L710 AT Command User Guide

IOT Module Series

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Shanghai Mobiletek Communication Ltd

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Version History

Date	Version	Description of change	Author
2019-08-27	V1.0	Initial	WangHao
2019-12-12	V1.1	Add +MIOTBAND	WangHao
2019-01-02	V1.1	Add jamming detection command $QCJDCFG and $QCJDSTATE	Wanghao

CONTENT

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/
ETSI GSM 07.05 specification and rules
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 IOT
Series.

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

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

Result Codes	Numeric form Verbose form
0	**OK**
1	**CONNECT**
2	**RING**

3	**NO CARRIER**
4	**ERROR**
6	**NO DIALTONE**
7	**BUSY**
8	**NO ANSWER**

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)
+COPS	**125 (test command)**
+CLCK	**15 (SS operation)** **5 (FDN enabling/disabling)**
+CPWD	**15 (SS operation)** **5 (PIN modification)**
+CLIP	**15 (read command)**
+CLIR	**15 (read command)**
+CCFC	**15**
+CCWA	**15**
+CHLD	**30**
+CPIN	**30**
+CPBS	**5 (FDN enabling/disabling)** **5 (single reading)**
+CPBR	**5 (single reading)** **15 (complete reading of a 500 records full phonebook)**

+CPBF	10 (string present in a 500 records full phonebook) 5 (string not present)
+CPBW	5
+CACM	5
+CAMM	5
+CPUC	180
+VTS	20 (transmission of full "1234567890*#ABCD" string with no delay betwe en tones, default duration)
+CSCA	5 (read and set commands)
+CSAS	5
+CMGS	120 after CTRL-Z; 1 to get '>' prompt
+CMSS	120 after CTRL-Z; 1 to get '>' prompt
+CMGW	5 after CTRL-Z; 1 to get '>' prompt
+CMGD	5 (single SMS cancellation) 25 (cancellation of 50 SMS)
+CNMA	120 after CTRL-Z; 1 to get '>' prompt
+CMGR	5
+CMGL	100
+CGACT	150
+CGATT	140 120 (voice call)
D	Timeout set with ATS7 (data call) 60 (voice call)
A	Timeout set with ATS7 (data call)
H	30
+CHUP	60
+COPN	10
+COPL	180
+CRSM	180
+FRH	Timeout set with ATS7
+FTH	Timeout set with ATS7
+FRM	Timeout set with ATS7
+FTM	Timeout set with ATS7
+FRS	Timeout set with the command itself
+FTS	Timeout set with the command itself
+WS46	10

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 LinePrefixes

3.3.1.1.1 AT Starting a Command Line

Execution Command	Response
AT	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
A/	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
AT&F[<value>]	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	
<value>	**0**	just factory profile's base section parameters are considered.
	***1**	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
ATZ[<value>]	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	
<value>	**0**	User profile number

3.3.2.1.3 AT+GMI Manufacturer Identification

Manufacturer Identification

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

3.3.2.1.4 AT+GMM Model Identification

Model Identification

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

3.3.2.1.5 AT+GMR Revision Identification

Revision Identification

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

3.3.2.1.6 AT+GCAP Capabilities List

Capabilities List

Execution Command	Response
AT+GCAP	**+CGSM**: 3GPP TS command set **+DS**: Data Service common modem command set **+MS**: Mobile Specific command set
Test Command	Response
AT+GCAP=?	**OK**
Reference	Note
V.25ter	

3.3.2.1.7 AT+GSN Serial Number

Serial Number

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

3.3.2.2 DTE -Modem Interface Control

3.3.2.2.1 ATE Set Command Echo Mode

Set Command Echo Mode

Execution Command	Response
ATE[<value>]	**OK**
Reference	Note
V25ter	

Parameters are defined below:

Parameters	Description	
<value>	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
ATQ [<value>]	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	
<value>	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 **AT+CGACT=?**	**+CGACT: (0-1)** nothing is appended to the response

3.3.2.2.3 ATV Response Format

Set DCE response format.

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

Parameters are defined below:

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

3.3.2.2.4 ATX Set Connect Result Code Format and Monitor Call Progress

Set Connect Result Code Format and Monitor Call Progress

Execution Command	Response
ATX[<value>]	**OK or ERROR**

Reference	Note
V.25ter	If parameter is omitted, the command has the same behaviour of ATX0 Parameter: <n> 0 - EXTENDED MESSAGES:X0=NO 1..4 - EXTENDED MESSAGES:X1=YES For complete control on CONNECT response message see also +DR command.

Parameters are defined below:

Parameters	Description	
<value>	0	send only OK, CONNECT, RING, NO CARRIER, ERROR, NO ANSWER Results.
	1…4	reports all messages (factory default is 1).

3.3.2.2.5 ATI Identification Information

Identification Information

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

Parameters are defined below:

Parameters	Description
<value>	0-255 parameter are accepted but ignored (to accommodateexternal software)

3.3.2.2.6 AT&C Data Carrier Detect (DCD) Control

Data Carrier Detect (DCD) Control

Execution Command	Response
AT&C[<value>]	Set command controls the RS232 DCD output behaviour. **OK** or **ERROR**
Reference	Note
V25ter	

Parameters are defined below:

Parameters	Description	
<value>	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
AT&D[<value>]	The set command controls the Module behaviour for RS232 DTR transitions. **OK** or **ERROR**
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

<value>	0 TA ignores status on DTR 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 2 NOT 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&S Data Set Ready (DSR) Control

Data Set Ready (DSR) Control

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

Parameters are defined below:

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

3.3.2.2.9 AT+IPR Fixed DTE Interface Rate

Fixed DTE Interface Rate

Execution Command	Response
AT+IPR	Pestore to default value

Test Command	Response
AT+IPR=?	Test command returns the list of supported autodetectable <rate> values and the list of fixed-only <rate> values in the format: **+IPR:(list of supported autodetectable <rate> values), (list of fixed-only <rate> values)**
Read Command	Response
AT+IPR?	Read command returns the current value of +IPR parameter.
Write Command	Response
AT+IPR=[<rate>]	**OK**
Reference	Note
V.25ter	DTE speed of USB does not change.

Parameters are defined below:

Parameters	Description

<rate>	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 enabled.

3.3.2.3 Call Control

3.3.2.3.1 ATD Mobile Originated Call to Dial a Number

Dial

Execution Command	Response
ATD<number>[;]	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
Reference	Note: for backwards compatibility with landline modems modifiers "T", "P","R", ",", "W", "!", "@" are accepted but have no effect. Note: Voice call is not currently supported.

Parameters are defined below:

Parameters	Description
<number>	Phone number to be dialed

3.3.2.3.2 ATO Return To On Line Mode

Return To On Line Mode

Execution Command	Response
ATO	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 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/RC336

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

Number Of Rings To Auto Answer.

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

Parameters are defined below:

Parameters	Description	
<value>	0	auto answer disabled (factory default)
	1-255	number of rings required before automatic answer.

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
AT+CGMI	Execution command returns the device manufacturer identification code without command echo.

Test Command **AT+CGMI=?**	Response OK
Reference 3GPP TS 27.007	Note

3.3.3.1.2 AT+CGMM Request Model Identification

Request Model Identification

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

3.3.3.1.3 AT+ CGMR Request Revision Identification

Request Revision Identification.

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

3.3.3.1.4 AT+CGSN Request Product Serial Number Identification

Request Product Serial Number Identification

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

3.3.3.1.5 AT+CSCS Select TE Character Set

Select TE Character Set

Test Command **AT+CSCS=?**	Response Test command returns the supported values for parameter <chset>.
Read Command **AT+CSCS?**	Response Read command returns the current value of the active character set.
Write Command **AT+CSCS=<chset>**	Response Set command sets the current character set used by the device.
Reference 3GPP TS 27.007	Note

Parameters are defined below:

Parameters	Description	
<chset>	"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
AT+CSCS="IRA"	**OK**

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

Request International Mobile Subscriber Identify

Test Command	Response
AT+CIMI=?	**OK**
Execution Command	Response
AT+CIMI	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
AT+WS46=?	Test command reports the range for the parameter <n>.

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

Parameters are defined below:

Parameters	Description
<n>	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

3.3.3.1.8 AT+CSTF Setting Time Format

Setting Time Format

Test Command	Response
AT+CSTF=?	**+CSTF: (list of supported <mode>s)** **+CME ERROR: <err>**
Read Command	Response
AT+CSTF?	**+CSTF: <mode>** **+CME ERROR: <err>**

Write Command	Response
AT+CSTF=<mode>	**+CME ERROR: <err>**
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<mode>	integer type. The default value is manufacturer specific. 1、HH:MM (24 hour clock) 2、HH:MM A.M./P.M.

3.3.3.1.9 AT+ICCID Read ICCID From SIM Card

Read ICCID from SIM card

Test Command	Response
AT+ICCID=?	**OK**
Execute Command	Response
AT+ICCID	**+ICCID: <ICCID>** **OK** **ERROR** **+CME ERROR: <err>**

Parameters are defined below:

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

Example:

Commands	Response
AT+ICCID	**+ICCID: 898600700907A6019125** **OK**
AT+ICCID=?	**OK**

3.3.3.2 Network Service Handling

3.3.3.2.1 AT+CREG Network Registration Report

Network Registration Report

Test Command	Response
AT+CREG=?	Test command returns the range of supported <mode>
Write Command	Response
AT+CREG=<mode>	Set command enables/disables network registration reports depending on the parameter <mode>. If <mode>=1, network registration result code reports: **+CREG: <stat>** If <mode>=2, network registration result code reports: **+CREG: <stat>[,[<lac>],[<ci>],[<AcT>]]** Note: <Lac>,<Ci> and <Act> are reported only if mode>=2 and the mobile is registered on some network cell
Read Command	Response
AT+CREG?	Read command reports the <mode> and <stat> parameter values in the format: **+CREG: <mode>,<stat>[,<Lac>,<Ci>,<Act>]** Note: <Lac>,<Ci> and <Act> are reported only if <mode>=2 and the mobile is registered on some network cell.

Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<mode>	0 - disable network registration unsolicited result code (factory default) 1 - enable network registration unsolicited result code 2 - enable network registration unsolicited result code with network Cell identification data
<stat>	0 - not registered, ME is not currently searching for a new operator to register to 1 - registered, home network 2 - not registered, but ME is currently searching for a new operator to register to 3 - registration denied 4 - unknown 5 - registered, roaming 6 – not initialized(Internal use only)
<lac>	string type; two byte location area code (when <AcT> indicates value 0 to 6), or tracking area code (when <AcT> indicates value 7). In hexadecimal forma t
<ci>	string type; four byte GERAN/UTRAN/E-UTRAN cell ID in hexadecimal format.
<AcT>	integer type; access technology of the serving cell 0 - GSM 1 - GSM Compact 2 - UTRAN 3 - GSM w/EGPRS 4 - UTRAN w/HSDPA 5 - UTRAN w/HSUPA 6 - UTRAN w/HSDPA and HSUPA 7 - E-UTRAN Note: <Lac>,<Ci> and <Act> are reported only if <mode>=2 and the mobile is registered on some network cell.

Example:

Commands	Response
AT+CREG?	**+CREG: 0,2** **OK** (the MODULE is in network searching state)

3.3.3.2.2 AT+COPS Operator Selection

Operator Selection

Test Command	Response
AT+COPS=?	Test command returns a list of quintuplets, each representing an operator present in the network. The quintuplets in the list are separated by commas: **+COPS: [list of supported (<stat>,long alphanumeric <oper>,short alphanumeric<oper>,numeric <oper>, <AcT>)]** [,,(list of supported <mode>s),(list of supported <format>s)]
Read Command	Response
AT+COPS?	Read command returns current value of <mode>,<format> and <oper> in format <format>; if no operator is selected, <format> and <oper> are omitted **+COPS: <mode>[,<format>,<oper>,< AcT>]**
Write Command	Response
AT+COPS=[<mode>[,<format> [,<oper>> [,< AcT>]]]]	Set command forces an attempt to select and register the GSM\UMTS network operator. <Mode> parameter defines whether the operator selection is automatic or forced by this command to operator <oper>. The operator <oper> given in format <format>.

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
<mode>	0 - automatic choice (the parameter <oper> will be ignored) (factory default) 1 - manual choice (<oper> field shall be present) 2 - deregister from the network; the MODULE is kept unregistered until a +COPS with <mode>=0, 1 or 4 is issued 3 - set only <format> parameter (the parameter <oper> will be ignored) 4 - manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered
<format>	0 - alphanumeric long form (max length 16 digits) 1 - short format alphanumeric <oper> 2 - numeric <oper>
<Oper>	String type <format> 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 <oper> 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). Note: <mode> parameter setting is stored in NVM and available at next reboot, if it is not 3 (i.e.: set only <format> parameter). Note: if <mode>=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) Note: <format> parameter setting is never stored in NVM

<stat>	0-unknown 1-available 2-current 3-forbidden
<AcT>	access technology selected 0 - GSM 2 – UTRAN 3 - GSM w/EGPRS (see NOTE 1) 7 - E-UTRAN 8 - EC-GSM-IoT 9 - EUTRAN NB1 NOTE: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS.

3.3.3.2.3 AT+CLCK Facility Lock/Unlock

Facility Lock /Unlock

Test Command	Response
AT+CLCK=?	Test command reports all the facilities supported by the device.
Write Command	Response
AT+CLCK=<fac>,<mode> [,<passwd> [,<class>]]	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
<fac>	Facility "SC" - SIM (PIN request) (device requests SIM password at power- up and when this lock command issued) "FD" - SIM fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)

<mode>	defines the operation to be done on the facility 0 - unlock facility 1 - lock facility 2 - query status
<passwd>	shall be the same as password specified for the facility from the DTE user interface or with command Change Password +CPWD
<class>	sum of integers each representing a class of information (default is 7) 1 - voice (telephony) 2 - data (refers to all bearer services) 4 - fax (facsimile services) 8 - short message service 6 - data circuit sync 32 - data circuit async 64 - dedicated packet access 128 - dedicated PAD access

3.3.3.2.4 AT+CPWD Change Facility Password

Change Facility Password

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

Parameters are defined below:

Parameters	Description

<fac>	facility AB - All barring services 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) SC -SIM (PIN request) P2 - SIM PIN2
<oldpwd>	String type, it shall be the same as password specified for the facility from the ME user interface or with command +CPWD
<newpwd>	String type, it is the new password

3.3.3.2.5 AT+CPOL Preferred Operator List

Preferred Operator List

Test Command	Response
AT+CPOL=?	Test command returns the whole <index> range supported by the SIM and the range for the parameter <format>
Write Command	Response
AT+CPOL=[<index>][,<format> [,<oper>] [,<GSM_AcT>, <GSM_Compact_ AcT>, <UTRAN_AcT>,<EUTRAN_ AcT>]]	Execution command writes an entry in the SIM list of preferred operators.

Read Command	Response
AT+CPOL?	Read command returns all used entries from the SIM list of preferred operators.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

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

3.3.3.2.6 AT+CPLS Selection of preferred PLMN list

Selection of Preferred PLMN List

Test Command **AT+CPLS=?**	Response Test command returns the whole index range supported by the SIM/USIM
Read Command **AT+CPLS?**	Response Read command returns the selected PLMN selector list from the SIM/USIM **+CPLS: <list>**
Write Command **AT+CPLS=<list>**	Response 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 3GPP TS 27.007(3GPP Only)	Note

Parameters are defined below:

Parameters	Description
<list>	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) 1 - Operator controlled PLMN selector with Access Technology EFOPLMNwAcT 2 - HPLMN selector with Access Technology EFHPLMNwAcT

3.3.3.2.7 AT+CPSMS Power Saving Mode Setting

Power saving mode settting

Test Command **AT+CPSMS=?**	Response The test command returns the supported <mode>s and the value ranges for the requested extended periodic RAU value and the requested GPRS READY timer value in GERAN/UTRAN, the requested extended periodic TAU value in E-UTRAN and the requested Active Time value as compound values. **+CPSMS:(list of supported <mode>s),(list of supported <Requested_Periodic-RAU>s),** **(list of supported <Requested_GPRS-READY-timer>s),** **(list of supported <Requested_Periodic-TAU>s),** **(list of supported <Requested_Active-Time>s)**
Read Command **AT+CPSMS?**	Response The read command returns the current parameter values. **+CPSMS:<mode>,[<Requested_Periodic-RAU>],[<Requested_GPRS-READY-timer>],[<Requested_Periodic-TAU>],[<Requested_Active-Time>]**
Write Command **AT+CPSMS=[<mode>[,<Requested_Periodic-RAU>[,<Requested_GPRS-READY-timer>[,<Requested_Periodic-TAU>[,<Requested_Active-Time>]]]]]**	Response The set command controls the setting of the UEs power saving mode (PSM) parameters. The command controls whether the UE wants to apply PSM or not, as well as the requested extended periodic RAU value and the requested GPRS READY timer value in GERAN/UTRAN, the requested extended periodic TAU value in E-UTRAN and the requested Active Time value. A special form of the command can be given as +CPSMS=2. In this form, the use of PSM will be disabled and data for all parameters in the command +CPSMS will be removed or, if available, set to the manufacturer specific default values
Reference 3GPP TS 27.007(3GPP Only)	Note

Parameters are defined below:

Parameters	Description
<mode>	integer type. Indication to disable or enable the use of PSM in the UE. 0 Disable the use of PSM 1 Enable the use of PSM 2 Disable the use of PSM and discard all parameters for PSM or, if available, reset to the manufacturer specific default values.(only remain unused)
<Requested_Periodic-RAU>	string type; one byte in an 8 bit format. Requested extended periodic RAU value (T3312) to be allocated to the UE in GERAN/UTRAN. The requested extended periodic RAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008.See also 3GPPTS 23.682 [149] and 3GPP TS 23.060[47]. The default value, if available, is manufacturer specific.
<Requested_GPRS-READY-timer>	string type; one byte in an 8 bit format. Requested GPRS READY timer value (T3314) to be allocated to the UE in GERAN/UTRAN. The requested GPRS READY timer value is coded as one byte (octet 2) of the GPRS Timer information element coded as bit format (e.g. "01000011" equals 3 decihours or 18 minutes). For the coding and the value range, see the GPRS Timer IE in 3GPP TS 24.008 [8] Table 10.5.172/3GPP TS 24.008. See also 3GPP TS 23.060 [47]. The default value, if available, is manufacturer specific.
<Requested_Periodic-TAU>	string type; one byte in an 8 bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN. The requested extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.

<Requested_Active-Time>	string type; one byte in an 8 bit format. Requested Active Time value (T3324) to be allocated to the UE. The requested Active Time value is coded as one byte (octet 3) of the GPRS Timer 2 information element coded as bit format (e.g. "00100100" equals 4 minutes). For the coding and the value range, see the GPRS Timer 2 IE in 3GPP TS 24.008 [8] Table 10.5.163/3GPP TS 24.008. See also 3GPP TS 23.682 [149], 3GPP TS 23.060 [47] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.

3.3.3.2.8 AT+CEDRXS eDRX Setting

eDRX setting

Test Command **AT+CEDRXS=?**	Response The test command returns the supported <mode>s and the value ranges for the access technology and the requested eDRX value as compound values. **+CEDRXS:(list of supported <mode>s),(list of supported <AcT-type>s),(list of supported <Requested_eDRX_value>s)**
Read Command **AT+CEDRXS?**	Response The read command returns the current settings for each defined value of <AcT-type>. **[+CEDRXS:<AcT-type>,<Requested_eDRX_value>** **[+CEDRXS:<AcT-type>,<Requested_eDRX_value>[...]]]** But before "AT+CEDRXS=[...]" is successful setting,it will return error.
Write Command **AT+CEDRXS=<mode>[,<AcT-type>[,<Requested_eDRX_value>]]**	Response The set command controls the setting of the UEs eDRX parameters. The command controls whether the UE wants to apply eDRX or not, as well as the requested eDRX value for each specified type of access technology.

Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

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

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

3.3.3.2.9 AT+CEDRXRDP eDRX Read

eDRX read dynamic parameters

Execute Command	Response
AT+CEDRXRDP	The execution command returns <AcT-type> and <Requested_eDRX_value>, <NW-provided_eDRX_value> and <Paging_time_window> if eDRX is used for the cell that the MS is currently registered to. If the cell that the MS is currently registered to is not using eDRX, AcT-type=0 is returned **+CEDRXRDP:<AcT-type>[,<Requested_eDRX_value>[,<NW-provided_eDRX_value>[,<Paging_time_window>]]]**
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<AcT-type>	integer type, indicates the type of access technology. This AT-command is used to specify the relationship between the type of access technology and the requested eDRX value. 0 Access technology is not using eDRX. This parameter value is only used in the unsolicited result code. 1 EC-GSM-IoT (A/Gb mode) 2 GSM (A/Gb mode) 3 UTRAN (Iu mode) 4 E-UTRAN (WB-S1 mode) 5 E-UTRAN (NB-S1 mode)

<Requested_eDRX_value>	string type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]).. For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.
<NW-provided_eDRX_value>	string type; half a byte in a 4 bit format. The eDRX value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.
<Paging_time_window>	string type; half a byte in a 4 bit format. The paging time window referes to bit 8 to 5 of octet 3 of the Extended DRX parameters information element (see subclause 10.5.5.32 of 3GPP TS 24.008 [8]). For the coding and the value range, see the Extended DRX parameters information element in 3GPP TS 24.008 [8] Table 10.5.5.32/3GPP TS 24.008.

3.3.3.3 Mobile Equipment Control

3.3.3.3.1 AT+CFUN Set Phone Functionality

Set Phone Functionality

Test Command **AT+CFUN=?**	Response Test command returns the list of supported values for <fun> and <rst>.
Read Command **AT+CFUN?**	Response Read command reports the current setting of <fun>.
Write Command **AT+CFUN=[<fun>[,<rst>]]**	Response Set command selects the level of functionality in the ME

Reference	Note
3GPP TS 27.007	1. Issuing AT+CFUN=4[,0] in fact causes the module to perform both a network deregistration and a SIM deactivation. 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 3. AT+CFUN=5 can not exit factory test mode via restart module, it need set by AT+CFUN

Parameters are defined below:

Parameters	Description
<fun>	is the power saving function mode 0 - minimum functionality 1 - mobile full functionality with power saving disabled (factory default) 4 - disable phone both transmit and receive RF circuits 5 - factory test mode 6 - reset 7 - offline mode
<rst>	reset flag 0 - do not reset the ME before setting it to <fun> functionality level. 1 - reset the ME before setting it to <fun> functionality level. This option works only with <fun> =1, with other values it will return an error.

3.3.3.3.2 AT+CPIN Enter PIN

Enter PIN

Test Command	Response
AT+CPIN=?	**OK** or **ERROR**

Write Command	Response
AT+CPIN=<pin>[,<newpin>]	Set command sends the device one of the necessary passwords before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the <pin> required is SIM PUK or SIM PUK2, the <newpin> is required. This second pin, <newpin> will replace the old pin in the SIM. The command may be used to change the SIM PIN by sending it with both parameters <pin> and <newpin> 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.
Read Command	Response
AT+CPIN?	Read command reports the PIN/PUK/PUK2 request status of the device in the form: **+CPIN: <code>** 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,<mode>,<pin>
Reference	Note
	What follows is a list of the commands which are accepted when ME is pending SIM PIN or SIM PUK

Parameters are defined below:

Parameters	Description
<pin>	string type value
<newpin>	string type value.

<code>	PIN/PUK/PUK2 request status code READY - ME is not awaiting any password SIM PIN - ME is awaiting SIM PIN SIM PUK - ME is awaiting SIM PUK PH-SIM PIN - ME is awaiting phone-to-SIM card password. 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. SIM PIN2 - ME is awaiting SIM PIN2; this <code> is returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17) SIM PUK2 - ME is awaiting SIM PUK2: this <code> is returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18) PH-NET PIN - ME is awaiting network personalization password PH-NET PUK - ME is awaiting network personalization unblocking password PH-NETSUB PIN - ME is awaiting network subset personalization password PH-NETSUB PUK - ME is awaiting network subset personalization unblocking password PH-SP PIN - ME is awaiting service provider personalization password PH-SP PUK - ME is awaiting service provider personalization unblocking password PH-CORP PIN - ME is awaiting corporate personalization password PH-CORP PUK - ME is awaiting corporate personalization unblocking password

Example:

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

3.3.3.3.3 AT+CSQ Signal Quality

Signal Quality

Execution Command	Response
AT+CSQ	Execution command reports received signal quality indicators in the form: **+CSQ: <rssi>,<ber>**
Test Command	Response
AT+CSQ=?	Test command returns the supported range of values of the parameters <rssi> and <ber>. Note: although +CSQ is an execution command without parameters, 3GPP TS 27.007 requires the Test command to be defined.
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<rssi>	received signal strength indication 0 - (-113) dBm or less 1 - (-111) dBm 2..30 - (-109)dBm..(-53)dBm / 2 dBm per step 31 - (-51)dBm or greater 99 - not known or not detectable

<ber>	bit error rate (in percent) 0 - less than 0.2% 1 - 0.2% to 0.4% 2 - 0.4% to 0.8% 3 - 0.8% to 1.6% 4 - 1.6% to 3.2% 5 - 3.2% to 6.4% 6 - 6.4% to 12.8% 7 - more than 12.8% 99 - not known or not detectable 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.

3.3.3.3.4 AT+MCSQ System Information in LTE

System Information in LTE.

Execution Command **AT+MCSQ**	Response This command is used to get system information in LTE network. responses: **+MCSQ: <RSRQ>,<RSRP>,<RSSI>,<SNR>,<SINR>**
Test Command **AT+MCSQ?**	Response **+MCSQ: <sys_mode>** **OK**

Parameters are defined below:

Parameters	Description
<RSRQ>	Current reference signal receive quality as measured by L1. Range: -20.0 to -3.0 dBm.
<RSRP>	Current reference signal receive power as measured by L1. Range: -44 to -140 dBm.

<RSSI>	Current received signal strength indicator as measured by L1. Range: -120.0 to 0 dBm.
<SNR>	signal-to-noise ratio of the serving cell. Range: -20 to 30dBm.
<SINR>	Logarithmic value of SINR,Range 0-250.
<sys_mode>	Defined sys_mode values: 3 – GSM 9 – LTE 12 – LTE M1 13 – LTE NB1

Example:

Commands	Response
AT+MCSQ?	**+MCSQ: LTE NB** **OK**
AT+MCSQ	**+MCSQ:-4,-99,-90,3.00,115** **OK**

3.3.3.3.5 AT+CMER Mobile Equipment Event Reporting

Mobile Equipment Event Reporting

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

Read Command	Response
AT+CMER?	**+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>**
Write Command	Response
AT+CMER=<mode>[,<keyp> [,<disp> [,<ind> [,<bfr>]]]]	Set command enables/disables sending of unsolicited result codes from TA to TE in the case of indicator state changes (NOTE : sending URCs in the case of key presses or display changes is currently not implemented).
Reference	Note
3GPP TS 27.007	

Parameters are defined below:

Parameters	Description
<mode>	controls the processing of unsolicited result codes 0 - discard +CIEV Unsolicited Result Codes. 1- discard +CIEV Unsolicited Result Codes when TA-TE link is reserved (e.g. on- line data mode); otherwise forward them directly to the TE. 2- buffer +CIEV Unsolicited Result Codes in the TA when TA-TE link is reserved (e.g. on-line data mode) and flush them to the TE after reservation; otherwise forward them directly to the TE. 3- forward +CIEV Unsolicited Result Codes directly to the TE; when TA is in on- line data mode each +CIEV URC is replaced with a Break (100 ms), and is stored in a buffer; once the ME goes into command mode (after +++ was entered), all URCs stored in the buffer will be output.
<keyp>	keypad event reporting 0 - no keypad event reporting
<disp>	display event reporting 0 - no display event reporting

<ind>	indicator event reporting 0 - no indicator event reporting 1 - indicator event reporting using unsolicited result code +CIEV: <class>,<value> < class >and<value>are defined as follows: < class >: integer type value, which shall be in range of corresponding < value > <value> values reserved by the present document and their< class > ranges: 0 battery charge level . the range is (0-5) 1 signal quality . the range is (0-5) 2 service availability. registered(1), not registered to any network(0). the range is (0-1) 3 call in progress. at least one call has been established (1), there are no calls in progress (0). the range is(0-1) 4 roaming indicator, registered to other network(1), registered to home network or not registered (0). the range is (0-1) 5 a short message memory storage in the MT has become full and a short message has been rejected (2), has become full (1), or memory locations are available (0); i.e. the range is (0-2) 6 packet service coverage , module is attached to a packet service(1), no packet service(0). the range is0-1） 7 call setup status indicator, no active call setup(0), MT call is waiting of ringing(1), MO call was initiated(2), MO call ringing at B-party(3), i.e. the range is (0-3)
<bfr>	TA buffer clearing 0 - TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered 1 - TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes)

3.3.3.3.6 AT+CCLK Clock Management

Clock Management

Test Command **AT+CCLK=?**	Response Test command returns the OK result code.
Read Command **AT+CCLK?**	Response Read command returns the current setting of the real-time clock, in the format <time>.
Write Command **AT+CCLK=<time>**	Response Set command sets the real-time clock of the ME.
Reference 3GPP TS 27.007	Note

Parameters are defined below:

Parameters	Description
<time>	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

3.3.3.3.7 AT+CRSM Restricted SIM Access

Restricted SIM Access

Test Command	Response
AT+CRSM=?	Test command returns the **OK** result code

Write Command	Response
AT+CRSM=<command> [,<fileid> [,<P1>,<P2>,<P3> [,<data>]]]	Execution command transmits to the ME the SIM <command> 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. The response of the command is in the format: **+CRSM: <sw1>,<sw2>[,<response>]** where: <sw1>,<sw2> - information from the SIM about the execution of the current command both on successful or failed execution. <response> - 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. 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.

Reference	Note
3GPP TS 27.007, 3GPP TS 11.11/51.011(3GPP Only)	

Parameters are defined below:

Parameters	Description

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

3.3.3.3.8 AT+CTZU Automatic Time Zone update

Automatic Time Zone update

Test Command **AT+CTZU=?**	Response Test command reports the supported range of values for parameter <onoff>
Read Command **AT+CTZU?**	Response Read command reports the currently selected <onoff> in the format: **+CTZU: <onoff>**
Write Command **AT+CTZU=<onoff>**	Response 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 3GPP Only	Note

Parameters are defined below:

Parameters	Description
<onoff>	0 - Disable automatic time zone update via NITZ (default) 1 - Enable automatic time zone update via NITZ

3.3.3.3.9 AT+MWAKEUPCFG Wakeup Service Config

Wakeup Service Config

Execution Command **AT+MWAKEUPCFG**	Response Use this command will set value to default. **OK**
Test Command **AT+MWAKEUPCFG=?**	Response **+MWAKEUPCFG: (0-7),(0-1000), (0-1)** **OK**
Read Command **AT+MWAKEUPCFG?**	Response Read command: **+MWAKEUPCFG:<mode>,<time_delay>** **OK**
Write Command **AT+MWAKEUPCFG=<mode>,[[<time_delay>],<gpio>]**	Response This command is used to configure wakeup host function Responses **OK** or **ERROR**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description

<mode>	Range:0 to 7(default is 3) Note: n:0 close wakeup host function 1:open wakeup host function Source:

Bit3-7	Bit2	Bit1	Bit0
undefine	data	sms	Call

<time_delay>	Range 0 to 1000(default is 0)
<gpio>	Range:0 to 1(default is 0) 0:select ri port to outputpulse. 1:select wakeup out port to output pulse.

Example:

Commands	Response
AT+MWAKEUPCFG=3,1000	**OK**
AT+MWAKEUPCFG?	**+MWAKEUPCFG: 3,1000** **OK**

3.3.3.4 Mobile Equipment Errors

3.3.3.4.1 AT+CMEE Report Mobile Equipment Error

Report Mobile Equipment Error

Test Command	Response
AT+CMEE=?	Test command returns the range of values for subparameter <n>
Read Command	Response
AT+CMEE?	**+CMEE: <n>** **OK**

Write Command	Response
AT+CMEE=[<n>]	Set command enables/disables the reporting of result codes: **+CME ERROR: <err>** It is an indication of an error relating to the +Cxxx commands issued. When enabled, device related errors cause the +CME ERROR <err> 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.
Reference	Note
3GPP TS 27.007	+CMEE has no effect on the final result code +CMS

Parameters are defined below:

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

3.3.3.5 Commands for Package Domain

3.3.3.5.1 AT+CGATT GPRS Attach or Detach

GPRS Attach or Detach

Test Command	Response
AT+CGATT=?	Test command requests information on the supported GPRS service states.

Read Command **AT+CGATT?**	Response Read command returns the current GPRS service state.
Write Command **AT+CGATT=[<state>]**	Response Execution command used to attach the terminal to, or detach the terminal from, the GPRS service depending on the parameter <state>.
Reference 3GPP TS 27.007(3GPP Only)	Note

Parameters are defined below:

Parameters	Description
<state>	state of GPRS attachment 0 - detached 1 - attached

Example:

Commands	Response
AT+CGATT?	**+CGATT: 0** **OK**
AT+CGATT=?	**+CGATT: (0,1)** **OK**
AT+CGATT=1	**OK**

3.3.3.5.2 AT+CGEREP GPRS Event Reporting

GPRS Event Reporting

Test Command **AT+CGEREP=?**	Response Test command reports the supported range of values for the +CGEREP command parameters.

Read Command	Response
AT+CGEREP?	Read command returns the current <mode> and <bfr> settings, in the format: **+CGEREP: <mode>,<bfr>**
Write Command	Response
AT+CGEREP=[<mode>[,<bfr>]]	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
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<mode>	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.
<bfr>	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: 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. +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)

3.3.3.5.3 AT+CEREG EPSNetwork Registration Status

EPS Network Registration Status

Test Command	Response
AT+CEREG=?	Test command returns values supported as a compound value. **+CEREG: (list of supported <n>s)**

Read Command	Response
AT+CEREG?	**+CEREG:<n>, <stat>** or **+CEREG: <n>,<stat>[,[<tac>],[<ci>],[<AcT>]]** or **+CEREG: <n>,<stat>[,[<tac>],[<rac>],[<ci>],[<AcT>]]** or **+CEREG:<n>,<stat>[,[<tac>],[<ci>],[<AcT>][,<cause_type>,<reject_cause>]]** 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. Note 3: 3GPP TS 44.060 [71] specifies the System Information messages which give
Write Command	Response
AT+CEREG=[<n>]	The set command controls the presentation of an unsolicited result code **+CEREG: <stat>** when <n>=1 and there is a change in the MT's EPS network registration status in E-UTRAN, or unsolicited result code. **+CEREG: <stat>[,[<tac>],[<ci>],[<AcT>]]** when <n>=2 and there is a change of the network cell in E-UTRAN. The parameters <AcT>, <tac> and <ci> are sent only if available. The value <n>=3 further extends the unsolicited result code with [,<cause_type>,<reject_cause>], when available, when the value of <stat> changes. Refer subclause 9.2 for possible <err> values. Current version cannot support <n>=3. 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 Possible response(s): **+CME ERROR: <err>**

Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

Parameters	Description
<n>	integer type 0 - disable network registration unsolicited result code 1 - enable network registration unsolicited result code +CEREG: <stat> 2 - enable network registration and location information unsolicited result code +CEREG: <stat>[,[<tac>],[<ci>],[<AcT>]] *3 - enable network registration, location information and EMM cause value information unsolicited result code. Current version cannot support <n>=3. 4 - display active time and periodic TAU. +CEREG:<stat>[,[<tac>],[<ci>],[<AcT>][,,[,[<Active-Time>],[<Periodic-TAU>]]]]
<stat>	integer type; indicates the EPS registration status 0 - not registered, MT is not currently searching an operator to register to. 1 - registered, home network. 2 - not registered, but MT is currently trying to attach or searching an operator to register to. 3 - registration denied. 4 - unknown (e.g. out of E-UTRAN coverage). 5 - registered, roaming. 6 – not initialized(Internal use only)
<tac>	string type; two byte tracking area code in hexadecimal format (e.g. "00C3" equals 195 in decimal).
<ci>	string type; four byte E-UTRAN cell ID in hexadecimal format.

<AcT>	integer type; indicates the access technology of the serving cell. 0 - GSM (not applicable) 1 - GSM Compact (not applicable) 2 - UTRAN (not applicable) 3 - GSM w/EGPRS (see NOTE 3) (not applicable) 4 - UTRAN w/HSDPA (see NOTE 4) (not applicable) 5 - UTRAN w/HSUPA (see NOTE 4) (not applicable) 6 - UTRAN w/HSDPA and HSUPA (see NOTE 4) (not applicable) 7 - E-UTRAN 8 - EC-GSM-IoT (A/Gb mode) (see NOTE 5) 9 - E-UTRAN (NB-S1 mode) (see NOTE 6) (not applicable) Note 3: 3GPP TS 44.060 [71] specifies the System Information messages which give the information about whether the serving cell supports EGPRS. Note 4: 3GPP TS 25.331 [74] specifies the System Information blocks which give the information about whether the serving cell supports HSDPA or HSUPA.
<cause_type>	integer type; indicates the type of <reject_cause>. 0 - Indicates that <reject_cause> contains an EMM cause value, see 3GPP TS 24.301 [83] Annex A. 1 - Indicates that <reject_cause> contains a manufacturer-specific cause.
<reject_cause>	integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.
<Active-Time>	string type; one byte in an 8 bit format. Indicates the Active Time value (T3324) allocated to the UE in E-UTRAN. The Active Time value is coded as one byte (octet 3) of the GPRS Timer 2 information element coded as bit format (e.g. "00100100" equals 4 minutes). For the coding and the value range, see the GPRS Timer 2 IE in 3GPP TS 24.008 [8] Table 10.5.163/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.401 [82].

<Periodic-TAU>	string type; one byte in an 8 bit format. Indicates the extended periodic TAU value (T3412) allocated to the UE in E-UTRAN. The extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.401 [82].

3.3.3.5.4 AT+CGPIAF Printing IP Address Format

Printing IP Address Format

Test Command **AT+CGPIAF=?**	Response Test command returns values supported as compound parameter setting.
Read Command **AT+CGPIAF?**	Response Read command returns the current parameter setting.
Write Command **AT+CGPIAF=[<IPv6_AddressFo rmat>[,<IPv6_SubnetNotation>[,<IPv6_leadingZeros>[,<IPv6_compressZeros>]]]]**	Response Set command decides what the format to print IPv6 address parameter.
Reference 3GPP TS 27.007(3GPP Only)	Note

Parameters are defined below:

Parameters	Description

<IPv6_AddressFormat>	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.
<IPv6_SubnetNotation>	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.
<IPv6_LeadingZeros>	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.
<IPv6_CompressZeros>	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
AT+CGPIAF=0,0,0,0	**OK**
AT+CGPIAF=1,0,0,0	**OK**

3.3.3.5.5 AT+CGDCONT Define PDP Context

Define PDP Context

Test Command	Response
AT+CGDCONT=?	Test command returns values supported as a compound value

Read Command	Response
AT+CGDCONT?	Read command returns the current settings for each defined context in the format: **+CGDCONT:<cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,…[,pdN]]][<CR><LF>+CGDCONT:<cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<pd1>[,…[,pdN]]][…]]**
Write Command	Response
AT+CGDCONT=[<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,<pd1>[,…[,pdN]]]]]]]]]	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
<cid>	(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.(100-179 use to CDMA)
<PDP_type>	(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol. "IP" - Internet Protocol "PPP" - Point to Point Protocol "IPV6" - Internet Protocol,Version6 "IPV4V6" - Virtual <PDP_type> introduced to handle dual IP stack UE capability.
<APN>	(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.

