;&gt; ab</b>  <b>OK</b>  <b>+MPUBID: 3</b>  <b>+MPUBACK: 3</b>

qos = 2 : <b>AT+MPUBEX=mobil etek/topic,2,0,2</b>	>> ab  OK  <b>+MPUBID: 4</b>  <b>+MPUBREC: 4</b>  <b>+MPUBCOMP: 4</b>
--	---

**3.3.5.19.6 AT+MSUB Request to subscribe a topic**

Request to subscribe a topic

Test Command	Response
<b>AT+MSUB=?</b>	<b>+MSUB: ,(0-2)</b>  OK
Read Command	Response
<b>AT+MSUB?</b>	<b>+MSUB:&lt;topic&gt;,&lt;qos&gt;</b> <b>+MSUB:&lt;topic&gt;,&lt;qos&gt;</b> <b>+MSUB:&lt;topic&gt;,&lt;qos&gt;</b> <b>+MSUB:&lt;topic&gt;,&lt;qos&gt;</b> <b>+MSUB:&lt;topic&gt;,&lt;qos&gt;</b> or ERROR

Write Command	Response
<b>AT+MSUB=&lt;topic&gt;,&lt;qos&gt;</b>	<b>OK</b> // Succeeded in requesting operation <b>ERROR</b> // Failed in requesting operation <b>BUSY</b> // Busy, please wait for a moment, and then retry.
	<p>There are two kinds of results depending on the Settings:</p> <p>a. <b>AT+MQTTMIX=0</b>  <b>+MSUB:&lt;result&gt;</b></p> <p>b. <b>AT+MQTTMIX=1</b>  <b>+MSUBID: &lt;packetid&gt;</b>  <b>+MSUBACK: &lt;packetid&gt;</b></p> <p>This command is used to request to subscribe a topic. The maximum topics is 5. The command is asynchronous. If has succeeded for subscribing a topic, the client will be to start to receive message from other client.</p> <p>Receive format:  <b>+MSUB: &lt;topic&gt;,&lt;len&gt; bytes,&lt;message&gt;</b></p>

Parameters are defined below:

Parameters	Description
<b>&lt;topic&gt;</b>	The maximum length is 256
<b>&lt;qos&gt;</b>	Quality of Service: 0 At most once delivery for message 1 At least once delivery for message 2 Exactly once delivery for message
<b>&lt;topic&gt;</b>	The topic.
<b>&lt;len&gt;</b>	The message length.
<b>&lt;message&gt;</b>	The message.
<b>&lt;result&gt;</b>	The result of subscribing topic operation: SUCCESS FAILURE
<b>&lt;packetid&gt;</b>	The Packet Identifier field (1~65535)

Example:

Commands	Response
----------	----------

Subscribe: If AT+MQTTMIX=0 : AT+MSUB=mobiletek/topic,0	OK  +MSUB: SUCCESS
AT+MSUB="L506#", 0	OK  +MSUB: FAILURE,2
If AT+MQTTMIX=1: AT+MSUB=mobiletek/topic,0	OK  +MSUBID: 5  +MSUBACK: 5

### 3.3.5.19.7 AT+MUNSUB Request to unsubscribe a topic

This command is used to request to unsubscribe a topic. The command is asynchronous.

Write Command	Response
AT+MUNSUB=<topic>	<p>There are two kinds of results depending on the Settings:</p> <p>a. AT+MQTTMIX=0 + MUNSUB:&lt;result&gt;</p> <p>b. AT+MQTTMIX=1 +MUNSUBID: &lt;packetid&gt;  +MUNSUBACK: &lt;packetid&gt;</p>

Parameters are defined below:

Parameters	Description
<topic>	The maximum length is 256
<result>	The result of unsubscribing topic operation: SUCCESS FAILURE
<packetid>	The Packet Identifier field (1~65535) .

Example:

Commands	Response
----------	----------

Unsubscribe: If <b>AT+MQTTMIX=0</b> : <b>AT+MUNSUB=mobil etek/topic</b>	<b>OK</b>  <b>+MUNSUB: SUCCESS</b>
If <b>AT+MQTTMIX=1</b> : <b>AT+MUNSUB=mobil etek/topic</b>	<b>OK</b>  <b>+MUNSUBID: 6</b>  <b>+MUNSUBACK: 6</b>

### 3.3.5.19.8 AT+ MDISCONNECT Request to disconnect to server

This command is used to request to disconnect to Server. The command is asynchronous.

Execution Command	Response
<b>AT+ MDISCONNECT</b>	<b>OK</b> // Succeeded in requesting operation <b>ERROR</b> // Failed in requesting operation <b>BUSY</b> // Busy, please wait for a moment, and then retry. <b>+MDISCONNECT:&lt;result&gt;</b>

Parameters are defined below:

Parameters	Description
<b>&lt;result&gt;</b>	The result of disconnection operation: SUCCESS FAILURE

Example:

Commands	Response
<b>AT+MDISCONNECT</b>	<b>+MDISCONNECT: SUCCESS</b>  <b>OK</b>

### 3.3.5.19.9 AT+ MIPCLOSE Release mqtt resources

Release mqtt resources

Execution Command	Response
<b>AT+ MIPCLOSE</b>	<b>+MIPCLOSE:&lt;result&gt;</b> <b>OK</b> // Succeeded in closing operation  or <b>ERROR</b> // Failed in closing operation

Parameters are defined below:

Parameters	Description
<b>&lt;result&gt;</b>	release result SUCCESS FAILURE

Example:

Commands	Response
<b>AT+MIPCLOSE</b>	<b>+MIPCLOSE: SUCCESS</b>  <b>OK</b>

### 3.3.5.19.10 AT+MQTTMSGGET Request to print the message received

Request to print the message received

Execution Command	Response
<b>AT+MQTTMSGGET</b>	This command will print all of the data received, the command print only once, after the print data <statu> will become invalid. <b>+MSUB: &lt;topic&gt;,&lt;len&gt; bytes,&lt;message&gt;</b> <b>+MSUB: &lt;topic&gt;,&lt;len&gt; bytes,&lt;message&gt;</b> <b>+MSUB: &lt;topic&gt;,&lt;len&gt; bytes,&lt;message&gt;</b> <b>+MSUB: &lt;topic&gt;,&lt;len&gt; bytes,&lt;message&gt;</b>  <b>OK</b>

Test Command	Response
<b>AT+MQTTMSGGET=?</b>	<b>+MQTTMSGGET: (0-3)</b>  <b>OK</b>
Read Command	Response
<b>AT+MQTTMSGGET?</b>	<b>+MQTTMSGGET: 0,&lt;statu&gt;</b> <b>+MQTTMSGGET: 1,&lt;statu&gt;</b> <b>+MQTTMSGGET: 2,&lt;statu&gt;</b> <b>+MQTTMSGGET: 3,&lt;statu&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+MQTTMSGGET=&lt;n&gt;</b>	This command is used to Print the MQTT subscribe message received when AT+MQTTMSGSET=1. Receive format: <b>+MSUB: &lt;topic&gt;,&lt;len&gt; bytes,&lt;message&gt;</b>  <b>OK</b> // Succeeded in requesting operation or <b>ERROR</b> // Failed in requesting operation or <b>BUSY</b> // Busy, please wait for a moment, and then retry.

Parameters are defined below:

Parameters	Description
<b>&lt;topic&gt;</b>	The topic.
<b>&lt;len&gt;</b>	The message length
<b>&lt;message&gt;</b>	The message maximum length 2048 bytes, including the message header, the excess part will be discarded.
<b>&lt;statu&gt;</b>	message status VALID received data. INVALID no data received. valid data, AT+MQTTMSGGET can print this data, after the print data <statu> will become INVALID.

Example:

Commands	Response
----------	----------



<b>AT+MQTTMSGGET =0</b>	<b>+MSUB: mobiletek/topic,5 bytes,12345</b>  <b>OK</b>
-----------------------------	--

### 3.3.5.19.11 AT+MQTTMSGSET Request to set the messages print mode

Request to set the messages print mode

Test Command	Response
<b>AT+MQTTMSGSET=?</b>	<b>+MQTTMSGSET: (0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+MQTTMSGSET?</b>	<b>+MQTTMSGSET: &lt;mode&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MQTTMSGSET=&lt;mode&gt; &gt;</b>	<b>OK</b> // Succeeded in requesting operation or <b>ERROR</b> // Failed in requesting operation

Parameters are defined below:

Parameters	Description
<b>&lt; mode&gt;</b>	0 Automatically report mode, Take the initiative to print to a serial port on when messages are received 1 The caching mode, When receiving the message is stored in the cache, you must use the AT + MQTTMSGGET read cache. The cache storage at most four message

Example:

Commands	Response
<b>AT+MQTTMSGSET =1</b>	<b>OK</b>

### 3.3.5.19.12 AT+MQTTCEER Request to check error code

This command is used to check the ERROR code of the ERROR in the previous MQTT related command.

Execution Command	Response
<b>AT+MQTTCEER</b>	<p>This command can query the ERROR code when the MQTT correlation command returns an ERROR.</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p> <p><b>+MQTTCEER: &lt;error_code&gt;</b></p>

Parameters are defined below:

Parameters	Description
<b>&lt; error_code&gt;</b>	<p>The result of error_code:</p> <ul style="list-style-type: none"> <li>0 no error</li> <li>1 mqtt connection is lost</li> <li>2 arguments error</li> <li>3 failed in opening network</li> <li>4 failed in creating socket</li> <li>5 failed in connecting to server</li> <li>6 failed in establishing mqtt connection</li> <li>7 old connection is not disconnect</li> <li>8 failed in opening ssl session</li> </ul>

Example:

Commands	Response
<b>AT+MQTTCEER</b>	<p><b>+MQTTCEER: 0</b></p> <p><b>OK</b></p>

### 3.3.5.19.13 AT+MQTTSSL MQTTSSL support switch

This command is used to switch SSL support for MQTT.

Test Command	Response
<b>AT+MQTTSSL=?</b>	<p><b>+MQTTSSL: (0-1),(0-1)</b></p> <p><b>OK</b></p>

Read Command	Response
<b>AT+MQTTSSL?</b>	<b>+MQTTSSL: &lt;action&gt;,&lt;cert&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+MQTTSSL=&lt;action&gt;[,cert]</b>	<b>OK</b> or <b>ERROR</b> NOTE: The command must be used before AT+MCONNECT

Parameters are defined below:

Parameters	Description
<b>&lt;action&gt;</b>	The switch for SSL support. 0    close SSL support 1    open SSL support The default value is 0.
<b>&lt;cert&gt;</b>	Whether to use the certificate. 0    Ignore the certificate 1    Use the certificate

Example:

Commands	Response
<b>AT+MQTTSSL=1,1</b>	<b>OK</b>

### 3.3.5.19.14 AT+MQTTSTATU Query the MQTT connection status

This command is used to Query the MQTT connection status.

