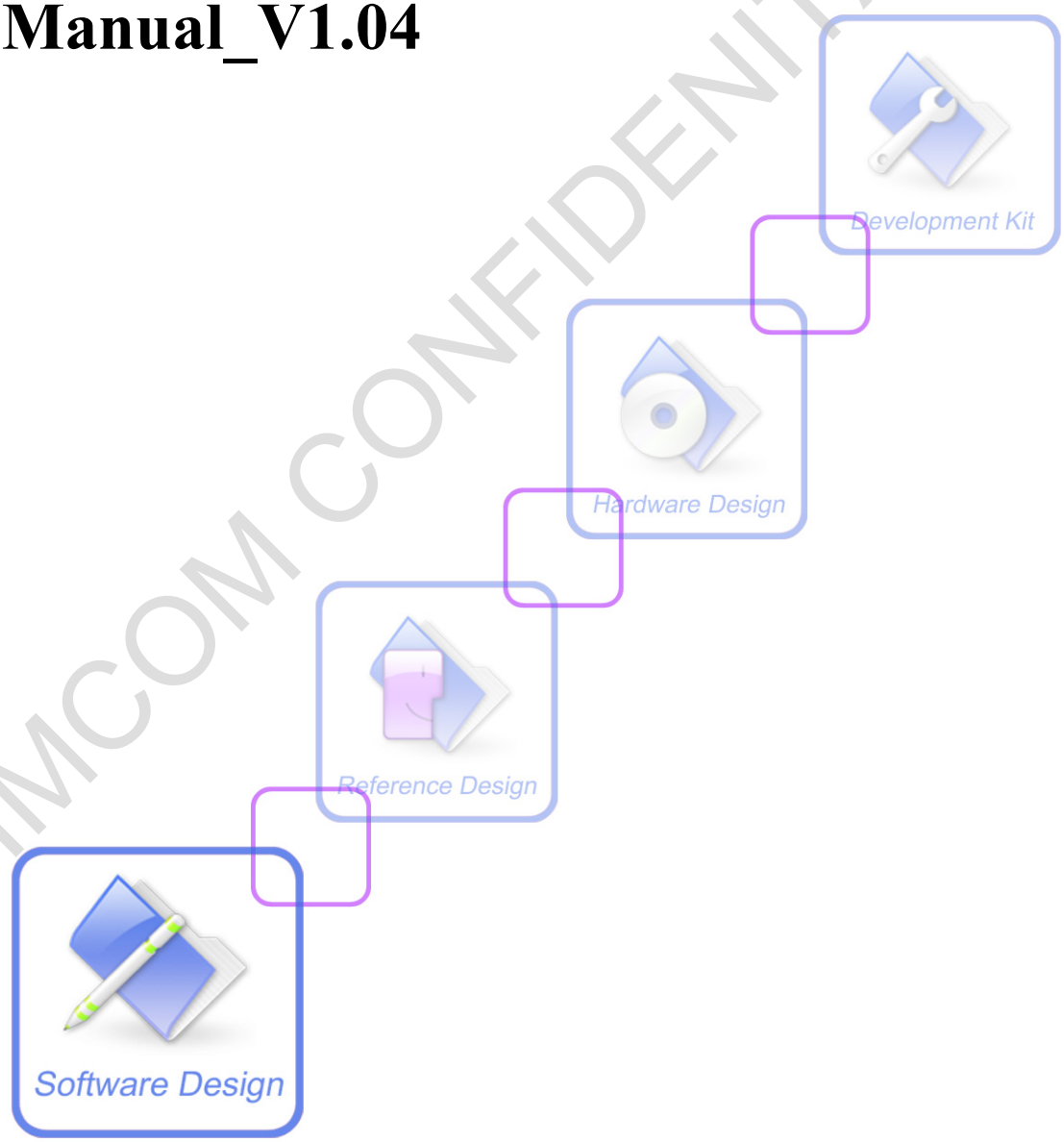
SIM7000 Series_AT Command Manual_V1.04



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Version	Date	Chapter	What is new
V1.00	2017-06-22		New version
V1.01	2017-09-08	5.2.22 AT+CPSI	Add AT command
		5.2.23 AT+CGNAPN	Add AT command
		5.2.24 AT+CSDP	Add AT command
		5.2.25 AT+MCELLLOCK	Add AT command
		5.2.26 AT+NCELLLOCK	Add AT command
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V1.02	2017-12-18		Delete ATZ,AT&F,AT&V
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		1.7.2	Add Max response time
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1 Introduction

1.1 Scope of the document

This document presents the AT Command Set for SIMCom SIM7000 Series, including SIM7000A, SIM700C, SIM7000E, SIM7000C-N, SIM7000E-N, SIM7000JC and SIM7000G.

1.2 Related documents

You can visit the SIMCom Website using the following link:
http://www.simcom.com

1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:
ME (Mobile Equipment);
MS (Mobile Station);
TA (Terminal Adapter);
DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface. The controlling device at the other end of the serial line is referred to as following term:
TE (Terminal Equipment);
DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

1.4 AT Command syntax

The "AT" or "at" or "aT" or "At" prefix must be set at the beginning of each Command line. To terminate a Command line enter **<CR>**.
Commands are usually followed by a response that includes.
"<CR><LF><response><CR><LF>"
Throughout this document, only the responses are presented,<**CR><LF>** are omitted intentionally.

The AT Command set implemented by SIM7000 Series is a combination of 3GPP TS 27.005, 3GPP TS 27.007 and ITU-T recommendation V.25ter and the AT commands developed by SIMCom.
Note: Only enter AT Command through serial port after SIM7000 Series is powered on and Unsolicited Result

Code "RDY" is received from serial port. If auto-bauding is enabled, the Unsolicited Result Codes "RDY" and so on are not indicated when you start up the ME, and the "AT" prefix, or "at" prefix must be set at the beginning of each command line.

All these AT commands can be split into three categories syntactically: "**basic**", "**S parameter**", and "**extended**". These are as follows:

1.4.1 Basic syntax

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

1.4.2 S Parameter syntax

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

1.4.3 Extended Syntax

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

Table 1: Types of AT commands and responses

Test Command	AT+<*x*>=?	The mobile equipment returns the list of parameters and value ranges set with the corresponding Write Command or by internal processes.
Read Command	AT+<*x*>?	This command returns the currently set value of the parameter or parameters.
Write Command	AT+<x>=<…>	This command sets the user-definable parameter values.
Execution Command	AT+<x>	The execution command reads non-variable parameters affected by internal processes in the GSM engine.

1.4.4 Combining AT commands on the same Command line

You can enter several AT commands on the same line. In this case, you do not need to type the "**AT**" or "**at**" prefix before every command. Instead, you only need type "**AT**" or "**at**" the beginning of the command line. Please note to use a semicolon as the command delimiter after an extended command; in basic syntax or S parameter syntax, the semicolon need not enter, for example: ATE1Q0S0=1S3=13V1X4;+IFC=0,0;+IPR=115200.

The Command line buffer can accept a maximum of 559 characters (counted from the first command without "AT" or "at" prefix) or 39 AT commands. If the characters entered exceeded

this number then none of the Command will executed and TA will return "**ERROR**".

1.4.5 Entering successive AT commands on separate lines

When you need to enter a series of AT commands on separate lines, please Note that you need to wait the final response (for example OK, CME error, CMS error) of last AT Command you entered before you enter the next AT Command.

1.5 Supported character sets

The SIM7000 Series AT Command interface defaults to the **IRA** character set. The SIM7000 Series supports the following character sets:
GSM format
UCS2
IRA
The character set can be set and interrogated using the "**AT+CSCS**" Command (3GPP TS 27.007). The character set is defined in GSM specification 3GPP TS 27.005.

The character set affects transmission and reception of SMS and SMS Cell Broadcast messages, the entry and display of phone book entries text field and SIM Application Toolkit alpha strings.

1.6 Flow control

Flow control is very important for correct communication between the GSM engine and DTE. For in the case such as a data or fax call, the sending device is transferring data faster than the receiving side is ready to accept. When the receiving buffer reaches its capacity, the receiving device should be capable to cause the sending device to pause until it catches up.

There are basically two approaches to achieve data flow control: software flow control and hardware flow control. SIM7000 Series support both two kinds of flow control.
In Multiplex mode, it is recommended to use the hardware flow control.

1.6.1 Software flow control (XON/XOFF flow control)

Software flow control sends different characters to stop (XOFF, decimal 19) and resume (XON, decimal 17) data flow. It is quite useful in some applications that only use three wires on the serial interface.

The default flow control approach of SIM7000 Series is hardware flow control (RTS/CTS flow control), to enable software flow control in the DTE interface and within GSM engine, type the following AT Command:
AT+IFC=1, 1

Ensure that any communications software package (e.g. Hyper terminal) uses software flow control.

NOTE:
Software Flow control should not be used for data calls where binary data will be transmitted or received (e.g. TCP/IP) as the DTE interface may interpret binary data as flow control characters.

1.6.2 Hardware flow control (RTS/CTS flow control)

Hardware flow control achieves the data flow control by controlling the RTS/CTS line. When the data transfer should be suspended, the CTS line is set inactive until the transfer from the receiving buffer has completed. When the receiving buffer is ok to receive more data, CTS goes active once again.

To achieve hardware flow control, ensure that the RTS/CTS lines are present on your application platform.

1.7 Definitions

1.7.1 Parameter Saving Mode

For the purposes of the present document, the following syntactical definitions apply:

- **NO_SAVE**: The parameter of the current AT command will be lost if module is rebooted or current AT command doesn't have parameter.
- **AUTO_SAVE**: The parameter of the current AT command will be kept in NVRAM automatically and take in effect immediately, and it won't be lost if module is rebooted.
- **AUTO_SAVE_REBOOT**: The parameter of the current AT command will be kept in NVRAM automatically and take in effect after reboot, and it won't be lost if module is rebooted.
- -: "-" means this AT command doesn't care the parameter saving mode.

1.7.2 Max Response Time

Max response time is estimated maximum time to get response, the unit is seconds.
"-" means this AT command doesn't care the response time.

2 AT Commands According to V.25TER

These AT Commands are designed according to the ITU-T (International Telecommunication Union, Telecommunication sector) V.25ter document.

2.1 Overview of AT Commands According to V.25TER

Command	Description
A/	Re-issues the last command given
ATD	Mobile originated call to dial a number
ATE	Set command echo mode
ATH	Disconnect existing connection
ATI	Display product identification information
ATL	Set monitor speaker loudness
ATM	Set monitor speaker mode
+++	Switch from data mode or ppp online mode to command mode
ATO	Switch from command mode to data mode
ATQ	Set result code presentation mode
ATS0	Set number of rings before automatically answering the call
ATS3	Set command line termination character
ATS4	Set response formatting character
ATS5	Set command line editing character
ATS6	Pause before blind dialling
ATS7	Set number of seconds to wait for connection completion
ATS8	Set number of seconds to wait for comma dial modifier encountered in dial string of D command
ATS10	Set disconnect delay after indicating the absence of data carrier
ATV	TA response format
ATX	Set connect result code format and monitor call progress
ATZ	Reset default configuration
AT&C	Set DCD function mode
AT&D	Set DTR function mode
AT&F	Factory defined configuration
AT&V	Display current configuration
AT&E	Set CONNECT Result Code Format About Speed
AT+GCAP	Request complete TA capabilities list

AT+GMI	Request manufacturer identification
AT+GMM	Request TA model identification
AT+GMR	Request TA revision identification of software release
AT+GOI	Request global object identification
AT+GSN	Request TA serial number identification (IMEI)
AT+ICF	Set TE-TA control character framing
AT+IFC	Set TE-TA local data flow control
AT+IPR	Set TE-TA fixed local rate

2.2 Detailed Description of AT Commands According to V.25TER

2.2.1 A/ Re-issues the Last Command Given

A/ Re-issues the Last Command Given	
Execution Command **A/**	Response Re-issues the previous Command
Reference V.25ter	Note

2.2.2 ATD Mobile Originated Call to Dial A Number

ATD Mobile Originated Call to Dial A Number	
Execution Command **ATD<n>[<mgsm]**	Response This command can be used to set up outgoing data calls. It also serves to control supplementary services. Note: This command may be aborted generally by receiving an **ATH** Command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking. If error is related to ME functionality **+CME ERROR: <err>** If no dial tone and (parameter setting **ATX2** or **ATX4**) **NO DIALTONE** If busy and (parameter setting **ATX3** or **ATX4**) **BUSY** If a connection cannot be established **NO CARRIER**

	If the remote station does not answer **NO ANSWER** If connection successful and non-voice call. **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK**
	Parameters **<n>** String of dialing digits and optionally V.25ter modifiers dialing digits: **0-9, * , #, +, A, B, C** Following V.25ter modifiers are ignored: **,(comma), T, P, !, W, @** **Emergency call:** **<n>** Standardized emergency number 112 (no SIM needed) **<mgsm>** String of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates Closed User Group invocation for this call only **g** Deactivates Closed User Group invocation for this call only
Parameter Saving Mode	NO_SAVE
Max Response Time	Timeout set with ATS7 (data call)
Reference V.25ter	Note

2.2.3 ATE Set Command Echo Mode

ATE Set Command Echo Mode	
Execution Command **ATE<value>**	Response This setting determines whether or not the TA echoes characters received from TE during Command state. **OK**
	Parameters

	<value> 0 Echo mode off 1 Echo mode on
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.4 ATH Disconnect Existing Connection

ATH Disconnect Existing Connection	
Execution Command **ATH**	Response Disconnect existing call by local TE from Command line and terminate call **OK** Note: OK is issued after circuit 109(DCD) is turned off, if it was previously on.
Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference V.25ter	Note

2.2.5 ATI Display Product Identification Information

ATI Display Product Identification Information	
Execution Command **ATI**	Response TA issues product information text Example: SIM7000 R1351 **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.6 ATL Set Monitor speaker loudness

ATL Set Monitor speaker loudness	
Execution Command **ATL<value>**	Response **OK**
	Parameters **<value>** 0..3 Volume
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.7 ATM Set Monitor Speaker Mode

ATM Set Monitor Speaker Mode	
Execution Command **ATM<value>**	Response **OK**
	Parameters **<value>** 0..2 Mode
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.8 +++ Switch from Data Mode or PPP Online Mode to Command Mode

+++ Switch from Data Mode or PPP Online Mode to Command Mode	
Execution Command +++	Response The +++ character sequence causes the TA to cancel the data flow over the AT interface and switch to Command mode. This allows you to enter AT Command while maintaining the data connection to the remote server. **OK** To prevent the +++ escape sequence from being misinterpreted as data, it should comply to following sequence: No characters entered for T1 time (1 second) "+++" characters entered with no characters in between (1 second) No characters entered for T1 timer (1 second) Switch to Command mode, otherwise go to step 1.

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note To return from Command mode back to data mode: Enter **ATO**.

2.2.9 ATO Switch from Command Mode to Data Mode

ATO Switch from Command Mode to Data Mode	
Execution Command **ATO[n]**	Response TA resumes the connection and switches back from command mode to data mode. **CONNECT** If connection is not successfully resumed **ERROR** else TA returns to data mode from command mode **CONNECT <text>** Note: <**text**> only if parameter setting **ATX>0**
	Parameter **<n>** 0 Switch from command mode to data mode.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.10 ATQ Set Result Code Presentation Mode

ATQ Set Result Code Presentation Mode	
Execution Command **ATQ<n>**	Response This parameter setting determines whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting. If <**n**>=0: **OK** If <**n**>=1: (none)
	Parameters **<n>** 0 TA transmits result code

	1 Result codes are suppressed and not transmitted
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.11 ATS0 Set Number of Rings before Automatically Answering the Call

ATS0 Set Number of Rings before Automatically Answering the Call	
Read Command **ATS0?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS0=<n>**	Response This parameter setting determines the number of rings before auto-answer. **OK** **ERROR**
	Parameters **<n>** 0 Automatic answering is disable. 1-255 Number of rings the modem will wait for before answering the phone if a ring is detected.
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note If <**n**> is set too high, the calling party may hang up before the call can be answered automatically. If using cmux port, **ATH** and **AT+CHUP** can hang up the call (automatically answering) only in the CMUX channel 0. If using dual-physical serial port, **ATH** and **AT+CHUP** can hang up the call (automatically answering) only in UART1.

2.2.12 ATS3 Set Command Line Termination Character

ATS3 Set Command Line Termination Character	
Read Command **ATS3?**	Response **<n>**

	OK
	Parameters See Write Command
Write Command **ATS3=<n>**	Response This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output. **OK** **ERROR**
	Parameters **<n>** 13 Command line termination character
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note Default 13 = CR. It only supports default value.

2.2.13 ATS4 Set Response Formatting Character

ATS4 Set Response Formatting Character	
Read Command **ATS4?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS4=<n>**	Response This parameter setting determines the character generated by the TA for result code and information text. **OK** **ERROR**
	Parameters **<n>** 10 Response formatting character
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

V.25ter	Default 10 = LF. It only supports default value.

2.2.14 ATS5 Set Command Line Editing Character

ATS5 Set Command Line Editing Character	
Read Command **ATS5?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS5=<n>**	Response This parameter setting determines the character recognized by TA as a request to delete from the command line the immediately preceding character. **OK** **ERROR**
	Parameters **<n>** 0-8-127 Response formatting character
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note Default 8 = Backspace.

2.2.15 ATS6 Pause Before Blind Dialling

ATS6 Pause Before Blind Dialling	
Read Command **ATS6?**	Response **<n>** **OK**
Write Command **ATS6=<n>**	Response **OK** **ERROR**
	Parameters **<n>** 0-2-999 Time
Parameter Saving Mode	-
Max Response	-

Time	
Reference V.25ter	Note No effect in GSM

2.2.16 ATS7 Set Number of Seconds to Wait for Connection Completion

ATS7 Set Number of Seconds to Wait for Connection Completion	
Read Command **ATS7?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS7=<n>**	Response This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call. **OK** **ERROR**
	Parameters **<n>** 0-255 Number of seconds to wait for connection completion
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note If called party has specified a high value for **ATS0=<n>**, call setup may fail. The correlation between **ATS7** and **ATS0** is important Example: Call may fail if **ATS7=30** and **ATS0=20**. **ATS7** is only applicable to data call.