<PDP_addr>	A string parameter that identifies the terminal in the addresss pace applicable to the PDP. The allocated address may be readusing the +CGPADDR command.
<d_comp>	Numeric parameter that controls PDP data compression. 0 - off (default if value is omitted) 1 - on 2 - V.42bis Other values are reserved
<h_comp>	Numeric parameter that controls PDP header compression. 0 - off(defaultifvalueisomitted) 1 - on 2 - RFC1144(applicableforSNDCP only) 3 - RFC2507 4 - RFC3095(applicableforPDCPonly)
<pd1>	<pdN>-zero to N string parameters whose meanings are specific to the <PDP_type>

3.3.3.5.6 AT+CGACT PDP Context Activate or Deactivate

PDP Context Activate or Deactivate

Test Command	Response
AT+CGACT=?	Test command reports information on the supported PDP context activation states parameters in the format: **+CGACT: (0,1)**
Read Command	**Response**
AT+CGACT?	Read command returns the current activation state for all the defined PDP contexts in the format: **+CGACT: <cid>,<state>** **[<CR><LF>** **+CGACT:<cid>,<state>[…]]**

Write Command	Response
AT+CGACT=<state>[,<cid>[,<cid>[,…]]]	Execution command is used to activate or deactivate the specified PDP context(s) Note: if no <cid> are specified the activation form of the command, activated will activatess all defined contexts, deactivated will keep one cid activated
Reference	Note
3GPP TS 27.007(3GPP Only)	

Parameters are defined below:

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

Example:

Commands	Response
AT+CGACT=1,1	**OK**
AT+CGACT?	**+CGACT: 1,1** **OK**

3.3.3.5.7 AT+CGPADDR Show PDP Address

Show PDP Address

Test Command	Response
AT+CGPADDR=?	Test command returns a list of defined <cid>s.

Write Command	Response
AT+CGPADDR=[<cid>[,<cid>[,...]]]	Execution command returns a list of PDP addresses for the specified context identifiers in the format: **+CGPADDR:<cid>[,<PDP_addr_1>[,<PDP_addr_2>]]]** **+CGPADDR:<cid>[,<PDP_addr_1>[,<PDP_addr_2>]]]** **[…]**
Reference 3GPP TS 27.007(3GPP Only)	Note

Parameters are defined below:

Parameters	Description
<cid>	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.
<PDP_addr_1>and **<PDP_addr_2>**	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 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
AT+CGPADDR=1	**+CGPADDR: 1,0.0.0.0,0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0** **OK**
AT+CGPADDR=?	**+CGPADDR: (1,2,3)** **OK**

3.3.3.5.8 AT+CGCONTRDP PDP Context Read Dynamic Parameters

PDP Context Read Dynamic Parameters

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

Parameters are defined below:

Parameters	Description
<p_cid>	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.
<bearer_id>	a numeric parameter identifies the bearer, EPS Bearer in EPS and NSAPI in UMTS/GPRS.
<APN>	a string parameter which is a logical name that was used to select the GGSN or the external packet data network.
<ip_addr>	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"
<subnet_mask>	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.
<gw_addr>	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.
<DNS_prim_addr>	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.
<DNS_sec_addr>	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.

<P_CSCF_sec_addr>	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.

3.3.3.5.9 AT$QCPDPP Sets PDP authentication parameters

Sets PDP authentication parameters

Test Command **AT$QCPDPP =?**	Response **$QCPDPP: (1-24,100-179),(0-3),,** **OK**
Read Command **AT$QCPDPP ?**	Response list of <cid>s associated with PDP authentication parameter. Responses: **$QCPDPP: <cid>,<type>[,< username>]**
Write Command **AT$QCPDPP=<cid>,<type>[,<password>,<username>]**	Response 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
<cid>	(PDP Context Identifier)numeric parameter which specifies aparticular PDP context definition.The range is (1-24,100-179).
<type>	(0-3) 0 -- No authentication 1 -- PAP authentication. 2 -- CHAP authentication 3 -- PAP/CHAP authentication
<password>	No quotes strings, length of not more than 132
<username>	No quotes strings, length of not more than 132

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 **AT+CSMS=?**	Response Test command reports the supported value of the parameter <service>.
Read Command **AT+CSMS?**	Response Read command reports current service setting along with supported message types in the format: **+CSMS: <service>,<mt>,<mo>,<bm>** where: <service> - messaging service (see above) <mt> - mobile terminated messages support (see above) <mo> - mobile originated messages support (see above) <bm> - broadcast type messages support (see above)
Write Command **AT+CSMS=<service>**	Response 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: **+CSMS: <mt>,<mo>,<bm>**where:
Reference 3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.41/23.041(3GPP Only)	Note

Parameters are defined below:

Parameters	Description

<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
<mt>	mobile terminated messages support 0 - type not supported 1 - type supported
<mo>	mobile originated messages support 0 - type not supported 1 - type supported
<bm>	broadcast type messages support 0 - type not supported 1 - type supported

Example:

Commands	Response
AT+CSMS=1	**+CSMS: 1,1,1** **OK**
AT+CSMS?	**+CSMS: 1,1,1,1** **OK**

3.3.4.1.2 AT+CPMS Preferred Message Storage

Preferred Message Storage

Test Command	Response
AT+CPMS=?	Test command reports the supported values for parameters**<mem1>,<mem2>** and **<mem3>**

Read Command	Response
AT+CPMS?	Read command reports the message storage status in the format: **+CPMS:<mem1>,<usedr>,<totalr>,<mem2>,<usedw>,<totalw>,<mem3>,<useds>,<totals>** Where: <mem1>, <mem2> and <mem3> are the selected storage memories for reading, writing and storing respectively
Write Command	Response
AT+CPMS=<mem1>[,<mem2>[,<mem3>]]	Set command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, sending and storing SMs.
Reference	Note
3GPP TS 27.005and 3GPP2	

Parameters are defined below:

Parameters	Description
<mem1>	memory from which messages are read and deleted SMS memory storage in Flash "ME" - SMS memory storage in Flash "MT" - SMS memory storage in Flash "SM" - SMS memory storage (default)
<mem2>	memory to which writing and sending operations are made "ME" - SMS memory storage in Flash "MT" - SMS memory storage in Flash "SM" - SIM SMS memory storage (default)

<mem3>	memory to which received SMs are preferred to be stored "ME" - SMS memory storage in Flash "SM" - SIM SMS memory storage (default) The command returns the memory storage status in the format: +CPMS: <usedr>,<totalr>,<usedw>,<totalw>,<useds>,<totals> <usedr> - number of SMs stored into <mem1> <totalr> - max number of SMs that <mem1> can contain <usedw> - number of SMs stored into <mem2> <totalw> max number of SMs that <mem2> can contain <totals> - max number of SMS that <mem3> can contain <useds> - number of SMs stored into <mem3>

3.3.4.1.3 AT+CMGF Message Format

Message Format

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

Parameters are defined below:

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

Parameters are defined below:

Parameters	Description
<number>	SC phone number in the format defined by <type>

<type>	the type of number 129 - national numbering scheme 145 - international numbering scheme (contains the character "+")

3.3.4.2.2 AT+CGSMS Select service for MO SMS services

Select service for MO SMS services

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

Parameters are defined below:

Parameters	Description
<service>	a numeric parameter which indicates the service or service preference to be used. 0 - Packet Domain 1 - Circuit switched (factory default) 2 - Packet Domain preferred (use circuit switched if GRPS is not available) 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 **AT+CSMP=?**	Response Test command returns the OK result code.
Read Command **AT+CSMP?**	Response Read command reports the current setting in the format: **+CSMP: < fo>,<vp>,<pid>,<dcs>**
Write Command **AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]**	Response 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 3GPP TS 27.005; 3GPP TS 03.40/23.040; 3GPP TS 03.38/23.038(3GPP Only)	Note

Parameters are defined below:

Parameters	Description
<fo>	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.
<vp>	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.
<pid>	3GPP TS 03.40/23.040 TP-Protocol-Identifier in integer format.
<dcs>	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
AT+CSMP=17,167,0,0	**OK** Set the parameters for an outgoing message with 24 hours of validity period and default properties

3.3.4.2.4 AT+CSDH Show Text Mode Parameters

Show Text Mode Parameters

Test Command	Response
AT+CSDH=?	Test command reports the supported range of values for parameter **+CSDH: (0-1)**
Read Command	Response
AT+CSDH?	Read command reports the current setting in the format: **+CSDH: <show>**
Write Command	Response
AT+CSDH=[<show>]	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
<show>	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+CSAS Save Settings

Save Settings

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

Parameters are defined below:

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

3.3.4.2.6 AT+CRES Restore Settings

Restore Settings

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

Parameters are defined below:

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

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 **AT+CNMI=?**	Response Test command reports the supported range of values for the +CNMI command parameters.

Read Command	Response
AT+CNMI?	Read command returns the current parameter settings for +CNMI command in the form: **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>**
Write Command	Response
AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	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
<mode>	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. 1 - Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved, otherwise forward them directly to the TE. 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. 3 - if <mt> 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. Note: In <mode>field,"3" not supported.

<mt>	result code indication reporting for SMS-DELIVER 0 - No SMS-DELIVER indications are routed to the TE and message is stored. 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: <memr>,<index> where: <memr> - memory storage where the new message is Stored: "SM" , "ME" <index> - location on the memory where SMS is stored. *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: (PDU Mode) +CMT: <alpha>,<length><CR><LF><pdu> where: <alpha> - 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. <length> - PDU length <pdu> - PDU message (TEXT Mode) +CMT:<oa>,<alpha>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (the information written in italics will be present depending on +CSDH last setting) where: <oa> - originating address, string type converted in the currently selected character set (see +CSCS) <alpha> - alphanumeric representation of <oa>, used character set should be the one selected with command +CSCS. <scts> - arrival time of the message to the SC <tooa>, <tosca> - type of number <oa> or <sca>: 129 - number in national format 145 - number in international format(contains the "+") <fo> - first octet of 3GPP TS 03.40/23.040 <pid> - Protocol Identifier

	<dcs> - Data Coding Scheme <sca> - Service Centre address, string type, converted in the currently selected character set (see +CSCS) <length> - text length <data> - TP-User-Data If <dcs> indicates that GSM03.38/23.038 default alphabet is used and <fo> indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is not set (bit 6 of <fo> is 0), 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 or <fo> indicates that GSM03.40/23.040 TP-User-Data-Header-Indication is set (bit 6 of <fo> 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) Class 2 messages and messages in the message waiting indication group (stored message) result in indication as defined in <mt>=1. Acknowledge for the received SMS-DELIVER SM is sent to network immediately when +CSMS <service> is set to '0' or when +CSMS <service> 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 <service> parameter set to '1'. *3 - Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.

<bm>	broadcast reporting option 0 - Cell Broadcast Messages are not sent to the DTE 2 - New Cell Broadcast Messages are sent to the DTE with the unsolicited result code: (PDU Mode) +CBM: <length><CR><LF><PDU> where: <length> - PDU length <PDU> - message PDU (TEXT Mode) +CBM:<sn>,<mid>,<dcs>,<pag>,<pags><CR><LF><data> where: <sn> - message serial number <mid> - message ID <dcs> - Data Coding Scheme <pag> - page number <pags> - total number of pages of the message <data> - CBM Content of Message 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)

<ds>	SMS-STATUS-REPORTs reporting option 0 - status report receiving is not reported to the DTE and messages are stored 1 - the status report is sent to the DTE with the following unsolicited result code: (PDU Mode) +CDS: <length><CR><LF><PDU> where: <length> - PDU length <PDU> - message PDU (TEXT Mode) +CDS: <fo>,<mr>,<ra>,<tora>,<scts>,<dt>,<st> where: <fo> - first octet of the message PDU <mr> - message Reference number <ra> - recipient address, string type, represented in the currently selected character set (see +CSCS) <tora> - type of number <ra> <scts> - arrival time of the message to the SC <dt> - sending time of the message <st> - message status as coded in the PDU Acknowledge for the received SMS-STATUS-REPORT SM is sent to network immediately when +CSMS <service> is set to '0' or when +CSMS <service> 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 <service> parameter set to '1'. *2 - if a status report is stored, then the following unsolicited result code is sent: +CDSI: <memr>,<index> where: <memr> - memory storage where the new message is stored "SR" <index> - location on the memory where SMS is stored

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

3.3.4.3.2 AT+CMGL List Messages

List Messages

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

Parameters are defined below:

Parameters	Description

<stat>	0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent 4 - all messages. Each message to be listed is represented in the format: +CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu> where: <index> - message position in the memory storage list. <stat> - status of the message <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. <length> - the length of the actual TP data unit in octets.(i.e. the RP layer SMSC address octets are not count ed in the length) <pdu> - message in PDU format according to 3GPP TS 3.40/23.040 (Text Mode) Parameter: <stat> "REC UNREAD" - new message "REC READ" - read message "STO UNSENT" - stored message not yet sent "STO SENT" - stored message already sent "ALL" - all messages. Each message to be listed is represented in the format (the information written in italics will be present depending on +CSDH last setting): +CMGL: <index>,<stat>,<oa/da>,[<alpha>],<scts>[,<tooa/toda>, <length>]<CR><LF><data> Each message to be listed is represented in the format in CDMA +CMGL: <index>,<stat>,<oa/da>,<scts>,,<tooa/toda>,<length><CR><LF><data> Where: <index> - message position in the memory storage list. <stat> - status of the message <oa/da> - originator/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. <scts> - TP-Service Centre Time Stamp in Time String Format <tooa/toda> - type of number <oa/da> 129 - number in national format

3.3.4.3.3 AT+CMGR Read Message

Read Message

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

<index>	message index. The output depends on the last settings of command +CMGF (message format to be used) (PDU Mode) The output has the following format: +CMGR: <stat>,[<alpha>],<length><CR><LF><pdu> Where: <stat> - status of the message 0 - new message 1 - read message 2 - stored message not yet sent 3 - stored message already sent <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. <length> - the length of the actual TP data unit in octets.(i.e. the RP layer SMSC address octets are not count ed in the length) <pdu> - message in PDU format according to 3GPP TS 3.40/23.040. The status of the message and entire message data unit <pdu> returned. (Text Mode) Output format for received messages (the information written in italics will be present depending on +CSDH last setting): +CMGR: <stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>, <dcs>,<sca>,<tosca>,<length>]<CR><LF><data> Output format for sent messages: +CMGR: <stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,, <sca>,<tosca>,<length>]<CR><LF><data> Output format for message delivery confirm: +CMGR: <stat>,<fo>,<mr>,,,<scts>,<dt>,<st> 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

3.3.4.3.4 AT+CNMA New Message Acknowledgement to ME/TA

New Message Acknowledgement to ME/TA

Execution Command	Response
(Text Mode) **AT+CNMA**	Only positive acknowledgement to network (RP-ACK) is possible.
Test Command	Response
(PDU Mode) **AT+CNMA=?**	Test command returns the possible range of values for the parameter <n>
Write Command (PDU Mode) **AT+CNMA[=<n>[,<length>[<CR>PDUisgiven<ctrl-Z/ESC]]]**	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

<n>	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.
<length>	Length of the PDU message.

3.3.4.4 Message Sending and Writing

3.3.4.4.1 AT+CMGS Send Message

Send Message

Test Command	Response
AT+CMGS=?	Test command resturns the OK result code.

Write Command	Response
(PDU Mode) **AT+CMGS=<length>**	(PDU Mode) Execution command sends to the network a message. Parameter: <length> - length of the PDU to be sent in bytes (excluding the SMSC address octets) 7..164 After command line is terminated with <CR>, the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) and waits for the specified number of bytes. Note: the DCD signal shall be in ON state while PDU is given. Note: the echoing of received characters back to the TA is controlled by echo command E 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. 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. To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex). If message is successfully sent to the network, then the result is sent in the format: Note: Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned: **+CMGS: <mr>[, <scts>]** Where: <mr> - message Reference number. <scts> - TP-Service Centre Time Stamp in Time String Format. 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.

Write Command	Response
(Text Mode) **AT+CMGS=<da> [,<toda>]**	(Text Mode) Execution command sends to the network a message. Parameters: <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 "+") After command line is terminated with <CR>, the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) After this prompt text can be entered; the entered text should be formatted as follows: if current <dcs> (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current <fo> (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. if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (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) If current network mode is CDMA and <dcs> (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 seperator. 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 <dcs>

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

3.3.4.4.2 AT+CMSS Send Message From Storage

Send Message From Storage

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

Write Command	Response
(PDU Mode) **AT+CMGW=<length>** **[,<stat>]**	(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. To write the message issue Ctrl-Z char (0x1A hex). To exit without writing the message issue ESC char (0x1B hex). If message is successfully written in the memory, then the result is sent in the format: **+CMGW: <index>**where: <index> - message location index in the memory <memw>. If message storing fails for some reason an error code is reported. Note: care must be taken to ensure that during the command execution, no other SIM interacting commands are issued .

Write Command	Response
(Text Mode) **AT+CMGW[=<da>[,<toda>[,<stat>]]]**	Text Mode) Execution command writes in the <memw> memory storage a new message. After command line is terminated with <CR>, the device responds by sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) After this prompt, text can be entered; the entered text should be formatted as follows: if current <dcs> (see +CSMP) indicates that GSM03.38/23.038 default alphabet is used and current <fo> (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. if current <dcs> (see +CSMP) indicates that 8-bit or UCS2 data coding scheme is used or current <fo> (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 "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 <dcs> (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 seperator. 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 <dcs> 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 <dcs> 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:

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.

3.3.4.4.4 AT+CMGD Delete Message

Delete Message

Test Command	Response
AT+CMGD=?	Test command shows the valid memory locations and optionally the supported values of <delflag>. +CMGD: (supported <index>s list)[,(supported <delflag>s list)]
Write Command **AT+CMGD=<[<index>][,<delflag>]>**	Response Execution command deletes from memory <memr> the message(s). Note: if <delflag> is present and not set to 0 then <index> is ignored and ME shall follow the rules for <delflag> shown above. if the location to be deleted is empty, still return **OK**.
Reference 3GPP TS 27.005(3GPP Only)	Note

Parameters are defined below:

Parameters	Description
<index>	message index in the selected storage <memr>

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

3.3.4.4.5 AT+CMMS More Message to Send

More Message to Send

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

Parameters are defined below:

Parameters	Description

<n>	0 - Disable(factory default) 1 - Keep link opened while messages are sent. If the delay betweent wo messages exceeds 3 seconds, the link is closed and the parameter <n> is automatically reset to 0: the feature is disabled. 2 - Keep link opened while messages are sent. If the delay betweent wo messages exceeds 3 seconds, the link is closed but the parameter <n> remains set to 2 – the feature is still enabled.

3.3.4.4.6 AT+CMGC Message to Send

Send SMS command

Test Command	Response
AT+CMGC=?	Test command returns the OK result code.

Write Command	Response
(PDU Mode) **AT+CMGC=<length><CR>** PDU is given **<Ctrl-Z/ESC>**	(PDU Mode) Execution command sends command message from a TE to the network (SMS-COMMAND). After command line is terminated with <CR>, the device responds sending a four character sequence prompt: <CR><LF><greater_than><space> (IRA 13, 10, 62, 32) and waits for the specified number of bytes. Note: the DCD signal shall be in ON state while PDU is given. Note: echoing given characters back from the TA is controlled by echo command E 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. 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. To send the message issue Ctrl-Z char (0x1A hex). To exit without sending the message issue ESC char (0x1B hex). Note : Optionally (when +CSMS <service> value is 1 and network supports it) <scts> is returned: If message is successfully sent to the network, then the result is sent in the format: **+CMGC: <mr>[, <ackpdu>]** 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.