Execution Command	Response
<b>AT+MQTTSTATU</b>	<b>OK</b> or <b>ERROR</b> <b>+MQTTSTATU: &lt;statu&gt;</b>

Parameters are defined below:

Parameters	Description
------------	-------------

<b>&lt;statu&gt;</b>	The result of statu: 0 MQTT connection is not established 1 The MQTT connection is successful
----------------------	---

Example:

Commands	Response
<b>AT+MQTTSTATU</b>	<b>+MQTTSTATU: 0</b>  <b>OK</b>

### 3.3.5.19.15 AT+MQTTMIX Set additional configuration parameters

This command is used to set additional configuration parameters.

Test Command	Response
<b>AT+MQTTMIX=?</b>	<b>+MQTTMIX: (0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+MQTTMIX?</b>	<b>+MQTTMIX: &lt;packetid&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MQTTMIX=&lt;packetid&gt;</b>	<b>OK</b> // Succeeded in requesting operation or <b>ERROR</b> // Failed in requesting operation

Parameters are defined below:

Parameters	Description
<b>&lt;packetid&gt;</b>	0 No packetid Mode(Default Mode). 1 Packet ID Mode.

Example:

Commands	Response
<b>AT+MQTTMIX=1</b>	<b>OK</b>

### 3.3.5.20 AT Commands for CERT

#### 3.3.5.20.1 AT+MCERTINST Install Certificate

This command is used to install certificate file to the module.

Test Command	Response
<b>AT+MCERTINST =?</b>	<b>OK</b>
Write Command	Response
<b>AT+MCERTINST=</b> <b>&lt;filename&gt;,&lt;len&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;filename&gt;</b>	The name of the certificate/key file. The file name must have type like ".cer" or ".der". the maximum value is 256.And name string not support non-ascii and cannot contain: / \ : , * ? " > <
<b>&lt;len&gt;</b>	The length of the file data to send, the maximum value is 6144.

Example:

Commands	Response
<b>AT+MCERTINST="test.der",1024</b>	<b>&gt;&gt;file datas.....</b> <b>OK</b>

#### 3.3.5.20.2 AT+MCERTLIST List the certificate

List the certificate

Execution Command	Response
<b>AT+MCERTLIST</b>	This command is used to list certificate files into the module.
Test Command	Response
<b>AT+MCERTLIST=?</b>	<b>OK</b>

Example:

Commands	Response
<b>AT+MCERTLIST=?</b>	<b>OK</b>
<b>AT+MCERTLIST</b>	<b>+MCERTLIST: "test.der"</b> <b>+MCERTLIST: "test.pem"</b> <b>OK</b>

### 3.3.5.20.3 AT+MCERTDEL Delete the certificate

This command is used to delete a certificate file in the module.

Test Command	Response
<b>AT+MCERTDEL=?</b>	<b>OK</b>
Write Command	Response
<b>AT+MCERTDEL= &lt;filename&gt;</b>	<b>OK</b> Or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;filename&gt;</b>	The name of the certificate file. If <filename> is *.* , it means delete all certificates.

Example:

Commands	Response
<b>AT+MCERTDEL="test.der"</b>	<b>OK</b>
<b>AT+MCERTDEL="*.*"</b>	<b>OK</b>

### 3.3.5.21 AT Commands for ETHER

#### 3.3.5.21.1 AT+METHER Open/Close Ether network

This command is used to open/close ether network. Must insert RG45 cable in the first.

Test Command	Response
<b>AT+METHER=?</b>	<b>+METHER:(0-2)</b> <b>OK</b>
Read Command	Response
<b>AT+METHER?</b>	<b>+METHER:&lt;mode&gt;</b> <b>OK</b>
Write Command	Response
<b>AT+METHER=&lt;mode&gt;</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	Ether mode. 0 Close ether network 1 Open ether by modem mode. 2 Open ether by wired mode.

Example:

Commands	Response
<b>AT+METHER?</b>	<b>+METHER:0</b> //Ether is closed. <b>OK</b>
<b>AT+METHER=1</b>	<b>OK</b>  <b>+METHER:SUCCESS,&lt;mode&gt;</b> //Open ether with modem mode.

### 3.3.5.22 AT Commands for soft sim card

#### 3.3.5.22.1 AT+MSOFTSIM Initialize the configuration and service or start the softcard service

This command is mainly used to initialize the NV and folder configuration of the soft card, and to initialize and start the soft card function service.

Write Command  <b>AT+MSOFTSIM=1</b>	Response <b>+SOFTSIM: INIT SUCCESS!</b>  <b>OK</b>  <b>+ISOFTSIM:0,personalize success</b>  <b>+ISOFTSIM:0,ready</b> or <b>+SOFTSIM: INIT FAILED!</b>  <b>OK</b>  <b>+ISOFTSIM:0,ready</b>
Execution Command  <b>AT+MSOFTSIM</b>	Response <b>+SOFTSIM: FAILED!</b>  <b>OK</b> or <b>+SOFTSIM: SUCCESS!</b>  <b>OK</b>  <b>+ISOFTSIM:0,ready</b>
Reference	<b>NOTE:</b> <ol style="list-style-type: none"> <li>1 AT+MSOFTSIM=1 Used to configure and initialize the softcard environment, After the environment is configured successfully, each time the module restarts, you only need to use AT+MSOFTSIM enable soft card.</li> <li>2 After starting the soft card and injecting the network ,the module will poll whether the current IMSI number is official or not. If it is not, it will download the official number through <b>ota</b>. After downloading, it will report to <b>" +ISOFTSIM:3,refresh"</b> and restart the module.</li> </ol>