2.2.17 ATS8 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command

ATS8 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command	
Read Command **ATS8?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command	Response

ATS8=<n>	**OK** **ERROR**
	Parameters **<n>** 0-2-255 The value of this register determines how long the modem should pause when it sees a comma in the dialing string.
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.18 ATS10 Set Disconnect Delay after Indicating the Absence of Data Carrier

ATS10 Set Disconnect Delay after Indicating the Absence of Data Carrier	
Read Command **ATS10?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS10=<n>**	Response This parameter setting determines the amount of time that the TA will remain connected in absence of data carrier. If the data carrier is once more detected before disconnecting, the TA remains connected. **OK** **ERROR**
	Parameters **<n>** 1-14-255 Number of tenths seconds of delay
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note

2.2.19 ATV TA Response Format

ATV TA Response Format	
Execution Command	Response This parameter setting determines the contents of the header and trailer

ATV<value>	transmitted with result codes and information responses. When <**value**>=0 **0** When <**value**>=1 **OK**
	Parameters **<value>** 0 Information response: **<text><CR><LF>** Short result code format: **<numeric code><CR>** 1 Information response: **<CR><LF><text><CR><LF>** Long result code format: **<CR><LF><verbose code><CR><LF>** The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note

ATV1	**ATV0**	**Description**
OK	0	Acknowledges execution of a Command
CONNECT	1	A connection has been established; the DCE is moving from Command state to online data state
RING	2	The DCE has detected an incoming call signal from network
NO CARRIER	3	The connection has been terminated or the attempt to establish a connection failed
ERROR	4	Command not recognized, Command line maximum length exceeded, parameter value invalid, or other problem with processing the Command line
NO DIALTONE	6	No dial tone detected
BUSY	7	Engaged (busy) signal detected
NO ANSWER	8	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer (S7)
PROCEEDING	9	An AT command is being processed
CONNECT <text>	Manufacturer-specific	Same as CONNECT, but includes manufacturer-specific text that may specify DTE speed, line speed, error control, data compression, or other status

2.2.20 ATX Set CONNECT Result Code Format and Monitor Call Progress

ATX Set CONNECT Result Code Format and Monitor Call Progress	
Execution Command **ATX<value>**	Response This parameter setting determines whether or not the TA detected the presence of dial tone and busy signal and whether or not TA transmits particular result codes. **OK** **ERROR**
	Parameters **<value>** 0 **CONNECT** result code only returned, dial tone and busy detection are both disabled. 1 **CONNECT<text>** result code only returned, dial tone and busy detection are both disabled. 2 **CONNECT<text>** result code returned, dial tone detection is enabled, busy detection is disabled. 3 **CONNECT<text>** result code returned, dial tone detection is disabled, busy detection is enabled. 4 **CONNECT<text>** result code returned, dial tone and busy detection are both enabled.
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note

2.2.21 AT&C Set DCD Function Mode

AT&C Set DCD Function Mode	
Execution Command **AT&C<value>**	Response This parameter determines how the state of circuit 109 **(DCD)** relates to the detection of received line signal from the distant end. **OK** **ERROR**
	Parameters **<value>** 0 **DCD** line is always ON 1 **DCD** line is ON only in the presence of data carrier
Parameter Saving Mode	-
Max Response	-

Time	
Reference V.25ter	Note

2.2.22 AT&D Set DTR Function Mode

AT&D Set DTR Function Mode	
Execution Command **AT&D[<value>]**	Response This parameter determines how the TA responds when circuit 108/2 (DTR) is changed from the ON to the OFF condition during data mode. **OK** or **ERROR**
	Parameters **<value>** 0 TA ignores status on DTR. 1 ON->OFF on DTR: Change to Command mode with remaining the connected call. 2 ON->OFF on DTR: Disconnect call, change to Command mode. During state DTR = OFF is auto-answer off.
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note

2.2.23 AT&E Set CONNECT Result Code Format About Speed

AT&E Set CONNECT Result Code Format About Speed	
Execution Command **AT&E[<value>]**	This parameter setting determines to report Serial connection rate or Wireless connection speed. It is valid only ATX above 0. Response **OK** or **ERROR**
	Parameters **<value>** 0 Wireless connection speed in integer format. 1 Serial connection rate in integer format. Such as: "115200"
Parameter Saving Mode	NO_SAVE
Max Response Time	-

Reference V.25ter	Note

2.2.24 AT+GCAP Request Complete TA Capabilities List

AT+GCAP Request Complete TA Capabilities List	
Execution Command **AT+GCAP**	Response TA reports a list of additional capabilities. **+GCAP:** list of supported **<name>**s **OK**
	Parameters **<name>** +CGSM GSM function is supported
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.25 AT+GMI Request Manufacturer Identification

AT+GMI Request Manufacturer Identification	
Test Command **AT+GMI=?**	Response **OK**
	Parameters
Execution Command **AT+GMI**	TA reports one or more lines of information text which permit the user to identify the manufacturer. **SIMCOM_Ltd** **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.26 AT+GMM Request TA Model Identification

AT+GMM Request TA Model Identification

Test Command **AT+GMM=?**	Response **OK**
Execution Command **AT+GMM**	TA reports one or more lines of information text which permit the user to identify the specific model of device. **<model>** **OK**
	Parameters **<model>** Product model identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.27 AT+GMR Request TA Revision Identification of Software Release

AT+GMR Request TA Revision Identification of Software Release	
Test Command **AT+GMR=?**	Response **OK**
Execution Command **AT+GMR**	TA reports one or more lines of information text which permit the user to identify the revision of software release. **Revision: <revision>** **OK**
	Parameters **<revision>** Revision of software release
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.28 AT+GOI Request Global Object Identification

AT+GOI Request Global Object Identification

Test Command **AT+GOI=?**	Response **OK**
Execution Command **AT+GOI**	Response TA reports one or more lines of information text which permit the user to identify the device, based on the ISO system for registering unique object identifiers. **<Object Id>** **OK**
	Parameters **<Object Id>** Identifier of device type see X.208, 209 for the format of <Object Id>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.29 AT+GSN Request TA Serial Number Identification (IMEI)

AT+GSN Request TA Serial Number Identification(IMEI)	
Test Command **AT+GSN=?**	Response **OK**
Execution Command **AT+GSN**	Response TA reports the IMEI (international mobile equipment identifier) number in information text which permit the user to identify the individual ME device. **<sn>** **OK**
	Parameters **<sn>** IMEI of the telephone(International Mobile station Equipment Identity)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note The serial number (IMEI) is varied by individual ME device.

2.2.30 AT+ICF Set TE-TA Control Character Framing

AT+ICF Set TE-TA Control Character Framing	
Test Command **AT+ICF=?**	Response **+ICF: (**list of supported **<format>**s**),(**list of supported **<parity>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+ICF?**	Response **+ICF: <format>,<parity>** **OK**
	Parameters See Write Command
Write Command **AT+ICF=<format>[,<parity>]**	Response This parameter setting determines the serial interface character framing format and parity received by TA from TE. **OK**
	Parameters **<format>** 1 8 data 0 parity 2 stop 2 8 data 1 parity 1 stop 3 8 data 0 parity 1 stop 4 7 data 0 parity 2 stop 5 7 data 1 parity 1 stop 6 7 data 0 parity 1 stop <parity> 0 odd 1 even 3 space (0)
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note The Command is applied for Command state; In **<format>** parameter, "0 parity" means no parity; The **<parity>** field is ignored if the **<format>** field specifies no parity and string "**+ICF: <format>,255**" will be response to "**AT+ICF**?" Command.

2.2.31 AT+IFC Set TE-TA Local Data Flow Control

AT+IFC Set TE-TA Local Data Flow Control

Test Command **AT+IFC=?**	Response **+IFC: (**list of supported **<dce_by_dte>**s**),(**list of supported **<dte_by_dce>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
	Parameters See Write Command
Write Command **AT+IFC=<dce_by_dte>[,<dte_by_dce>]**	Response This parameter setting determines the data flow control on the serial interface for data mode. **OK**
	Parameters **<dce_by_dte>** Specifies the method will be used by TE at receive of data from TA 0 No flow control 1 Software flow control 2 Hardware flow control **<dte_by_dce>**Specifies the method will be used by TA at receive of data from TE 0 No flow control 1 Software flow control 2 Hardware flow control
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note

2.2.32 AT+IPR Set TE-TA Fixed Local Rate

AT+IPR Set TE-TA Fixed Local Rate	
Test Command **AT+IPR=?**	Response **+IPR: (**list of supported auto detectable <**rate**>s**),(**list of supported fixed-only **<rate>**s**)**

	OK
	Parameters See Write Command
Read Command **AT+IPR?**	Response **+IPR: <rate>** **OK**
	Parameters See Write Command
Write Command **AT+IPR=<rate>**	Response This parameter setting determines the data rate of the TA on the serial interface. The rate of Command takes effect following the issuance of any result code associated with the current Command line. **OK**
	Parameters **<rate>** Baud rate per second 0 300 600 1200 2400 4800 9600 19200 38400 57600 115200 230400 921600 2000000 2900000 3000000 3200000 3686400 4000000
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference V.25ter	Note

3 AT Commands According to 3GPP TS 27.007

3.1 Overview of AT Command According to 3GPP TS 27.007

Command	Description
AT+CGMI	Request manufacturer identification
AT+CGMM	Request model identification
AT+CGMR	Request TA revision identification of software release
AT+CGSN	Request product serial number identification (identical with +GSN)
AT+CSCS	Select TE character set
AT+CIMI	Request international mobile subscriber identity
AT+CLCK	Facility lock
AT+CMEE	Report mobile equipment error
AT+COPS	Operator selection
AT+CPAS	Phone activity status
AT+CPIN	Enter PIN
AT+CPWD	Change password
AT+CRC	Set cellular result codes for incoming call indication
AT+CREG	Network registration
AT+CRSM	Restricted SIM access
AT+CSQ	Signal quality report
AT+CPOL	Preferred operator list
AT+COPN	Read operator names
AT+CFUN	Set phone functionality
AT+CCLK	Clock
AT+CSIM	Generic SIM access
AT+CBC	Battery charge
AT+CUSD	Unstructured supplementary service data
AT+CNUM	Subscriber Number

3.2 Detailed Descriptions of AT Command According to 3GPP TS 27.007

3.2.1 AT+CGMI Request Manufacturer Identification

AT+CGMI Request Manufacturer Identification	
Test Command **AT+CGMI=?**	Response **OK**
Execution	Response

Command **AT+CGMI**	TA returns manufacturer identification text. **<manufacturer>** **OK**
	Parameters **<manufacturer>** The ID of manufacturer
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.2 AT+CGMM Request Model Identification

AT+CGMM Request Model Identification	
Test Command **AT+CGMM=?**	Response **OK**
Execution Command **AT+CGMM**	Response TA returns product model identification text. **<model>** **OK**
	Parameters **<model>** Product model identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.3 AT+CGMR Request TA Revision Identification of Software Release

AT+CGMR Request TA Revision Identification of Software Release	
Test Command **AT+CGMR=?**	Response **OK**
Execution Command **AT+CGMR**	Response TA returns product software version identification text. **Revision: <revision>**

	OK
	Parameters **<revision>** Product software version identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.4 AT+CGSN Request Product Serial Number Identification

AT+CGSN Request Product Serial Number Identification (Identical with +GSN)	
Test Command **AT+CGSN=?**	Response **OK**
Execution Command **AT+CGSN**	Response see +GSN **<sn>** **OK**
	Parameters **<sn>** International mobile equipment identity (IMEI)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.5 AT+CSCS Select TE Character Set

AT+CSCS Select TE Character Set	
Test Command **AT+CSCS=?**	Response **+CSCS: (**list of supported **<chset>**s**)** **OK**
	Parameters **<chset>** "GSM" GSM 7 bit default alphabet (3GPP TS 23.038); "UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g.

	"004100620063" equals three 16-bit characters with decimal values 65, 98 and 99 "IRA" International reference alphabet (ITU-T T.50)
Read Command **AT+CSCS?**	Response **+CSCS: <chset>** **OK**
	Parameters See Test Command
Write Command **AT+CSCS=<chset>**	Response Sets which character set **<chset>** are used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Test Command
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.6 AT+CIMI Request International Mobile Subscriber Identity

AT+CIMI Request International Mobile Subscriber Identity	
Test Command **AT+CIMI=?**	Response **OK**
Execution Command **AT+CIMI**	Response TA returns <**IMSI**>for identifying the individual SIM which is attached to ME. **<IMSI>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<IMSI>** International Mobile Subscriber Identity (string without double quotes)
Parameter Saving Mode	NO_SAVE

Max Response Time	20s
Reference 3GPP TS 27.007 [13]	Note

3.2.7 AT+CLCK Facility Lock

AT+CLCK Facility Lock	
Test Command **AT+CLCK=?**	Response **+CLCK: (**list of supported **<fac>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]**	Response This Command is used to lock, unlock or interrogate a ME or a network facility <**fac**>. Password is normally needed to do such actions. When querying the status of a network service (<**mode**>=2) the response line for 'not active' case (<**status**>=0) should be returned only if service is not active for any <**class**>. If <**mode**>≠2 and Command is successful **OK** If <**mode**>=2 and Command is successful **+CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[…]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<fac>** "AB" All Barring services(only for <mode>=0) "AC" All inComing barring services(only for <mode>=0) "AG" All outGoing barring services(only for <mode>=0) "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 (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code. "FD" SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) "PN" Network Personalization, Correspond to NCK code "PU" Network subset Personalization Correspond to NSCK code "PP" Service Provider Personalization Correspond to SPCK code **<mode>** 0 unlock 1 lock 2 query status **<passwd>** String type (Shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD) **<class>** 1-255 1 Voice (telephony) 2 Data refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) 4 Fax (facsimile services) 7 All classes **<status>** 0 Not active 1 Active
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference 3GPP TS 27.007 [14]	Note ● CME errors if SIM not inserted or PIN is not entered.

3.2.8 AT+CMEE Report Mobile Equipment Error

AT+CMEE Report Mobile Equipment Error	
Test Command **AT+CMEE=?**	Response **+CMEE: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command

Read Command **AT+CMEE?**	Response **+CMEE: <n>** **OK**
	Parameters See Write Command
Write Command **AT+CMEE=[<n>]**	Response TA disables or enables the use of result code **+CME ERROR: <err>** as an indication of an error relating to the functionality of the ME. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<n>** 0 Disable **+CME ERROR: <err>** result code and use ERROR instead. 1 Enable **+CME ERROR: <err>** result code and use numeric **<err>** 2 Enable **+CME ERROR: <err>** result code and use verbose **<err>** values
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.9 AT+COPS Operator Selection

AT+COPS Operator Selection	
Test Command **AT+COPS=?**	Response TA returns a list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM, and other networks. **+COPS: (**list of supported**<stat>,**long alphanumeric**<oper>,**short alphanumeric**<oper>,**numeric **<oper>,<netact>)**s**[,,(**list of supported **<mode>**s**),(**list of supported **<format>**s**)]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**

	Parameters See Write Command
Read Command **AT+COPS?**	Response TA returns the current mode and the currently selected operator. If no operator is selected,<**format**> and <**oper**> are omitted. **+COPS: <mode>[,<format>,<oper>,<netact>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+COPS=<mode>,[<format>[,<oper>]]**	Response TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected (except <**mode**>=4). The selected operator name format shall apply to further read commands (**AT+COPS?**). **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<stat>** 0 Unknown 1 Operator available 2 Operator current 3 Operator forbidden **<oper>** Refer to [27.007] operator in format as per <**format**> <**mode**> 0 Automatic mode; <**oper**> field is ignored 1 Manual (<**oper**> field shall be present, and <**AcT**> optionally) 2 manual deregister from network 3 set only <**format**> (for read Command **+COPS?**) - not shown in Read Command response 4 Manual/automatic (<**oper**> field shall be present); if manual selection fails, automatic mode (<**mode**>=0) is entered **<format>** 0 Long format alphanumeric <**oper**> 1 Short format alphanumeric <**oper**> 2 Numeric <**oper**>; GSM Location Area Identification number **<netact>** 0 User-specified GSM access technology 1 GSM compact

	3 GSM EGPRS 7 User-specified LTE M1 A GB access technology 9 User-specified LTE NB S1 access technology
Parameter Saving Mode	AUTO_SAVE
Max Response Time	Test command: 45 seconds Write command: 120 seconds
Reference 3GPP TS 27.007 [14]	Note

3.2.10 AT+CPAS Phone Activity Status

AT+CPAS Phone Activity Status	
Test Command **AT+CPAS=?**	Response **+CPAS: (**list of supported **<pas>**s**)** **OK**
	Parameters See Execution Command
Execution Command **AT+CPAS**	Response TA returns the activity status of ME. **+CPAS: <pas>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<pas>** 0 Ready (MT allows commands from TA/TE) 3 Ringing (MT is ready for commands from TA/TE, but the ger is active) 4 Call in progress (MT is ready for commands from TA/TE, a call is in progress)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.11 AT+CPIN Enter PIN

AT+CPIN Enter PIN	
Test Command **AT+CPIN=?**	Response **OK**
Read Command **AT+CPIN?**	Response TA returns an alphanumeric string indicating whether some password is required or not. **+CPIN: <code>** **OK**
	Parameters **<code>** READY MT is not pending for any password SIM PIN MT is waiting SIM PIN to be given SIM PUK MT is waiting for SIM PUK to be given PH_SIM PIN ME is waiting for phone to SIM card (antitheft) PH_SIM PUK ME is waiting for SIM PUK (antitheft) SIM PIN2 PIN2, e.g. for editing the FDN book possible only if preceding Command was acknowledged with +CME ERROR:17 SIM PUK2 Possible only if preceding Command was acknowledged with error +CME ERROR: 18.
Write Command **AT+CPIN=<pin>[,<new pin>]**	Response TA stores a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin <**new pin**>, is used to replace the old pin in the SIM. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<pin>** String type; password **<new pin>** String type; If the PIN required is SIM PUK or SIMPUK2: new password
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.007 [13]	Note

3.2.12 AT+CPWD Change Password

AT+CPWD Change Password	
Test Command **AT+CPWD=?**	Response TA returns a list of pairs which present the available facilities and the maximum length of their password. **+CPWD: (**list of supported **<fac>**s, list of supported **<pwdlength>**s**)** **OK**
	Parameters **<fac>** See Write Command **<pwdlength>** Integer max. length of password
Write Command **AT+CPWD=<fac>,<oldpwd>,<newpwd>**	Response TA sets a new password for the facility lock function. **OK**
	Parameters **<fac>** "AB" All Barring services "AC" All inComing barring services(only for <mode>=0) "AG" All outGoing barring services(only for <mode>=0) "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 (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code. "P2" SIM PIN2 **<oldpwd>** String type (string should be included in quotation marks): password specified for the facility from the user interface or with command. If an old password has not yet been set,<oldpwd> is not to enter. **<newpwd>** String type (string should be included in quotation marks): new password
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference 3GPP TS 27.007	Note

[13]	

3.2.13 AT+CRC Set Cellular Result Codes for Incoming Call Indication

AT+CRC Set Cellular Result Codes for Incoming Call Indication	
Test Command **AT+CRC=?**	Response **+CRC: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CRC?**	Response **+CRC: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CRC=[<mode>]**	Response TA controls whether or not the extended format of incoming call indication is used. **OK**
	Parameters **<mode>** 0 Disable extended format 1 Enable extended format Omitted Use previous value
	Unsolicited Result Code When enabled, an incoming call is indicated to the TE with unsolicited result code **+CRING: <type>** instead of the normal **RING**.
	Parameters **<type>** ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent FAX Facsimile VOICE Voice
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.14 AT+CREG Network Registration

AT+CREG Network Registration	
Test Command **AT+CREG=?**	Response **+CREG: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CREG?**	Response TA returns the status of result code presentation and an integer <**stat**> which shows whether the network has currently indicated the registration of the ME. Location information elements <**lac**> and <**ci**> are returned only when <**n**>=2 and ME is registered in the network. **+CREG: <n>,<stat>[,<lac>,<ci>,<netact>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CREG[=<n>]**	Response TA controls the presentation of an unsolicited result code **+CREG: <stat>** when <**n**>=1 and there is a change in the ME network registration status. **OK**
	Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CREG: <stat>** 2 Enable network registration unsolicited result code with location information(2 is only for 7000 series module which support GPRS.) **CREG: <stat>[,<lac>,<ci>,<netact>]** **<stat>** 0 Not registered, MT is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but MT is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming **<lac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format **<ci>** String type (string should be included in quotation marks); two byte cell ID in hexadecimal format

	<netact> 0 User-specified GSM access technology 1 GSM compact 3 GSM EGPRS 7 User-specified LTE M1 A GB access technology 9 User-specified LTE NB S1 access technology
	Unsolicited Result Code If <**n**>=1 and there is a change in the MT network registration status **+CREG: <stat>** If <**n**>=2 and there is a change in the MT network registration status or a change of the network cell: **+CREG: <stat>[,<lac>,<ci>,<netact>]**
	Parameters See Write Command
Parameter Saving Mode	-
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.15 AT+CRSM Restricted SIM Access

AT+CRSM Restricted SIM Access	
Test Command **AT+CRSM=?**	Response **OK**
Write Command **AT+CRSM=<Command>[,<fileId>[,<P1>,<P2>,<P3>[,<data>]]]**	Response **+CRSM: <sw1>,<sw2>[,<response>]** **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<Command>** 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS All other values are reserved; refer GSM 11.11. **<fileId>** Integer type; this is the identifier for an elementary data file on

	SIM. Mandatory for every Command except STATUS **<P1>,<P2>,<P3>** Integer type, range 0 – 255 Parameters to be passed on by the ME to the SIM; refer GSM 11.11. **<data>** Information which shall be written to the SIM (hex-decimal character format) **<sw1>,<sw2>** Integer type, range 0 - 255 Status information from the SIM about the execution of the actual Command. These parameters are delivered to the TE in both cases, on successful or failed execution of the Command; refer GSM 11.11. **<response>** Response of a successful completion of the Command previously issued (hexadecimal character format)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 GSM 11.11	Note

3.2.16 AT+CSQ Signal Quality Report

AT+CSQ Signal Quality Report	
Test Command **AT+CSQ=?**	Response **+CSQ:** (list of supported **<rssi>**s)**,(**list of supported **<ber>**s**)** **OK**
Execution Command **AT+CSQ**	Response **+CSQ: <rssi>,<ber>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Execution Command returns received signal strength indication <**rssi**> and channel bit error rate <**ber**> from the ME. Test Command returns values supported by the TA.
	Parameters **<rssi>** 0 -115 dBm or less 1 -111 dBm 2...30 -110... -54 dBm 31 -52 dBm or greater

	99 not known or not detectable **<ber>** (in percent): 0...7 As RXQUAL values in the table in GSM 05.08 [20] subclause 7.2.4 99 Not known or not detectable
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.17 AT+CPOL Preferred Operator List

AT+CPOL Preferred Operator List	
Test Command **AT+CPOL=?**	Response **+CPOL: (**list of supported **<index>**s**),(**list of supported **<format>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>][<CR><LF>+CPOL: <index2>,<format>,<oper2>[,<GSM,<GSM_compact>,<UTRAN>,<E-UTRAN>][…]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CPOL=<index>[,<format>[,<oper>[<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<index>** Integer type: order number of operator in SIM preferred operator list **<format>** Indicates whether alphanumeric or numeric

	format used (see **+COPS** Command) 0 Long format alphanumeric <**oper**> 1 Short format alphanumeric <**oper**> 2 Numeric <**oper**> **<oper>** String type(string should be included in quotation marks) **<GSM>** GSM access technology 0 Access technology is not selected 1 Access technology is selected **<GSM_compact>** GSM compact access technology 0 Access technology is not selected 1 Access technology is selected **<UTRAN>** UTRAN access technology 0 Access technology is not selected 1 Access technology is selected **<E-UTRAN>** E-UTRAN access technology 0 Access technology is not selected 1 Access technology is selected
Parameter Saving Mode	-
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.18 AT+COPN Read Operator Names

AT+COPN Read Operator Names	
Test Command **AT+COPN=?**	Response **OK**
Execution Command **AT+COPN**	Response **+COPN: <numeric1>,<alpha1>** **[<CR><LF>+COPN: <numeric2>,<alpha2>** **[…]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<numeric*n*>** String type (string should be included in quotation marks): operator in numeric format (see **+COPS**) **<alpha*n*>** String type (string should be included in quotation marks): operator in long alphanumeric format (see **+COPS**)

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.19 AT+CFUN Set Phone Functionality

AT+CFUN Set Phone Functionality	
Test Command **AT+CFUN=?**	Response **+CFUN: (**list of supported **<fun>**s**),(**list of supported **<rst>**s**)** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Read Command **AT+CFUN?**	Response **+CFUN: <fun>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CFUN=<fun>[,<rst>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<fun>** 0 Minimum functionality 1 Full functionality (Default) 4 Disable phone both transmit and receive RF circuits. 5 Factory Test Mode 6 Reset 7 Offline Mode **<rst>** 0 Do not Reset the MT before setting it to <**fun**> power level. 1 Reset the MT before setting it to <**fun**> power level.