(Text Mode) **AT+CMGC=<fo>,<ct>[,<pid>[,<mn>[,<da>[,<toda>]]]]><CR>** Text can be entered **<Ctrl- Z/ESC>**	(Text Mode) Execution command sends to the network a message
Reference 3GPP TS 27.005(3GPP Only)	Note To avoid malfunctions is suggested to wait for the +CMGC: <mr> or +CMS ERROR: <err> response before issuing further commands.

Parameters are defined below:

Parameters	Description
<length>	Length of the actual TP data unit in octets. (excluding the SMSC address octets).
<mr>	TP-Message-Reference in integer format.
<ackpdu>	RP-User-Data element of RP-ACK PDU (When +CSMS <service> value is 1 and network supports).
<fo>	First octet of 3GPP TS 23.040 SMS-COMMAND in integer format
<ct>	TP-Command-Type in integer format specified in 3GPP TS 23.040. Default value is 0.
<pid>	TP-Protocol-Identifier in integer format. Range 0-255. Default value is 0.
<mn>	TP-Message-Number in integer format.
<da>	TP-Destination-Address-Value field in string format represented in the currently selected character set (see +CSCS).
<toda>	TP-Destination-Address Type-of-Address octet: 129 - number in national format 145 - number in international format (contains the "+")
<scts>	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$QCRMCALL Setup RmNet Call

Setup RmNet Call

Read Command	Response
AT$QCRMCALL?	Read the current RmNet type.
Write Command	Response
AT$QCRMCALL =<Action>, <Instance> [,<IP Type> [,<Tech Pref > [,<umts profile number> [,<cdma profile number> [,<APN>]]]]]	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
< Action >	0 – Stop 1 – Start
<Instance>	1 to 8
<IP Type>	1 – Ipv4 2 – Ipv6 3 – Ipv4v6
<Tech Pref>	1 – 3GPP2 2 – 3GPP
<umts_profile>	1 to 24
***<cdma profile>**	100 to 179
<APN >	String type，maximum length is 62

Example:

Commands	Response

AT$QCRMCALL=1, 1,1,2,1,,	**+IND:WWAN START** **+IND:WWAN CONNECTED** **$QCRMCALL: 1, V4** **OK**

3.3.5.1.2 AT+CPOF Power Down The Module

Power Down The Module.

Execution Command	Response
AT+CPOF	**OK**
Test Command	Response
AT+CPOF=?	**OK**

Example:

Commands	Response
AT+CPOF	**OK**
AT+CPOF=?	**OK**
AT+CPOF? (not support read command)	**ERROR**

3.3.5.1.3 AT+MRESET Reset The Module

Reset The Module

Execution Command	Response
AT+MRESET	**OK**

Test Command	Response
AT+MRESET =?	**OK**

Example:

Commands	Response
AT+MRESET	**OK**
AT+MRESET =?	**OK**
AT+MRESET? (not support read command)	**ERROR**

3.3.5.1.4 AT+ESIMS SIM Card HotSwap Control command

SIM Card HotSwap Control command

Test Command	Response
AT+ESIMS=?	Query command is used to query SIM card hotswap range.
Read Command	Response
AT+ESIMS?	Read command is used to query SIM card hotswap status
Write Command	Response
AT+ESIMS=<Action>	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
<Action>	0 --> SIM card hotswap is not effective. 1 --> SIM card hotswap is effective.

Example:

Commands	Response
AT+ESIMS?	**+ESIMS:0** **OK**
AT+ESIMS=1	**OK**
AT+ESIMS?	**+ESIMS:1** **OK**
AT+ESIMS=?	**+ESIMS:(0-1)** **OK**

3.3.5.1.5 AT+MTZ Time zone Control command

Time zone Control command

Execution Command	Response
AT+MTZ	**OK**
Test Command	Response
AT+MTZ=?	Query command is used to query mode range.
Read Command	Response
AT+MTZ?	Read command is used to get current mode and city. Return: **+MTZ:<mode>,<city>**
Write Command	Response
AT+MTZ=<mode>[,<city>]	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
<mode>	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>	this value is valid when mode is 2. The length of value is no more than 40. values as follows： 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

	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/Srednekolymsk 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/Fakaofo 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

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

3.3.5.1.6 AT+MNTP Synchronous server time

Synchronous server time

Test Command **AT+MNTP=?**	Response **+MNTP: ,(0-65535)** **OK**
Write Command **AT+MNTP=<serverAddr>,<port>**	Response **+MNTP: "serverAddr",port** **OK** **ERROR**
Execution Command **AT+MNTP**	Response Read battery voltage **+MNTP: <result>** **OK** **Note:** **The maximum response time is 120 seconds, which is affected by the network status.**

Parameters are defined below:

Parameters	Description
<serverAddr>	NTP server IP address or domain name. Note: The default value is "120.25.155.20".
<port>	NTP server port, from 0 to 65535. Note: The default Value is 123.

<result>	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
AT+MNTP	**OK** **+MNTP:0**
AT+MNTP=?	**+MNTP: ,(0-65535)** **OK**
AT+MNTP?	**+MNTP: "120.25.155.20",123** **OK**

3.3.5.2 AT Commands for HTTP

3.3.5.2.1 AT$HTTPOPEN Open HTTP Service

Open HTTP Service

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

Example:

Commands	Response
AT$HTTPOPEN	**OK**

3.3.5.2.2 AT$HTTPCLOSE Close HTTP Service

Close HTTP Service

Execution Command	Response
AT$HTTPCLOSE	The command is used to close HTTP service. After executing this command,HTTP will be unavailable.
Read Command	Response
AT$HTTPCLOSE?	**$HTTPCLOSE: <closed_or_not>** **OK** Return HTTP service is closed or not. 1: HTTP service is closed. 0: HTTP service is not closed.

Example:

Commands	Response
AT$HTTPCLOSE	**OK**

3.3.5.2.3 AT$HTTPRQH Set HTTP header fields

Set HTTP header fields.

Test Command	Response
AT$HTTPRQH=?	**$HTTPRQH: "",""** **OK**
Read Command	Response
AT$HTTPRQH?	Return current HTTP request header fields and entity header fields.

Write Command	Response
AT$HTTPRQH=<ParamKey>,<ParamValue>	The command is used to set HTTP request header fields and entity header fields. The common request header: "Host" : The server's host.Must be matched with URL,If not set,will get from URL. "Content-Length" : The content length which will be send.This only for POST. "Range": Support for file upload from break Refer to : " IETP-RFC 2616 "

Parameters are defined below:

Parameters	Description
<ParamKey>	HTTP request or entity header field's Key. If there are special characters, such as‘,’ or ‘;’please add quotes The max length is 50. Support parameter： "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","rser-agent","allow","content-encoding","content-language","content-length","content-location","content-md5","content-range","content-type","expires","last-modified","user-agent","connection"
<ParamValue>	HTTP request or entity header field's Value. If there are special characters, please add quotes. The max length is 255.

Example:

Commands	Response
Example 1: **AT$HTTPRQH=Host,182.150.28.206** **AT$HTTPRQH=Connection,keep-alive**	**OK** **OK**

Example 2: **AT$HTTPRQH?**	**Host:182.150.28.206** **Connection :keep-alive** **OK**
Example 3: **AT$HTTPRQH=User-Agent,"Mozilla/5.0 (X11;Ubuntu; Linux x86_64; rv:38.0) Gecko/20100101 Firefox/38.0"**	**OK**
Example 4: **AT$HTTPRQH=Range,bytes=0-999**	**OK**

3.3.5.2.4 AT$HTTPPARA Set HTTP Request URL And Port

Set HTTP Request URL And Port.

Test Command **AT$HTTPPARA=?**	Response **$HTTPPARA: "",(0-65535),(0-1)** **OK**
Read Command **AT$HTTPPARA?**	Response **Host : "182.150.28.206"** **URI : "/httpdemo/http"** **Port : 8182** **OK**
Write Command **AT$HTTPPARA=<url>,<port>,<type>[,<cert>]**	Response **OK**

Parameters are defined below:

Parameters	Description
<url>	The HTTP request's url, such as "http://182.150.28.206:8182/ httpdemo/http". If there are special characters, such as‘,’ or‘;’please add quotes.The URL has a maximum length of 255 and contains host with a maximum length of 50 bytes.
<port>	The HTTP request's port.The default port is 80(HTTP) or 443(HTTPS).
<type>	The request type. 0 : HTTP (Default) ,The default port is 80. 1 : HTTPS,The default port is 443.
<cert>	Indicates whether the SSL connection ignores the certificate,and default is 0. 0 - ignores certificate 1 - use certificate

Example:

Commands	Response
Example 1: **AT$HTTPPARA=www.baidu.com,80,0**	**OK**
Example 2: **AT$HTTPPARA=www.baidu.com,443,1**	**OK**
Example 3: **AT$HTTPPARA=www.baidu.com,443,1,1**	**OK**
Example 4: **AT$HTTPPARA=http://182.150.28.206:8182/httpdemo/http?name=mobiletek&pass=123456,8182,0**	**OK**

3.3.5.2.5 AT$HTTPCLEAR Clear HTTP Related parameters

Clear HTTP Related parameters

Execution Command	Response
AT$HTTPCLEAR	The command is used to clear HTTP parameters. Such as HTTP header fields ,URL and port.

Example:

Commands	Response
Example 1: **AT$HTTPCLEAR**	**OK**

3.3.5.2.6 AT$HTTPACTION Send HTTP Request

Send HTTP Request

Test Command	Response
AT$HTTPACTION=?	**$HTTPACTION: (0-3)** **OK**
Write Command **AT$HTTPACTION=<request>**	Response **$HTTPRECV:DATA,<len>** **.....** **$HTTPRECV:DATA,2** **<\r><\n>** **$HTTPRECV:DATA,<len>** **.....** **$HTTPRECV:DATA,<len>** ..... 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.

Parameters are defined below:

Parameters	Description
<request>	HTTP request type ,available data include 0,1,2. 0: GET request 1: POST request 2: HEAD request 3: POST request (Content length must be less than 500 and set content is the first.)

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	**$HTTPRECV:DATA,153** **HTTP/1.1 200 OK** **Server: Apache-Coyote/1.1** **Content-Type: text/html;charset=ISO-8859-1** **Transfer-Encoding: chunked** **Date: Tue, 20 Sep 2016 05:37:48 GMT** **$HTTPRECV:DATA,2** **$HTTPRECV:DATA,195** **<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01** **Transitional//EN">** **<HTML>** **<HEAD><TITLE>A Servlet</TITLE></HEAD>** **<BODY>** **POST: Name is mobiletek,pass is 123456** **</BODY>** **</HTML>** **OK**
Example 3: **AT$HTTPACTION=2**	**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**
Example 4: **AT$HTTPOPEN**	**OK**

AT$HTTPPARA=http://182.150.28.206:8182/httpdemo/http,8182	**OK**
AT$HTTPRQH=Content-Length,26	**OK**
AT$HTTPDATAEX=26,"name=mobiletek&pass=123456"	**OK**
AT$HTTPACTION=3	**OK** **AT$HTTPACTION=3** **$HTTPRECV:DATA,153** **.....** **$HTTPRECV:DATA,2** **$HTTPRECV:DATA,195** **.....** **OK**
AT$HTTPCLEAR	**OK**

3.3.5.2.7 AT$HTTPDATA Set HTTP Post Request's Data

Set HTTP Post Request's Data

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

Parameters are defined below:

Parameters	Description
<data_len>	The post request's content length.The length is between 0 and 1024. 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
AT$HTTPDATAEX=?	**$HTTPDATAEX: (1-500),""** **OK**
Read Command	Response
AT$HTTPDATAEX?	**$HTTPDATAEX:<data_len>** **OK**
Write Command	Response
AT$HTTPDATAEX=<data_len>,<data>	The command is used to set HTTP post request's content. This command is effective only to POST.

Parameters are defined below:

Parameters	Description
<data_len>	The post request's content length.The length between 1 and 500. Before this must be set "Content-Length" request head,and must be the same as the value.
<data>	The post request's content.The length must be same as the <data_len>.

Example:

Commands	Response
AT$HTTPOPEN	**OK**

AT$HTTPPARA=http://182.150.28.206:8182/httpdemo/http,8182	**OK**
AT$HTTPRQH=Content-Length,26	**OK**
AT$HTTPDATAEX=26,"name=mobiletek&pass=123456"	**OK**
AT$HTTPACTION=3	**$HTTPRECV:DATA,153** **.....** **$HTTPRECV:DATA,2** **$HTTPRECV:DATA,195** **<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">** **<HTML>** **<HEAD><TITLE>A Servlet</TITLE></HEAD>** **<BODY>** **POST: Name is mobiletek,pass is 123456** **</BODY>** **</HTML>** **OK**
AT$HTTPCLEAR	**OK**

3.3.5.2.9 AT$HTTPSEND Send HTTP Post Content Data

Send HTTP Post Content Data

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

Example:

Commands	Response

AT$HTTPOPEN	**OK**
AT$HTTPPARA=http://182.150.28.206:8182/httpdemo/http,8182	**OK**
AT$HTTPRQH=Content-Length,26	**OK**
AT$HTTPACTION=1	**OK**
AT$HTTPDATA=13	**>> name=mobilete** **OK**
AT$HTTPSEND	**OK**
AT$HTTPDATA=13	**>> k&pass=123456** **OK**
AT$HTTPSEND	**$HTTPRECV:DATA,153** **.....** **$HTTPRECV:DATA,2** **$HTTPRECV:DATA,195** **.....** **POST: Name is mobiletek,pass is 123456** **</BODY>** **</HTML>** **OK**

3.3.5.2.10 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
350	Unknown HTTP error

3.3.5.3 AT Commands for Network

3.3.5.3.1 AT+CNMP Preferred Mode Selection

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. For network settings, please use the "AT+CNMP=?" query result as the benchmark. Others are for reference only.

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

Write Command	Response
AT+CNMP=<mode>	**OK** If <mode> not supported by module, this command will return ERROR: **ERROR**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description
<mode>	2 – Automatic 13 – GSM Only 38 – LTE Only 51 – GSM and LTE only

Example:

Commands	Response
AT+CNMP=51	**OK**
AT+CNMP?	**+CNMP:51** **OK**
AT+CNMP=?	**+CNMP: (2,13,38,51)** **OK**

3.3.5.3.2 AT+CNAOP Acquisition Order Preference

Acquisition Order Preference

Test Command	Response
AT+CNAOP=?	**+CNAOP: <mode>, (list1 of supported <sys_mode>),** **...,(list3 of supported <sys_mode>)** **OK**

Read Command	Response
AT+CNAOP?	**+CNAOP:<mode>[,<sys_mode1>[,<sys_mode2>[...[,<sys_mode3>]]]]** **OK**
Write Command	Response
AT+CNAOP=<mode>,<sys_mode1>,[<sys_mode2>[...[,<sys_mode3>]]]	**OK** or **ERROR**
Reference	Note
Vendor	

Parameters are defined below:

Parameters	Description
<mode>	Mandatory parameter. Defined mode values: 7 – Acquistion by priority order list <sys_moden>s.
<sys_moden>	Optional parameter,n belongs to 1 ~ 3 Defined sys_mode values: 3 – GSM 12 – LTE M1 13 – LTE NB1

Example:

Commands	Response
AT+CNAOP=?	**+CNAOP: (7),(3,12-13),(3,12-13),(3,12-13)** **OK**
AT+CNAOP=7,3,12,13	**OK**
AT+CNAOP?	**+CNAOP:7,3,12,13** **OK**

3.3.5.3.3 AT+CPSI Inquiring UE System Information

Inquiring UE System Information

Read Command	Response
AT+CPSI?	If camping on a GSM cell: **+CPSI:<System Mode>,<Operation Mode>,<MCC>-** **<MNC>,<LAC>,<Cell ID>,<Absolute RF Ch Num>,** **<RxLev> ,<C1-C2>** **OK** If camping on a LTE cell: **+CPSI:<System Mode>,<Operation Mode>,<MCC>-** **<MNC>,<TAC>,<SCellID>,<PCellID>,<Frequency Band>,<earfcn>,<dlbw>,<ulbw>,<RSRQ>,<RSRP>,** **<RSSI>,<SNR>,<SINR>** **OK** If no service: **+CPSI: NO SERVICE,ONLINE** **OK** Or **ERROR**
Execution Command	Response
AT+CPSI	Execute command responses the same as AT+CPSI?
Reference	Note
Vendor	

AT+CPSI? Defined values:

Parameters	Description
<System Mode>	System mode, values: "NO SERVICE", "GSM" , "LTE", "LTE M", "LTE NB"

<Operation Mode>	UE operation mode, values: "Online","Offline","Factory Test Mode","Reset", "Low Power Mode", "PSM"
<MCC>	Mobile Country Code (first part of the PLMN code)
<MNC>	Mobile Network Code (second part of the PLMN code)
<LAC>	Location Area Code (hexadecimal digits)
<Cell ID>	Service-cell ID.
<Absolute RF Ch Num>	AFRCN for service-cell.
<RxLev>	RX level value for base station selection
<C1>	Coefficient for base station selection
<C2>	Coefficient for Cell re-selection
<TAC>	Tracing Area Code
<Cpid>	Cell Parameter ID
<PCellID>	Physical Cell ID
<Frequency Band>	Frequency Band of active set
<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.
<RSSI>	Received signal strength indicator, values are in dBm x10. Range: -120.0 to 0.
<SNR>	signal-to-noise ratio of the serving cell. Range: -20 to 30.
<SINR>	Signal to Interface plus Noise Ratio, Values are in 1/5th of a dB. Range 0-250 which translates to -20dB - +30dB.

Example:

Commands	Response
AT+CPSI?	**+CPSI:GSM,ONLINE,460-00,0x8109,42860,556,-64,37-153** **OK**

3.3.5.3.4 AT+CNSMOD Show Network System Mode

Show Network System Mode.

Execution Command	Response
AT+CNSMOD	**+CNSMOD:<text>** **OK**
Read Command **AT+ CNSMOD?**	Response **+CNSMOD: <text>** **OK** Other: **ERROR** or **+CME ERROR: <err>**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description
<text>	NO SERVICE,GSM, LTE, LTE CAT-M, LTE NB

Example:

Commands	Response
AT+CNSMOD?	**+CNSMOD:GSM** **OK**
AT+CNSMOD	**+CNSMOD:GSM** **OK**

3.3.5.3.5 AT+MSDP Preferred Service Domain Selection

Preferred Service Domain Selection

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

Parameters are defined below:

Parameters	Description
<mode>	0 – CS Only // only remain unused 1 – PS Only 2 – CS + PS

Example:

Commands	Response
AT+MSDP=?	**+MSDP: (1-2)** **OK**
AT+MSDP=1	**OK**

AT+MSDP?	**+MSDP:0** **OK**

3.3.5.3.6 AT+MIOTBAND Set LET preference

Set the supported LTE bands

Test Command **AT+MIOTBAND=?**	Response **+MIOTBAND: (0-6),,** **OK**
Read Command **AT+MIOTBAND?**	Response **+MIOTBAND: <mode>,<cat-m>,<nb>** **OK**
Write Command **AT+ MIOTBAND =[<mode> [,<cat-m> [,<NB>]]]**	Response **OK** or **ERROR** Set the corresponding band to reduce registration network time. After a successful write, the restart takes effect

Parameters are defined below:

Parameters	Description
<mode>	LTE option mode preference: 0 - IOT_OP_MODE_PREF_WB 1 - IOT_OP_MODE_PREF_M1 2 - IOT_OP_MODE_PREF_NB1 3 - IOT_OP_MODE_PREF_M1_NB1 4 - IOT_OP_MODE_PREF_WB_M1 5 - IOT_OP_MODE_PREF_WB_NB1 6 - IOT_OP_MODE_PREF_WB_M1_NB1

<cat-m>	Cat-m band: The maximum length is 64 for band1~band256. Input HEX parameters, each bit for a band bit. For example: Intput HEX:1234 Binary:0001 0010 0011 0100 Band3/band5/band6/band10/band13 Intput HEX FFFFFFFFFFFFFFFF Band1~band64
<nb>	nb band: It is similar to cat-m.