Example:

Commands	Response
<b>AT+MSOFTSIM=1</b>	<b>+SOFTSIM: INIT SUCCESS!</b>  <b>OK</b>  <b>+ISOFTSIM:0,personalize success</b>  <b>+ISOFTSIM:0,ready</b>
<b>AT+MSOFTSIM</b>	<b>+SOFTSIM: SUCCESS!</b>  <b>OK</b>  <b>+ISOFTSIM:0,ready</b>

### 3.3.5.22.2 AT+PSOFTSIM Control or query soft card function(only support L506X)

This command can only be used after AT+ MSOFTSIM successfully activates the soft card service. This command is mainly used to query the service status of the soft card function and switch the soft card function.

Query Command	Response
<b>AT+PSOFTSIM=start?</b>	// If the soft card service is not enabled, it will return <b>ERROR</b> // Soft card service started but not injected into the network <b>+PSOFTSIM:0</b> <b>OK</b> or // Start the softcard service and successfully inject the network <b>+PSOFTSIM:1</b> <b>OK</b>
Write Command	Response
<b>AT+PSOFTSIM= start,&lt;n&gt;</b>	//AT+PSOFTSIM=start,0 <b>+IND:SIM REMOVED</b>  <b>OK</b> or //AT+PSOFTSIM=start,1 <b>OK</b> or //AT+PSOFTSIM=start,ER000 <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;n&gt;</b>	<b>0:</b> turn off Soft Card <b>1:</b> turn on Soft Card <b>ER000:</b> erase Soft Card data

Example:

Commands	Response
<b>AT+PSOFTSIM=start?</b>	+PSOFTSIM:0 OK
<b>AT+PSOFTSIM=start,1</b>	OK
<b>AT+PSOFTSIM=start,0</b>	+IND:SIM REMOVED  OK
<b>AT+PSOFTSIM=start,ER000</b>	+IND:SIM REMOVED  OK

### 3.3.5.23 AT Commands for ECM/RNDIS (linux)

#### 3.3.5.23.1 AT+MNETCALL enable or disable ECM/RNDIS

This command is used to enable or disable ECM/RNDIS function.

Read Command	Response
<b>AT+MNETCALL?</b>	<b>+MNETCALL: &lt;status&gt;</b>  OK
Write Command	Response
<b>AT+MNETCALL=&lt;status&gt;</b>	OK or ERROR
Test Command	Response
<b>AT+MNETCALL=?</b>	<b>+MNETCALL: (0-2)</b>  OK

Parameters are defined below:

Parameters	Description
<b>&lt;status&gt;</b>	0 Disable the ECM/RNDIS function 1 Enable ECM function 2 Enable RNDIS function(L506X not support)

Example:

Commands	Response
<b>AT+MNETCALL?</b>	<b>+MNETCALL: 1</b> // Enable ECM function  <b>OK</b>
<b>AT+MNETCALL =1</b>	<b>OK</b> // Enable ECM function
Reference	NOTE: 1. L506X not support RNDIS. 2. After executing the commands, A series of L506X need restart the board. 3. Execute the AT\$MNETSWITCH=1 to provide Internet server, except after the L506X has executed the command.

### 3.3.5.24 AT Commands for start ECM dial

#### 3.3.5.24.1 AT+MNETSTART start ECM dial

This command is used to start ECM dial.

Read Command	Response
<b>AT+MNETSTART?</b>	<b>+MNETSTART: &lt;status&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+MNETSTART=&lt;status&gt;</b>	<b>OK</b> or <b>ERROR</b>
Test Command	Response
<b>AT+MNETSTART=?</b>	<b>+MNETSTART: (0-1)</b>  <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;status&gt;</b>	ECM dial switch. 0 Disable ECM dial 1 Enable ECM dial

Example:

Commands	Response
<b>AT+MNETSTART?</b>	<b>+MNETSTART: 1</b> // Enable ECM dial  <b>OK</b>
<b>AT+MNETSTART =1</b>	<b>OK</b> // Enable ECM dial

Reference	<p>NOTE:</p> <ol style="list-style-type: none"> <li>1. This commands is only applicable to the L506X series.</li> <li>2. After executing the commands, A series of L506X need restart the board.</li> </ol>
-----------	---

### 3.3.5.25 AT Commands for EUICC

#### 3.3.5.25.1 Open Logical Channel

For this, we use **AT+CSIM=10,"0070000001"** fixed instruction format to open the logical channel.

Example:

Commands	Response
<b>AT+CSIM=10,"0070000001"</b> (Manage Channel to request a new logical channel ID from UICC)	<b>+CSIM: 6,"029000"</b> (6 indicates the response length, and logical channel ID is 02, 9000 means normal end)

#### 3.3.5.25.2 Close Logical Channel

For this, we use **AT+CSIM=10,"0070800X00"** fixed instruction format to close the logical channel.