Parameter Saving Mode	-
Max Response Time	10s
Reference 3GPP TS 27.007 [13]	Note ● The <**fun**> power level will be written to flash except minimum functionality. ● **AT+CFUN=1,1** can be used to reset module purposely at minimum/full functionality mode. ● Response string "**OK**" will be returned after module resets if baud rate is set to fixed baud rate.

3.2.20 AT+CCLK Clock

AT+CCLK Clock	
Test Command **AT+CCLK=?**	Response **OK**
Read Command **AT+CCLK?**	Response **+CCLK: <time>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CCLK=<time>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<time>** String type(string should be included in quotation marks) value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits),month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -47...+48). E.g. 6th of May 2010, 00:01:52 GMT+2 hours equals to "10/05/06,00:01:52+08".
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007	Note Only time zone is auto saved.

[13]	

3.2.21 AT+CSIM Generic SIM Access

AT+CSIM Generic SIM Access	
Test Command **AT+CSIM=?**	Response **OK**
Write Command **AT+CSIM=<length>,<Command>**	Response **+CSIM: <length>,<response>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<length>** Integer type: length of characters sent to the TE in <**Command**> or <**response**> (i.e. twice the number of octets in the raw data). **<Command>** String type (string should be included in quotation marks): hex format: GSM 11.11 SIM Command sent from the ME to the SIM. **<response>** String type(string should be included in quotation marks): hex format: GSM 11.11 response from SIM to <**Command**>.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.22 AT+CBC Battery Charge

AT+CBC Battery Charge	
Test Command **AT+CBC=?**	Response **+CBC: (**list of supported **<bcs>**s**),(**list of supported **<bcl>**s**),(<voltage>)** **OK**
	Parameters See Execution Command
Execution Command **AT+CBC**	Response **+CBC: <bcs>,<bcl>,<voltage>**

	OK If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<bcs>** Charge status 0 ME is not charging 1 ME is charging 2 Charging has finished **<bcl>** Battery connection level 1...100 battery has 1-100 percent of capacity remaining vent **<voltage>** Battery voltage(mV)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.23 AT+CUSD Unstructured Supplementary Service Data

AT+CUSD Unstructured Supplementary Service Data	
Test Command **AT+CUSD=?**	Response **+CUSD: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CUSD?**	Response **+CUSD: <n>** **OK**
	Parameters See Write Command
Write Command **AT+CUSD=<n>,<str>,<dcs>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<n>** A numeric parameter which indicates control of the unstructured supplementary service data

	0 disable the result code presentation in the TE 1 enable the result code presentation in the TE 2 cancel session (not applicable to read Command response) **<str>** String type (string should be included in quotation marks) USSD-string **<dcs>** Cell Broadcast Data Coding Scheme in integer format (default 0)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference GSM 03.38 [25]	Note When ussd is not suport or return error,TE will print +CUSD:4.

3.2.24 AT+CNUM Subscriber Number

AT+CNUM Subscriber Number	
Test Command **AT+CNUM=?**	Response **OK**
Execution Command **AT+CNUM**	Response **+CNUM: "",<number1>,<type1>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters <**number*x***> String type (string should be included in quotation marks) phone number of format specified by <**type*x***> <**type*x***> Type of address octet in integer format (refer GSM04.08[8] subclause 10.5.4.7)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

4 AT Commands According to 3GPP TS 27.005

The 3GPP TS 27.005 commands are for performing SMS and CBS related operations. SIM7000 Series supports both Text and PDU modes.

4.1 Overview of AT Commands According to 3GPP TS 27.005

Command	Description
AT+CMGD	Delete SMS message
AT+CMGF	Select SMS message format
AT+CMGL	List SMS messages from preferred store
AT+CMGR	Read SMS message
AT+CMGS	Send SMS message
AT+CMGW	Write SMS message to memory
AT+CMSS	Send SMS message from storage
AT+CNMI	New SMS message indications
AT+CPMS	Preferred SMS message storage
AT+CRES	Restore SMS settings
AT+CSAS	Save SMS settings
AT+CSCA	SMS service center address
AT+CSDH	Show SMS text mode parameters
AT+CSMP	Set SMS text mode parameters
AT+CSMS	Select message service

4.2 Detailed Descriptions of AT Commands According to 3GPP TS 27.005

4.2.1 AT+CMGD Delete SMS Message

AT+CMGD Delete SMS Message	
Test Command **AT+CMGD=?**	Response **+CMGD: (**list of supported **<index>**s**),(**list of supported **<delflag>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+CMGD=<index>[,<delflag>]**	Response TA deletes message from preferred message storage <**mem1**> location <**index**>.

	OK **ERROR** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<index>** Integer type; value in the range of location numbers supported by the associated memory **<delflag>** 0 Delete the message specified in <**index**> 1 Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched 2 Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched 3 Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched 4 Delete all messages from preferred message storage including unread messages
Parameter Saving Mode	NO_SAVE
Max Response Time	5s（delete 1 message） 25s（delete 50 messages） 25s（delete 150 messages）
Reference 3GPP TS 27.005	Note

4.2.2 AT+CMGF Select SMS Message Format

AT+CMGF Select SMS Message Format	
Test Command **AT+CMGF=?**	Response **+CMGF: (**list of supported **<mode>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CMGF?**	Response **+CMGF: <mode>** **OK**
	Parameter See Write Command

Write Command **AT+CMGF=[<mode>]**	Response TA sets parameter to denote which input and output format of messages to use. **OK**
	Parameter **<mode>** 0 PDU mode 1 Text mode
Parameter Saving Mode	-
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.3 AT+CMGL List SMS Messages from Preferred Store

AT+CMGL List SMS Messages from Preferred Store	
Test Command **AT+CMGL=?**	Response **+CMGL: (**list of supported **<stat>**s**)** **OK**
	Parameter See Write Command
Write Command **AT+CMGL=<stat>[,<mode>]**	Parameters 1) If text mode: **<stat>** "REC UNREAD" Received unread messages "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages **<mode>** 0 Normal 1 Not change status of the specified SMS record 2) If PDU mode: **<stat>** 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages **<mode>** 0 Normal 1 Not change status of the specified SMS record
	Response TA returns messages with status value **<stat>** from message storage **<mem1>** to the TE. If status of the message is 'received unread', status in

	the storage changes to 'received read'. 1) If text mode (**+CMGF=1**) and Command successful: for SMS-SUBMITs and/or SMS-DELIVERs: **+CMGL: <index>,<stat>,<oa/da>[,<alpha>][,<scts>]** **[,<tooa/toda>,<length>]<CR><LF><data>** **[<CR><LF>+CMGL: <index>,<stat>,<da/oa>** **[,<alpha>][,<scts>][,<tooa/toda>,<length>]<CR><LF><data>[...]]** for SMS-STATUS-REPORTs: **+CMGL: <index>,<stat>,<fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>** **[<CR><LF>+CMGL: <index>,<stat>,<fo>,<mr>** **[,<ra>][,<tora>],<scts>,<dt>,<st>[...]]** for SMS-COMMANDs: **+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>** **+CMGL: <index>,<stat>,<fo>,<ct>[...]]** for CBM storage: **+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages>** **<CR><LF><data>** **<CR><LF>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages>** **<CR><LF><data>[...]]** **OK** 2) If PDU mode (**+CMGF=0**) and Command successful: **+CMGL: <index>,<stat>[,<alpha>],<length>** **<CR><LF><pdu><CR><LF>** **+CMGL: <index>,<stat>[,alpha],<length>** **<CR><LF><pdu>[...]]** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<alpha>** String type(string should be included in quotation marks) alphanumeric representation of <**da**> or <**oa**> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with Command Select TE Character Set **+CSCS** (see definition of this Command in 3GPP TS 27.007) **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer

Command +**CSCS** in 3GPP TS 27.007); type of address given by <**toda**>

<data> In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format:

- if <**dcs**> indicates that GSM 03.38 default alphabet is used and <**fo**> indicates that GSM 03.40 TPUser-Data-Header-Indication is not set:
- if TE character set other than "HEX" (refer Command Select TE Character Set +CSCS in 3GPP TS 27.007):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55))
- if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used, or <**fo**> indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format:
- if <**dcs**> indicates that GSM 03.38 default alphabet is used:
- if TE character set other than "HEX" (refer Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number
- if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

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

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

<oa> GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer Command +**CSCS** in 3GPP TS 27.007); type of address given by <tooa>

<pdu> In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet

	with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format. **<scts>** GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer <**dt**>) **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129) **<tooa>** GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer<**toda**>)
Execution Command **AT+CMGL**	1) If text mode: the same as **AT+CMGL="REC UNREAD"**, received unread messages 2) If PDU mode: the same as **AT+CMGL=0**, received unread messages See more messages please refer to Write Command.
	Parameters See Write Command
Parameter Saving Mode	NO_SAVE
Max Response Time	20s(list 50 messages) 20s(list 150 messages)
Reference 3GPP TS 27.005	Note

4.2.4 AT+CMGR Read SMS Message

AT+CMGR Read SMS Message	
Test Command **AT+CMGR=?**	Response **OK**
Write Command **AT+CMGR=<index>[,<mode>]**	Parameters **<index>** Integer type; value in the range of location numbers supported by the associated memory **<mode>** 0 Normal 1 Not change status of the specified SMS record
	Response TA returns SMS message with location value <**index**> from message storage <**mem1**> to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'. 1) If text mode (**+CMGF=1**) and Command successful: for SMS-DELIVER: **+CMGR: <stat>,<oa>[,<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>** **,<sca>,<tosca>,<length>]<CR><LF><data>**

for SMS-SUBMIT:
+CMGR: <stat>,<da>[,<alpha>][,<toda>,<fo>,<pid>,<dcs>[,<vp>]
,<sca>,<tosca>,<length>]<CR><LF><data>

for SMS-STATUS-REPORTs:
+CMGR: <stat>,<fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>

for SMS-COMMANDs:
+CMGR: <stat>,<fo>,<ct>[,<pid>[,<mn>][,<da>][,<toda>]
,<length><CR><LF><cdata>]

for CBM storage:
+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>
2) If PDU mode (+CMGF=0) and Command successful:
+CMGR: <stat>[,<alpha>],<length><CR><LF><pdu>

OK
3) If error is related to ME functionality:
+CMS ERROR: <err>

Parameters
<alpha> String type (string should be included in quotation marks) alphanumeric representation of <**da**> or <**oa**> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific
<da> GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**>
<data> In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format:
- if <**dcs**> indicates that GSM 03.38 default alphabet is used and <**fo**> indicates that GSM 03.40 TPUser-Data-Header-Indication is not set:
- if TE character set other than "HEX" (refer Command Select TE Character Set +CSCS in 3GPP TS 27.007):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55))
- if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used, or <**fo**> indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each

	8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format: - if <**dcs**> indicates that GSM 03.38 default alphabet is used: - if TE character set other than "HEX" (refer Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number - if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number **<dcs>** Depending on the Command or result code: GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format **<fo>** Depending on the Command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format **<length>** integer type value indicating in the text mode (**+CMGF=1**) the length of the message body <**data**> (or <**cdata**>) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) **<mid>** GSM 03.41 CBM Message Identifier in integer format **<oa>** GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <**tooa**> <**pdu**> In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format. **<pid>** GSM 03.40 TP-Protocol-Identifier in integer format (default 0) **<sca>** GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <**tosca**> **<scts>** GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer <**dt**>) **<stat>** 0 "REC UNREAD" Received unread messages

	1 "REC READ" Received read messages 2 "STO UNSENT" Stored unsent messages 3 "STO SENT" Stored sent messages 4 "ALL" All messages **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129) **<tooa>** GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer<**toda**>) **<tosca>** GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <**toda**>) **<vp>** Depending on SMS-SUBMIT <**fo**> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <**dt**>)
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.5 AT+CMGS Send SMS Message

AT+CMGS Send SMS Message	
Test Command **AT+CMGS=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **+CMGS=<da>[,<toda>]** **<CR>text is entered** **<ctrl-Z/ESC>** ESC quits without sending 2) If PDU mode (+CMGF=0): **+CMGS=<length>** **<CR>PDU is given**	Parameters **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129) **<length>** Integer type value (not exceed 160 bytes) indicating in the text mode (**+CMGF=1**) the length of the message body <**data**> (or <**cdata**>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	Response TA sends message from a TE to the network (SMS-SUBMIT). Message reference value <**mr**> is returned to the TE on successful message delivery.

<ctrl-Z/ESC>	Optionally (when **+CSMS <service>** value is 1 and network supports) <**scts**> is returned. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(**+CMGF=1**) and sending successful: **+CMGS: <mr>** **OK** 2) If PDU mode(**+CMGF=0**) and sending successful: **+CMGS: <mr>** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameter **<mr>** GSM 03.40 TP-Message-Reference in integer format
Parameter Saving Mode	NO_SAVE
Max Response Time	60s
Reference 3GPP TS 27.005	Note ● Reject incoming call when sending messages.

4.2.6 AT+CMGW Write SMS Message to Memory

AT+CMGW Write SMS Message to Memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **AT+CMGW=<oa/da>[,<tooa/toda>][,<stat>]** <CR> **text is entered** **<ctrl-Z/ESC>** <ESC> quits without sending	Response TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <**mem2**>. Memory location <**index**> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <**stat**> allows also other status values to be given. If writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
2) If PDU mode (+CMGF=0): **AT+CMGW=<length>[,<stat>]**	Parameters **<oa>** GSM 03.40 TP-Originating-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the

<CR>PDU is given <ctrl-Z/ESC>	currently selected TE character set (specified by +CSCS in 3GPP TS 27.007);type of address given by <**tooa**> **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**> **<tooa>** GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer <**toda**>) **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145, otherwise default is 129) 129 Unknown type(IDSN format number) 161 National number type(IDSN format) 145 International number type(ISDN format) 177 Network specific number(ISDN format) **<length>** Integer type value (not exceed 160 bytes) indicating in the text mode (**+CMGF=1**) the length of the message body <**data**> (or <**cdata**>) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) **<stat>** in the text mode (**+CMGF=1**): "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages in PDU mode (**+CMGF=0**): 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages <**pdu**> In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format. **<index>** Index of message in selected storage <**mem2**>
Execution Command **AT+CMGW**	Response TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <**mem2**>. Memory location <**index**> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <**stat**> allows also other status values to be given. If writing is successful: **+CMGW: <index>**

	OK If error is related to ME functionality: **+CMS ERROR: <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.7 AT+CMSS Send SMS Message from Storage

AT+CMSS Send SMS Message from Storage	
Test Command **AT+CMSS=?**	Response **OK**
Write Command **AT+CMSS=<index>[,<da>,<toda>]**	Response TA sends message with location value <**index**> from message storage <**mem2**> to the network (SMS-SUBMIT). If new recipient address <**da**> is given, it shall be used instead of the one stored with the message. Reference value <**mr**> is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(**+CMGF=1**) and sending successful: **+CMSS: <mr>** **OK** 2) If PDU mode(**+CMGF=0**) and sending successful: **+CMSS: <mr>** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<index>** Integer type; value in the range of location numbers supported by the associated memory **<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <**da**> is + (IRA 43) default is 145,

	otherwise default is 129) **<mr>** GSM 03.40 TP-Message-Reference in integer format
Parameter Saving Mode	NO_SAVE
Max Response Time	60s
Reference 3GPP TS 27.005	Note

4.2.8 AT+CNMI New SMS Message Indications

AT+CNMI New SMS Message Indications	
Test Command **AT+CNMI=?**	Response **+CNMI: (**list of supported **<mode>**s**),(**list of supported **<mt>**s**),(**list of supported **<bm>**s**),(**list of supported **<ds>**s**),(**list of supported **<bfr>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CNMI?**	Response **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** **OK**
	Parameters See Write Command
Write Command **AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]**	Response TA selects the procedure for how the receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in GSM 03.38. **OK** or **ERROR**
	Parameters **<mode>** 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. 1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE. 2 Buffer unsolicited result codes in the TA when TA-TE

link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

<mt> (the rules for storing received SMs depend on its data coding scheme (refer GSM 03.38 [2]), preferred memory storage (+CPMS) setting and this value):

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

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

2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code:

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

or

+CMT: <oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (text mode enabled; about parameters in italics, refer Command Show Text Mode Parameters +CSDH). Class 2 messages result in indication as defined in <**mt**>=1.

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

<bm> (the rules for storing received CBMs depend on its data coding scheme (refer GSM 03.38 [2]), the setting of Select CBM Types (+CSCB) and this value):

0 No CBM indications are routed to the TE.

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

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

or

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

<ds> 0 No SMS-STATUS-REPORTs are routed to the TE.

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

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

or

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

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

<bfr> 0 TA buffer of unsolicited result codes defined within this Command is flushed to the TE when <**mode**> 1...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
	Unsolicited result code 1. Indicates that new message has been received If <**mt**>=1: **+CMTI: <mem3>,<index>** If <**mt**>=2 (PDU mode enabled): **+CMT: [<alpha>],<length><CR><LF><pdu>** If <**mt**>=2 (text mode enabled): **+CMT:** **<oa>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>** 2. Indicates that new cell broadcast message has been received If <**bm**>=2 (PDU mode enabled): **+CBM: <length><CR><LF><pdu>** If <**bm**>=2 (text mode enabled): **+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>** 3. Indicates that new SMS status report has been received If <**ds**>=1 (PDU mode enabled): **+CDS: <length><CR><LF><pdu>** If <**ds**>=1 (text mode enabled): **+CDS: <fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>**
Parameter Saving Mode	-
Max Response Time	-
Reference 3GPP TS 27.005	Note ● This command is used to select the procedure how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF). If set <mt>＝2,<mt>＝3 or <ds>＝1, make sure <mode>＝1, otherwise it will return error..