Example:

Commands	Response
AT+MIOTBAND?	**+MIOTBAND: 2,0007800004F0E389F,0007800004F0E389F** **OK**
AT+MIOTBAND=3,F,FF	**OK** Set the frequency bands of cat-m and nb Mode: 3 Set to Cat-m and nb mode Cat-m: F band1~band4 NB: FF band1~band8
AT+MIOTBAND	**OK**

3.3.5.3.7 AT$QCJDCFG Set jamming mode

Set jamming mode

Test Command	Response
AT$QCJDCFG=?	**$QCJDCFG: (list of supported <mode>s)** **OK**

Read Command	Response
AT$QCJDCFG?	**$QCJDCFG: <mode>** **OK**
Write Command	Response
AT$QCJDCFG=<mode>	**OK** If <mode> not supported by module, this command will return ERROR: **ERROR** When there is a jamming state change client get below notification. **$QCDJSTATE:<RAT>, <Jamming state>**

Parameters are defined below:

Parameters	Description
<mode>	0 – disable notification 1 – Enable notification
<RAT>	RAT can be GSM, CATM1, NB1. 0: GSM 7: CATM1 9: NB1
<Jamming state>	0 – if jamming is not detected. 1 – if jamming is detected.

Example:

Commands	Response
AT$QCJDCFG?	**AT$QCJDCFG?** **$QCJDCFG: 0** **OK**
AT$QCJDCFG=1	**AT$QCJDCFG=1** **OK** **$QCJDSTATE:9 1 //NB jamming is detected.**

3.3.5.3.8 AT$QCJDSTATE Get jamming state

Get jamming state

Test Command	Response
AT$QCJDSTATE=?	**$QCJDSTATE: (list of supported <RAT>s)** **OK**
Write Command	Response
AT$QCJDSTATE=<RAT>	**$QCDJSTATE:<Jamming state>** The user client can explicitly query the jamming state for a RAT if in case, client does not receive any notification.

Parameters are defined below:

Parameters	Description
<RAT>	RAT can be GSM, CATM1, NB1. 0: GSM 7: CATM1 9: NB1
<Jamming state>	0 – if jamming is not detected. 1 – if jamming is detected.

Example:

Commands	Response
AT$QCJDSTATE=?	**AT$QCJDSTATE=?** **$QCJDSTATE:(0,7,9)** **OK**
AT$QCJDSTATE=9	**AT$QCJDSTATE=9** **$QCJDSTATE:1 //NB jamming is detected.** **OK**

3.3.5.4 AT Commands for GPIO Control

3.3.5.4.1 AT+CGDRT Set the Direction of Specified GPIO

Set the Direction of Specified GPIO.

Test Command **AT+CGDRT=?**	Response **+CGDRT: (list of supported< gpio_num >s),(list of supported< gpio_io >s)** **OK**
Write Command **AT+CGDRT=<gpio_num>, <gpio_io>**	Response 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. **OK**
Write Command **AT+CGDRT=<gpio_num>**	Response When only one parameter is used to read the configuration of the current GPIO port Responses **+CGDRT: <gpio_num>,<gpio_io>** **OK**

Parameters are defined below:

Parameters	Description
<gpio_num>	supported operating gpio num
<gpio_io>	0 – in 1 – out

Example:

Commands	Response

AT+CGDRT=?	**+CGDRT: (49),(0-1)** **OK**
AT+CGDRT=49,1	**OK**
AT+CGDRT=49	**+CGDRT: 49,1** **OK**

3.3.5.4.2 AT+CGSETV Set the Value of Specified GPIO

Set the Value of Specified GPIO

Test Command **AT+CGSETV=?**	Response **+CGSETV: (list of supported< gpio_num >s),(list of supported< gpio_ hl >s)** **OK**
Write Command **AT+CGSETV=<gpio_num>, <gpio_hl>**	Response 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 **OK**

Parameters are defined below:

Parameters	Description
<gpio_num>	supported operating gpio num
<gpio_hl>	0 – low 1 – high

Example:

Commands	Response

AT+CGSETV=?	**+CGSETV: (49),(0-1)** **OK**
AT+CGSETV=49,1	**OK**

3.3.5.4.3 AT+CGGETV Get the Value of Specified GPIO

Get the Value of Specified GPIO

Test Command **AT+ CGGETV =?**	Response **+CGDRT: list of supported< gpio_num >s** **OK**
Write Command **AT+CGGETV=<gpio_num>**	Response This command is used to get the value (high or low) of the specified GPIO. GPIO should first be set to intput mode with +CGDRT **+CGGETV: <gpio_num>,<gpio_hl>** **OK**

Parameters are defined below:

Parameters	Description
<gpio_num>	-supported operating gpio num
<gpio_hl>	0 – low 1 – high

Example:

Commands	Response
AT+CGGETV=?	**+CGGETV: (49)** **OK**
AT+CGGETV=49	**+CGGETV: 49,0** **OK**

3.3.5.4.4 AT+CGFLY Flight Mode Control

Flight Mode Control

Test Command	Response
AT+CGFLY=?	**+CGFLY: (list of supported <mode>s)** **OK**
Read Command	Response
AT+ CGFLY?	**+CGFLY: <mode>** **OK**
Write Command	Response
AT+CGFLY=<mode>	This command is used to enable or disableFLIGHT GPIO port state, When enabled, the gpio port can control entry or exit flight mode **OK**

Parameters are defined below:

Parameters	Description
<mode>	0 – disable 1 – enable

Example:

Commands	Response
AT+CGFLY=1	**OK**
AT+CGFLY?	**+CGFLY: 1** **OK**
AT+CGFLY=?	**+CGFLY: (0-1)** **OK**

3.3.5.4.5 AT+CGNETLED Network LED Control

Network LED Control

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

Parameters are defined below:

Parameters	Description
<mode>	0 – disable 1 – enable

Example:

Commands	Response
AT+CGNETLED=1	**OK**
AT+CGNETLED?	**+CGNETLED: 1** **OK**
AT+CGNETLED=?	**+CGNETLED: (0-1)** **OK**

3.3.5.5 AT Commands for LOCK

3.3.5.5.1 AT+MLKSTA Get Lock State

Get Lock State.

Read Command	Response
AT+MLKSTA?	**+MLKSTA: 0 // No lock** **OK** or **+MLKSTA: 1,<lock_type> // Lock to <lock_type>** **OK**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description
<lock_type>	+MLKBAND Lock band +MLKNET Lock network +MLKSIM Lock Sim card +MLKCELL Lock cell

Example:

Commands	Response
AT+MLKSTA?	**+MLKSTA: 0** // Lock is closed **OK**
AT+MLKSTA?	**+MLKSTA: 1,+MLKBAND** // Lock band **OK**

3.3.5.5.2 AT+CELLINFO Get Nearby Cell Information

Get Nearby Cell Information

Read Command	Response
AT+CELLINFO?	**+CELLINFO:<net_mode>,<net>** **<nmr_1>...<nmr_n>** **<nmr_1>...<nmr_n>** **.....** **OK** Nearby cell information for GSM (not support) For current and nearby cell <lac>,<cell_id>,<rssi> Nearby cell information for CAT-M1 For current cell: <tac>,<cell_id>,<rssi> For nearby cell: <earfcn>,<pci>,<rssi> Nearby cell information for NB For current cell: <tac>,<cell_id>,<rssi> For nearby cell: <earfcn>,<pci>,<rssi>

Parameters are defined below:

Parameters	Description
<net_mode>	Current network mode 0 GSM (not support) 1 CAT-M1 2 NB

3.3.5.5.3 AT+MLKBAND Lock To Band

Lock to band

Execution Command	Response
AT+MLKBAND	This command is used to get current support's bands. **AT+MLKBAND** **+MLKBAND** **0: <band_1>, ... ,<band_n>** // Support general bands **1: <band_1>, ... ,<band_n>** // Support CAT-M1 bands **2: <band_1>, ... ,<band_n>** // Support NB bands **OK**
Read Command	Response
AT+MLKBAND?	This command is used to get current locked bands. Must lock to band in the first. **AT+MLKBAND?** **+MLKBAND** **0: <band_1>, ... ,<band_n>** // Locked general bands **1: <band_1>, ... ,<band_n>** // Support CAT-M1 bands **2: <band_1>, ... ,<band_n>** // Support NB bands **OK** or **AT+MLKBAND?** **+MLKBAND: 0** // Band lock is closed **OK**
Write Command	Response
AT+MLKBAND=<state1>	This command is used to lock to band. **OK** **ERROR**

Write Command	Response
AT+MLKBAND=<state2>,<band_type>,<band_1>...<band_n>	This command is used to add or remove bands which will be locked.The max bands number is 10 for every command.Must lock to band in the first. **OK** **ERROR**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description
<state1>	0 Unlock from band 1 Lock to band
<state2>	2 Add bands 3 Remove bands
<band_type>	0 Generalband 1 CAT-M1 band 2 NB 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=1	**OK**
AT+MLKBAND?	**+MLKBAND** **0: 8,9,20,22,23,24,27,44** **1: 1,3,5,7,8,18,23,36,38** **2: 1,3,5,8,18,23** **OK**

AT+MLKBAND	**+MLKBAND** **0: 8,9,20,22,23,24,27,44** **1: 1,3,5,7,8,18,23,36,38** **2: 1,3,5,8,18,23** **OK**
AT+MLKBAND=3,2,5,8,18,23	**OK**
AT+MLKBAND?	**+MLKBAND** **0: 8,9,20,22,23,24,27,44** **1: 1,3,5,7,8,18,23,36,38** **2: 1,3** **OK**

3.3.5.5.4 AT+MLKNET Lock To Network

Lock To Network

Read Command **AT+MLKNET?**	Response **AT+MLKNET?** **+MLKNET: 0** // Network lock is closed **OK** or **AT+MLKNET?** **+MLKNET: 1,<net_1>, ... ,<net_n>** // Locked networks **OK**
Write Command **AT+MLKNET=<state1>**	Response This command is used to lock to network. Take effect after reboot +CFUN. **OK** **ERROR**

Write Command	Response
AT+MLKNET=<state2>,<net_1>...<net_n>	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. **OK** **ERROR**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description
<state1>	0 - Unlock from network 1 - Lock to network
<state2>	2 - Add networks 3 - Remove networks
<net_1>...<net_n>	The networks for add/remove.The max number is 10 for every time.

Example:

Commands	Response
AT+MLKNET?	**+MLKNET: 0** **OK**
AT+MLKNET=1	**OK**
AT+MLKNET?	**+MLKNET: 1** **OK**
AT+MLKNET=2,46001,46002,46003	**OK**
AT+MLKNET?	**+MLKNET: 1,46001,46002,46003** **OK**
AT+MLKNET=3,46002	**OK**

AT+MLKNET?	**+MLKNET: 1,46001,46003** **OK**

3.3.5.5.5 AT+MLKSIM Lock To Sim Card

Lock To Sim Card

Read Command **AT+MLKSIM?**	Response **AT+MLKSIM?** **+MLKSIM: 0** // SIM lock is closed **OK** or **AT+MLKSIM?** **+MLKSIM: 1,<imsi>** // Locked sim card by IMSI **OK**
Write Command **AT+MLKSIM=<state>[,<imsi>]**	Response This command is used to lock to sim card. Take effect after reboot +CFUN. **OK** **ERROR**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description
<state>	0 Unlock from sim. 1 Lock to sim,must set <imsi> for this.
<imsi>	The IMSI of sim card.The length of IMSI is 15.This only set when <state> is 1

Example:

Commands	Response

AT+MLKSIM?	**+MLKSIM: 0** **OK**
AT+MLKSIM=1,46001234567890	// Lock to sim which IMSI is "460011234567890 " **OK**
AT+MLKSIM?	**+MLKSIM: 1,460011234567890** **OK**

3.3.5.5.6 AT+MLKCELL Lock To Cell

Lock To Cell

Execution Command **AT+MLKCELL**	Response **+MLKCELL: <net_type>,<net_string>** **<data_1_1>[,<data_1_2>]; ... ;<data_n_1>[,<data_n_2>]** **OK**
Read Command **AT+MLKCELL?**	Response **+MLKCELL: 0** // Lock cell is closed **OK** or **+MLKCELL: 1** // Lock cell is opened **1,0/arfcn** // GSM (not support) **2,0/uarfcn** // CAT-M1 **3,0/earfdn,pci** // NB **OK**
Write Command **AT+MLKCELL=<state>[,<net_type>[,<data1>[,<data2>]]]**	Response This command is used to lock to cell.Take effect after reboot Modem. **OK** **ERROR**
Reference Vendor	Note

Parameters are defined below:

Parameters	Description
<state>	0 Unlock from cell,If not set <net_type> means unlock all. 1 Lock to cell,must set <data1> and may be set <data2>
<net_type>	1 GSM (not support) 2 CAT-M1 3 NB
<data1>/<data2>	Different networks for different parameters For CAT-M1:<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) For NB:<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)
<net_type>	1 GSM (not support) 2 CAT-M1 3 NB
<data_n_1>/<data_n_2>	Different networks for different parameters For CAT-M1:<data_n_1> is earfcn,<data_n_2> is pci For NB:<data_n_1> is earfcn,<data_n_2> is pci

Example:

Commands	Response
AT+MLKCELL?	**+MLKCELL: 0** // Lock cell is closed. **OK**
AT+MLKCELL	**+MLKCELL: 3,NB** // Current network is NB **2506,192; 2506,194** // There are 2 available cells,and the first cell's earfcn is 2506,pci is 192 ... **OK**
AT+MLKCELL=1,3,2506,194	// Lock to NB cell which earfcn is 2506,pci is 194 **OK**

AT+MLKCELL?	**+MLKCELL: 1** **1,0** // Not lock to GSM **2,0** // Not lock to CAT-M1 **3,2506,194** //Locked to NB cell and the cell's earfch is 2506,pci is 194 **OK**

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	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 */

3.3.5.6 AT Commands for FTP

3.3.5.6.1 AT+CFTPPORT Set FTP Server Port

Set FTP Server Port

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

Parameters are defined below:

Parameters	Description
<port>	The FTP server port, from 1 to 65535, and default value is 21.

Example:

Commands	Response
AT+CFTPPORT=21	**OK**
AT+CFTPPORT?	**+CFTPPORT:21** **OK**
AT+CFTPPORT=?	**+CFTPPORT: (1-65535)** **OK**

3.3.5.6.2 AT+CFTPMODE Set FTP Mode

Set FTP Mode

Test Command **AT+CFTPMODE=?**	Response **+CFTPMODE: (list of supported <mode>s)** **OK**
Read Command **AT+CFTPMODE?**	Response **+CFTPMODE: <mode>** **OK**
Write Command **AT+CFTPMODE=<mode>**	Response **OK** or **ERROR** This command is used to set FTP passive/proactive mode. Default is passive mode.

Parameters are defined below:

Parameters	Description
<mode>	The FTP access mode:(now only support 0 – passive mode) 0 – passive mode. 1 – proactive mode

Example:

Commands	Response
AT+CFTPMODE=1	**OK**
AT+CFTPMODE?	**+CFTPMODE: 1** **OK**
AT+CFTPMODE=?	**+CFTPMODE: (0-1)** **OK**

3.3.5.6.3 AT+CFTPTLS Set FTP Security Mode

Set FTP Security Mode

Test Command	Response
AT+CFTPTLS=?	**+CFTPTLS: (0-2),(0-1)** **OK**
Read Command	Response
AT+CFTPTLS?	**+CFTPTLS: < mode>,<cert>** **OK**
Write Command	Response
AT+CFTPTLS=<mode>[,<cert>]	**OK** or **ERROR** This command is used to set FTP Security Mode.

Parameters are defined below:

Parameters	Description
<mode>	Default is 0.When mode is non 0, FTP will over TLS use SSL. 0 - None 1 - Implict 2 - Explicit
<cert>	Whether to ignore a certificate,Default is 0 0 - Ignore 1 - Don't ignore

Example:

Commands	Response
AT+ CFTPTLS=2,0	**OK**
AT+ CFTPTLS?	**+ CFTPTLS:2,0** **OK**
AT+ CFTPTLS=?	**+CFTPTLS: (0-2),(0-1)** **OK**

3.3.5.6.4 AT+CFTPTYPE Set FTP Type

Set FTP Type

Test Command	Response
AT+CFTPTYPE=?	**+CFTPTYPE: ("I","A")** **OK**
Read Command	Response
AT+CFTPTYPE?	**+CFTPTYPE: <type>** **OK**
Write Command	Response
AT+CFTPTYPE=<type>	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<type>	I – binary type. A – ASCII type.

Example:

Commands	Response
AT+CFTPTYPE="A"	**OK**
AT+CFTPTYPE=I	**OK**
AT+CFTPTYPE?	**+CFTPTYPE: A** **OK**
AT+CFTPTYPE=?	**+CFTPTYPE: ("I","A")** **OK**

3.3.5.6.5 AT+CFTPSERV Set FTP Server Domain Name or IP Address

Set FTP Server Domain Name or IP Address

Test Command	Response
AT+CFTPSERV=?	**OK**
Read Command	Response
AT+CFTPSERV?	**+ CFTPSERV: "<address>"** **OK**
Write Command	Response
AT+CFTPSERV = "<address>"	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<address>	The FTP server domain name or IP address. The maximum length is 100.

Example:

Commands	Response
AT+CFTPSERV="www.mydomain.com"	**OK**
AT+CFTPSERV?	**+CFTPSERV: "www.mydomain.com"** **OK**
AT+CFTPSERV=?	**OK**
AT+CFTPSERV="10.0.0.127"	**OK**

3.3.5.6.6 AT+CFTPUN Set User Name for FTP Access

Set User Name for FTP Access

Test Command	Response
AT+CFTPUN=?	**OK**
Read Command	Response
AT+CFTPUN?	**+CFTPUN: "<name> "** **OK**
Write Command	Response
AT+CFTPUN= "<name>"	**OK**

Parameters are defined below:

Parameters	Description
<name>	The user name for FTP server access. The maximum length is 30.

Example:

Commands	Response
AT+CFTPUN="myname"	**OK**
AT+CFTPUN="anonymous"	**OK**
AT+CFTPUN?	**+CFTPUN: "myname"** **OK**
AT+CFTPUN=?	**OK**

3.3.5.6.7 AT+CFTPPW Set User Password for FTP Access

Set User Password for FTP Access

Test Command **AT+CFTPPW=?**	Response **OK**
Read Command **AT+CFTPPW?**	Response **+ CFTPPW: "<password>"** **OK**
Write Command **AT+CFTPPW="<password>"**	Response **OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<password>	The user password for FTP server access. The maximum length is 40.