(0X is the channel ID returned after successfully opening the channel after using **AT+CSIM=10,"0070000001"**)

Example:

Commands	Response
<b>AT+CSIM=10,"0070800200"</b> (Manage Channel to close the above logical channel, 02 indicates the channel ID that needs to be closed after we successfully open it)	<b>+CSIM: 4,"9000"</b> (4 indicates the response length, and 9000 means normal end)

#### 3.3.5.25.3 Generic UICC Logical Channel Access

For this, we use the **AT+CSIM=<length>,<command>** instruction to access the logical channel. And the format of the instruction is as follows:

Commands	Response
----------	----------

<b>AT+CSIM=&lt;length&gt;,&lt;command&gt;</b>	<b>+CSIM:&lt;length&gt;,&lt;response&gt;</b> <b>or</b> <b>+CME ERROR:&lt;err&gt;</b>
	<b>Note:</b> For APDU and proactive commands and File structure, please refer to the following documents:  <a href="#">ETSI TS 102 221 V16.4.0.pdf</a> <a href="#">ETSI TS 102 223 V15.3.0.pdf</a> <a href="#">ETSI TS 131 102 V16.7.0.pdf</a>

Parameters are defined below:

Parameters	Description
<b>&lt;length&gt;</b>	integer type; length of the characters that are sent to TE in <command> or <response>
<b>&lt;command&gt;</b>	command passed on by the MT to the SIM in the format as described in 3GPP TS 51.011 [28] (hexadecimal character format)
<b>&lt;response&gt;</b>	response to the command passed on by the SIM to the MT in the format as described in 3GPP TS 51.011 [28] (hexadecimal character format)

### 3.3.5.26 AT Commands for STK

#### 3.3.5.26.1 AT+STKMENU Main menu command

This command is used to query STK main menu.

Test Command	Response
<b>AT+STKMENU=?</b>	<b>OK</b>
Read Command	Response
<b>AT+STKMENU?</b>	<b>OK</b> <b>or</b> <b>[+ STKMENU: &lt;id&gt;, &lt;text&gt;]</b> <b>[+ STKMENU: &lt;id&gt;, &lt;text&gt;]</b> <b>[+ STKMENU: &lt;id&gt;, &lt;text&gt;]</b> <b>[...]</b>  <b>OK</b>

Parameters are defined below:

Parameters	Description
<b>&lt;id&gt;</b>	The item identifier
<b>&lt;text&gt;</b>	The content of item

### 3.3.5.26.2 AT+STKTRS Terminal Response

This command is used to send TRS response

Test Command	Response
<b>AT+STKTRS=?</b>	<b>+STKTRS: ,</b>  <b>OK</b>
Write Command	Response
<b>AT+STKTRS=&lt;result&gt;[,&lt;text&gt;]</b>	<b>OK</b> or <b>ERROR</b>

Parameters are defined below:

Parameters	Description
<b>&lt;result&gt;</b>	HEX String - 00 = Command performed successfully; - 10 = Proactive SIM session terminated by the user; - 11 = Backward move in the proactive SIM session requested by the user;
<b>&lt;text&gt;</b>	Hex String(max len is 142 bytes) and the previous event has been successfully executed(in other words result = 00, no need to enter in other cases) 1 If it is selected for the menu, it is the selected item ID 2 If it is input, it is the input text content

### 3.3.5.26.3 AT+STKENVS STK Envelope Command

This command is used to STK Envelope Command.

Test Command	Response
<b>AT+STKENVS=?</b>	<b>+STKENVS: &lt;command_length&gt;,&lt;data_length&gt;</b>  <b>OK</b>
Read Command	Response
<b>AT+STKENVS?</b>	<b>OK</b>

Write Command	Response
<b>AT+STKENVS=&lt;command&gt;</b> <b>[,&lt;data&gt;]</b>	<b>OK</b>  or  <b>ERROR</b>
Reference	Note

Parameters are defined below:

Parameters	Description
<b>&lt;command&gt;</b>	HEX String --specified in GSM11.14[13.1] "D3"= Menu Selection;
<b>&lt;data&gt;</b>	Hex String If command is 'D3' ,<data> is Item identifier of main menu.The range is 00 to FF.

#### 3.3.5.26.4 AT+STKPCI STK Proactive Command Indication

This unsolicited result code is used to indicate Proactive Command Indication.

	Unsolicited Result Code <b>+STKPCI:&lt;pci_type&gt;[,&lt;proactive_command&gt;,...]</b>
Reference	Note

Parameters are defined below:

Parameters	Description
<b>&lt;pci_type&gt;</b>	0 The SAT command is handled by TE. 1 The SAT command is handled by ME. 2 No other command (end of session)

<b>&lt;proactive_command&gt;</b>	<p>HEX string of STK proactive command, sent when &lt;pci_type&gt; = 0 or 1</p> <p>-DISPLAY TEXT,&lt;dc&gt;,&lt;text string&gt;</p> <p>-GET INPUT, &lt;response_format&gt;,&lt;dc&gt;,&lt;text string&gt;,&lt;Min length&gt;,&lt;Max length&gt;</p> <p>-SET UP MENU,&lt;the number of item &gt;,&lt;alpha id&gt;</p> <p>-SELECT ITEM, &lt;the number of item &gt;</p> <p>-ITEM,&lt;index&gt;,&lt;item id&gt;,&lt;item string&gt;</p> <p>-SEND SHORT MESSAGE,&lt;alpha id&gt;,&lt;addr&gt;,&lt;sms tpdu&gt;</p> <p>If &lt;alpha id&gt; = 0, the alpha id is null</p> <p>If &lt;addr&gt; = 0, the addr is null</p> <p>&lt;dc&gt; is '08' represent UCS-2 formatting</p> <p>&lt;dc&gt; is '04' represent GSM default character set</p> <p>&lt;response_format&gt;</p> <p>00 SMS default alphabet.</p> <p>01 Yes or No.</p> <p>02 Numerical only.</p> <p>03 UCS-2 alphabet.</p> <p>04 Immediate Digit Response.</p> <p>05 Yes/No and Immediate Digit Response.</p>
----------------------------------	--

### 3.3.5.26.5 AT+STKSMS STK SMS delivery

This command is used to STK SMS delivery.