4.2.9 AT+CPMS Preferred SMS Message Storage

AT+CPMS Preferred SMS Message Storage	
Test Command **AT+CPMS=?**	Response **+CPMS: (**list of supported **<mem1>**s**),(**list of supported **<mem2>**s**),(**list of supported **<mem3>**s**)** **OK**
	Parameters

	See Write Command
Read Command **AT+CPMS?**	Response **+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3>** **OK** **ERROR**
	Parameters See Write Command
Write Command **AT+CPMS=<mem1>[,<mem2>[,<mem3>]]**	Response TA selects memory storages <mem1>,<mem2> and <mem3> to be used for reading, writing, etc. **+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>** **OK** **ERROR**
	Parameters **<mem1>** Messages to be read and deleted from this memory storage "SM" SIM message storage **<mem2>** Messages will be written and sent to this memory storage "SM" SIM message storage **<mem3>** Received messages will be placed in this memory storage if routing to PC is not set ("+CNMI") "SM" SIM message storage **<usedx>** Integer type; Number of messages currently in <memx> **<totalx>** Integer type; Number of messages storable in <memx>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.10 AT+CRES Restore SMS Settings

AT+CRES Restore SMS Settings	
Test Command **AT+CRES=?**	Response **+CRES:** list of supported **<profile>**s **OK**
	Parameter See Write Command
Write Command	Response

AT+CRES=<profile>	Execution command restores message service settings from non-volatile memory to active memory. A TA can contain several profiles of settings. Settings specified in commands Service Centre Address +CSCA and Set Message Parameters +CSMP are restored. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be restored. **OK** **ERROR**
	Parameter **<profile>** 0 Restore SM service settings from profile 0
Execution Command **AT+CRES**	Response Same as **AT+CRES=0**. **OK** If error is related to ME functionality: **+CMS ERROR <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.11 AT+CSAS Save SMS Settings

AT+CSAS Save SMS Settings	
Test Command **AT+CSAS=?**	Response **+CSAS:** list of supported **<profile>**s **OK**
	Parameter See Write Command
Write Command **AT+CSAS=<profile>**	Response Execution command saves active message service settings to a non-volatile memory. Settings specified in commands Service Centre Address +CSCA and Set Message Parameters +CSMP are saved. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be saved. **OK** **ERROR**
	Parameter **<profile>** 0 Save SM service setting in profile 0
Execution Command	Response Same as **AT+CSAS=0**

AT+CSAS	**OK** If error is related to ME functionality: **+CMS ERROR <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.12 AT+CSCA SMS Service Center Address

AT+CSCA SMS Service Center Address	
Test Command **AT+CSCA=?**	Response **OK**
Read Command **AT+CSCA?**	Response **+CSCA: <sca>,<tosca>[,<scaAlpha>]** **OK**
	Parameters See Write Command
Write Command **AT+CSCA=<sca>[,<tosca>]**	Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by send and writes commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero. Note: The Command writes the parameters in NON-VOLATILE memory. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<sca>** GSM 04.11 RP SC address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <tosca> **<tosca>** Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <toda>) **<scaAlpha>** String type(string should be included in quotation marks) Service center address alpha data

Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.13 AT+CSDH Show SMS Text Mode Parameters

AT+CSDH Show SMS Text Mode Parameters	
Test Command **AT+CSDH=?**	Response **+CSDH: (**list of supported **<show>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CSDH?**	Response **+CSDH: <show>** **OK**
	Parameter See Write Command
Write Command **AT+CSDH=<show>**	Response TA determines whether detailed header information is shown in text mode result codes. **OK**
	Parameter **<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 1 Show the values in result codes
Execution Command **AT+CSDH**	Response **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.14 AT+CSMP Set SMS Text Mode Parameters

AT+CSMP Set SMS Text Mode Parameters	
Test Command **AT+CSMP=?**	Response **OK**
	Parameters See Write Command
Read Command **AT+CSMP?**	Response **+CSMP: <fo>,<vp>,<pid>,<dcs>** **OK**
	Parameters See Write Command
Write Command **AT+CSMP=[<fo>[,<vp>,<pid>,<dcs>]]**	Response TA selects values for additional parameters needed when SM is sent to the network or placed in a storage when text mode is selected (+CMGF=1). It is possible to set the validity period starting from when the SM is received by the SMSC (<**vp**> is in range 0... 255) or define the absolute time of the validity period termination (<**vp**> is a string). Note: The Command writes the parameter <fo> in NON-VOLATILE memory. **OK**
	Parameters **<fo>** Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if <**fo**> is set to 49. **<vp>** Depending on SMS-SUBMIT <**fo**> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <**dt**>) **<pid>** GSM 03.40 TP-Protocol-Identifier in integer format (default 0). **<dcs>** GSM 03.38 SMS Data Coding Scheme in Integer format.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.15 AT+CSMS Select Message Service

AT+CSMS Select Message Service

Test Command **AT+CSMS=?**	Response **+CSMS: (**list of supported **<service>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CSMS?**	Response **+CSMS: <service>,<mt>,<mo>,<bm>** **OK**
	Parameters See Write Command
Write Command **AT+CSMS=<service>**	Response **+CSMS: <mt>,<mo>,<bm>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<service>** 0 GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0; Phase 2+ features which do not require new Command syntax may be supported (e.g. correct routing of messages with new Phase 2+ data coding schemes)) 1 GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version; the requirement of <service> setting 1 is mentioned under corresponding command descriptions) **<mt>** Mobile Terminated Messages: 0 Type not supported 1 Type supported **<mo>** Mobile Originated Messages: 0 Type not supported 1 Type supported **<bm>** Broadcast Type Messages: 0 Type not supported 1 Type supported
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

5 AT Commands Special for SIMCom

5.1 Overview

Command	Description
AT+CPOWD	Power off
AT+CADC	Read ADC
AT+CFGRI	Indicate RI when using URC
AT+CLTS	Get local timestamp
AT+CBAND	Get and set mobile operation band
AT+CNBP	Set the state of the band preference
AT+CNSMOD	Show network system mode
AT+CSCLK	Configure slow clock
AT+CCID	Show ICCID
AT+CDEVICE	View Current Flash Device Type
AT+GSV	Display product identification information
AT+SGPIO	Control the GPIO
AT+SLEDS	Set the timer period of net light
AT+CNETLIGHT	Close the net light or open it to shining
AT+CSGS	Netlight indication of GPRS status
AT+CGPIO	Control the GPIO by PIN Index
AT+CBATCHK	Set VBAT checking feature ON/OFF
AT+CNMP	Preferred mode selection
AT+CMNB	Preferred selection between CAT-M and NB-IoT
AT+CPSMS	Power Saving Mode Setting
AT+CEDRXS	Entended-DRX Setting
AT+CPSI	Inquiring UE system information
AT+CGNAPN	Get Network APN in CAT-M Or NB-IOT
AT+CSDP	Service Domain Preference
AT+MCELLLOCK	Lock the special CAT-M cell
AT+NCELLLOCK	Lock the special NB-IOT cell
AT+NBSC	Config NB-IOT Scrambling Feature
AT+CAPNMODE	Select the mode of application configure APN
AT+CRRCSTATE	Query RRC State
AT+CBANDCFG	Configure CAT-M Or NB-IOT Band
AT+CNACT	App Network Active
AT+CEDUMP	Set whether the module reset when the module is crashed

AT+CNBS	Configure Band Scan Optimization for NB-IOT
AT+CNDS	Configure Service Domain Preference For NB-IOT
AT+CENG	Switch on or off Engineering Mode
AT+CNACTCFG	IP Protocol Type Config
AT+CTLIIC	Control the Switch of IIC
AT+CWIIC	Write Values to Register of IIC Device
AT+CRIIC	Read Values from Register of IIC Device
AT+CMCFG	Manage Mobile Operator Configuration
AT+CSIMLOCK	SIM Lock
AT+CRATSRCH	Configure parameter for better RAT search
AT+SPWM	Generate the Pulse-Width-Modulation
AT+CASRIP	Show Remote IP Address and Port When Received Data
AT+CEDRX	Configure EDRX parameters

5.2 Detailed Descriptions of Commands

5.2.1 AT+CPOWD Power off

AT+CPOWD Power Off	
Write Command **AT+CPOWD=<n>**	Response **[NORMAL POWER DOWN]**
	Parameter **<n>** 0 Power off urgently (Will not send out NORMAL POWER DOWN) 1 Normal power off (Will send out NORMAL POWER DOWN)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.2 AT+CADC Read ADC

AT+CADC Read ADC	
Test Command **AT+CADC=?**	Response **+CADC: (**list of supported **<status>**s**),(**list of supported **<value>**s**)** **OK**
	Parameters **<status>** 1 Success

	0 Fail **<value>** Integer 0,100-1700
Read Command **AT+CADC?**	Response **+CADC: <status>,<value>** **OK**
	Parameters See Test Command
Parameter Saving Mode	NO_SAVE
Max Response Time	2s
Reference	Note

5.2.3 AT+CFGRI Indicate RI When Using URC

AT+CFGRI Indicate RI When Using URC	
Test Command **AT+CFGRI=?**	Response **+CFGRI: (0-2)** **OK**
	Parameters See Write Command
Read Command **AT+CFGRI?**	Response **+CFGRI: <status>** **OK**
	Parameters See Write Command
Write Command **AT+CFGRI=<status>**	Response **OK** **ERROR**
	Parameters **<status>** 0 Off 1 On(TCPIP, FTP and URC control RI pin) 2 On(only TCPIP control RI pin)
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

	● RI pin can not controll by "**AT+CFGRI**" command when module has call service or receiving SMS.

5.2.4 AT+CLTS Get Local Timestamp

AT+CLTS Get Local Timestamp	
Test Command **AT+CLTS=?**	Response **+CLTS: "yy/MM/dd,hh:mm:ss+/-zz"** **OK**
Read Command **AT+CLTS?**	Response **+CLTS: <mode>** **OK**
Write Command **AT+CLTS=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Disable 1 Enable
	Unsolicited Result Code When "get local timestamp" function is enabled, the following URC may be reported if network sends the message to the MS to provide the MS with subscriber specific information. 1. Refresh network name by network: ***PSNWID: "<mcc>", "<mnc>", "<full network name>",<full network name CI>,"<short network name>",<short network name CI>** 2. Refresh time and time zone by network: This is UTC time, the time queried by AT+CCLK command is local time. ***PSUTTZ: <year>,<month>,<day>,<hour>,<min>,<sec>,"<time zone>",<dst>** 3. Refresh network time zone by network: **+CTZV: "<time zone>"** 4. Refresh Network Daylight Saving Time by network: **DST: <dst>**

	Parameters **<mcc>** String type; mobile country code **<mnc>** String type; mobile network code **<full network name>** String type; name of the network in full length. **<full network name CI>** Integer type; indicates whether to add CI. 0 The MS will not add the initial letters of the Country's Name to the text string. 1 The MS will add the initial letters of the Country's Name and a separator (e.g. a space) to the text string. **<short network name>** String type; abbreviated name of the network **<short network name CI>** Integer type; indicates whether to add CI. 0 The MS will not add the initial letters of the Country's Name to the text string. 1 The MS will add the initial letters of the Country's Name and a separator (e.g. a space) to the text string. **<year>** 4 digits of year (from network) **<month>** Month (from network) **<day>** Day (from network) **<hour>** Hour (from network) **<min>** Minute (from network) **<sec>** Second (from network) **<time zone>** String type; network time zone. If the network time zone has been adjusted for Daylight Saving Time, the network shall indicate this by including the <dst> (Network Daylight Saving Time) **<dst>** Network Daylight Saving Time; the content of this indicates the value that used to adjust the network time zone 0 No adjustment for Daylight Saving Time 1 +1 hour adjustment for Daylight Saving 2 +2 hours adjustment for Daylight Saving Time others Reserved
Parameter Saving Mode	-
Max Response Time	-
Reference	Note Support for this Command will be network dependent. Set **AT+CLTS=1**, it means user can receive network time updating and use **AT+CCLK** to show current time. ***PSUTTZ** may report twice.

5.2.5 AT+CBAND Get and Set Mobile Operation Band

AT+CBAND Get and Set Mobile Operation Band

Test Command **AT+CBAND=?**	Response **+CBAND: (**list of supported **<op_band>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CBAND?**	Response **+CBAND: <op_band>** **OK**
	Parameter See Write Command
Write Command **AT+CBAND=<op_band>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<op_band>** A string parameter which indicate the operation band. And the following strings should be included in quotation marks. EGSM_MODE DCS_MODE ALL_MODE
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note ● Radio settings are stored in non-volatile memory. ● Only for GSM

5.2.6 AT+CNBP Set the state of the band preference

AT+CNBP Set the state of the band preference	
Read Command **AT+CNBP?**	Response **+CNBP: <mode>[,<lte_mode>]** **OK**
	Parameter See Write Command
Write Command **AT+CNBP=<mo**	Response **OK**

de>[,<lte_mode>]	**ERROR**
	Parameter **<mode>** 64bit number, the value is "1" << "**<pos>**", then or by bit. Some special mode value declared below: 0x40000000 BAND_PREF_NO_CHANGE **<pos>** 0xFFFFFFFF7FFFFFFF Any (any value) 7 GSM_DCS_1800 8 GSM_EGSM_900 9 GSM_PGSM_900 **<lte_mode>** 64bit number, the value is "1" << "<lte_pos>", then or by bit **<lte_pos>** 0x000007FF3FDF3FFF Any (any value) 0 EUTRAN_BAND1(UL:1920-1980; DL:2110-2170) 1 EUTRAN_BAND2(UL:1850-1910; DL:1930-1990) 2 EUTRAN_BAND3(UL:1710-1785; DL:1805-1880) 3 EUTRAN_BAND4(UL:1710-1755; DL:2110-2155) 4 EUTRAN_BAND5(UL: 824-849; DL: 869-894) 5 EUTRAN_BAND6(UL: 830-840; DL: 875-885) 6 EUTRAN_BAND7(UL:2500-2570; DL:2620-2690) 7 EUTRAN_BAND8(UL: 880-915; DL: 925-960) 8 EUTRAN_BAND9(UL:1749.9-1784.9; DL:1844.9-1879.9) 9 EUTRAN_BAND10(UL:1710-1770; DL:2110-2170) 10 EUTRAN_BAND11(UL:1427.9-1452.9; DL:1475.9-1500.9) 11 EUTRAN_BAND12(UL:698-716; DL:728-746) 12 EUTRAN_BAND13(UL: 777-787; DL: 746-756) 13 EUTRAN_BAND14(UL: 788-798; DL: 758-768) 16 EUTRAN_BAND17(UL: 704-716; DL: 734-746) 17 EUTRAN_BAND18(UL: 815-830; DL: 860-875) 18 EUTRAN_BAND19(UL: 830-845; DL: 875-890) 19 EUTRAN_BAND20(UL: 832-862; DL: 791-821) 20 EUTRAN_BAND21(UL: 1447.9-1462.9; DL: 1495.9-1510.9) 22 EUTRAN_BAND23(UL: 2000-2020; DL: 2180-2200) 23 EUTRAN_BAND24(UL: 1626.5-1660.5; DL: 1525 -1559) 24 EUTRAN_BAND25(UL: 1850-1915; DL: 1930 -1995) 25 EUTRAN_BAND26(UL: 814-849; DL: 859 -894) 26 EUTRAN_BAND27(UL: 807.5-824; DL: 852 -869) 27 EUTRAN_BAND28(703-748; DL: 758-803) 28 EUTRAN_BAND29(UL:1850-1910 or 1710-1755; DL:716-728)

	29 EUTRAN_BAND30(UL: 2305-2315 ; DL: 2350 - 2360) 32 EUTRAN_BAND33(UL: 1900-1920; DL: 1900-1920) 33 EUTRAN_BAND34(UL: 2010-2025; DL: 2010-2025) 34 EUTRAN_BAND35(UL: 1850-1910; DL: 1850-1910) 35 EUTRAN_BAND36(UL: 1930-1990; DL: 1930-1990) 36 EUTRAN_BAND37(UL: 1910-1930; DL: 1910-1930) 37 EUTRAN_BAND38(UL: 2570-2620; DL: 2570-2620) 38 EUTRAN_BAND39(UL: 1880-1920; DL: 1880-1920) 39 EUTRAN_BAND40(UL: 2300-2400; DL: 2300-2400) 40 EUTRAN_BAND41(UL: 2496-2690; DL: 2496-2690) 41 EUTRAN_BAND42(UL: 3400-3600; DL: 3400-3600) 42 EUTRAN_BAND43(UL: 3600-3800; DL: 3600-3800)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note ● Radio settings are stored in non-volatile memory.

5.2.7 AT+CNSMOD Show Network System Mode

AT+CNSMOD	**Show Network System Mode**
Test Command **AT+CNSMOD=?**	Response **+CNSMOD: (list of supported <n>s)** **OK**
	Parameter See Write Command
Read Command **AT+CNSMOD?**	Response **+CNSMOD: <n>,<stat>** **OK**
	Parameter See Write Command
Write Command **AT+CNSMOD=<n>**	Response **OK** **ERROR:**
	Parameter **<n>** 0 Disable auto report the network system mode information

	1 Auto report the network system mode information, command: **+CNSMOD: <stat>** <**stat**> 0 no service 1 GSM 3 EGPRS 7 LTE M1 9 LTE NB
Parameter Saving Mode	-
Max Response Time	
Reference	

5.2.8 AT+CSCLK Configure Slow Clock

AT+CSCLK Configure Slow Clock	
Test Command **AT+CSCLK=?**	Response **+CSCLK: (**list of supported <**n**>s**)** **OK**
	Parameter See Write Command
Read Command **AT+CSCLK?**	Response **+CSCLK: <n>** **OK**
	Parameter See Write Command
Write Command **AT+CSCLK=<n>**	Response **OK** or **ERROR**
	Parameter **<n>** 0 Disable slow clock, module will not enter sleep mode. 1 Enable slow clock, 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.
Parameter Saving Mode	AUTO_SAVE
Max Response	-

Time	
Reference	Note

5.2.9 AT+CCID Show ICCID

AT+CCID Show ICCID	
Test Command **AT+CCID=?**	Response **OK**
Execution Command **AT+CCID**	Response **Ccid data** [ex. 898600810906F8048812] **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	2s
Reference	Note

5.2.10 AT+CDEVICE View Current Flash Device Type

AT+CDEVICE View Current Flash Device Type	
Read Command **AT+CDEVICE?**	Response **Device Name: Current flash device type** **Ram Size: Current RAM size** **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

5.2.11 AT+GSV Display Product Identification Information

AT+GSV Display Product Identification Information	
Execution Command **AT+GSV**	Response TA returns product information text Example: **SIMCOM_Ltd**

	SIMCOM_SIM7000 **Revision: 1351B01SIM7000** **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.12 AT+SGPIO Control the GPIO

AT+SGPIO Control the GPIO	
Test Command **AT+SGPIO=?**	Response **+SGPIO: (0-1),(0-4),(0-1),(0-1)** **OK**
	Parameters See Write Command
Write Command **AT+SGPIO=<operation>,<GPIO>,<function>,<level>**	Response **OK** or **ERROR**
	Parameters **<operation>** 0 Set the GPIO function including the GPIO output. 1 Read the GPIO level. Please note that only when the gpio is set as input, user can use parameter 1 to read the GPIO level, otherwise the module will return "ERROR". **<GPIO>** The GPIO you want to be set. (It has relations with the hardware, please refer to the hardware manual) **<function>** Only when <**operation**> is set to 0, this option takes effect. 0 Set the GPIO to input. 1 Set the GPIO to output **<level>** 0 Set the GPIO low level 1 Set the GPIO high level
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.13 AT+SLEDS Set the Timer Period of Net Light

AT+SLEDS Set the Timer Period of Net Light	
Test Command **AT+SLEDS=?**	Response **+SLEDS: (1-3),(0,40-65535),(0,40-65535)** **OK**
	Parameters See Write Command
Read Command **AT+SLEDS?**	Response **+SLEDS: <mode>,<timer_on>,<timer_off>** **OK**
	Parameters See Write Command
Write Command **AT+SLEDS=<mode>,<timer_on>,<timer_off>**	Response **OK** **ERROR**
	Parameters **<mode>** 1 Set the timer period of net light while SIM7000 series does not register to the network 2 Set the timer period net light while SIM7000 series has already registered to the network 3 Set the timer period net light while SIM7000 series is in the state of PPP communication <**timer_on**> Timer period of "LED ON" in decimal format which range is 0 or 40-65535(ms) <**timer_off**> Timer period of "LED OFF" in decimal format which range is 0 or 40-65535(ms)
Parameter Saving Mode	-
Max Response Time	-
Reference	Note The default value is : **<mode>,<timer_on>,<timer_off>** 1,64,800 2,64,3000

	3,64,300

5.2.14 AT+CNETLIGHT Close the Net Light or Open It to Shining

AT+CNETLIGHT Close the Net Light or Open It to Shining	
Test Command **AT+CNETLIGHT=?**	Response **+CNETLIGHT: (0,1)** **OK**
	Parameters See Write Command
Read Command **AT+CNETLIGHT?**	Response **+CNETLIGHT: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CNETLIGHT=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Close the net light 1 Open the net light to shining
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

5.2.15 AT+CSGS Netlight Indication of GPRS Status

AT+CSGS Netlight Indication of GPRS Status	
Test Command **AT+CSGS=?**	Response **+CSGS: (0-2)** **OK**
	Parameters See Write Command

Read Command **AT+CSGS?**	Response **+CSGS: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CSGS=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Disable 1 Enable, the netlight will be forced to enter into 64ms on/300ms off blinking state in GPRS data transmission service. Otherwise, the netlight state is not restricted. 2 Enable, the netlight will blink according to **AT+SLEDS** in GPRS data transmission service.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.16 AT+CGPIO Control the GPIO by PIN Index

AT+CGPIO Control the GPIO by PIN Index	
Test Command **AT+CGPIO=?**	Response **+CGPIO: (0-1),(** list of supported <**pin**>s**),(0-1),(0-1)** **OK**
	Parameters See Write Command
Write Command **AT+CGPIO=<operation>,<pin>,<function>,<level>**	Response **OK** or **ERROR**
	Parameters **<operation>** 0 Set the GPIO function including the GPIO output . 1 Read the GPIO level. Please note that only when the gpio is set as input, user can use parameter 1 to read the GPIO level, otherwise the

	module will return "ERROR". **<pin>** The PIN index you want to be set. (It has relations with the hardware, please refer to the hardware manual) **<function>** Only when <**operation**> is set to 0, this option takes effect. 0 Set the GPIO to input. 1 Set the GPIO to output **<level>** 0 Set the GPIO low level 1 Set the GPIO high level
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.17 AT+CBATCHK Set VBAT Checking Feature ON/OFF

AT+CBATCHK	**Set VBAT Checking Feature ON/OFF**
Test Command **AT+CBATCHK=?**	Response **+CBATCHK: (0,1)** **OK**
Read Command **AT+CBATCHK?**	Response **+CBATCHK: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CBATCHK=<mode>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Close the function of VBAT checking 1 Open the function of VBAT checking
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

5.2.18 AT+CNMP Preferred Mode Selection

AT+CNMP Preferred Mode Selection	
Test Command **AT+CNMP=?**	Response **+CNMP: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+CNMP?**	Response **+CNMP: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CNMP=<mode>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 2 Automatic 13 GSM only 38 LTE only 51 GSM and LTE only
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note Default value of parameter <**mode**> is different among SIM7000 series project.