Example:

Commands	Response
AT+CFTPPW="mypass"	**OK**
AT+CFTPPW?	**+CFTPPW: "mypass"** **OK**
AT+CFTPPW=?	**OK**

3.3.5.6.8 AT+CFTPGETFILE Get a File from FTP Server to EFS

Get a File from FTP Server to EFS

Test Command **AT+CFTPGETFILE=?**	Response **+CFTPGETFILE: ,,(0-2147483647)** **OK**

Read Command	Response
AT+CFTPGETFILE?	**+CFTPGETFILE:“remote_path”, “local_path” ,<rest_size> OK**
Write Command	Response
AT+CFTPGETFILE= "< remote_path>"," <local_path>" [,<rest_size>]	**OK +CFTPGETFILE: SUCCESS,<length>** or **ERROR +CFTPGETFILE: FAIL,<err>**

Parameters are defined below:

Parameters	Description
< remote_path >	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}.
< local_path >	The efs file path. The maximum length is 512. Local file name string not sopport non-ascii and cannot contain: '/', '\\', ':', '*', '?','\"', '>', '<', '|', ',' Note : local_path root directory"/" is default"C: / " in EFS
<rest_size>	The value for FTP “REST” command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<err>	The error code of FTP operation.
<length>	The size of the download file

Example:

Commands	Response

AT+CFTPGETFILE= "/test/CXL/abc.txt", "/mydir/test1.txt"	**OK** **…** **+CFTPGETFILE: SUCCESS,10245** **AT+CFTPGETFILE= "/test/CXL/abc.txt", "/mydir/test1.txt",10** **AT+CFTPGETFILE={non-ascii}"2F746573742F63584C2F6162632E747874", "/mydir/test1.txt",10** **OK** **…** **+CFTPGETFILE: SUCCESS,10235**

3.3.5.6.9 AT+CFTPPUTFILE Upload a File from Module EFS to FTP Server

Upload a File from Module EFS to FTP Server

Test Command **AT+CFTPPUTFILE=?**	Response **+CFTPPUTFILE: ,,(0-2147483647)** **OK**
Read Command **AT+CFTPPUTFILE?**	Response **+CFTPPUTFILE:"remote_path", "local_path" ,<rest_size>** **OK**
Write Command **AT+CFTPPUTFILE = "<remote_path>"," <local_path>" [,<rest_size>]**	Response **OK** **+CFTPPUTFILE: SUCCESS** or **+CFTPPUTFILE: FAIL ,<err>** **ERROR**

Parameters are defined below:

Parameters	Description
<remote_path>	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}.
<local_path>	The efs file path. The maximum length is 512. Note : local_path root directory"/" is default"C: / " in EFS

<rest_size>	The value for FTP “REST” command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<err>	The error code of FTP operation.

Example:

Commands	Response
AT+CFTPPUTFILE="/pub/mydir/test1.txt","/mydir/test1.txt"	**OK** **…** **+CFTPPUTFILE: SUCCESS**
AT+CFTPPUTFILE={non-ascii}"2F746573742F63584C2F6162632E747874","/mydir/test1.txt",10	**OK** **…** **+CFTPPUTFILE: SUCCESS**

3.3.5.6.10 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
AT+CFTPGET=?	**+CFTPGET: ,(0-2147483647)** **OK**
Read Command	Response
AT+CFTPGET?	**+CFTPGET:"remote_path", <rest_size>** **OK**

Write Command	Response
AT+CFTPGET = "<remote_path>" [,<rest_size>]	**OK** **+CFTPGET: DATA,<len>** **…** **+CFTPGET: DATA, <len>** **…** **+CFTPGET: SUCCESS, <length>** or **+CFTPGET: FAIL,<err>** **ERROR**

Parameters are defined below:

Parameters	Description
<remote_path>	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}.
<rest_size>	The value for FTP “REST” command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<err>	The error code of FTP operation.
<len>	Every time the length of the read from the server
<length>	The size of the download file

Example:

Commands	Response
AT+CFTPGET="/test/CXL/abc.txt", 10	**OK** **+CFTPGET: DATA, 1020** **AT+CFTPGET={non-ascii}"2F746573742F63584C2F6162632E747874", 10** **OK** **+CFTPGET: DATA, 1058** **…** **+CFTPGET: SUCCESS,1246792**

3.3.5.6.11 AT+CFTPMKD Create a New Directory on FTP Server

Create a New Directory on FTP Server.

Test Command **AT+CFTPMKD=?**	Response **OK**
Read Command **AT+CFTPMKD?**	Response **+ CFTPMKD:"dir"** **OK**
Write Command **AT+CFTPMKD="<dir>"**	Response **OK** or **ERROR** **+CFTPMKD:FAIL,<err>**

Parameters are defined below:

Parameters	Description
<dir>	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}.should contain a prefix of {non-ascii}.
<err>	The result code of the listing

Example:

Commands	Response
AT+CFTPMKD="/testdir"	**OK**
AT+CFTPMKD={non-ascii}"2F746573742F43584C"	**OK**

3.3.5.6.12 AT+CFTPPUT Upload the DATA from SIO to FTP Server

Upload the DATA from SIO to FTP Server.

Test Command	Response
AT+CFTPPUT=?	**+CFTPPUT: ,(0-2147483647)** **OK**
Read Command	Response
AT+CFTPPUT?	**+ CFTPPUT:"remote_path", <rest_size>** **OK**
Write Command **AT+CFTPPUT="<remote_path>" [,<rest_size>]**	Response **>…..<Ctrl+Z>** **OK** **+CFTPPUT:SUCCESS** or **+CME ERROR** **+CFTPPUT: FAIL,<err_code>** **ERROR**

Parameters are defined below:

Parameters	Description
< remote_path >	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}.
<rest_size>	The value for FTP “REST” command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<err>	The error code of FTP operation.

Example:

Commands	Response
AT+CFTPPUT="/pub/mydir/test1.txt", 20	**>sssssssssssssssss …..<Ctrl+Z> OK +CFTPPUT:SUCCESS**
AT+CFTPPUT={non-ascii}"2F746573742F63584C2F6162632E747874", 20	**+CFTPPUT: BEGIN …..<Ctrl+Z> OK**

3.3.5.6.13 AT+CFTPLIST List the Items in the Directory on FTP Server

List the Items in the Directory on FTP Server

Test Command	Response
AT+CFTPLIST=?	**OK**
Read Command **AT+CFTPLIST?**	Response **+CFTPLIST:"dir" OK**
Write Command **AT+CFTPLIST= "<dir>"**	Response **OK +CFTPLIST: … +CFTPLIST: SUCCESS** or **+CFTPLIST:FAIL,<err> ERROR**

Parameters are defined below:

Parameters	Description
<dir>	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}.

<err>	The result code of the listing

Example:

Commands	Response
AT+CFTPLIST="/testd"	**OK** **+CFTPLIST:** **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** **+CFTPLIST: SUCCESS**
AT+CFTPLIST={non-ascii}"2F746573742F43584C"	**OK** **+CFTPLIST:** **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** **+CFTPLIST: SUCCESS**

3.3.5.6.14 AT+CFTPRMD Delete a Directory on FTP Server

Delete a Directory on FTP Server.

Test Command	Response
AT+CFTPRMD =?	**OK**
Read Command	Response
AT+CFTPRMD?	**+ CFTPRMD:"dir"** **OK**

Write Command	Response
AT+CFTPRMD ="<dir>"	**OK** or **ERROR** **+ CFTPRMD:FAIL,<err>**

Parameters are defined below:

Parameters	Description
<dir>	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}.
<err>	The result code of the listing

Example:

Commands	Response
AT+CFTPRMD="/testdir"	**OK**
AT+CFTPRMD={non-ascii}"2F746573742F43584C"	**OK**

3.3.5.6.15 AT+CFTPDELE Delete a File on FTP Server

Delete a File on FTP Server

Test Command	Response
AT+CFTPDELE=?	**OK**
Read Command	Response
AT+CFTPDELE?	**+ CFTPDELE:"filename"** **OK**

Write Command	Response
AT+CFTPDELE= **"<filename>"**	**OK** or **ERROR** **+ CFTPDELE:FAIL,<err>**

Parameters are defined below:

Parameters	Description
< filename >	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}.
<err>	The result code of the listing

Example:

Commands	Response
AT+CFTPDELE="/testdir/test.txt"	**OK**
AT+CFTPDELE={non-ascii}"2F746573742F63584C2F6162632E747874"	**OK**

3.3.5.6.16 AT+CFTPRDFILE Read File from Local File to SIO

Read File from Local File to SIO

Test Command	Response
AT+CFTPRDFILE=?	**+CFTPRDFILE: ,(0-2147483647),(0-2147483647)** **OK**
Read Command	Response
AT+CFTPRDFILE?	**+CFTPRDFILE: "local_file",read_pos,read_len**

Write Command	Response
AT+CFTPRDFILE= **"<local_file>" ,<read_pos>, <read_len>**	**+ CFTPRDFILE:DATA,<len>** **……(data)** **+ CFTPRDFILE:SUCCESS,<length>** **OK** or **+ CFTPRDFILE: FAIL,<err_code>** **ERROR**

Parameters are defined below:

Parameters	Description
<local_file>	The local file name. The maximum length is 512. Note : local path root directory"/" is default"C: / " in EFS
<read_pos>	Start read file position,The range is from 0 to 2147483647.
<read_len>	Read file length,The range is from 0 to 2147483647.
<len>	Every time the length of the read from the server
<length>	The size of the download file

Example:

Commands	Response
AT+CFTPRDFILE="/p.txt",10,100	**+CFTPRDFILE:DATA,100** **aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa** **aaaaaaaaaaaaaaaaaaaaaaaaaaaaa** **aaaaaaaaaaaaaaaa** **+CFTPRDFILE:SUCCESS,100** **OK**

3.3.5.6.17 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

3.3.5.7 AT Commands for TCP/IP

3.3.5.7.1 AT+CIPTIMEOUT Select TCP/IP Timeout Value

Select TCP/IP Timeout Value

Execution Command	Response
AT+CIPTIMEOUT	Execute command will set the parameters to default value.
Test Command	Response
AT+CIPTIMEOUT=?	**+CIPTIMEOUT: (list of supported < netopen_timeout >), (list of supported < cipopen_timeout >),(list of supported < cipsend_timeout >)** **OK**

Read Command	Response
AT+CIPTIMEOUT?	**+CIPTIMEOUT: <netopen_timeout>,<cipopen_timeout>, <cipsend_timeout>** **OK**
Write Command	Response
AT+CIPTIMEOUT=[**< netopen_timeout >][,** **[< cipopen_timeout >]** **[,[<cipsend_timeout >]]]**	**OK** **ERROR** for AT+NETOPEN/AT+CIPOPEN/AT+CIPSEND, before execute all of them.

Parameters are defined below:

Parameters	Description
< netopen_timeout >	Timeout value for AT+NETOPEN, from 3000 to 120000 milliseconds, and default value is 120000.
< cipopen_timeout >	Timeout value for AT+CIPOPEN, from 3000 to 120000 milliseconds, and default value is 120000.
< cipsend_timeout >	Timeout value for AT+CIPSEND, from 3000 to 120000 milliseconds, and default value is 120000.

Example:

Commands	Response
AT+CIPTIMEOUT=30000,20000,40000	**OK**
AT+CIPTIMEOUT?	**+CIPTIMEOUT: 30000,20000,40000** **OK**
AT+CIPTIMEOUT=?	**+CIPTIMEOUT: (3000-120000),(3000-120000),(3000-120000)** **OK**

3.3.5.7.2 AT+CIPMODE Select TCP/IP Application Mode

Select TCP/IP Application Mode

Execution Command **AT+CIPMODE**	Response **OK**
Test Command **AT+CIPMODE=?**	Response **+CIPMODE: (list of supported<mode>s)** **OK**
Read Command **AT+CIPMODE?**	Response **+CIPMODE: <mode>** **OK**
Write Command **AT+CIPMODE=<mode>**	Response **OK** **ERROR** Note: when set to transparent mode, the ACK and HEX set by MCIPCFGPL will not take effect.

Parameters are defined below:

Parameters	Description
<mode>	Indicates to select transparent mode or non-transparent mode. from 0 to 1, and default value is 0. 0: non-transparent mode 1: transparent mode Note: in transparent mode, it is recommended to limit the rate of sending data to more than 1 second. If the rate is too fast, BUSY will be automatically reported to indicate that the sending fails

Example:

Commands	Response

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

3.3.5.7.3 AT+NETOPEN Open packet network

Open packet network

Execution Command **AT+NETOPEN**	Response **OK** **+NETOPEN: <err>** **ERROR**
Read Command **AT+NETOPEN?**	Response **+NETOPEN: <net_state>** **OK**

Parameters are defined below:

Parameters	Description
<err>	Indicate the result of operation. SUCCESS: is success ONGOING: is open in progress FAIL: is failure
<net_state>	Indicate the current network state 0: network close (deactivated) 1: network open(activated)

Example:

Commands	Response
AT+NETOPEN	**OK** **+NETOPEN: SUCCESS**
AT+ NETOPEN?	**+NETOPEN: 1** **OK**

3.3.5.7.4 AT+NETCLOSE Close Network

Close Network

Execution Command	Response
AT+NETCLOSE	**OK**
Read Command	Response
AT+NETCLOSE?	**OK**

Parameters are defined below:

Parameters	Description
<err>	Indicate the result of operation. SUCCESS: is success ONGOING：is close in progress FAIL: is failure

Example:

Commands	Response
AT+NETCLOSE	**OK** **+NETCLOSE: SUCCESS**

AT+NETCLOSE?	**OK**

3.3.5.7.5 AT+IPADDR Inquire Socket PDP Address

Inquire Socket PDP Address

Execution Command **AT+IPADDR**	Response **+IPADDR: <err>,<ip_address>** **OK** **ERROR**
Read Command **AT+IPADDR?**	Response **OK** **ERROR**

Parameters are defined below:

Parameters	Description
<err>	Indicate the result of operation. SUCCESS: is success FAIL: is failure
<ip_address>	This command inquires the IP address of current active socket PDP.

Example:

Commands	Response
AT+IPADDR	**+IPADDR: SUCCESS ,10.97.210.19** **OK**
AT+ IPADDR?	**OK**
AT+IPADDR	**+IPADDR: FAIL** **OK**

3.3.5.7.6 AT+CIPOPEN Establish Connection in Multi-socket Mode

Establish Connection in Multi-socket Mode

Test Command	Response
AT+CIPOPEN=?	**+CIPOPEN: (list of supported <link_num>s), (list of supported <type>s)** **OK**
Read Command	Response
AT+CIPOPEN?	**+CIPOPEN: <link_num>[,<type>,<serverIP>, <serverPort>,<index>]** **OK** **ERROR**
Write Command **AT+CIPOPEN=** **< link_num>,** **<type>,** **[<serverIP>],** **[<serverPort>],** **[< localPort>]**	Response **OK** **+CIPOPEN: <link_num>,<err>** Open connection successfully in transparent mode: CONNECT [<text>] Open connection failed in transparent mode: CONNECT FAIL **ERROR**

Parameters are defined below:

Parameters	Description
<link_num>	Identifies a connection , from 0 to 9, and default value is 0. If AT+CIPMODE=1 is set, the <link_num> is restricted to be only 0.
<type >	Identifies the type of transmission protocol. TCP: Transfer Control Protocol UDP: User Datagram Protocol If AT+CIPMODE=1 is set, the <type> is restricted to be only “TCP”.

<serverIP >	Identifies the IP address or domain name of server, if type is TCP, <serverIP> can't be empty,if type is UDP, <serverIP> must set to empty.
<serverPort>	Identifies the port of TCP server, from 0 to 65535, and default value is 0. If type is TCP, <serverPort > can't be empty. If type is UDP, <serverPort> must set to empty.
<localPort>	Identifies the port of local socket, from 0 to 65535, and default value is 0.
<text>	CONNECT result code string; the string formats please refer ATX/AT\V command.
<err>	Indicate the result of operation. SUCCESS: is success FAIL: is failure

Example:

Commands	Response
AT+CIPOPEN=0,"TCP","182.150.28.206",8800,0	**OK** **+CIPOPEN: 0,SUCCESS**
AT+CIPOPEN=1,"UDP",,,8080	**OK** **+CIPOPEN: 1,SUCCESS**

AT+CIPOPEN?	**+CIPOPEN: 0,"TCP","182.150.28.206",8800,-1** **+CIPOPEN: 1,"UDP","",0,-1** **+CIPOPEN: 2,"UDP","182.150.28.206",8800,-1** **+CIPOPEN: 3** **+CIPOPEN: 4** **+CIPOPEN: 5** **+CIPOPEN: 6** **+CIPOPEN: 7** **+CIPOPEN: 8** **+CIPOPEN: 9** **OK**
AT+CIPOPEN=?	**+CIPOPEN: (0-9),(TCP, UDP)** **OK**

3.3.5.7.7 AT+CIPSEND Send Data Through TCP or UDP Connection

Send Data Through TCP or UDP Connection

Test Command	Response
AT+CIPSEND=?	**+CIPSEND: (list of supported <link_num>s), (list of supported <length>s)** **OK**
Read Command	Response
AT+CIPSEND?	**OK**

Write Command	Response
AT+CIPSEND= < link_num> ,[<length>] **AT+CIPSEND=<link_num>,,,,<data>** (This format is for TCP connect)	This command is used to send data to remote side. The <length> field can be empty, when it is empty, the input data can be empty or content (maximum send 1500), Single <Ctrl+Z> means end of the input data. But the <length> is a number, the input data must be <length> length, you can not be sent with <Ctrl+Z>. Single <ESC> is used to cancel the sending. <Ctrl+Z> is 0x1A, <ESC> is 0x1B, <Ctrl+D> is x04. **OK** **+CIPSEND: <link_num>,<reqSendLength>,<cnfSendLength>,<err>** Or **+CIPSEND: <link_num>,<err>** **ERROR**
AT+CIPSEND= <link_num> ,[<length>],<serverIP>, <serverPort> (This format is for UDP connect)	NOTE 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
<link_num>	Identifies a connection , from 0 to 9, and default value is 0.
<length>	Indicates the length of sending data, from 1 to 1500, and default value is 0.
<serverIP>	Identifies the IP address of server.The IP address format consists of 4 octets,separated by decimal point:"AAA.BBB.CCC.DDD"
<serverPort>	Identifies the port of UDP server, from 0 to 65535, and default value is 0.

<data>	Identifies the contents for sending,and The maximum length is 512.
<reqSendLength>	a numeric parameter that requested number of data bytes to be transmitted.
<cnfSendLength>	a numeric parameter that confirmed number of data bytes to be transmitted. PS: 1) When set to hexadecimal by the MCIPCFGPL, <cnfSendLength>=<reqSendLength>/2. 2) When set to ack mechanism by the MCIPCFGPL, <cnfSendLength>=Actual byte order sent, And multiple response results are returned when <reqSendLength> is greater than the current network mode MTU value
<err>	Indicate the result of operation. SUCCESS: is success FAIL: is failure HEX NOT MATCHED: that send the hexadecimal data is wrong.

Example:

Commands	Response
AT+CIPSEND=1,20	**>2233** **OK** **+CIPSEND: SUCCESS ,1,20,4,SUCCESS**
AT+CIPSEND=2,5,"182.150.28.206",6988	**>33** **OK** **+CIPSEND: SUCCESS ,2,5,2,SUCCESS**
AT+CIPSEND?	**OK**
AT+CIPSEND=?	**+CIPSEND: (0-9),(1-1500)** **OK**

3.3.5.7.8 AT+CIPRXGET Get the Network Data Manually

Get the Network Data Manually

Test Command	Response
AT+CIPRXGET=?	**+CIPRXGET: (list of supported <mode >s), (list of supported <cid>s),(list of supported<len>s)** **OK**
Read Command	Response
AT+CIPRXGET?	**+CIPRXGET: <link0_mode>...,<link9_mode>** **OK** **ERROR**
Write Command **AT+CIPRXGET= <mode >, <cid>[,<len>]**	Response 1. If <mode> = 0 or 1: **OK** 2. If <mode> = 2 or 3: **+CIPRXGET: <mode>,<cid>,<read_len>,<rest_len>** **<data>** **OK** 3. If <mode> = 4: **+CIPRXGET: 4,<cid>,<rest_len>** **OK** **ERROR** NOTE: 1. When <mode> is set to 1 and the 2-4 mode will take effect. 2. If AT+CIPRXGET=1, it will report +CIPRXGET: 1,<cid>(multi client) until it has been read all when received data and the buffer is empty

Parameters are defined below:

Parameters	Description

<mode >	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
<cid>	Identifies a connection, from 0 to 9, and default value is 0.
<len>	The data length to be read. When <mode>=0, the receiving capability depends on the network capability, and maximum can receive 1500 . If <mode> is 0 or 1, <len> is not set. Not required, the default value is 1500 when <mode>=2, and 750 when <mode>=3.
<read_len>	The length of the data that have read.
<rest_len >	The data length which not read in the buffer.
<data>	The read data.
<err>	Indicate the result of operation. SUCCESS: is success FAIL: is failure

Example:

Commands	Response
AT+CIPRXGET=1,0	**OK** **+CIPRXGET: 1,0**
AT+CIPRXGET=2,0,5	**+CIPRXGET: 2,0,5,15** **ddddd** **OK**
AT+CIPRXGET=3,0,5	**+CIPRXGET: 3,0,5,10** **6464646464** **OK**

AT+CIPRXGET=4,0	**+CIPRXGET: 4,0,10** **OK**
AT+CIPRXGET=?	**+CIPRXGET: (0-4),(0-9),(1-1500)** **OK**
AT+CIPRXGET?	**+CIPRXGET: 1,0,0,0,0,0,0,0,0,0** **OK**

3.3.5.7.9 AT+ CIPCLOSE Close TCP or UDP Socket

Close TCP or UDP Socket

Test Command **AT+CIPCLOSE=?**	Response **+CIPCLOSE: (list of supported <link_num>s)** **OK**
Write Command **AT+CIPCLOSE=<link_num>**	Response **OK** **+CIPCLOSE: <link_num>,<err>** **ERROR** NOTE When link was closed by server will popup notify: +SERVER DISCONNECTED:<link_num> When link was closed by network will poppup notify:

Parameters are defined below:

Parameters	Description
<link_num>	Identifies a connection . from 0 to 9, and default value is 0.