Test Command	Response
<b>AT+STKSMS=?</b>	<b>OK</b>
Write Command	Response
<b>AT+STKSMS=&lt;command&gt;</b>	<b>OK</b>
	or
	<b>ERROR</b>
Reference	<p>Note</p> <p>Above are the possible terminal response value needed to be responded by application.</p> <p>It's modem's responsibility to response for other terminal response value</p>

Parameters are defined below:

Parameters	Description
------------	-------------



<b>&lt;command&gt;</b>	0 (Trigger modem to send STK SMS)
	4 (Trigger modem to send STK SMS but icon cannot be displayed)

### 3.3.5.26.6 AT+STKPCIS STK URC switch command

This command is used to STK URC switch command.

Test Command	Response
<b>AT+STKPCIS=?</b>	<b>+STKPCIS: (0-1)</b>  <b>OK</b>
Read Command	Response
<b>AT+STKPCIS?</b>	<b>+STKPCIS: &lt;switch&gt;</b>  <b>OK</b>
Write Command	Response
<b>AT+STKPCIS=&lt;switch&gt;</b>	<b>OK</b>  Or <b>ERROR</b>
Reference	Note

Parameters are defined below:

Parameters	Description
<b>&lt;switch&gt;</b>	the switch of STK URC 0 the STK URC is off 1 the STK URC is on

## 3.3.6 AT Commands for IS-707

### 3.3.6.1 IS-707 vendor Specific AT command table

#### 3.3.6.1.1 AT\$QCCAV Answer Incoming Voice Call

Answer Incoming Voice Call

Execution Command	Response
<b>AT\$QCCAV</b>	Answer incoming voice call.
Reference	Note
3GPP2	

### 3.3.6.1.2 AT\$QCCHV Hangs Up Incoming Voice Call

Hangs up incoming voice call.

Execution Command	Response
<b>AT\$QCCHV</b>	Hangs up incoming voice call.
Reference	Note
3GPP2	

### 3.3.6.1.3 AT ^CPIN Sends to the ME a Password

Sends to the ME a Password

Test Command	Response
<b>AT ^CPIN=?</b>	<b>OK</b>
Read Command	Response
<b>AT ^CPIN?</b>	<b>^CPIN:&lt;code&gt;,&lt;SIMPUKretries&gt;,&lt;SIM PIN retries&gt;,&lt;SIM PUK2 retries&gt;,&lt;SIM PIN2 retries&gt; OK</b>
Write Command	Response
<b>AT ^CPIN=</b>	This set commands sends to the ME a password which is necessary before operation.
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;code&gt;</b>	describes the current pin state
<b>&lt;XXX retries&gt;</b>	it defines the number of retries left for each PIN's

#### 3.3.6.1.4 AT+QCPIN Sends to the ME a Password

Sends to the ME a Password

Test Command	Response
<b>AT+QCPIN =?</b>	<b>OK</b>
Read Command	Response
<b>AT+QCPIN?</b>	<b>+QCPIN:&lt;code&gt;</b>
Write Command	Response
<b>AT+QCPIN =</b>	This set commands sends to the ME a password which is necessary before operation.
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;code&gt;</b>	describes the current pin state

#### 3.3.6.1.5 AT+CCSQ Query Received Signal Quality

Query Received Signal Quality

Execution Command	Response
<b>AT+CCSQ</b>	Query received signal quality. Returns the signal quality measure <SQM>and the frame error rate <FER>

Test Command	Response
<b>AT+CCSQ=?</b>	<b>+CCSQ: (0-31,99),(99)</b> <b>OK</b>
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;SQM&gt;</b>	0-31 - <SQM> 99 - <SQM> not known or is detectable.
<b>&lt;FER&gt;</b>	0 - < 0.01% 1 - 0.01 to < 0.1% 2 - 0.1 to < 0.5% 3 - 0.5 to < 1.0% 4 - 1.0 to < 2.0% 5 - 2.0 to < 4.0% 6 - 4.0 to < 8.0% 7 - >= 8.0%
<b>&lt;FER&gt;</b>	is not known or is not detectable.

#### 3.3.6.1.6 AT+CDV Originated Voice Call

Originated Voice Call

Execution Command	Response
<b>AT+CDV&lt;num&gt;</b>	originated voice call
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;num&gt;</b>	phone number

#### 3.3.6.1.7 AT+QCIMI Compiles the IMSI Number

Compiles the IMSI Number

Execution Command	Response
<b>AT+QCIMI</b>	This command compiles the International Mobile Subscriber Identity (IMSI) number of the device from the relevant NV items or the RUIM card and prints out the information.
Test Command	Response
<b>AT+QCIMI=?</b>	<b>OK</b>
Reference	Note
3GPP2	

### 3.3.6.1.8 AT^HDRCSQ Query Received Signal Quality

Query Received Signal Quality

Execution Command	Response
<b>AT^HDRCSQ</b>	<b>^HDRCSQ: &lt;hdr_rssi_intensity&gt;</b>
Test Command	Response
<b>AT^HDRCSQ =?</b>	<b>^HDRCSQ: (0, 20, 40, 60, 80, 99)</b>
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;hdr_rssi_intensity&gt;</b>	0, 20, 40, 60, 80, 99
<b>&gt;</b>	<p>Note:</p> <p>The value of 99 means the signal is the best, and 0 means the signal is the worst.</p>