5.2.19 AT+CMNB Preferred Selection between CAT-M and NB-IoT

AT+CMNB Preferred Selection between CAT-M and NB-IoT	
Test Command **AT+CMNB=?**	Response **+CMNB: (**list of supported**<mode>**s**)** **OK**
Read Command **AT+CMNB?**	Response **+CMNB: <mode>** **OK**
	Parameters See Write Command

Write Command **AT+CMNB=<mode>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 1 CAT-M 2 NB-Iot 3 CAT-M and NB-IoT
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note Default value of parameter <**mode**> is different among SIM7000 series project.

5.2.20 AT+CPSMS Power Saving Mode Setting

AT+CPSMS Power Saving Mode Setting	
Test Command **AT+CPSMS=?**	Response **+CPSMS: (**list of supported <**mode**>s),(list of supported <**Requested_Periodic-RAU**>s),(list of supported <**Requested_GPRS-READY-timer**>s),(list of supported <**Requested_Periodic-TAU**>s),(list of supported <**Requested_Active-Time**>s**)** **OK**
Read Command **AT+CPSMS?**	Response **+CPSMS: <mode>,[<Requested_Periodic-RAU>],[<Requested_GPRS-READY-timer>],[<Requested_Periodic-TAU>],[<Requested_Active-Time>]** **OK**
	Parameters See Write Command
Write Command **AT+CPSMS=[<mode>[,<Requested_Periodic-RAU>[,<Requested_GPRS-READY-timer>[,<Requested_Periodic-TAU**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Disable the use of PSM 1 Enable the use of PSM

>[,<Requested_Active-Time>]]]]]	**<Requested_Periodic-RAU>** Not supported **<Requested_GPRS-READY-timer>** Not supported **<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.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

5.2.21 AT+CEDRXS Entended-DRX Setting

AT+CEDRXS Entended-DRX Setting	
Test Command **AT+CEDRXS=?**	Response **+CEDRXS: (**list of supported **<n>**s**),<AcT-type>,<Requested_eDRX_value>** **OK**
Read Command **AT+CEDRXS?**	Response **+CEDRXS: <AcT-type>,<Requested_eDRX_value>** **OK**
	Parameters See Write Command
Write Command	Response

AT+CEDRXS=<n>,<AcT-type>,<Requested_eDRX_value>	**OK** If failed: **+CME ERROR: <err>**
	Parameters **<n>** 0 Disable the use of eDRX 1 Enable the use of eDRX 2 Enable the use of eDRX and auto report 3 Disable the use of eDRX(Reserved) **<AcT-type>** 4 CAT-M 5 NB-IoT **<Requested_eDRX_value>** Requested eDRX value. 4 bit format. "0000"-"1111"
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note ● The Requested_eDRX_value is the value of cycle length, separately means 5.12,10.24,20.48,40.96,61.44,81.92,102.40,122.88,143.36,163.84,327.68,655.36,1310.72,2621.44,5242.88,10485.76.(seconds)

5.2.22 AT+CPSI Inquiring UE System Information

AT+CPSI Inquiring UE System Information	
Test Command **AT+CPSI=?**	Response **OK**
Read Command **AT+CPSI?**	If camping on a gsm cell: **+CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<LAC>,<Cell ID>,<Absolute RF Ch Num>,<RxLev>,<Track LO Adjust>,<C1-C2>** **OK** If camping on a CAT-M or NB-IOT cell: **+CPSI: <System Mode>,<Operation Mode>,<MCC>-<MNC>,<TAC>,<SCellID>,<PCellID>,<Frequency Band>,<earfcn>,<dlbw>,<ulbw>,<RSRQ>,<RSRP>,<RSSI>,<RSSNR>** **OK** If no service: **+CPSI: NO SERVICE,Online**

	OK If failed: **+CME ERROR: <err>**
	Parameters **<System Mode>** System mode. "NO SERVICE" "GSM" "LTE CAT-M1" "LTE NB-IOT" **<Operation Mode>** UE operation mode. "Online", "Offline", "Factory Test Mode", "Reset", "Low Power Mode". **<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 Identify **<Absolute RF Ch Num>** AFRCN for service-cell. **<Track LO Adjust>** Track LO Adjust **<C1>** Coefficient for base station selection **<C2>** Coefficient for Cell re-selection **<TAC>** Tracing Area Code **<SCellID>** Serving Cell ID **<PCellID>** Physical Cell ID **<Frequency Band>** Frequency Band of active set **<earfcn>** E-UTRA absolute radio frequency channel number for searching CAT-M or NB-IOT 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 received power.Available for CAT-M or NB-IOT. **<RSRQ>** Current reference signal receive quality as measured by L1. **<RSSI>** Current Received signal strength indicator **<RSSNR>** Average reference signal signal-to-noise ratio of the serving cell The value of **SINR** can be calculated according to **<RSSNR>**, the formula is as below: **SINR = 2 * <RSSNR> - 20** The range of **SINR** is from -20 to 30

Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.23 AT+CGNAPN Get Network APN in CAT-M Or NB-IOT

AT+CGNAPN Get Network APN in CAT-M Or NB-IOT	
Test Command **AT+CGNAPN=?**	Response **+CGNAPN: (**list of supported **<valid>**s**),<length>** **OK**
Execution Command **AT+CGNAPN**	Response **+CGNAPN: <valid>,<Network_APN>** **OK** If failed: **+CME ERROR: <err>**
	Parameters **<valid>** 0 The network did not sent APN parameter to UE.In the case,<**Network_APN**> is NULL. 1 The network sent APN parameter to UE. **<length>** Max the length of **<network_APN>**. **<Network_APN>** String type.The network sends APN parameter to UE when UE registers CAT-M or NB-IOT network successfully.In GSM,<**Network_APN**> always is NULL.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● In CAT-M or NB-IOT,after UE sending attach request message,If core network responds attach accept message that includes APN parameter,**<Netwok_APN>** is valid.

5.2.24 AT+CSDP Service Domain Preference

AT+CSDP Service Domain Preference

Test Command **AT+CSDP=?**	Response **+CSDP: (**list of supported **<domain>**s**)** **OK**
Read Command **AT+CSDP?**	Response **+CSDP: <domain>** **OK**
	Parameters See Write Command
Write Command **AT+CSDP=<domain>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<domain>** 0 CS(Circuit Switched Domain) ONLY 1 PS(Packet Switched Domain) ONLY 2 CS(Circuit Switched Domain) + PS(Packet Switched Domain)
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note

5.2.25 AT+MCELLLOCK Lock the special CAT-M cell

AT+MCELLLOCK Lock the special CAT-M cell	
Test Command **AT+MCELLLOCK=?**	Response **+MCELLLOCK: (0,1),(0-65535),(0-503)** **OK**
Read Command **AT+MCELLLOCK?**	Response **+MCELLLOCK: <mode>[,<earfcn>,<pci>]** **OK**
	Parameters See Write Command
Write Command **AT+MCELLLOCK=<mode>[,<earfcn>,<pci>]**	Response **OK** If failed: **+CME ERROR: <err>**

	Parameter **<mode>** 0 Unlock 1 Lock **<earfcn>** A number in the range 0-65535 representing the EARFCN to search **<pci>** A number in the range 0-503 representing the Physical Cell ID to search
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note

5.2.26 AT+NCELLLOCK Lock the special NB-IOT cell

AT+NCELLLOCK Lock the special NB-IOT cell	
Test Command **AT+NCELLLOCK=?**	Response **+NCELLLOCK: (0,1),(0-65535),(0-503)** **OK**
Read Command **AT+NCELLLOCK?**	Response **+NCELLLOCK: <mode>[,<earfcn>,<pci>]** **OK**
	Parameters See Write Command
Write Command **AT+NCELLLOCK=<mode>[,<earfcn>,<pci>]**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameter **<mode>** 0 Unlock 1 Lock **<earfcn>** A number in the range 0-65535 representing the EARFCN to search **<pci>** A number in the range 0-503 representing the Physical Cell ID to search
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note

5.2.27 AT+NBSC Config NB-IOT Scrambling Feature

AT+NBSC Config NB-IOT Scrambling Feature	
Test Command **AT+NBSC=?**	Response **+NBSC: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+NBSC?**	Response **+NBSC: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+NBSC=<mode>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Disable the scrambling feature in NB-IOT network. 1 Enable the scrambling feature in NB-IOT network.
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note ● Please configure UE in accordance with the base station,Otherwise UE can not register NB-IOT network.

5.2.28 AT+CAPNMODE Select the Mode of Application Configure APN

AT+CAPNMODE Select the Mode of Application Configure APN	
Test Command **AT+CAPNMODE=?**	Response **+CAPNMODE: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+CAPNMODE?**	Response **+CAPNMODE: <mode>** **OK**
	Parameters

	See Write Command
Write Command **AT+CAPNMODE=<mode>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** mode of application configure APN.In CAT-M or NB-IOT network,if module has registered to the network successfully,it will get an APN from base station delivering. 0 Automatic mode.Applications(AT+CSTT and AT+SAPBR) do not need to config APN,it will use the APN from base station delivering. 1 Manual mode,Applications(AT+CSTT,AT+SAPBR) need to config APN,these APNs can get from operators.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● If module are using in GPRS network,you must config **<mode>** to 1

5.2.29 AT+CRRCSTATE Query RRC State

AT+CRRCSTATE Query RRC State	
Test Command **AT+CRRCSTATE=?**	Response **+CRRCSTATE: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CRRCSTATE?**	Response **+CRRCSTATE: <n>,<state>** **OK**
	Parameters See Write Command
Write Command **AT+CRRCSTATE=<n>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<n>** Integer type 0 Disable unsolicited result code 1 Enable unsolicited result code **"+CRRCSTATE: <state>"** <**state**> Integer type,indicates RRC connection state

	0 Idle 1 Connected 255 Other
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● The command is only valid that module registering in CAT-M or NB-IOT network.

5.2.30 AT+CBANDCFG Configure CAT-M Or NB-IOT Band

AT+CBANDCFG Configure CAT-M Or NB-IOT Band	
Test Command **AT+CBANDCFG=?**	Response **+CBANDCFG: (CAT-M,NB-IOT)**,(list of supported **<band>**s) **OK**
Read Command **AT+CBANDCFG?**	Response **+CBANDCFG: "CAT-M",<band>[,<band>…]** **<CR><LF>+CBANDCFG: "NB-IOT",<band>[,<band>…]** **OK**
	Parameters See Write Command
Write Command **AT+CBANDCFG=<mode>,<band>[,<band>…]**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** string type; network system mode. **"CAT-M"** LTE Cat.M1(eMTC) **"NB-IOT"** Narrow Band Internet of Things <**band**> Integer type;The value of <**band**> must is in the band list of getting from **AT+CBANDCFG=?**
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note ● The command can take effect immediately,It does not need to reboot module.

5.2.31 AT+CNACT App Network Active

AT+CNACT App Network Active	
Read Command **AT+CNACT?**	Response **+CNACT: <status>,<ip_addr>** **OK**
	Parameters See Write Command
Write Command **AT+CNACT=<mode>[,<apn>]**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Deactive 1 Active 2 Auto Active **<apn>** (Access Point Name) A string parameter (string should be included in quotation marks) 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.The default value is NULL. <**status**> 0 Deactived 1 Actived
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note "+APP PDP: ACTIVE" will be reported if the app network actived,and "+APP PDP: DEACTIVE" will be reported if the app network deactived. Auto Active means the will active automatically if the activation failed.

5.2.32 AT+CEDUMP Set Whether the Module Reset When The Module is Crashed

AT+CEDUMP Set Whether the Module Reset When The Module is Crashed	
Read Command **AT+CEDUMP?**	Response **+CEDUMP: <mode>** **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CEDUMP=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<fun>** 0 The module will reset when the module is crashed(Default) 1 The module will go into download mode when the module is crashed
Parameter Saving Mode	-
Max Response Time	
Reference	Note

5.2.33 AT+CNBS Configure Band Scan Optimization For NB-IOT

AT+CNBS Configure Band Scan Optimization for NB-IOT	
Test Command **AT+CNBS=?**	Response **+CNBS: (1-5)** **OK**
Read Command **AT+CNBS?**	Response **+CNBS: <n>** **OK**
	Parameters See Write Command
Write Command **AT+CNBS=<n>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters Band scan is performed in the following levels based on the SNR: level 0 Used for good SNR levels(0 db and above); detects strong cells first and takes the shortest time to acquire cells.UE scans each raster in 30 ms. level 1 Used for medium SNR levels(-9 dB and above),UE scans each

	raster for 200 ms level 2 Used for poor SNR levels(-12.6 dB and above),UE scans each raster for 500 ms. **<n>** 1 UE tries SNR level 0 band scan 2 UE tries SNR level 0 and level 1 band scan 3 UE tries SNR level 0, level 1, and level 2 band scan 4 Reserved 5 UE tries SNR level 2 band scan only
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note ● The command controls the band scan for different SNR levels. This optimization is applicable only for NB-IOT and it reduces the band scan time and power consumption.

5.2.34 AT+CNDS Configure Service Domain Preference For NB-IOT

AT+CNDS Configure Service Domain Preference For NB-IOT	
Test Command **AT+CNDS=?**	Response **+CNDS: (list of supported <domain>s)** **OK**
	Parameters See Write Command
Read Command **AT+CNDS?**	Response **+CNDS: <domain>** **OK**
	Parameters See Write Command
Write Command **AT+CNDS=<domain>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<domain>** 1 PS(Packet Switched Domain) ONLY 2 CS(Circuit Switched Domain) + PS(Packet Switched Domain)
Parameter Saving Mode	AUTO_SAVE_REBOOT

Max Response Time	-
Reference	Note ● The command of **AT+CSDP** is used to config service domain preference for GSM and CAT-M.If you want to config service domain preference for NB-IOT,you can use **AT+CNDS**.

5.2.35 AT+CENG Switch On or Off Engineering Mode

AT+CENG Switch On or Off Engineering Mode	
Test Command **AT+CENG=?**	Response TA returns the list of supported modes. **+CENG: (**list of supported **<mode>**s**),(**list of supported **<Ncell>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CENG?**	Response Engineering Mode is designed to allow a field engineer to view and test the network information received by a handset, when the handset is either in idle mode or dedicated mode (that is: with a call active). In each mode, the engineer is able to view network interaction for the "serving cell" (the cell the handset is currently registered with) or for the neighboring cells. TA returns the current engineering mode. The network information including serving cell and neighboring cells are returned. <**cell**> carry with them corresponding network interaction. If camping on a gsm cell: **+CENG: <mode>,<Ncell>,<cell num>,<System Mode>** **[+CENG: <cell>,"<bcch>,<rxl>,<bsic>,<cellid>,<mcc>,<mnc>,<lac>"** **<CR><LF>+CENG:<cell>,"<bcch>,<rxl>,<bsic>,<cellid>,<mcc>,<mnc>,<lac>"…]** **OK** If camping on a CAT-M or NB-IOT cell: **+CENG: <mode>,<Ncell>,<cell num>,<System Mode>** **[+CENG:** **<cell>,"<earfcn>,<pci>,<rsrp>,<rssi>,<rsrq>,<sinr>,<tac>,<cellid>,<mcc>,<mnc>,<tx power>"** **<CR><LF>+CENG:<cell>,"<earfcn>,<pci>,<rsrp>,<rssi>,<rsrq>,<sinr**

	>"…] **OK**
	Parameters See Write Command
Write Command **AT+CENG=<mode>[,<Ncell>]**	Switch on or off engineering mode. **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Switch off engineering mode 1 Switch on engineering mode **<Ncell>** 1 Display neighbor cell ID **<cell num>** The number of cell,it includes serving cell and neighbor cells. **<System Mode>** System mode. "NO SERVICE" "GSM" "LTE CAT-M1" "LTE NB-IOT" **<cell>** 0 The serving cell 1-6 The index of the neighboring cell **<bcch>** ARFCN(Absolute radio frequency channel number) of BCCH carrier, in decimal format **<rxl>** Receive level, in decimal format **<mcc>** Mobile country code, in decimal format **<mnc>** Mobile network code, in decimal format **<bsic>** Base station identity code, in decimal format **<cellid>** Cell id, in hexadecimal format **<lac>** Location area code, in hexadecimal format **<earfcn>** E-UTRA absolute radio frequency channel number for searching CAT-M or NB-IOT cells **<pci>** Physical Cell ID **<rsrp>** Current reference signal received power.Available for CAT-M or NB-IOT. **<rssi>** Current Received signal strength indicator **<rsrq>** Current reference signal receive quality as measured by L1. **<sinr>** Signal to Interference plus Noise Ratio,The range is from -20 to 30. **<tac>** Tracing Area Code, in decimal format **<tx power>** Tx power value in 1/10 dBm. **<tx power>** is only meaningful when the device is in traffic. When there is no traffic, the value is invalid.The value of **<tx power>** is 255.

Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.36 AT+CNACTCFG IP Protocol Type Config

AT+CNACTCFG IP Protocol Type Config	
Test Command **AT+CNACTCFG=?**	Response **+CNACTCFG: ("IPV4","IPV6","IPV4V6")** **OK**
	Parameters See Write Command
Read Command **AT+CNACTCFG?**	Response **+CNACTCFG: <IPType>** **OK**
	Parameters See Write Command
Write Command **AT+CNACTCFG=<IPType>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<IPType>** "IPV4" IPv4 protocol "IPV6" IPv6 protocol "IPV4V6" IPv4 and IPv6 protocol
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.37 AT+CTLIIC Control the Switch of IIC

AT+CTLIIC Control the Switch of IIC

Test Command **AT+CTLIIC=?**	Response **+CTLIIC: (0,1)** **OK**
	Parameters See Write Command
Read Command **AT+CTLIIC?**	Response **+CTLIIC: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CTLIIC=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 switch off the IIC 1 switch on the IIC
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.38 AT+CWIIC Write Values to Register of IIC Device

AT+CWIIC Write Values to Register of IIC Device	
Test Command **AT+CWIIC=?**	Response **OK**
Write Command **AT+CWIIC=<addr>,<reg>,<data>,<len>**	Response **OK** or **ERROR**
	Parameters **<addr>** Device address. Input format must be hex, such as 0xFF. **<reg>** Register address. Input format must be hex, such as 0xFF. **<len>** Read length. Range: 1-4; unit: byte. **<data>** Data written. Input format must be hex, such as 0xFF–0xFFFFFFFF

Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.39 AT+CRIIC Read Values from Register of IIC Device

AT+CRIIC Read Values from Register of IIC Device	
Test Command **AT+CRIIC=?**	Response **OK**
Write Command **AT+CRIIC=<addr>,<reg>,<len>**	Response **+CRIIC: <data>** **OK** or **ERROR**
	Parameters **<addr>** Device address. Input format must be hex, such as 0xFF. **<reg>** Register address. Input format must be hex, such as 0xFF. **<len>** Read length. Range:1-4; unit:byte. **<data>** Data read. Input format must be hex, such as 0xFF.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.40 AT+CMCFG Manage Mobile Operator Configuration

AT+CMCFG Manage Mobile Operator Configuration	
Test Command **AT+CMCFG=?**	Response TA returns the list of supported modes. **+CMCFG: (**list of supported **<mode>**s**),<length>** **OK**
	Parameters See Write Command
Read Command **AT+CMCFG?**	Response **+CMCFG: <mode>,<config_num>** **[+CMCFG: <index>,<config_name>,<config_version>,<state>…]**

	OK
	Parameters See Write Command
Write Command **AT+CMCFG=<mode>[,<config_name>]**	when <**mode**>=0,1,2 or 3 and command successful: **OK** when <**mode**>=4 and command successful: **+CMCFG: 4,<flag>,<config_name>** **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Manually select mobile operator configuration 1 Automatically select mobile operator configuration according to ICCID information in SIM card 2 Activate specified mobile operator configuration, **<config_name>** must be provided. 3 Deactivation specified mobile operator configuration, **<config_name>** must be provided. **<length>** Interger type,the maximum length of **<config_name>** **<config_num>** Integer type,the number of mobile network configuration **<index>** Integer type,the index of mobile network configuration **<config_name>** String type,the name of mobile network configuration. "Default" Default network configuration "ATT" ATT network configuration, not support VOLTE "Verizon" Verizon network configuration,not support VOLTE **<config _version>** Hex type,the version of mobile network configuration **<state>** Integer type,the state of mobile network configuration 0 Inactive 1 Active **<flag>** Integer type,it indicates whether module has activated a network configuration.If network configuration has been activated,The third parameter **<config_name>** is the name of activating network configuration. 0 Network configuration has been activated 1 Not any network configuration is activated
Parameter Saving Mode	-
Max Response	-

Time	
Reference	Note ● After setting **AT+CMCFG=1**,module can select mobile operator configuration according to ICCID information in SIM card automatically,If network configuration has changed,module will reboot and make configuration effective ● If module needs to select mobile operator configuration manually, you should do as the following steps. 1) Setting manual mode AT+CMCFG=0 2) Activate specified configuration AT+CMCFG=2,**<config_name>** 3) Reboot the module AT+CFUN=1,1

5.2.41 AT+CSIMLOCK SIM Lock

AT+CSIMLOCK SIM Lock	
Test Command **AT+CSIMLOCK=?**	Response TA returns the list of supported modes. **+CSIMLOCK:** (list of supported **<facility>**s),(list of supported **<mode>**s>,**<pwlength>,<pclength>** **OK**
	Parameters See Write Command
Read Command **AT+CSIMLOCK?**	Response **OK**
	Parameters See Write Command
Write Command **AT+CSIMLOCK=<facility>,<mode>[,<password>|,<pers_code_list>]]**	If **<mode>**≠2 and Command is successful **OK** If **<mode>**=2 and Command is successful **+CSIMLOCK: <status>,<pers_code_list>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**If failed:
	Parameters **<facility>** String type,Phone security locks set by factory or customer. which can be: "PN" Network Personalisation **<mode>** 0 unlock

	1 lock 2 query status **<pwlength>** Integer type,maximum length of **<password>**,the maxinum length is 16. **<pclength>** Integer type,maximum length of **<pers_code_list>**,the maxinum length is 160. **<password>** String type,password is used to lock or unlock a **<facility>**. **<pers_code_list>** String type,code list for device personalization.The contents depend on the selected **<facility>**. If **<facility>** is "PN": **<pers_code_list>** is in the format: "MCC1-MNC1[;MCC2-MNC2[…]] " It contains a list of pairs of MCC and MNC.MCC and MNC is separated by a '-',every pair of MCC and MNC is separated by semicolon. For example: **"460-00;460-01"** **<status>** Integer type,the status of lock 0 lock is inactive 1 lock is active
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● Lock device Customer can send AT command to lock the deivce that can only use some specific SIM card. **AT+CSIMLOCK="PN",1, "0123456789ABCDEF","460-00;460-01"** ● Unlock device If the device is locking, Customer can send AT command to unlock the device. **AT+CSIMLOCK="PN",0, "ABCDEFGH12345678"** ● Query device status customer may send AT command as follow to query status of the device **AT+CSIMLOCK="PN",2**

5.2.42 AT+CRATSRCH Configure Parameter for Better RAT Search

AT+CRATSRCH Configure Parameter for Better RAT Search	
Test Command **AT+CRATSRCH=?**	Response TA returns the list of supported modes. **+CRATSRCH:** (list of supported **<rat_timer>**s),(list of supported

	<srch_align>), **OK**
	Parameters See Write Command
Read Command **AT+CRATSRCH?**	Response **+CRATSRCH: <rat_timer>,<srch_align>** **OK**
	Parameters See Write Command
Write Command **AT+CRATSRCH=<rat_timer>,<srch_align>**	**OK** If error is related to ME functionality: **+CME ERROR: <err>**If failed:
	Parameters **<rat_timer>** Integer type, **<rat_timer>** is timeout for better RAT(radio access technology) search.The default value is 60, expressed in minutes.For SIM7000 series modules,the priority of RAT is as follows: **CAT-M** > **NB-IOT** > **GSM** If UE has registered successfully GSM network,it will try to search CAT-M and NB-IOT network after the timer expiring. **<srch_align>** Integer type, **<srch_align>** specifies an interval before eDRX page when a scan should begin.The default value is 20,expressed in minutes.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.43 AT+SPWM Generate the Pulse-Width-Modulation

AT+SPWM Generate the Pulse-Width-Modulation	
Test Command **AT+SPWM=?**	Response **+SPWM:** (list of supported** **s)**,**(list of supported**<level>**s) **OK**
	Parameters See Write Command

Write Command **AT+SPWM= ,<level>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters ** ** The range of is 0-31, theoutput frequency equals to (192KHz)/(period+1). **<level>** 0-100: tone level, which can be converted to duty ratio.
Reference	Note ● The equation of final frequency and <period> is this: frequency=192KHz/(period+1), when **div** is 0 or 1, the period is 1. When **div** is 2, the period is 1.5. When **div** is 3, the period is 2. When **div** is 4, the period is 2.5…….. ● The equation of <level> and duty factor is: duty factor=(level+1).

5.2.44 AT+CASRIP Show Remote IP address and Port When Received Data

AT+CASRIP Show Remote IP Address and Port When Received Data	
Read Command **AT+CASRIP?**	Response **+CASRIP**: **<mode>** **OK**
	Parameters See Write Command
Write Command **AT+CASRIP=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** A numeric parameter which shows remote IP address and port. 0 Do not show the prompt 1 Show the prompt, the format is as follows:
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

5.2.45 AT+CEDRX Configure EDRX parameters

AT+CEDRX Configure EDRX parameters	
Test Command	Response

AT+CEDRX=?	**+CEDRX: (0-3),(0-1),(0-15),(0-15)** **OK**
Read Command **AT+CEDRX?**	Response **+CEDRX: <mode>,<enabled>,<ptw>,<cycle_length>** **…** **OK**
	Parameters See Write Command
Write Command **AT+CEDRX=<mode>,<enabled>,<ptw>,<cycle_length>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 GSM 1 LTE 2 NB-IoT 3 CAT-M **<enabled>** 0 Disable 1 Enable **<ptw>** Page time window 0-15 **<cycle_length>** 0-15
Reference	Note ● The value 0-15 of ptw separately means 1280,2560,3840,5120,6400, 7680,8960,10240,11520,12800,14080,15360,16640,17920,19200, 20480.(ms) ● The value 0-15 of cycle_length separately means 5.12,10.24,20.48, 40.96,61.44,81.92,102.40,122.88,143.36,163.84,327.68,655.36,1310.72,2621.44,5242.88,10485.76.(seconds) ● There has no effect if <mode> is 0 or 1. ● The edrx parameters can take effect after module restarting

6 AT Commands for GPRS Support

6.1 Overview of AT Commands for GPRS Support

Command	Description
AT+CGATT	Attach or detach from GPRS service
AT+CGDCONT	Define PDP context
AT+CGACT	PDP context activate or deactivate
AT+CGPADDR	Show PDP address
AT+CGREG	Network registration status
AT+CGSMS	Select service for MO SMS messages
AT+CEREG	EPS Network Registration Status

6.2 Detailed Descriptions of AT Commands for GPRS Support

6.2.1 AT+CGATT Attach or Detach from GPRS Service

AT+CGATT Attach or Detach from GPRS Service	
Test Command **AT+CGATT=?**	Response **+CGATT: (**list of supported **<state>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGATT?**	Response **+CGATT: <state>** **OK**
	Parameters See Write Command
Write Command **AT+CGATT=<state>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<state>** Indicates the state of GPRS attachment 0 Detached 1 Attached

	Other values are reserved and will result in an ERROR response to the Write Command.
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds
Reference	Note

6.2.2 AT+CGDCONT Define PDP Context

AT+CGDCONT	**Define PDP Context**
Test Command **AT+CGDCONT=?**	Response **+CGDCONT: (range of supported <cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)(list of <ipv4_ctrl>s),(list of <emergency_flag>s)** **OK**
	Parameters See Write Command
Read Command **AT+CGDCONT?**	Response **+CGDCONT: [<cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>,<ipv4_ctrl>,<emergency_flag>[<CR><LF> +CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>,<ipv4_ctrl>,<emergency_flag>[...]]]** **OK**
	Parameters See Write Command
Write Command **AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,<ipv4_ctrl>[,<emergency_flag>]]]]]]]**	Response **OK** or **ERROR**
	Parameters **<cid>** (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command. 1…24 **<PDP_type>** (Packet Data Protocol type) A string parameter which

	specifies the type of packet data protocol. IP Internet Protocol (IETF STD 5) PPP Point to Point Protocol IPV6 Internet Protocol Version 6 IPV4V6 Dual PDN Stack **<APN>** (Access Point Name) A string parameter (string should be included in quotation marks) 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.The default value is NULL. **<PDP_addr>** A string parameter that identifies the MT in the address space applicable to the PDP. Format: "**<n>.<n>.<n>.<n>**" where <**n**>=0..255 If the value is null or equals 0.0.0.0 a dynamic address will be requested. The allocated address may be read using the +CGPADDR command. **<d_comp>** A numeric parameter that controls PDP data compression 0 Off (default if value is omitted) 1 On 2 V.42bis **<h_comp>** A numeric parameter that controls PDP head compression 0 Off (default if value is omitted) 1 On 2 RFC1144 3 RFC2507 4 RFC3095 **<ipv4_ctrl>** Parameter that controls how the MT/TA requests to get the IPv4 address information: 0 Address Allocation through NAS Signaling 1 on **<emergency_flag>** Emergency_flag: 0 Off (default if value is omitted) 1 On
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note <cid> values 17 to 24 are supported from MPSS JO 1.0+ onwards.

6.2.3 AT+CGACT PDP Context Activate or Deactivate

AT+CGACT PDP Context Activate or Deactivate

Test Command **AT+CGACT=?**	Response **+CGACT: (**list of supported **<state>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>…]** **OK**
	Parameters See Write Command
Write Command **AT+CGACT=<state>[,<cid>[,<cid>[,…]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<state>** Indicates the state of PDP context activation 0 Deactivated 1 Activated Other values are reserved and will result in an ERROR response to the Write Command. **<cid>** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command). If the <cid> is omitted, it only affects the first cid. <cid> values 17 to 24 are supported from MPSS JO 1.0+ onwards. 1…24
Parameter Saving Mode	NO_SAVE
Max Response Time	150 seconds
Reference	Note ● This command is used to test PDPs with network simulators. Successful activation of PDP on real network is not guaranteed.

6.2.4 AT+CGPADDR Show PDP Address

AT+CGPADDR	**Show PDP Address**
Test Command **AT+CGPADDR=?**	Response **+CGPADDR: (**list of defined **<cid>**s**)** **OK**

	Parameters See Write Command
Write Command **AT+CGPADDR=<cid>[,<cid>[,…]]**	Response **+CGPADDR: <cid>,<PDP_addr>** **[<CR><LF>+CGPADDR: <cid>,<PDP_addr>[…]]** **OK** If SIM card supports IPV4V6 type and the PDP_type of the command "AT+CGDCONT" defined is ipv4v6 : **[+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>]** **+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]]]** **OK** or **ERROR**
	Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** Command) 1…24 **<PDP_addr>** String type, IP address Format: **<n>.<n>.<n>.<n>** where <**n**>=0..255 **<PDP_addr_IPV4>** A string parameter that identifies the MT in the address space applicable to the PDP. **<PDP_addr_IPV6>** A string parameter that identifies the MT in the address space applicable to the PDP when the sim_card supports ipv6. The pdp type must be set to "ipv6" or "ipv4v6" by the AT+CGDCONT command.
Execution Command **AT+CGPADDR**	Response **[+CGPADDR: <cid>,<PDP_addr>] +CGPADDR: <cid>,<PDP_addr>[...]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>** If SIM card supports IPV4V6 type and the PDP_type of the command "AT+CGDCONT" defined is ipv4v6 : **[+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>]** **+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]]]**

	OK
	Parameters See Write Command
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● <cid> values 17 to 24 are supported from MPSS JO 1.0+ onwards. ● Write command returns address provided by the network if a connection has been established.

6.2.5 AT+CGREG Network Registration Status

AT+CGREG Network Registration Status	
Test Command **AT+CGREG=?**	Response **+CGREG: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGREG?**	Response **+CGREG: <n>,<stat>[,<lac>,<ci>,<netact>[,[<Active-Time>],[<Periodic-RAU>],[<GPRS-READY-timer>]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CGREG[=<n>]**	Response **OK** **ERROR**
	Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CGREG: <stat>** 2 Enable network registration and location information unsolicited result code **+CGREG: <stat>[,<lac>,<ci>,<netact>]** 4 Enable display gprs time and periodic RAU **<stat>** 0 Not registered, MT is not currently searching an

	operator to register to.The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user. 1 Registered, home network. 2 Not registered, but MT is currently trying to attach or searching an operator to register to. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. 3 Registration denied, The GPRS service is disabled, the UE is not allowed to attach for GPRS if it is requested by the user. 4 Unknown 5 Registered, roaming **<lac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** String type (string should be included in quotation marks); two bytes cell ID in hexadecimal format **<netact>** 0 User-specified GSM access technology 1 GSM compact 3 GSM EGPRS 7 User-specified LTE M1 A GB access technology 9 User-specified LTE NB S1 access technology <**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). <**Periodic-RAU**> 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). <**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).
Parameter Saving Mode	-

Max Response Time	-
Reference	Note

6.2.6 AT+CGSMS Select Service for MO SMS Messages

AT+CGSMS Select Service for MO SMS Messages	
Test Command **AT+CGSMS=?**	Response **+CGSMS: (**list of currently available **<service>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK**
	Parameters See Write Command
Write Command **AT+CGSMS=<service>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<service>** A numeric parameter which indicates the service or service preference to be used 0 Packet Domain(value is not really supported and is internally mapped to 2) 1 Circuit switched(value is not really supported and is internally mapped to 3) 2 Packet Domain preferred (use circuit switched if GPRS not available) 3 Circuit switched preferred (use Packet Domain if circuit switched not available)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

6.2.7 AT+CEREG EPS Network Registration Status

AT+CEREG EPS Network Registration Status	
Test Command **AT+CEREG=?**	Response **+CEREG: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CEREG?**	Response when <**n**>=0, 1, 2 and command successful: **+CEREG: <n>,<stat>[,[<tac>],[<rac>],[<ci>],[<AcT>]]** **OK** when <**n**>=4 and command successful: **+CEREG: <n>,<stat>[,[<tac>],[<rac>],[<ci>],[<AcT>][,,[,[<Active-Time>],[<Periodic-TAU>]]]]** **OK** If error is related to wrong AT syntax or operation not allowed: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CEREG[=<n>]**	Response **OK** or **ERROR**
	Parameters **<n>** 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>],[<rac>],[<ci>],[<AcT>]]** 4 For a UE that wants to apply PSM, enable network registration and location information unsolicited result code **+CEREG: <stat>[,[<tac>],[<rac>],[<ci>],[<AcT>][,,[,[<Active-Time>],[<Periodic-RAU>]]]]** **<stat>** 0 Not registered, MT is not currently searching an operator to register to.The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user.

	1 Registered, home network. 2 Not registered, but MT is currently trying to attach or searching an operator to register to. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. 3 Registration denied, The GPRS service is disabled, the UE is not allowed to attach for GPRS if it is requested by the user. 4 Unknown 5 Registered, roaming **<tac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** String type (string should be included in quotation marks); two bytes cell ID in hexadecimal format **<AcT>** 0 User-specified GSM access technology 7 User-specified LTE M1 A GB access technology 9 User-specified LTE NB S1 access technology <**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). <**Periodic-RAU**> 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).
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

7 AT Commands for IP Application

7.1 Overview

Command	Description
AT+SAPBR	Bearer settings for applications based on IP

7.2 Detailed Descriptions of Commands

7.2.1 AT+SAPBR Bearer Settings for Applications Based on IP

AT+SAPBR Bearer Settings for Applications Based on IP	
Test Command **AT+SAPBR=?**	Response **+SAPBR: (0-4),(1-3), "ConParamTag","ConParamValue"** **OK**
	Parameters See Write Command
Write Command **AT+SAPBR=<cmd_type>,<cid>[,<ConParamTag>,<ConParamValue>]**	Response **OK** If **<cmd_type>=2** **+SAPBR: <cid>,<Status>,<IP_Addr>** **OK** If **<cmd_type>=4** **+SAPBR:** **<ConParamTag>,<ConParamValue>** **OK** Unsolicited Result Code **+SAPBR <cid>: DEACT**
	Parameters **<cmd_type>** 0 Close bearer 1 Open bearer 2 Query bearer 3 Set bearer parameters 4 Get bearer parameters **<cid>** Bearer profile identifier **<Status>**

	0 Bearer is connecting 1 Bearer is connected 2 Bearer is closing 3 Bearer is closed **<ConParamTag>** Bearer parameter "APN" Access point name string: maximum 64 characters "USER" User name string: maximum 32 characters "PWD" Password string: maximum 32 characters **<ConParamValue>** Bearer paramer value **<IP_Addr>** The IP address of bearer
Parameter Saving Mode	NO_SAVE
Max Response Time	When **<cmd_type>** is 1, 85 seconds When **<cmd_type>** is 0, 65 seconds
Reference	Note This command is applied to activate some applications such as HTTP, FTP.

8 AT Commands for TCPIP Application Toolkit

8.1 Overview

Command	Description
AT+CIPMUX	Start up multi-IP connection
AT+CIPSTART	Start up TCP or UDP connection
AT+CIPSEND	Send data through TCP or UDP connection
AT+CIPQSEND	Select data transmitting mode
AT+CIPACK	Query previous connection data transmitting state
AT+CIPCLOSE	Close TCP or UDP connection
AT+CIPSHUT	Deactivate GPRS PDP context
AT+CLPORT	Set local port
AT+CSTT	Start task and set APN, user name, password
AT+CIICR	Bring up wireless connection with GPRS
AT+CIFSR	Get local IP address
AT+CIFSREX	Get Local IP Address extend
AT+CIPSTATUS	Query current connection status
AT+CDNSCFG	Configure domain name server
AT+CDNSGIP	Query the IP address of given domain name
AT+CIPHEAD	Add an IP head at the beginning of a package received
AT+CIPATS	Set auto sending timer
AT+CIPSPRT	Set prompt of '>' when module sends data
AT+CIPSERVER	Configure module as server
AT+CIPCSGP	Set GPRS for connection mode
AT+CIPSRIP	Show remote IP address and port when received data
AT+CIPDPDP	Set whether to check state of GPRS network timing
AT+CIPMODE	Select TCPIP application mode
AT+CIPCCFG	Configure transparent transfer mode
AT+CIPSHOWTP	Display transfer protocol in IP head when received data
AT+CIPUDPMODE	UDP extended mode
AT+CIPRXGET	Get data from network manually
AT+CIPRDTIMER	Set remote delay timer

AT+CIPSGTXT	Select GPRS PDP context
AT+CIPSENDHEX	Set CIPSEND Data Format to HEX
AT+CIPHEXS	Set Output-data Format with suffix
AT+CIPTKA	Set TCP keepalive parameters
AT+CIPOPTION	Enable or Disable TCP nagle algorithm

8.2 Detailed Descriptions of Commands

8.2.1 AT+CIPMUX Start Up Multi-IP Connection

AT+CIPMUX Start Up Multi-IP Connection	
Test Command **AT+CIPMUX=?**	Response **+CIPMUX: (0,1)** **OK**
	Parameters See Write Command
Read Command **AT+CIPMUX?**	Response **+CIPMUX: <n>** **OK**
	Parameters See Write Command
Write Command **AT+CIPMUX=<n>**	Response **OK**
	Parameters **<n>** 0 Single IP connection 1 Multi IP connection
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Only in IP initial state, **AT+CIPMUX=1** is effective; ● Only when multi IP connection and GPRS application are both shut down, **AT+CIPMUX=0** is effective.