<err>	Indicate the result of operation. SUCCESS: is success FAIL: is failure

Example:

Commands	Response
AT+CIPCLOSE=0	**OK** **+CIPCLOSE: 0, SUCCESS**
AT+CIPCLOSE=?	**+CIPCLOSE: (0-9)** **OK**

3.3.5.7.10 AT+CIPSTAT Inquire the Total Size of Data Sent or Received Recently

Inquire the Total Size of Data Sent or Received Recently

Test Command	Response
AT+CIPSTAT=?	**+CIPSTAT: (list of supported <link_num>s)** **OK**
Write Command	Response
AT+CIPSTAT=<link_num>	**+CIPSTAT: <sent_size>, <recv_size>** **OK** **ERROR**

Parameters are defined below:

Parameters	Description
<link_num >	Identifies a connection. The range of permitted values is 0 to 9.
<sent_size>	Total size of sent data.
<recv_size >	Total size of received data.

Example:

Commands	Response
AT+CIPSTAT=1	**+CIPSTAT: 1,0** **OK**
AT+CIPSTAT=?	**+CIPSTAT: (0-9)** **OK**

3.3.5.7.11 AT+CIPOPQUERY Inquire the specific link connect status

Inquire the specific link connect status

Test Command	Response
AT+CIPOPQUERY?	**+CIPOPQUERY: < link0_state>,< link1_state>,…,< link9_state>** **OK**
Read Command	Response
AT+CIPOPQUERY =?	**+CIPOPQUERY: (list of supported <link_num>s)** **OK**
Write Command	Response
AT+CIPOPQUERY=<link_num>,[<link_num>,...]	**+CIPOPQUERY: <link_num_state>[,…,<link_n_state>]** **OK** **ERROR**

Parameters are defined below:

Parameters	Description
<link_num >	Identifies a connection. The range of permitted values is 0 to 9.
<state>	0:disconnected 1:connected

Example:

Commands	Response

AT+CIPOPQUERY =1,3	**+CIPOPQUERY: 1,0** **OK**
AT+CIPOPQUERY?	**+CIPOPQUERY: 1,0,0,0,0,0,0,0,0,0** **OK**
AT+CIPOPQUERY= ?	**+CIPOPQUERY: (0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9),(0-9)** **OK**

3.3.5.7.12 AT+MCIPCFG Configure parameters of TCP/IP

Configure parameters of TCP/IP

Test Command **AT+MCIPCFG=?**	Response **+MCIPCFG: (list of supported <heartbeat_time>s), (list of supported <delay_time>ms)** **OK**
Read Command **AT+MCIPCFG?**	Response **+MCIPCFG: <heartbeat_time><,delay_time>** **OK**
Write Command **AT+MCIPCFG= [<heartbeat_time>], [<delay_time>]**	Response **OK** or **ERROR** Ps.If need to read/write value of heartbeat/delay time, all scokets must be disconnected before.

Parameters are defined below:

Parameters	Description
<heartbeat_time>	Indicates keepalive time,the time depends on the network(test eg:GSM can not exceed 10min). Range:0-7200 sencod, and default value is 0 sencod . Ps. When heartbeat_time set to 0, the function of keepalive will be closed.

<DelayTm>	a numeric parameter which is number of milliseconds to delay to output data of Receiving.The default value is 0.

Example:

Commands	Response
AT+MCIPCFG=0,1	**OK**
AT+MCIPCFG?	**+MCIPCFG: 0,1** **OK**
AT+MCIPCFG =?	**+MCIPCFG: (0-7200)s,(0-30000)** **OK**

3.3.5.7.13 AT+MCIPCFGPL Configure parameters of TCP/IP

Configure parameters of TCP/IP

Test Command **AT+MCIPCFGPL=?**	Response **+MCIPCFGPL: (list of supported <link_num>s), (list of supported <hex_support >s),(list of supported <ack_support >s), (list of supported <ssl_support >s, (list of supported < ignore_cert >s)** **OK**
Read Command **AT+MCIPCFGPL?**	Response **+MCIPCFGPL: (<hex_support>,<ack_support>,<ssl_support>,<ignore_cert>),…** **OK**

Write Command	Response
AT+MCIPCFGPL= **<link_num>,** **[[<hex_support>]** **[,[<ack_support>]** **[,[<ssl_support>]** **[,[<ignore_cert>]]]]**	**OK** or **ERROR** Ps. If would like to change hex/ack/ssl/ support. all scokets must be disconnected before.

Parameters are defined below:

Parameters	Description
<link_num>	Identifies a connection. The range of permitted values is 0 to 9.
<hex_support>	Indicates the form of sending data, 0 - normal,1 – HEX.
<ack_support>	Indicates the form of sending ACK, default ACKfunction is not supported. 0 – not wait for server ACK,1 – need to wait for server ACK
<ssl_support>	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
<ignore_cert>	Indicates whether the SSL connection ignores the certificate,and default is 0. 0 - ignores certificate 1 - use certificate

Example:

Commands	Response
AT+MCIPCFGPL=0,1,0,0,0	**OK**
AT+MCIPCFGPL?	**+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),(0,0,0,0)** **OK**

AT+MCIPCFGPL =?	**+MCIPCFGPL: (0-9),(0-1),(0-1),(0-1) ,(0-1)** **OK**

3.3.5.7.14 AT+MCIPSPDP Set multi-APN function for TCP connection

This command is used to set a particular PDP context definition (see + CGDCONT command to set the APN type) 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 **AT+MCIPSPDP**	Response **AT+MCIPSPDP**
Test Command **AT+MCIPSPDP?**	Response **+MCIPSPDP: (list of setting a particular PDP context definition)** **OK**
Read Command **AT+MCIPSPDP=?**	Response **+MCIPSPDP: (list of supported ranges for evey link)** **OK**
Write Command **AT+MCIPSPDP=<link0>,<link1>[,…,<link9]**	Response **OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<link0>,<link1>[,…,<link9]	Each link range is 1-15 and 100-179, default valueis 0.

Example:

Commands	Response

AT+CGPADDR	**+CGPADDR: 1,10.214.118.36** **+CGPADDR: 2,0.0.0.0,0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0** **+CGPADDR: 3,0.0.0.0,0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0** **OK**
AT+MCIPSPDP=1,2,3	**OK**
AT+MCIPSPDP?	**+MCIPSPDP: 1,2,3,0,0,0,0,0,0,0** **OK**

3.3.5.7.15 Information elements related to TCP/IP

The following table lists information elements which may be reported.

+CIPEVENT: NETWORK CLOSED UNEXPECTEDLY	Network is closed for network error(Out of service, etc). When this event happens, user's application needs to check and close all opened sockets, and then uses AT+NETCLOSE to release the network library if AT+NETOPEN? shows the network library is still opened.
+NETWORK DISCONNECTED:<link_num >	Socket connection is disconnected due to network reasons.
+SERVER DISCONNECTED:<link_num >	Socket connection is disconnected due to server causes.

3.3.5.8 AT Commands for FOTA

3.3.5.8.1 AT+FOTA Detect/Upgrade Software Version

Detect/Upgrade Software Version

Execution Command	Response
AT+FOTA	This command is used to upgrade software version. This command must be used after "AT+FOTA?" cmd return "+FOTA: DETECTED". If the download fails, executes the command again that will continue to download, until the download is successful. Note: After the restart, updated package will be cleared **CHECK_SUCCESS** detect a new version **DOWNLOAD_SUCCESS** download success **REBOOT_AND_UPGRADE** reboot for recovery upgrade **CHECK_FAILURE** the new version is not detected **NET_FAILURE** network error **DOWNLOAD_FAILURE** download error **VERIFY_FAILURE** verify downloaded file error **downloading progress xxx%** download progress
Read Command	Response
AT+ FOTA?	**DETECTED** a new version is detected **LATEST** this version is latest **CHECK_FAILURE** detect version error **NET_ERROR** network error This command is used to detect new software version.
Reference	Note Please ensure network flow, before upgrade. 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. The format of report result is "+FOTA: <result>". The value of "<result>" is: UPGRADE_SUCCESS UPGRADE_FAILURE

Example:

Commands	Response

Detect: **AT+FOTA?**	**+FOTA: DETECTED** **OK**
Upgrade: **AT+FOTA**	**+FOTA: CHECK_SUCCESS** **+FOTA: downloading progress 010%** **+FOTA: downloading progress 020%** **+FOTA: downloading progress 030%** **+FOTA: downloading progress 040%** **+FOTA: downloading progress 050%** **+FOTA: downloading progress 060%** **+FOTA: downloading progress 070%** **+FOTA: downloading progress 080%** **+FOTA: downloading progress 100%** **+FOTA: REBOOT_AND_UPGRADE** **OK**

3.3.5.8.2 AT+MFOTAGCVI Get the publish content of new version

Get the publish content of new version

Execution Command	Response
AT+MFOTAGCVI	**new version: <version>** **publish date: <date>** **publish content: <content>** **OK** **ERROR**

Parameters are defined below:

Parameters	Description
<version>	the number of new version.
<date>	the publish time of new version. The format is YYYY-MM-DD
<content>	the publish content of new version. This data is encoded by UTF-8.

Example:

Commands	Response
AT+MFOTAGCVI	**new version: L506Cv01.05b05_fota.02** **publish date: 2017-03-13** **publish content: 1.Optimization system,2.Fix bugs.** **OK**

3.3.5.8.3 AT+MOTA Set FTP parameters and start the download

Set FTP parameters and start the download

Test Command	Response
AT+MOTA=?	**OK**
Read Command **AT+MOTA?**	Response **+MOTA:"/fota/update_v1_2_v2-02.zip",** **"182.150.28.206",6988,"jingbin","jingbin"** **OK**
Execute Command **AT+MOTA**	Response **+FOTA: downloading progress xxx%** **+FOTA: DOWNLOAD_SUCCESS** **+FOTA: DOWNLOAD_FAILURE** **+FOTA: ERROR** **OK** **ERROR**
Write Command **AT+MOTA = "<path>","<host>",<port>,"<username>","<password>"**	Response **+FOTA: downloading progress xxx%** **+FOTA: DOWNLOAD_SUCCESS** **+FOTA: DOWNLOAD_FAILURE** **+FOTA: ERROR** **OK** **ERROR**

Parameters are defined below:

Parameters	Description
<path>	The path of the download file, and The maximum length is 128.
<host>	The server's IP or domain name, and The maximum length is 128.
<port>	The server port, The range is 1-65535
<username>	Login user name, and The maximum length is 28.
<password>	Login password, and The maximum length is 28.

Example:

Commands	Response
AT+MOTA="/fota/update_v1_2_v2-02.zip","182.150.28.206",6988,"jingbin","jingbin"	**+FOTA: downloading progress 006%** **+FOTA: downloading progress 016%** **+FOTA: downloading progress 025%** **+FOTA: downloading progress 035%** **+FOTA: downloading progress 045%** **+FOTA: downloading progress 054%** **+FOTA: downloading progress 064%** **+FOTA: downloading progress 073%** **+FOTA: downloading progress 083%** **+FOTA: downloading progress 092%** **+FOTA: downloading progress 100%** **+FOTA: DOWNLOAD_SUCCESS** **OK**

3.3.5.8.4 AT+MDELTA Upgrade Software Version

Upgrade Software Version

Execution Command	Response
AT+MDELTA	**+FOTA: REBOOT_AND_UPGRADE** **+FOTA: CHECK_FAILURE** **+FOTA: ERROR** **OK** **ERROR** NOTE: ● When +MOTAcommand executed successfully after download, can begin to upgrade. ● 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. ● The format of report result is "+FOTA: <result>". The value of "<result>" is: UPGRADE_SUCCESS UPGRADE_FAILURE
Test Command	Response
AT+MDELTA=?	**OK**

Example:

Commands	Response
AT+MDELTA	**+MDELTA: REBOOT_AND_UPGRADE** **OK**

3.3.5.9 AT Commands for Sleep Mode

3.3.5.9.1 AT+CSCLK Sleep mode function

Sleep mode function

Test Command **AT+CSCLK =?**	Response **+CSCLK: (0-2)** **OK**
Read Command **AT+CSCLK?**	Response **+CSCLK:<type>** **OK**
Write Command **AT+CSCLK =<type>**	Response **OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<type>	0 AT command mode.For details, please refer to the +MPWRSM command 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. 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.

3.3.5.9.2 AT+MPWRSM Entry Sleep mode function

Entry Sleep mode function

Test Command **AT+MPWRSM=?**	Response **+MPWRSM: (0-1)** **OK**

Read Command **AT+MPWRSM?**	Response **+MPWRSM:<mode>** **OK**
Write Command **AT+MPWRSM=<mode>**	Response **OK** or **ERROR**

Parameters are defined below:

Parameters	Description
< mode>	0 quit sleep mode 1 enter sleep mode

3.3.5.10 AT Commands for FS

3.3.5.10.1 AT+MFSCD Select directory as current directory

Select directory as current directory

Test Command **AT+MFSCD=?**	Response **OK**
Read Command **AT+MFSCD?**	Response **+MFSCD: <curr_path>** **OK**

Write Command	Response
AT+MFSCD=<path>	**+MFSCD: <curr_path>** **OK** or **ERROR** Note : If <path> is “..”, it will go back to previous level of directory. Maximum absolute path length 1024, path string not sopport non-ascii

Parameters are defined below:

Parameters	Description
<path>	String with double quotes, directory for selection.
<curr_path>	current directorywithout double quotes.

Example:

Commands	Response
AT+MFSCD="C:/test1/test2"	**+MFSCD: C:/test1/test2** **OK**
AT+MFSCD=".."	**+MFSCD: C:/test1** **OK**
AT+MFSCD=?	**OK**

3.3.5.10.2 AT+MFSMKDIR Make new directory in current directory

Make new directory in current directory

Test Command	Response
AT+MFSMKDIR=?	**OK**

Write Command	Response
AT+MFSMKDIR=<dirname>	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<dirname>	String with double quotes, directory name which does not already exist in current directory.Maximum name length is 255 name string not sopport non-ascii and cannot contain: '/', '\', ':', '*', '?',"", '>', '<', '|', ','

Example:

Commands	Response
AT+MFSMKDIR="Test"	**OK**
AT+MFSLS=1	**+MFSLS: SUBDIRECTORIES:** **Test** **OK**
AT+MFSMKDIR=?	**OK**

3.3.5.10.3 AT+MFSRMDIR Delete Directory In Current Directory

Delete Directory In Current Directory

Test Command	Response
AT+MFSRMDIR=?	**OK**
Write Command	Response
AT+MFSRMDIR=<dirname>	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<dirname>	String with double quotes. Directory name to be deleted which already exist in current directory. name string not sopport non-ascii. Maximum length is 255.

Example:

Commands	Response
AT+MFSRMDIR=?	**OK**
AT+MFSLS=1	**+MFSLS: SUBDIRECTORIES:** **Test1** **Test2** **OK**
AT+MFSRMDIR="Test1"	**OK**
AT+MFSLS=1	**+MFSLS: SUBDIRECTORIES:** **Test2** **OK**

3.3.5.10.4 AT+MFSLS List directories/files in current directory

List directories/files in current directory

Execution Command	Response
AT+MFSLS	**[+MFSLS: SUBDIRECTORIES:** **<list of subdirectories>** **<CR><LF>]** **[+MFSLS: FILES:<list of files>** **<CR><LF>]** **OK**

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

Parameters are defined below:

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

Example:

Commands	Response
AT+MFSLS?	**+MFSLS: SUBDIRECTORIES:2,FILES:2** **OK**

AT+MFSLS	**+MFSLS: SUBDIRECTORIES:** **FirstDir** **SecondDir** **+MFSLS: FILES:** **test_0.txt** **test_1.txt** **OK**
AT+MFSLS=2	**+MFSLS: FILES:** **test_0.txt** **test_1.txt** **OK**

3.3.5.10.5 AT+MFSDEL Delete file in current directory

Delete file in current directory

Test Command	Response
AT+MFSDEL=?	**OK**
Write Command	Response
AT+MFSDEL=<filename>	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<filename>	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 sopport non-ascii

Example:

Commands	Response

AT+MFSLS=2	**+MFSLS: FILES:** **test_0.txt** **test_1.txt** **OK**
AT+MFSDEL="test_0.txt"	**OK**
AT+MFSLS=2	**+MFSLS: FILES:** **test_1.txt** **OK**
AT+MFSDEL=?	**OK**

3.3.5.10.6 AT+MFSRENAME Rename file or subdirectory in current directory

Rename file or subdirectory in current directory

Test Command	Response
AT+MFSRENAME=?	**OK**
Write Command	Response
AT+MFSRENAME=<old_name>,<new_name>	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<old_name>	Stringwith double quotes, name which is existed in current directory.

<new_name>	New name of specified file, string with double quotes. Maximum name string length is 255 name string not sopport non-ascii and cannot contain: '/', '\', ':', '*', '?',"", '>', '<', '|', ','

Example:

Commands	Response
AT+MFSRENAME="image_0.jpg", "image_1.jpg"	**OK**
AT+MFSRENAME=?	**OK**
AT+MFSRENAME?	**ERROR**
AT+MFSRENAME	**ERROR**

3.3.5.10.7 AT+MFSATTRI Request file attributes

Request file attributes

Test Command	Response
AT+MFSATTRI=?	**OK**
Write Command	Response
AT+MFSATTRI=<filename>	**+MFSATTRI: <file_size>, <last_modified_timestamp>** **OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<filename>	String with double quotes, file name which is in current directory. name string not sopport non-asci
<file_size>	The size of specified file, and the unit is in Byte.

<last_modified_timestamp>	Last modified timestamp, the format is YYYY/MM/DD HH/MM/SS Week. Week – Mon, Tue, Wed, Thu, Fri, Sat, Sun

Example:

Commands	Response
AT+MFSATTRI="image_0.jpg"	**+MFSATTRI: 8604,2017/04/11 10:24:46 Tue** **OK**
AT+MFSATTRI=?	**OK**
AT+MFSATTRI?	**ERROR**

3.3.5.10.8 AT+MFSMEM Check the size of available memory

Check the size of available memory

Execution Command	Response
AT+MFSMEM	**+MFSMEM: C:(<total>, <available>)** **OK** or **ERROR** NOTE: The unit of storage space size is in Byte.
Test Command	Response
AT+MFSMEM=?	**OK**

Parameters are defined below:

Parameters	Description
<total>	The total size of local storage space
<available>	The available size of local storage space.