### 3.3.6.2 IS-707 Sms related AT command table

#### 3.3.6.2.1 AT\$QCNMI Set How Receiving New Message

Set How Receiving New Message

Test Command	Response
<b>AT\$QCNMI=?</b>	<b>\$QCNMI: (0,1,2),(1,2,3),(0,1),(0,1,2),(0,1)</b> <b>OK</b>
Read Command	Response
<b>AT\$QCNMI?</b>	<b>\$QCNMI: x,x,x,x,x</b> <b>OK</b>
Write Command	Response
<b>AT\$QCNMI=[&lt;mode&gt; [,&lt;mt&gt;[,&lt;bm&gt;[,&lt;ds&gt; [,&lt;bfr&gt;]]]]]</b>	select the procedure of how receiving new messages from the network is indicated to TE.  Similar to +CNMI. Note: If <mode> is 0 or 2,<mt> cannot be set to 2 and 3.
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0,1,2
<b>&lt;mt&gt;</b>	1,2,3
<b>&lt;bm&gt;</b>	0,1
<b>&lt;ds&gt;</b>	0,1,2
<b>&lt;bfr&gt;</b>	0,1

#### 3.3.6.2.2 AT\$QCSMP Set Parameters for Sending Messages

Set Parameters for Sending Messages

Test Command	Response
<b>AT\$QCSMP=?</b>	<b>OK</b>
Read Command	Response
<b>AT\$QCSMP?</b>	Read current value
Write Command	Response
<b>AT\$QCSMP=[&lt;tid&gt;[,&lt;vpf&gt;[,&lt;vp&gt;[,&lt;ddtf&gt;[,&lt;ddt&gt;]]]]]</b>	set parameters for sending text sms messages.
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;tid&gt;</b>	4095 - 4102
<b>&lt;vpf&gt;</b>	0 - 1 (0 Absolute, 1 Relative)
<b>&lt;vp&gt;</b>	string[22]
<b>&lt;ddtf&gt;</b>	0 - 1 (0 Absolute, 1 Relative)
<b>&lt;ddt&gt;</b>	string[22]
	Similar to +CSMP but with a different parameters
	<input type="checkbox"/> tid – Teleservice ID <input type="checkbox"/> vpf – Validity Period Format <input type="checkbox"/> vp – Validity Period <input type="checkbox"/> ddtf – Deferred Delivery Time Format <input type="checkbox"/> ddt – Deferred Delivery Time

### 3.3.6.2.3 AT\$QCPMS Select Preferred Memory Storage

Select Preferred Memory Storage

Test Command	Response
<b>AT\$QCPMS=?</b>	<b>\$QCPMS:("ME","MT","SM"),("ME","MT","SM"),("ME","MT","SM")</b>
	<b>OK</b>

Read Command	Response
<b>AT\$QCPMS?</b>	Read current value
Write Command	Response
<b>AT\$QCPMS=</b> <b>&lt;mem1&gt;,&lt;mem2&gt;,&lt;mem3&gt;</b>	select preferred memory storage for reading, writing etc. Similar to +CPMS
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;mem&gt;</b>	is any of ME or MT or SM

#### 3.3.6.2.4 AT\$QCMGR Read a Sms Message

Read a Sms Message

Test Command	Response
<b>AT\$QCMGR=?</b>	<b>OK</b>
Write Command	Response
<b>AT\$QCMGR=</b> <b>&lt;index&gt;</b>	read a sms message.  Similar to +CMGR
Reference	Note
3GPP2	

#### 3.3.6.2.5 AT\$QCMGS Send a Message from TE to The Network

Send a Message from TE to The Network



Test Command	Response
<b>AT\$QCMGS=?</b>	<b>OK</b>
Write Command	Response
<b>AT\$QCMGS=</b> <b>&lt;da&gt; , &lt;todo&gt;</b>	send a message from TE to the network.  Similar to +CMGS
Reference	Note
3GPP2	

#### 3.3.6.2.6 AT\$QCMSS Send a Message Already Stored from Memory

Send a Message Already Stored from Memory

Test Command	Response
<b>AT\$QCMSS=?</b>	<b>OK</b>
Write Command	Response
<b>AT\$QCMSS=</b> <b>&lt;index&gt;[,&lt;da&gt;[,</b> <b>&lt;todo&gt;]]</b>	send a message already stored from Memory to the network.  Similar to +CMSS
Reference	Note
3GPP2	

#### 3.3.6.2.7 AT\$QCMGD Delete SMSMessages

Delete SMSMessages

Test Command	Response
<b>AT\$QCMGD=?</b>	<b>\$QCMGD: (0),(0-4)</b>  <b>OK</b>
Write Command	Response
<b>AT\$QCMGD=</b> <b>&lt;[&lt;index&gt;]</b> <b>[,&lt;delflag&gt;]&gt;</b>	delete sms messages from <mem1>.  Similar to +CMGD
Reference	Note
3GPP2	

### 3.3.6.2.8 AT\$QCMGL List All the SMS Saved in the Loaction

List All the SMS Saved in the Loaction

Test Command	Response
<b>AT\$QCMGL=?</b>	<b>\$QCMGL: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL")</b>  <b>OK</b>
Write Command	Response
<b>AT\$QCMGL=</b> <b>&lt;stat&gt;</b>	Lists all the SMS saved in the loaction.  Similar to +CMGL
Reference	Note
3GPP2	