8.2.2 AT+CIPSTART Start Up TCP or UDP Connection

AT+CIPSTART Start Up TCP or UDP Connection	
Test Command	Response

AT+CIPSTART=?	1) If AT+CIPMUX=0 **+CIPSTART: (**list of supported **<mode>),(<IP address>),(<port>)** **+CIPSTART: (**list of supported **<mode>),(<domain name>),(<port>)** **OK** 2) If AT+CIPMUX=1 **+CIPSTART: (**list of supported **<n>),(**list of supported **<mode>),(<IP address>),(<port>)** **+CIPSTART: (**list of supported **<n>),(**list of supported **<mode>),(<domain name>),(<port>)** **OK**
	Parameters See Write Command
Write Command 1)If single IP connection (+CIPMUX=0) **AT+CIPSTART=<mode>,<IP address>,<port>** Or **AT+CIPSTART=<mode>,<domain name>,<port>** 2)If multi-IP connection (+CIPMUX=1) **AT+CIPSTART=<n>,<mode>,<address>,<port>** **AT+CIPSTART=<n>,<mode>,<domain name>,<port>**	Response 1)If single IP connection (**+CIPMUX=0**) If format is right response **OK** otherwise response If error is related to ME functionality: **+CME ERROR <err>** Response when connection exists **ALREADY CONNECT** Response when connection is successful **CONNECT OK** Otherwise **STATE: <state>** **CONNECT FAIL** 2)If multi-IP connection (+CIPMUX=1) If format is right **OK**, otherwise response If error is related to ME functionality: **+CME ERROR <err>** Response when connection exists **<n>,ALREADY CONNECT** If connection is successful **<n>,CONNECT OK** Otherwise **<n>,CONNECT FAIL**
	Parameters

	<n> 0..7 A numeric parameter which indicates the connection number **<mode>** A string parameter which indicates the connection type "TCP" Establish a TCP connection "UDP" Establish a UDP connection **<IP address>** A string parameter which indicates remote server IP address **<port>** Remote server port **<domain name>** A string parameter which indicates remote server domain name **<state>** A string parameter which indicates the progress of connecting 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 TCP CONNECTING/UDP CONNECTING/ SERVER LISTENING 6 CONNECT OK 7 TCP CLOSING/UDP CLOSING 8 TCP CLOSED/UDP CLOSED 9 PDP DEACT In Multi-IP state: 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 IP PROCESSING 9 PDP DEACT
Parameter Saving Mode	NO_SAVE
Max Response Time	When mode is multi-IP state, the max response time75 seconds. When mode is single state, and the state is IP INITIAL, the max response time is 160 seconds.
Reference	Note ● This command allows establishment of a TCP/UDP connection only when the state is IP INITIAL or IP STATUS when it is in single state. In multi-IP state, the state is in IP STATUS only. So it is necessary to process "**AT+CIPSHUT**" before user establishes a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS. ● When module is in multi-IP state, before this command is executed, it is necessary to process "**AT+CSTT**, **AT+CIICR**, **AT+CIFSR**".

8.2.3 AT+CIPSEND Send Data Through TCP or UDP Connection

AT+CIPSEND Send Data Through TCP or UDP Connection	
Test Command **AT+CIPSEND=?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND: <length>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND: (0-7),<length>** **OK**
	Parameters See Write Command
Read Command **AT+CIPSEND?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND: <size>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND: <n>,<size>** **OK**
	Parameters **<n>** A numeric parameter which indicates the connection number **<size>** A numeric parameter which indicates the data length sent at a time
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPSEND=<length>** 2) If multi IP connection (+CIPMUX=1) **AT+CIPSEND=<n>[,<length>]**	Response This Command is used to send changeable length data If single IP is connected (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **SEND OK** When +CIPQSEND=1 **DATA ACCEPT: <length>** If sending fails: **SEND FAIL** If multi IP connection is established (+CIPMUX=1) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>**

	If sending is successful: When +CIPQSEND=0 **<n>,SEND OK** When +CIPQSEND=1 **DATA ACCEPT: <n>,<length>** If sending fails: **<n>,SEND FAIL**
	Parameters **<n>** A numeric parameter which indicates the connection number **<length>** A numeric parameter which indicates the length of sending data, it must be less than <size>
Execution Command **AT+CIPSEND** Response ">", then type data for send,tap CTRL+Z to send, tap ESC to cancel the operation	Response This Command is used to send changeable length data. If single IP connection is established (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **SEND OK** When +CIPQSEND=1 **DATA ACCEPT: <length>** If sending fails: **SEND FAIL** Note This Command can only be used in single IP connection mode (+CIPMUX=0) and to send data on the TCP or UDP connection that has been established already. Ctrl-Z is used as a termination symbol. ESC is used to cancel sending data. There are at most **<size>** bytes which can be sent at a time.
Parameter Saving Mode	NO_SAVE
Max Response Time	When +CIPQSEND=0 and the remote server no response, after 645 seconds, "**CLOSE**" will be reported.
Reference	Note ● The data length which can be sent depends on network status. ● Set the time that send data automatically with the Command of AT+CIPATS. ● Only send data at the status of established connection.

8.2.4 AT+CIPQSEND Select Data Transmitting Mode

AT+CIPQSEND	Select Data Transmitting Mode
Test Command **AT+CIPQSEND=?**	Response **+CIPQSEND: (0,1)** **OK**
	Parameters See Write Command
Read Command **AT+CIPQSEND?**	Response **+CIPQSEND: <n>** **OK**
	Parameter See Write Command
Write Command **AT+CIPQSEND=<n>**	Response **OK**
	Parameters **<n>** 0 Normal mode – when the server receives TCP data, it will responsd SEND OK. 1 Quick send mode – when the data is sent to module, it will responsd DATA ACCEPT: <n>,<length>, while not responding SEND OK.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.5 AT+CIPACK Query Previous Connection Data Transmitting State

AT+CIPACK	Query Previous Connection Data Transmitting State
Test Command **AT+CIPACK=?**	Response **OK**
Write Command If in multi IP connection (+CIPMUX=1) **AT+CIPACK=<n>**	Response **+CIPACK: <txlen>,<acklen>,<nacklen>** **OK**
	Parameters **<n>** A numeric parameter which indicates the connection number **<txlen>** The data amount which has been sent **<acklen>** The data amount confirmed successfully by the server **<nacklen>** The data amount without confirmation by the server

Execution Command If in single IP connection (+CIPMUX=0) **AT+CIPACK**	Response **+CIPACK: <txlen>,<acklen>,<nacklen>** **OK**
	Parameters See Write Command
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.6 AT+CIPCLOSE Close TCP or UDP Connection

AT+CIPCLOSE	**Close TCP or UDP Connection**
Test Command **AT+CIPCLOSE=?**	Response **OK**
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPCLOSE=<n>** 2) If multi IP connection (+CIPMUX=1) **AT+CIPCLOSE=<id>,[<n>]**	Response: 1) For single IP connection (+CIPMUX=0) **CLOSE OK** 2) For multi IP connection (+CIPMUX=1) **<id>,CLOSE OK**
	Parameters **<n>** 0 Slow close 1 Quick close <id> A numeric parameter which indicates the connection number
Execution Command **AT+CIPCLOSE**	Response If close is successfully: **CLOSE OK** If close fails: **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note AT+CIPCLOSE only closes connection at corresponding status of TCP/UDP stack. To see the status use AT+CIPSTATUS command. Status

	should be: TCP CONNECTING, UDP CONNECTING, SERVER LISTENING or CONNECT OK in single-connection mode (see <state> parameter); CONNECTING or CONNECTED in multi-connection mode (see <client state>); OPENING or LISTENING in multi-connection mode (see <server state>). Otherwise it will return "ERROR".

8.2.7 AT+CIPSHUT Deactivate GPRS PDP Context

AT+CIPSHUT Deactivate GPRS PDP Context	
Test Command **AT+CIPSHUT=?**	Response **OK**
Execution Command **AT+CIPSHUT**	Response If close is successful: **SHUT OK** If close fails: **ERROR**
Parameter Saving Mode	NO_SAVE
Max Response Time	65 seconds
Reference	Note ● If this command is executed in multi-connection mode, all of the IP connection will be shut. ● User can close gprs pdp context by AT+CIPSHUT. After it is closed, the status is IP INITIAL. ● If "+PDP: DEACT" urc is reported which means the gprs is released by the network, then user still needs to execute "AT+CIPSHUT" command to make PDP context come back to original state.

8.2.8 AT+CLPORT Set Local Port

AT+CLPORT Set Local Port	
Test Command **AT+CLPORT=?**	Response 1) For single IP connection (+CIPMUX=0) **+CLPORT: ("TCP","UDP"),(0-65535)** **OK** 2) For multi IP connection (+CIPMUX=1) **+CLPORT: (0-7),("TCP","UDP"),(0-65535)** **OK**

	Parameters See Write Command
Read Command **AT+CLPORT?**	Response 1) For single IP connection (+CIPMUX=0) **+CLPORT: <TCP port>,<UDP port>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CLPORT: 0,<TCP port>,<UDP port>** **+CLPORT: 1,<TCP port>,<UDP port>** **+CLPORT: 2,<TCP port>,<UDP port>** **+CLPORT: 3,<TCP port>,<UDP port>** **+CLPORT: 4,<TCP port>,<UDP port>** **+CLPORT: 5,<TCP port>,<UDP port>** **+CLPORT: 6,<TCP port>,<UDP port>** **+CLPORT: 7,<TCP port>,<UDP port>** **OK**
	Parameters See Write Command
Write Command 1) For single IP connection (+CIPMUX=0) **AT+CLPORT=<mode>,<port>** 2) For multi IP connection (+CIPMUX=1) **AT+CLPORT=<n>,<mode>,<port>**	Response **OK** **ERROR**
	Parameters **<n>** 0..7 A numeric parameter which indicates the connection number this used in multi IP connection **<mode>** A string parameter which indicates the connection type "TCP" TCP local port "UDP" UDP local port **<port>** 0-65535 A numeric parameter which indicates the local port. Default value is 0, a port can be dynamically allocated a port.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command will be effective when module is set as a Client.

8.2.9 AT+CSTT Start Task and Set APN, USER NAME, PASSWORD

AT+CSTT Start Task and Set APN, USER NAME, PASSWORD	
Test Command	Response

AT+CSTT=?	**+CSTT: "APN","USER","PWD"** **OK**
	Parameters See Write Command
Read Command **AT+CSTT?**	Response **+CSTT: <apn>,<user name>,<password>** **OK**
	Parameters See Write Command
Write Command **AT+CSTT=<apn>,<user name>,<password>**	Response **OK** **ERROR**
	Parameters **<apn>** A string parameter which indicates the GPRS access point name. The max length is 50 bytes.Defautl value is **"CMNET"**. **<user name>** A string parameter which indicates the GPRS user name. The max length is 50 bytes. **<password>** A string parameter which indicates the GPRS password. The max length is 50 bytes.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Execution Command **AT+CSTT**	Response **OK** **ERROR**
Reference	Note The write command and execution command of this command is valid only at the state of IP INITIAL. After this command is executed, the state will be changed to IP START.

8.2.10 AT+CIICR Bring Up Wireless Connection with GPRS

AT+CIICR Bring Up Wireless Connection with GPRS	
Test Command **AT+CIICR=?**	Response **OK**
Execution Command **AT+CIICR**	Response **OK** **ERROR**
Parameter Saving	NO_SAVE

Mode	
Max Response Time	85 seconds
Reference	Note ● AT+CIICR only activates moving scene at the status of IP START, after operating this Command is executed, the state will be changed to IP CONFIG. ● After module accepts the activated operation, if it is activated successfully, module state will be changed to IP GPRSACT, and it responds OK, otherwise it will respond ERROR.

8.2.11 AT+CIFSR Get Local IP Address

AT+CIFSR Get Local IP Address	
Test Command **AT+CIFSR=?**	Response **OK**
Execution Command **AT+CIFSR**	Response **<IP address>** **ERROR**
	Parameter **<IP address>** A string parameter which indicates the IP address assigned from GPRS
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Only after PDP context is activated, local IP address can be obtained by AT+CIFSR, otherwise it will respond ERROR. To see the status use AT+CIPSTATUS command. Status should be: IP GPRSACT, TCP CONNECTING, UDP CONNECTING, SERVER LISTENING, IP STATUS, CONNECT OK, TCP CLOSING, UDP CLOSING, TCP CLOSED, UDP CLOSED in single-connection mode (see <state> parameter); IP STATUS, IP PROCESSING in multi-connection mode (see <state> parameter).

8.2.12 AT+CIFSREX Get Local IP Address extend

AT+CIFSREX Get Local IP Address extend	
Test Command **AT+CIFSREX=?**	Response **OK**
Execution	Response

Command **AT+CIFSREX**	**+CIFSREX: <IP address>** **OK**
	Parameter **<IP address>** A string parameter which indicates the IP address assigned from GPRS
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Only after PDP context is activated, local IP address can be obtained by AT+CIFSR, otherwise it will respond ERROR. To see the status use AT+CIPSTATUS command. Status should be: IP GPRSACT, TCP CONNECTING, UDP CONNECTING, SERVER LISTENING, IP STATUS, CONNECT OK, TCP CLOSING, UDP CLOSING, TCP CLOSED, UDP CLOSED in single-connection mode (see <state> parameter); IP STATUS, IP PROCESSING in multi-connection mode (see <state> parameter).

8.2.13 AT+CIPSTATUS Query Current Connection Status

AT+CIPSTATUS	**Query Current Connection Status**
Test Command **AT+CIPSTATUS=?**	Response **OK**
Write Command If multi IP connection mode (+CIPMUX=1) **AT+CIPSTATUS=<n>**	Response **+CIPSTATUS: <n>,<bearer>,<TCP/UDP>,<IP address>,<port>,<client state>** **OK**
	Parameters See Execution Command
Execution Command **AT+CIPSTATUS**	Response 1）If in single connection mode (+CIPMUX=0) **OK** **STATE: <state>** 2) If in multi-connection mode (+CIPMUX=1) **OK**

	STATE: <state> If the module is set as server **S: 0,<bearer>,<port>,<server state>** **C: <n>,<bearer>,<TCP/UDP>,<IP address>,<port>,<client state>**
	Parameters **<n>** 0-7 A numeric parameter which indicates the connection number **<bearer>** 0-1 GPRS bearer, default is 0 **<server state>** OPENING LISTENING CLOSING **<client state>** INITIAL CONNECTING CONNECTED REMOTE CLOSING CLOSING CLOSED **<state>** A string parameter which indicates the progress of connecting 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 TCP CONNECTING/UDP CONNECTING /SERVER LISTENING 6 CONNECT OK 7 TCP CLOSING/UDP CLOSING 8 TCP CLOSED/UDP CLOSED 9 PDP DEACT In Multi-IP state: 0 IP INITIAL 1 IP START 2 IP CONFIG 3 IP GPRSACT 4 IP STATUS 5 IP PROCESSING 9 PDP DEACT
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.14 AT+CDNSCFG Configure Domain Name Server

AT+CDNSCFG	Configure Domain Name Server
Test Command **AT+CDNSCFG=?**	Response **+CDNSCFG: ("Primary DNS"),("Secondary DNS")** **OK**
	Parameters See Write Command
Read Command **AT+CDNSCFG?**	Response **PrimaryDns: <pri_dns>** **SecondaryDns: <sec_dns>** **OK**
	Parameter See Write Command
Write Command **AT+CDNSCFG=<pri_dns>[,<sec_dns>]**	Response **OK** **ERROR**
	Parameters **<pri_dns>** A string parameter which indicates the IP address of the primary domain name server. Default value is 0.0.0.0. **<sec_dns>** A string parameter which indicates the IP address of the secondary domain name server. Default value is 0.0.0.0.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.15 AT+CDNSGIP Query the IP Address of Given Domain Name

AT+CDNSGIP	Query the IP Address of Given Domain Name
Test Command **AT+CDNSGIP=?**	Response **OK**
Write Command **AT+CDNSGIP=<domain name>**	Response **OK** **ERROR** If successful, return:

	+CDNSGIP: 1,<domain name>,<IP1>[,<IP2>] If fail, return: **+CDNSGIP:0,<dns error code>**
	Parameters **<domain name>** A string parameter which indicates the domain name **<IP1>** A string parameter which indicates the first IP address corresponding to the domain name **<IP2>** A string parameter which indicates the second IP address corresponding to the domain name **<dns error code>** A numeric parameter which indicates the error code 8 DNS COMMON ERROR 3 NETWORK ERROR There are some other error codes as well.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.16 AT+CIPHEAD Add an IP Head at the Beginning of a Package Received

AT+CIPHEAD Add an IP Head at the Beginning of a Package Received	
Test Command **AT+CIPHEAD=?**	Response **+CIPHEAD: (**list of supported **<mode>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CIPHEAD?**	Response **+CIPHEAD: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPHEAD=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** A numeric parameter which indicates whether an IP header is added to the received data or not. 0 Not add IP header 1 Add IP header, the format is:

	1) For single IP connection (+CIPMUX=0) **+IPD,<data length>:** 2) For multi IP connection (+CIPMUX=1) **+RECEIVE,<n>,<data length>:**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.17 AT+CIPATS Set Auto Sending Timer

AT+CIPATS Set Auto Sending Timer	
Test Command **AT+CIPATS=?**	Response **+CIPATS: (**list of supported **<mode>**s**),(**list of supported **<time>**) **OK**
	Parameters See Write Command
Read Command **AT+CIPATS?**	Response **+CIPATS: <mode>,<time>** **OK**
	Parameters See Write Command
Write Command **AT+CIPATS=<mode>[,<time>]**	Response **OK** **ERROR**
	Parameters **<mode>** A numeric parameter which indicates whether set timer when module is sending data 0 Not set timer when module is sending data 1 Set timer when module is sending data **<time>** 1..100 A numeric parameter which indicates the seconds after which the data will be sent
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.18 AT+CIPSPRT Set Prompt of '>' When Module Sends Data

AT+CIPSPRT Set Prompt of '>' When Module Sends Data	
Test Command **AT+CIPSPRT=?**	Response **+CIPSPRT: (**list of supported **<send prompt>**s) **OK**
	Parameters See Write Command
Read Command **AT+CIPSPRT?**	Response **+CIPSPRT: <send prompt>** **OK**
	Parameters See Write Command
Write Command **AT+CIPSPRT=<send prompt>**	Response **OK** **ERROR**
	Parameters **<send prompt>** A numeric parameter which indicates whether to echo prompt '>' after module issues AT+CIPSEND command. 0 It shows "send ok" but does not prompt echo '>' when sending is successful. 1 It prompts echo '>' and shows "send ok" when sending is successful. 2 It neither prompts echo '>' nor shows "send ok" when sending is successful.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.19 AT+CIPSERVER Configure Module as Server

AT+CIPSERVER Configure Module as Server	
Test Command **AT+CIPSERVER=?**	Response **+CIPSERVER: (0-CLOSE SERVER, 1-OPEN SERVER),(1-65535)** **OK**
	Parameters See Write Command

Read Command **AT+CIPSERVER?**	Response **+CIPSERVER: <mode>[,<port>,<channel id>,<bearer>]** **OK**
	Parameters See Write Command
Write Command **AT+CIPSERVER=<mode>[,<port>]**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Close server 1 Open server **<port>** 1..65535 Listening port **<channel id>** Channel id **<bearer>** GPRS bearer
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command is allowed to establish a TCP server only when the state is IP INITIAL or IP STATUS when it is in single state. In multi-IP state, the state is in IP STATUS only.

8.2.20 AT+CIPCSGP Set GPRS for Connection Mode

AT+CIPCSGP Set GPRS for Connection Mode	
Test Command **AT+CIPCSGP=?**	Response **+CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD** **OK**
	Parameters See Write Command
Read Command **AT+CIPCSGP?**	Response **+CIPCSGP: <mode>,<apn>,<user name>,<password>[,<rate>]** **OK**
	Parameters See Write Command
Write Command **AT+CIPCSGP=<mode>[,(<apn>,<**	Response **OK** **ERROR**

user name>, <password>)]	Parameters **<mode>** A numeric parameter which indicates the wireless connection mode 1 set GPRS as wireless connection mode **<apn>** A string parameter which indicates the access point name **<user name>** A string parameter which indicates the user name **<password>** A string parameter which indicates the password
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.21 AT+CIPSRIP Show Remote IP Address and Port When Received Data

AT+CIPSRIP Show Remote IP Address and Port When Received Data	
Test Command **AT+CIPSRIP=?**	Response **+CIPSRIP: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CIPSRIP?**	Response **+CIPSRIP**: **<mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPSRIP=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** A numeric parameter which shows remote IP address and port. 0 Do not show the prompt 1 Show the prompt, the format is as follows: 1) For single IP connection (+CIPMUX=0) **RECV FROM:<IP ADDRESS>:<PORT>** 1) For multi IP connection (+CIPMUX=1) **+RECEIVE,<n>,<data length>,<IP ADDRESS>:<PORT>**
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	

8.2.22 AT+CIPDPDP Set Whether to Check State of GPRS Network Timing

AT+CIPDPDP Set Whether to Check State of GPRS Network Timing	
Test Command **AT+CIPDPDP=?**	Response **+CIPDPDP: (**list of supported**<mode>**s**,** list of supported **<interval>,** list of supported **<timer>)** **OK**
	Parameters See Write Command
Read Command **AT+CIPDPDP?**	Response **+CIPDPDP: <mode>,<interval>,<timer>** **OK**
	Parameters See Write Command
Write Command **AT+CIPDPDP=<mode>[,<interval>,<timer>]**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Not set detect PDP 1 Set detect PDP **<interval>** 1<=interval<=180(s), default value is 10. **<timer>** 1<=timer<=10, default value is 3.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note If "+PDP: DEACT" urc is reported because of module not attaching to gprs for a certain time or other reasons, user still needs to execute "AT+CIPSHUT" command makes PDP context come back to original state.