Example:

Commands	Response

AT+MFSMEM	**+MFSMEM: C:(1348480, 221600)** **OK**
AT+MFSMEM=?	**OK**
AT+MFSMEM?	**ERROR**

3.3.5.10.9 AT+MFSCOPY Copy an appointed file

Copy an appointed file

Test Command	Response
AT+MFSCOPY=?	**OK**
Write Command **AT+MFSCOPY=<file1>,<file2>[,<sync_mode>]**	Response synchronous mode (sync_mode = 0): **+MFSCOPY: <percent>** **[+MFSCOPY: <percent>]** **OK** Or **BUSY** Or **+MFSCOPY: FAIL <error code>** **ERROR** asynchronous mode (sync_mode = 1): **OK** **+MFSCOPY: <percent>** **[+MFSCOPY: <percent>]** **+MFSCOPY: END** Or **BUSY** Or **OK** **+MFSCOPY: FAIL <error code>**

Reference	Note
	1. The <file1> and <file2> should give the whole path and name, if only given file name, it will refer to current path (AT+MFSCD) and check the file's validity. 2. If <file2> is a whole path and name, make sure the directory exists, make sure that the file name does not exist or the file name is not the same name as the sub folder name, otherwise return error. 3. <percent> report refer to the copy file size. The big file maybe report many times, and little file report less. 4. If <sync_mode> is 1, the command will return OK immediately, and report final result with +MFSCOPY: END. If not set<sync_mode>, use the default value. Multiple asynchronous copy operations are not supported at the same time, the busy state is returned 5.Total length of "AT+MFSCOPY=…" cannot over 1035 bytes.

Parameters are defined below:

Parameters	Description
<file1>	The sources file name or the whole path name with sources file name.
<file2>	The destination file name or the whole path name with destination file name. name string not sopport non-ascii and cannot contain: '/', '\', ':', '*', '?','"', '>', '<', '|', ',' Max file name string length is 255 and max whole path length is 1024
<percent>	The percent of copy done. The range is 0.0 to 100.0
<sync_mode>	The execution mode of the command: 0 – synchronous mode (default 0) 1 – asynchronous mode
<error code>	1 - NEW FILE NAME ALREADY EXIST 2 - SOURCE FILE NOT EXIST 3 - DIRECTORY NOT EXIST 4 - INVALID PATH NAME 5 - INVALID FILE NAME 6 - EFS HAVE NO ENOUGH MEMORY 7 - FILE CREATE ERROR 8 - READ FILE ERROR 9 - WRITE FILE ERROR

Example:

Commands	Response
AT+MFSCD?	**+MFSCD: C:/** **OK**
AT+MFSCOPY="testfile","copyfile"	**+MFSCOPY: 1.0** **+MFSCOPY: 19.4** **…** **+MFSCOPY: 100.0** **OK**
AT+MFSCOPY="C:/testfile","C:/copyfile",1	**OK** **+MFSCOPY: 1.0** **+MFSCOPY: 19.4** **…** **+MFSCOPY: 100.0** **+MFSCOPY: END**

3.3.5.10.10 AT+MFSCREATE Create a new file

Create a new file

Test Command	Response
AT+MFSCREATE=?	**OK**
Write Command	Response
AT+MFSCREATE=<file>	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<file>	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 sopport non-ascii and cannot contain: '/', '\', ':', '*', '?',"", '>', '<', '|', ','

Example:

Commands	Response
AT+MFSCREATE="Testfile"	**OK**
AT+MFSLS=2	**+MFSLS: FILES:** **Testfile** **OK**
AT+MFSCREATE=?	**OK**

3.3.5.10.11 AT+MFSWRITE Write data to file

Write data to file

Test Command	Response
AT+MFSWRITE=?	**OK**
Write Command	Response
AT+MFSWRITE=<file>,<mode>,<size>	**OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<file>	String with double quotes, fileshould already exist,.Maximum file name length is 255.
<mode>	0 - write data at the beginning of the file 1 - write data at the end of the file

<size>	1-1024 Size of data to be written

Example:

Commands	Response
AT+MFSWRITE="Testfile",0,10	**>>1234567890** **OK**
AT+MFSWRITE=?	**OK**

3.3.5.10.12 AT+MFSREAD Read File content

Read File content

Test Command	Response
AT+MFSREAD=?	**OK**
Write Command	Response
AT+MFSREAD=<file>,<offset>,<size>	**+MFSREAD: DATA: <data_size>, <data>** **OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<file>	String with double quotes, fileshould already exist,.Maximum file name length is 255
<offset>	offset from the file beginning,<offset> should less than file size.
<size>	0-10240 Size of data to be read, Reads the entire file when set to 0.

Example:

Commands	Response
AT+MFSREAD="Testfile",0,10	**+MFSREAD: DATA: 10, 1234567890** **OK**

AT+MFSREAD=?	**OK**

3.3.5.11 AT Commands for MQTT

3.3.5.11.1 AT+MCONFIG Parameters Configuration

Parameters Configuration

Test Command **AT+MCONFIG=?**	Response **+MCONFIG: ,,,(0-1),(0-2),(0-1),,** **OK**
Read Command **AT+MCONFIG?**	Response **+MCONFIG:<clientid>[,<username>,<password>[,<will_flag>,<will_qos>,<will_retain>,<will_topic>,<will_message>]]** **OK**
Write Command **AT+MCONFIG=<clientid>[,<username>,<password>[,<will_flag>,<will_qos>,<will_retain>,<will_topic>,<will_message>]]**	Response **OK** // Succeeded in requesting operation **BUSY** // Busy, please wait for a moment, and then retry. **ERROR** // Failed configuration parameters **+MCONFIG:<result>,<result type>**

Parameters are defined below:

Parameters	Description
< clientid >	This parameter is used to allow the server to identify the client identity information. The maximum length is 256.
<username>	This parameter is used to login server. The maximum length is 256.
<password>	This parameter is used to login server. The maximum length is 256.

<will_flag>	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.
<will_qos>	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
<will_retain>	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.
<will_topic>	The will topic of the will message. The maximum length is 256.
<will_message>	The will message content. The maximum length is 1024.
<result>	The result of connection operation: SUCCESS FAILURE
<result type>	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 disconect 8 failed in opening ssl session

Example:

Commands	Response
AT+MCONFIG=client_id_mobiletk,admin,password	**+MCONFIG: SUCCESS,0** **OK**

3.3.5.11.2 AT+MIPSTART Set address and port and version

Set address and port

Test Command	Response
AT+MIPSTART=?	**+MIPSTART: ,(1-65535),(3-4)** **OK**
Read Command	Response
AT+MIPSTART?	**+MIPSTART:<address>,<port>,<version>** **OK**
Write Command	Response
AT+MIPSTART=<address>,<port>[,<version>]	**OK** // Succeeded in requesting operation **ERROR** // Failed in opening operation **BUSY** // Busy, please wait for a moment, and then retry. **+MIPSTART:<result>,<result type>**

Parameters are defined below:

Parameters	Description
<address>	The MQTT server domain name or IP address. The maximum length is 256.
<port>	The MQTT server port. The value is between 1 and 65535,default value is 1.
<version>	The MQTT version.The value is between 3 and 4,default value is 3.
<result>	The result of connection operation: SUCCESS FAILURE
<result type>	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 disconect 8 failed in opening ssl session

Example:

Commands	Response
Domain name: **AT+MIPSTART=test.mosquitto.org,1883**	**OK** **+MIPSTART: SUCCESS,0**
IP address: **AT+MIPSTART=182.150.28.206,8182**	**OK** **+MIPSTART: SUCCESS,0**

3.3.5.11.3 AT+MCONNECT Request to connect to server

Request to connect to server

Test Command	Response
AT+MCONNECT=?	**+MCONNECT: (0-1),(30-1800)** **OK**
Read Command **AT+MCONNECT?**	Response **+MCONNECT:<cleansession>,<keep alive timer>** **OK**
Write Command **AT+MCONNECT=<clean_session>,<keepalive>**	Response **OK** // Succeeded in requesting operation **ERROR** // Failed in requesting operation **BUSY //** Busy, please wait for a moment, and then retry. **+MCONNECT:<result>,<result type>**

Parameters are defined below:

Parameters	Description

<clean_session>	This parameter specifies the handling of the Session state: 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. 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. The default value is 1.
<keepalive>	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.
<result>	The result of connection operation: SUCCESS FAILURE
<result type>	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 disconect 8 failed in opening ssl session

Example:

Commands	Response
AT+MCONNECT=1,30	**OK** **+MCONNECT: SUCCESS,0**

3.3.5.11.4 AT+MPUB Request to publish message

Request to publish message

Test Command	Response
AT+MPUB =?	**+MPUB: ,(0-2),(0-1),** **OK**
Read Command	Response
AT+MPUB?	**+MPUB:<topic> ,<qos>,<retain>,<message>** **OK**
Write Command **AT+MPUB=<topic>,<qos>,<retain>,<message>**	Response **OK** // Succeeded in requesting operation **ERROR** // Failed in requesting operation **BUSY** // Busy, please wait for a moment, and then retry. There are two kinds of resultsdepending on the Settings: **AT+MQTTMIX=0** **+MPUB:<result>** **AT+MQTTMIX=1** If qos=0, nothing returned; if qos>0, return +MPUBID: <packetid> first,then return as follows: **+MPUBACK: <packetid>** qos = 1 **+MPUBREC: <packetid>** qos = 2 **+MPUBCOMP: <packetid>**

Parameters are defined below:

Parameters	Description
<topic>	The maximum length is 256
<qos>	Quality of Service: 0 At most once delivery for message 1 At least once delivery for message 2 Exactly once delivery for message

<retain>	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.
<message>	Themessage content. The maximum length is 1024.
<result>	The result of publishing operation: SUCCESS FAILURE
<packetid>	The Packet Identifier field (1~65535) .

Example:

Commands	Response
Publish: If AT+MQTTMIX=0 : **AT+MPUB=mobiletek/topic,0,0,12345**	**OK** **+MPUB: SUCCESS**
If AT+MQTTMIX=1, The return status varies with the QOS: qos = 0: **AT+MPUB=mobiletek/topic,0,0,12345**	**OK**
qos = 1: **AT+MPUB=mobiletek/topic,1,0,12345**	**OK** **+MPUBID: 1** **+MPUBACK: 1**
qos = 2 : **AT+MPUB=mobiletek/topic,2,0,12345**	**OK** **+MPUBID: 2** **+MPUBREC: 2** **+MPUBCOMP: 2**

3.3.5.11.5 AT+MPUBEX Request to publish a long message

Request to publish a long message

Test Command	Response
AT+MPUBEX=?	**+MPUBEX: ,(0-2),(0-1) ,(1-65535)** **OK**
Read Command	Response
AT+MPUBEX?	**+MPUBEX:<topic>,<qos>,<retain>,<message_length>** **OK**
Write Command	Response
AT+MPUBEX=<topic>,<qos>,<retain>,<message_length>	**OK** // Succeeded in requesting operation **ERROR** // Failed in requesting operation **BUSY** // Busy, please wait for a moment, and then retry. There are two kinds of resultsdepending on the Settings: a. **AT+MQTTMIX=0** **+MPUBEX:<result>** b. **AT+MQTTMIX=1** If qos = 0, nothing returned; if qos > 0, +MPUBID: <packetid> return first,then return as follows: **+MPUBACK: <packetid>** qos = 1 **+MPUBREC: <packetid>** qos = 2 **+MPUBCOMP: <packetid>** NOTE: Input mode will not sent keepalive. Input mode should not exceed 4096 bytes at a time or data will be lost, and each input should be at least 25 milliseconds apart.

Parameters are defined below:

Parameters	Description
<topic>	The maximum length is 256
<qos>	Quality of Service: 0 At most once delivery for message 1 At least once delivery for message 2 Exactly once delivery for message

<retain>	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.
<message_length>	The message content length. The maximum length of 65535.
<result>	The result of publishing operation: SUCCESS FAILURE
<packetid>	The Packet Identifier field (1~65535)

Example:

Commands	Response
Publish: If **AT+MQTTMIX=0:** **AT+MPUBEX=mobiletek/topic,0,0,2**	**>> ab** **OK** **+MPUBEX: SUCCESS**
If **AT+MQTTMIX=1,** The return status varies with the QOS: qos = 0: **AT+MPUBEX=mobiletek/topic,0,0,2**	**>> ab** **OK**
qos = 1: **AT+MPUBEX=mobiletek/topic,1,0,2**	**>> ab** **OK** **+MPUBID: 3** **+MPUBACK: 3**

qos = 2 : **AT+MPUBEX=mobiletek/topic,2,0,2**	**>> ab** **OK** **+MPUBID: 4** **+MPUBREC: 4** **+MPUBCOMP: 4**

3.3.5.11.6 AT+MSUB Request to subscribe a topic

Request to subscribe a topic

Test Command **AT+MSUB=?**	Response **+MSUB: ,(0-2)** **OK**
Read Command **AT+MSUB?**	Response **+MSUB:<topic>,<qos>** **+MSUB:<topic>,<qos>** **+MSUB:<topic>,<qos>** **+MSUB:<topic>,<qos>** **+MSUB:<topic>,<qos>** Or **ERROR**

Write Command	Response
AT+MSUB=<topic>,<qos>	**OK** // Succeeded in requesting operation **ERROR** // Failed in requesting operation **BUSY** // Busy, please wait for a moment, and then retry. There are two kinds of resultsdepending on the Settings: a. **AT+MQTTMIX=0** **+MSUB:<result>** b. **AT+MQTTMIX=1** **+MSUBID: <packetid>** **+MSUBACK: <packetid>**

Parameters are defined below:

Parameters	Description
<topic>	The maximum length is 256
<qos>	Quality of Service: 0 At most once delivery for message 1 At least once delivery for message 2 Exactly once delivery for message
<topic>	The topic.
<len>	The message length.
<message>	The message.
<result>	The result of subscribing topic operation: SUCCESS FAILURE
<packetid>	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**

3.3.5.11.7 AT+MUNSUB Request to unsubscribe a topic

Request to unsubscribe a topic

Write Command	Response
AT+MUNSUB=<topic>	There are two kinds of resultsdepending on the Settings: **a. AT+MQTTMIX=0** **+ MUNSUB:<result>** **b. AT+MQTTMIX=1** **+MUNSUBID: <packetid>** **+MUNSUBACK: <packetid>**

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 AT+MQTTMIX=0 :** **AT+MUNSUB=mobiletek/topic**	**OK** **+MUNSUB: SUCCESS**
If AT+MQTTMIX=1 : **AT+MUNSUB=mobiletek/topic**	**OK** **+MUNSUBID: 6** **+MUNSUBACK: 6**

3.3.5.11.8 AT+ MDISCONNECT Request to disconnect to server

Request to disconnect to server

Execution Command	Response
AT+ MDISCONNECT	**OK** **ERROR** **BUSY** **+MDISCONNECT:<result>**

Parameters are defined below:

Parameters	Description
<result>	The result of diconnection operation: SUCCESS FAILURE

Example:

Commands	Response
AT+MDISCONNECT	**+MDISCONNECT: SUCCESS** **OK**

3.3.5.11.9 AT+ MIPCLOSE Release mqtt resources

Release mqtt resources

Execution Command	Response
AT+ MIPCLOSE	**+MIPCLOSE:<result>** **OK** or **ERROR**

Parameters are defined below:

Parameters	Description
<result>	release result SUCCESS FAILURE

Example:

Commands	Response
AT+MIPCLOSE	**+MIPCLOSE: SUCCESS** **OK**

3.3.5.11.10 AT+MQTTMSGGET Request to print the message received

Request to print the message received

Execution Command	Response
AT+MQTTMSGGET	This command will print all of the data received, the command print only once, after the print data <statu> will become invalid. **+MSUB: <topic>,<len> bytes,<message>** **+MSUB: <topic>,<len> bytes,<message>** **+MSUB: <topic>,<len> bytes,<message>** **+MSUB: <topic>,<len> bytes,<message>** **OK**

Test Command	Response
AT+MQTTMSGGET =?	**+MQTTMSGGET: (0-3)** **OK**
Read Command **AT+MQTTMSGGET?**	Response **+MQTTMSGGET: 0,<statu>** **+MQTTMSGGET: 1,<statu>** **+MQTTMSGGET: 2,<statu>** **+MQTTMSGGET: 3,<statu>** **OK**
Write Command **AT+MQTTMSGGET=<n>**	Response This command is used to Print the MQTT subscribe message received when AT+MQTTMSGSET=1. Receive format: **+MSUB: <topic>,<len> bytes,<message>** **OK** Or **ERROR** Or **BUSY**

Parameters are defined below:

Parameters	Description
<topic>	The topic.
<len>	The message lenth
<message>	The message maximum length 2048 bytes, including the message header, the excess part will be discarded.
<statu>	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
AT+MQTTMSGGET=0	**+MSUB: mobiletek/topic,5 bytes,12345** **OK**

3.3.5.11.11 AT+MQTTMSGSET Request to set the messages print mode

Request to set the messages print mode

Test Command	Response
AT+MQTTMSGSET=?	**+MQTTMSGSET: (0-1)** **OK**
Read Command **AT+MQTTMSGSET?**	Response **+MQTTMSGSET: <mode>** **OK**
Write Command **AT+MQTTMSGSET=<mode>**	Response **OK** Or **ERROR**

Parameters are defined below:

Parameters	Description
< mode>	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

AT+MQTTMSGSET=1	**OK**

3.3.5.11.12 AT+MQTTCEER Request to check error code

Request to check error code

Execution Command	Response
AT+MQTTCEER	This command can query the ERROR code when the MQTT correlation command returns an ERROR. **Ok** Or **ERROR** **+MQTTCEER: <error_code>**

Parameters are defined below:

Parameters	Description
< error_code>	The result of error_code: 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 disconect 8 failed in opening ssl session

Example:

Commands	Response
AT+MQTTCEER	**+MQTTCEER: 0** **OK**

3.3.5.11.13 AT+MQTTSSL MQTTSSL support switch

MQTTSSL support switch

Test Command	Response
AT+MQTTSSL=?	**+MQTTSSL: (0-1),(0-1)** **OK**
Read Command	Response
AT+MQTTSSL?	**+MQTTSSL: <action>,<cert>** **OK**
Write Command	Response
AT+MQTTSSL=<action>[,cert]	**OK** or **ERROR** NOTE: The command must be used before AT+MCONNECT

Parameters are defined below:

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

Example:

Commands	Response
AT+MQTTSSL=1,1	**OK**

3.3.5.11.14 AT+MQTTSTATU Query the MQTT connection status

Query the MQTT connection status

Execution Command	Response
AT+MQTTSTATU	**OK** or **ERROR** **+MQTTSTATU: <statu>**

Parameters are defined below:

Parameters	Description
<statu>	The result of statu: 0 MQTT connection is not established 1 The MQTT connection is successful

Example:

Commands	Response
AT+MQTTSTATU	**+MQTTSTATU: 0** **OK**

3.3.5.11.15 AT+MQTTMIX Set additional configuration parameters

Set additional configuration parameters

Test Command	Response
AT+MQTTMIX=?	**+MQTTMIX: (0-1)** **OK**
Read Command	Response
AT+MQTTMIX?	**+MQTTMIX: <packetid>** **OK**

Write Command	Response
AT+MQTTMIX=<packetid>	**OK** Or **ERROR**

Parameters are defined below:

Parameters	Description
<packetid>	0 No packetid Mode(Default Mode). 1 Packet ID Mode.

Example:

Commands	Response
AT+MQTTMIX=1	**OK**

4 LIST OF acronyms

ARFCN	Absolute Radio Frequency Channel Number AT
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

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	no +CNMA acknowledgement expected