### 3.3.6.2.9 AT\$QCMGF Message Format

Message Format

Test Command	Response
<b>AT\$QCMGF=?</b>	<b>\$QCMGF: (0-1)</b> <b>OK</b>
Read Command	Response
<b>AT\$QCMGF?</b>	<b>\$QCMGF: 1</b>  <b>OK</b>
Write Command	Response
<b>AT\$QCMGF=&lt;mode&gt;</b>	Similar to +CMGF
Reference	Note
3GPP2	

Parameters are defined below:

Parameters	Description
<b>&lt;mode&gt;</b>	0 PDU mode 1 TEXT mode

### 3.3.6.2.10 AT\$QCMGW Store Message to Memory

Store Message to Memory

Execution Command	Response
<b>AT\$QCMGW</b>	Similar to +CMGW
Test Command	Response
<b>AT\$QCMGW=?</b>	<b>OK</b>
Write Command	Response
<b>AT\$QCMGW=[&lt;da&gt; [,&lt;toda&gt; [,&lt;stat&gt;]]]</b>	store message to memory storage <mem2>  Similar to +CMGW
Reference	Note
3GPP2	

## 4 List of acronyms

ARFCN	Absolute Radio Frequency Channel Number AT Attention command
BA	BCCH Allocation
BCCH	Broadcast Control Channel
CA	Cell Allocation
CBM	Cell Broadcast Message
CBS	Cell Broadcast Service
CCM	Current Call Meter
CLIR	Calling Line Identification Restriction
CTS	Clear To Send
CUG	Closed User Group
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DCS	Digital Cellular System
DNS	Domain Name System Server
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi Frequency
DTR	Data Terminal Ready
GPRS	Global Packet Radio Service
IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IRA	International Reference Alphabet
IWF	Interworking Function
MO	Mobile Originated
MT	Mobile Terminal
NVM	Non Volatile Memory

PCS	Personal Communication Service
PDP	Packet Data Protocol
PDU	Packet Data Unit
PIN	Personal Identification Number
PPP	Point to Point Protocol
PUK	Pin Unblocking Code
RLP	Radio Link Protocol
RMC	Recommended minimum Specific data
RTS	Request To Send
SAP	SIM Access Profile
SCA	Service Center Address
SMS	Short Message Service
SMSC	Short Message Service Center
SMTP	Simple Mail Transport Protocol
TA	Terminal Adapter
TCP	Transmission Control Protocol
TE	Terminal Equipment
UDP	User Datagram Protocol
USSD	Unstructured Supplementary Service Data
UTC	Coordinated Universal Time
VDOP	Vertical dilution of precision
VTG	Course over ground and ground speed

## 5 ERROR CODE

### 5.1 ME Error Result Code

This is NOT a command; it is the error response to Cxxx 3gpp TS 27.007 commands.

Syntax: +CME ERROR: <err>

Parameter: <err> - error code can be either numeric or verbose (see +CMEE). The possible values of <err> are reported in the table:

Numeric Format	Verbose Format General errors:
0	phone failure
1	No connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string

26	dial string too long
27	invalid characters in dial string
30	no network service
31	network time-out
32	network not allowed - emergency calls only
40	network personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	Service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required General purpose error:
100	unknown
770	SIM invalid

GPRS related errors to a failure to perform an Attach:

Parameters	Description
103	Illegal MS (#3)*
106	Illegal ME (#6)*
107	GPRS service not allowed (#7)*
111	PLMN not allowed (#11)*
112	Location area not allowed (#12)*
113	Roaming not allowed in this location area (#13)* GPRS related errors to a failure to Activate a Context and others:
132	service option not supported (#32)*
133	requested service option not subscribed (#33)*
134	service option temporarily out of order (#34)*
148	unspecified GPRS error
149	PDP authentication failure

150	invalid mobile class Easy GPRS® related errors
550	generic undocumented error
551	wrong state
552	wrong mode
553	context already activated
554	stack already active
555	activation failed
556	context not opened
557	cannot setup socket
558	cannot resolve DN
559	time-out in opening socket
560	cannot open socket
561	remote disconnected or time-out
562	connection failed
563	tx error
564	already listening Network survey errors
657	Network survey error (No Carrier)*
658	Network survey error (Busy)*
659	Network survey error (Wrong request)*
660	Network survey error (Aborted)* Supplementary service related error
257	network rejected request
258	retry operation
259	invalid deflected to number
260	deflected to own number
261	unknown subscriber
262	service not available
263	unknown class specified
264	unknown network message AT+COPS test command related error



680	LU processing
681	Network search aborted
682	PTM mode AT+WS46 test command related error
683	Active call state
684	RR connection Established

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## 5.2 Message Service Failure Result Code -

### AT+CMS ERROR: <err>

This is NOT a command; it is the error response to AT+Cxxx 3gpp TS 27.005 commands.

Syntax: AT+CMS ERROR: <err>

Parameter: <err> - numeric error code. The <err> values are reported in the table:

Parameters	Description
0...127	3gpp TS 24.011 Annex E-2 values
128...255	3gpp TS 23.040 sub clause 9.2.3.22 values
300	ME failure
301	SMS service of ME reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode parameter
305	invalid text mode parameter
310	SIM not inserted
311	SIM PIN required
312	PH-SIM PIN required
313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
330	SMSC address unknown
331	no network service
332	network time-out

340	no +CNMA acknowledgement expected
350/500	Unknown error

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