8.2.23 AT+CIPMODE Select TCPIP Application Mode

AT+CIPMODE Select TCPIP Application Mode	
Test Command **AT+CIPMODE=?**	Response **+CIPMODE: (0-NORMAL MODE,1-TRANSPARENT MODE)** **OK**
	Parameters See Write Command
Read Command **AT+CIPMODE?**	Response **+CIPMODE: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPMODE=<mode>**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Normal mode 1 Transparent mode
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.24 AT+CIPCCFG Configure Transparent Transfer Mode

AT+CIPCCFG Configure Transparent Transfer Mode	
Test Command **AT+CIPCCFG=?**	Response **+CIPCCFG: (NmRetry:3-8),(WaitTm:1-10),(SendSz:1-1460),(esc:0,1) ,(Rxmode:0,1), (RxSize:50-1460),(Rxtimer:20-1000)** **OK**
	Parameters See Write Command
Read Command **AT+CIPCCFG?**	Response **+CIPCCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>,<Rxmode>,<RxSize>,<Rxtimer>**

	OK
	Parameters See Write Command
Write Command **AT+CIPCCFG=<NmRetry>,<WaitTm>,<SendSz>,<esc>[,<Rxmode>,<RxSize>,<Rxtimer>]**	Response **OK** **ERROR**
	Parameters **<NmRetry>** Number of retries to be made for an IP packet.Default value is 5. **<WaitTm>** Number of 100ms intervals to wait for serial input before sending the packet. Default value is 2. **<SendSz>** Size in bytes of data block to be received from serial port before sending. Default value is 1024. **<esc>** Whether turn on the escape sequence, default is TRUE. 0 Turn off the escape sequence 1 Turn on the escape sequence **<Rxmode>** Whether to set time interval during output data from serial port. 0 output data to serial port without interval 1 output data to serial port within <Rxtimer> interval. **<RxSize>** Output data length for each time. Default value is 1460. **<Rxtimer>** Time interval (ms) to wait for serial port to output data again. Default value: 50ms
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command will be effective only in single connection mode (+CIPMUX=0)

8.2.25 AT+CIPSHOWTP Display Transfer Protocol in IP Head When Received Data

AT+CIPSHOWTP	**Display Transfer Protocol in IP Head When Received Data**
Test Command **AT+CIPSHOWTP=?**	Response **+CIPSHOWTP: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CIPSHOWTP**	Response **+CIPSHOWTP: <mode>**

?	**OK**
	Parameters See Write Command
Write Command **AT+CIPSHOWTP=<mode>**	Response **OK** **ERROR** Parameters **<mode>** A numeric parameter which indicates whether to display transfer protocol in IP header to received data or not 0 Not display transfer protocol 1 Display transfer protocol, the format is "+IPD,<data size>,<TCP/UDP>:<data>"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● This command will be effective only in single connection mode (+CIPMUX=0). • Only when +CIPHEAD is set to 1, the setting of this command will work.

8.2.26 AT+CIPUDPMODE UDP Extended Mode

AT+CIPUDPMODE UDP Extended Mode	
Test Command **AT+CIPUDPMODE=?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPUDPMODE: (0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPUDPMODE:** **(0-5),(0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)** **OK**
	Parameters See Write Command
Read Command **AT+CIPUDPMODE?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPUDPMODE: <mode>[,<IP address>,<Port>]** **OK** 2) For multi IP connection (+CIPMUX=1)

	+CIPUDPMODE: 0,<mode>[,<IP address>,<Port>] **+CIPUDPMODE: 1,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 2,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 3,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 4,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 5,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 6,<mode>[,<IP address>,<Port>]** **+CIPUDPMODE: 7,<mode>[,<IP address>,<Port>]** **OK**
	Parameter See Write Command
Write Command 1) For single IP connection (+CIPMUX=0) **AT+CIPUDPMODE=<mode>[,<IP address>,<Port>]** 2) For multi IP connection (+CIPMUX=1) **AT+CIPUDPMODE=<n>,<mode>[,<IP address>,<Port>]**	Response **OK** **ERROR**
	<n> 0-7 A numeric parameter which indicates the connection number **<mode>** 0 UDP Normal Mode 1 UDP Extended Mode 2 Set UDP address to be sent **<IP address>** A string parameter which indicates remote IP address **<port>** Remote port
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.27 AT+CIPRXGET Get Data from Network Manually

AT+CIPRXGET	**Get Data from Network Manually**
Test Command **AT+CIPRXGET=?**	Response If single IP connection (+CIPMUX=0) **+CIPRXGET: (**list of supported **<mode>**s**),(**list of supported **<reqlength>)** **OK** If multi IP connection (+CIPMUX=1) **+CIPRXGET: (**list of supported **<mode>**s**), (**list of supported **<id>**s**), (**list of supported **<reqlength>)**

	OK
	Parameters See Write Command
Read Command **AT+CIPRXGET?**	Response **+CIPRXGET: <mode>** **OK**
	Parameters See Write Command
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPRXGET=<mode>[,<reqlength>]** 2) If multi IP connection (+CIPMUX=1) **AT+CIPRXGET=<mode>[,<id>,<reqlength>]**	Response **OK** **ERROR** 1)For single IP connection If "AT+CIPSRIP=1" is set, IP address and port are contained. if <mode>=1 **+CIPRXGET: 1[,<IP ADDRESS>:<PORT>]** if <mode>=2 **+CIPRXGET: 2,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **1234567890…** **OK** if <mode>=3 **+CIPRXGET: 3,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **5151…** **OK** if <mode>=4 **+CIPRXGET: 4,<cnflength>** **OK** 2)For multi IP connection If "AT+CIPSRIP=1" is set, IP address and port is contained. if <mode>=1 **+CIPRXGET: 1[,<id>,<IP ADDRESS>:<PORT>]** if <mode>=2 **+CIPRXGET: 2,<id>,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **1234567890…** **OK** if <mode>=3 **+CIPRXGET: 3,<id>,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **5151…** **OK**

	if <mode>=4 **+CIPRXGET: 4,<id>,<cnflength>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Disable getting data from network manually, the module is set to normal mode, data will be pushed to TE directly. 1 Enable getting data from network manually. 2 The module can get data, but the length of output data can not exceed 1460 bytes at a time. 3 Similar to mode 2, but in HEX mode, which means the module can get 730 bytes maximum at a time. 4 Query how many data are not read with a given ID. **<id>** A numeric parameter which indicates the connection number **<reqlength>** Requested number of data bytes (1-1460 bytes)to be read. If <mode>=4,the range of <reqlength> is 0-2920bytes. **<cnflength>** Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note To enable this function, parameter <mode> must be set to 1 before connection.

8.2.28 AT+CIPRDTIMER Set Remote Delay Timer

AT+CIPRDTIMER Set Remote Delay Timer	
Test Command **AT+CIPRDTIMER=?**	Response **+CIPRDTIMER: (100-4000),(100-7000)** **OK**
	Parameters See Write Command
Read Command **AT+CIPRDTIMER?**	Response **+CIPRDTIMER: <rdsigtimer>,<rdmuxtimer>** **OK**

	Parameters See Write Command
Write Command **AT+CIPRDTIMER=<rdsigtimer>,<rdmuxtimer>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<rdsigtimer>** Remote delay timer of single connection. Default value is 2000. **<rdmuxtimer>** Remote delay timer of multi-connections. Default value is 3500.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command is used to shorten the disconnect time locally when the remote server has been disconnected.

8.2.29 AT+CIPSGTXT Select GPRS PDP context

AT+CIPSGTXT	**Select GPRS PDP context**
Test Command **AT+CIPSGTXT=?**	Response **+CIPSGTXT: (0,1)** **OK**
	Parameters See Write Command
Write Command **AT+CIPSGTXT=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Select first PDP context 1 Select second PDP context
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command is used to select pdp context, only for multi IP connection (+CIPMUX=1).

8.2.30 AT+CIPSENDHEX Set CIPSEND Data Format to Hex

AT+CIPSENDHEX Set CIPSEND Data Format to HEX	
Test Command **AT+CIPSENDHEX=?**	Response **+ CIPSENDHEX: (0,1)** **OK**
	Parameters See Write Command
Write Command **AT+CIPSENDHEX=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 0 The default format of output data in AT+CIPSEND. 1 Set the input data in HEX format when using CIPSEND command to send data.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.31 AT+CIPHEXS Set Output-data Format with suffix

AT+CIPHEXS Set Output-data Format with suffix	
Test Command **AT+CIPHEXS=?**	Response **+CIPHEXS: (list of supported <mode>s)** **OK**
	Parameters See Write Command
Write Command **AT+CIPHEXS=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 0 The default format of output data 1 Set the output data with suffix "0d 0a" 2 Set the output data in HEX format with suffix "0d 0a".
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note: This command is only available when "AT+CIPHEAD=1".

8.2.32 AT+CIPTKA Set TCP Keepalive Parameters

AT+CIPTKA Set TCP Keepalive Parameters	
Test Command **AT+CIPTKA=?**	Response **+CIPTKA:** (list of supported **<mode>**s),(list of supported **<keepIdle>**s),(list of supported **<keepInterval>**),(list of supported **<keepCount>**s) **OK**
	Parameters See Write Command
Read Command **AT+CIPTKA?**	Response **+CIPTKA: <mode>,<keepIdle>,<keepInterval>,<keepCount>** **OK**
	Parameters See Write Command
Write Command **AT+CIPTKA=<mode>[,<keepIdle>[,<keepInterval>[,<keepCount>]]]**	Response **OK** If error is related to ME functionality: **ERROR**
	Parameters **<mode>** Set TCP keepalive option. 0 Disable TCP keep alive mechanism 1 Enable TCP keep alive mechanism **<keepIdle>** Integer type; Idle time (in second) before TCP send the initial keepalive probe. 30-7200 Default: 7200 **<keepInterval>** Interval time (in second) between keepalive probes retransmission. 30-600 Default: 75 **<keepCount>** Integer type; Maximum number of keepalive probes to be sent. 1-9 Default: 9
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note

8.2.33 AT+CIPOPTION Enable or Disable TCP nagle algorithm

AT+CIPOPTION Enable or Disable TCP nagle algorithm	
Test Command **AT+CIPOPTION=?**	Response **+CIPOPTION:** (list of supported **<mode>**s) **OK**
	Parameters See Write Command
Read Command **AT+CIPOPTION?**	Response **+CIPOPTION: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPOPTION=<mode>**	Response **OK** If error is related to ME functionality: **ERROR**
	Parameters **<mode>** Config to enable or disable TCP nagle algorithm 0 Enable TCP nagle algorithm 1 Disable TCP nagle algorithm
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

9 AT Commands for HTTP Application

SIM7000 series has an embedded TCP/IP stack that is driven by AT commands and enables the host application to easily access the Internet HTTP service. This chapter is a reference guide to all the AT commands and responses defined to use with the TCP/IP stack in HTTP Service.

9.1 Overview

Command	Description
AT+HTTPINIT	Initialize HTTP service
AT+HTTPTERM	Terminate HTTP service
AT+HTTPPARA	Set HTTP parameters value
AT+HTTPDATA	Input HTTP data
AT+HTTPACTION	HTTP method action
AT+HTTPREAD	Read the HTTP server response
AT+HTTPSTATUS	Read HTTP status
AT+HTTPHEAD	Read the HTTP header information of server response
AT+HTTPTOFS	Download file to ap file system
AT+HTTPTOFSRL	State of download file to ap file system

9.2 Detailed Descriptions of Commands

9.2.1 AT+HTTPINIT Initialize HTTP Service

AT+HTTPINIT	Initialize HTTP Service
Test Command **AT+HTTPINIT=?**	Response **OK**
Execution Command **AT+HTTPINIT**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note HTTPINIT should first be executed to initialize the HTTP service.

9.2.2 AT+HTTPTERM Terminate HTTP Service

AT+HTTPTERM Terminate HTTP Service	
Test Command **AT+HTTPTERM=?**	Response **OK**
Execution command **AT+HTTPTERM**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

9.2.3 AT+HTTPPARA Set HTTP Parameters Value

AT+HTTPPARA Set HTTP Parameters Value	
Test Command **AT+HTTPPARA=?**	Response **+HTTPPARA: "HTTPParamTag","HTTPParmValue"** **OK**
	Parameters See Write Command
Read Command **AT+HTTPPARA?**	Response **+HTTPPARA: <HTTPParamTag>,<HTTPParamValue>** **OK**
	Parameters See Write Command
Write Command **AT+HTTPPARA=<HTTPParamTag>,<HTTPParamValue>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<HTTPParamTag>** "CID" HTTP Parameter "URL"

		(Mandatory Parameter) Bearer profile identifier (Mandatory Parameter) HTTP client URL "http://'server'/'path':'tcpPort' " "server": FQDN or IP-address "path": path of file or directory
	"UA"	"tcpPort": default value is 80. Refer to "IETF-RFC 2616".
	"PROIP"	The user agent string which is set by the application to identify the mobile. Usually this parameter is set as operation system and software version information.
	"PROPORT"	Default value is "SIMCom_MODULE".
	"REDIR"	The IP address of HTTP proxy server The port of HTTP proxy server
	"BREAK"	This flag controls the redirection mechanism of the SIM800 when it is acting as HTTP client (numeric). If the server sends a redirect code (range 30x), the client will automatically send a new HTTP request when the flag is set to (1). Default value is 0 (no redirection).
	"BREAKEND"	Parameter for HTTP method "GET", used for resuming broken transfer. Parameter for HTTP method "GET", used for resuming broken transfer. which is used together with "BREAK", If the value of "BREAKEND" is bigger than "BREAK", the transfer scope is from "BREAK" to "BREAKEND".
	"TIMEOUT"	If the value of "BREAKEND" is smaller than "BREAK", the transfer scope is from "BREAK" to the end of the file. If both "BREAKEND" and "BREAK" are 0, the resume broken transfer function is disabled. HTTP session timeout value, scope: 30-1000 second. Default value is 120 seconds.
	"CONTENT"	HTTP Parameter value. Type and supported content depend on related <HTTPParamTag>.
	"USERDATA"	Used to set the “Content-Type” field in HTTP header.
<HTTPParamValue>		User data HTTP Parameter value.Type and supported content depend on related <HTTPParamTag>.

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Not all the HTTP Server supports "BREAK" and "BREAKEND" parameters

9.2.4 AT+HTTPDATA Input HTTP Data

AT+HTTPDATA	**Input HTTP Data**
Test Command **AT+HTTPDATA=?**	Response **+HTTPDATA: (**list of supported **<size>s),(**list of supported **<time>s)** **OK**
	Parameters See Write Command
Write Command **AT+HTTPDATA=<size>,<time>**	Response **DOWNLOAD** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<size>** Size in bytes of the data to POST. 1-319488 (bytes) 0 means delete all the content. **<time>** 1000-120000 (millisecond) Maximum time in milliseconds to input data.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note It is strongly recommended to set enough time to input all data with the length of <size>.

9.2.5 AT+HTTPACTION HTTP Method Action

AT+HTTPACTION	**HTTP Method Action**

Test Command **AT+HTTPACTION=?**	Response **+HTTPACTION: (0-3)** **OK**
	Parameters See Write Command
Write Command **AT+HTTPACTION=<Method>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Unsolicited Result Code **+HTTPACTION: <Method>,<StatusCode>,<DataLen>**
	Parameters **<Method>** HTTP method specification: 0 GET 1 POST 2 HEAD 3 DELETE **<StatusCode>** HTTP Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616) 100 Continue 101 Switching Protocols 200 OK 201 Created 202 Accepted 203 Non-Authoritative Information 204 No Content 205 Reset Content 206 Partial Content 300 Multiple Choices 301 Moved Permanently 302 Found 303 See Other 304 Not Modified 305 Use Proxy 307 Temporary Redirect 400 Bad Request 401 Unauthorized 402 Payment Required 403 Forbidden 404 Not Found 405 Method Not Allowed

	406 Not Acceptable 407 Proxy Authentication Required 408 Request Time-out 409 Conflict 410 Gone 411 Length Required 412 Precondition Failed 413 Request Entity Too Large 414 Request-URI Too Large 415 Unsupported Media Type 416 Requested range not satisfiable 417 Expectation Failed 500 Internal Server Error 501 Not Implemented 502 Bad Gateway 503 Service Unavailable 504 Gateway Time-out 505 HTTP Version not supported 600 Not HTTP PDU 601 Network Error 602 No memory 603 DNS Error 604 Stack Busy **<DataLen>** The length of data got
Parameter Saving Mode	NO_SAVE
Max Response Time	About 5 seconds in test, dependence on network status and the size of request website
Reference	Note

9.2.6 AT+HTTPREAD Read the HTTP Server Response

AT+HTTPREAD Read the HTTP Server Response	
Test Command **AT+HTTPREAD=?**	Response **+HTTPREAD: (**list of supported **<start_address>**s**),(**list of supported **<byte_size>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+HTTPREA**	Response **+HTTPREAD: <date_len>**

D=<start_address>,<byte_size>	**<data>** **OK** Read data when AT+HTTPACTION=0 or AT+HTTPDATA is executed. If<byte_size> is bigger than the data size received, module will only return actual data size. If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<data>** Data from HTTP server or user input. **<start_address>** The starting point for data output. 0-319488 (bytes) **<byte_size>** The length for data output. 1-319488 (bytes) **<data_len>** The actual length for data output.
Execution Command **AT+HTTPREAD**	Response **+HTTPREAD: <date_len>** **<data>** **OK** Read all data when AT+HTTPACTION=0 or AT+HTTPDATA is executed. If error is related to ME functionality: **+CME ERROR: <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

9.2.7 AT+HTTPSTATUS Read HTTP Status

AT+HTTPSTATUS Read HTTP Status	
Test Command **AT+HTTPSTATUS=?**	Response **OK**

Read Command **AT+HTTPSTATUS?**	Response **+HTTPSTATUS: <mode>,<status>,<finish>,<remain>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters: **<mode>** GET POST HEAD **<status>** 0 idle 1 receiving 2 sending **<finish>** The amount of data which have been transmitted **<remain>** The amount of data remaining to be sent or received
Parameter Saving Mode	NO_SAVE
Max Response Time	-

9.2.8 AT+HTTPHEAD Read the HTTP Header Information of Server Response

AT+HTTPHEAD	**Read the HTTP Header Information of Server Response**
Test Command **AT+HTTPHEAD=?**	Response **OK**
Execution Command **AT+HTTPHEAD**	Response **+HTTPHEAD: <date_len>** **<data>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<data_len>** The actual length for http header data output **<data>** Data from HTTP server
Parameter Saving Mode	NO_SAVE
Max Response	-

Time	
Reference	Note Read header data when AT+HTTPACTION=0 executed.

9.2.9 AT+HTTPTOFS Download File to AP File System

AT+HTTPTOFS	**Download File to AP File System**
Test Command **AT+HTTPTOFS=?**	Response **+HTTPTOFS: (1-255),(1-127)** **OK**
Read Command **AT+HTTPTOFS?**	Response **+HTTPTOFS: <status>,<url>,<file_path>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+HTTPTOFS=<url>,<file_path>[,<timeout>[,<retrycnt>]]**	Response **OK** **+HTTPTOFS: <StatusCode>,<DataLen>**
	Parameters **<status>** 0 Idle 1 Busy **<url>** The url **<file_path>** File path and name on ap side, For example: "/customer/test.bin","/custapp/ test.bin","/fota/test.bin" **<timeout>** Timeout of HTTP request. Unit is second. Range is 10-1000, default value is 50. **<retrycnt>** Retry times of HTTP request. Range is 5-100, default value is 5. **<StatusCode>** HTTP Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616) 100 Continue 200 OK 206 Partial Content 400 Bad Request

	404 Not Found 408 Request Time-out 500 Internal Server Error 600 Not HTTP PDU 601 Network Error 602 No memory 603 DNS Error 604 Stack Busy 620 SSL continue 65535 Other Errors **<DataLen>** The length of data download
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

9.2.10 AT+HTTPTOFSRL State of Download File to AP File System

AT+HTTPTOFSRL State of Download File to AP File System	
Test Command **AT+HTTPTOFSRL=?**	Response **OK**
Read Command **AT+HTTPTOFSRL?**	Response **+HTTPTOFSRL: <status>,<curlen >,<totallen>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<status>** Downloading state 0 Idle 1 During downloading **<curlen>** The length of data have been download successfully **<totallen>** The length of data download. If total length does not been got, **<totallen>** will be 0.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

10 AT Commands for PING Application

SIM7000 series modules provide PING AT command is as follows:

10.1 Overview

Command	Description
AT+CIPPING	PING Request
AT+CIPCTL	Set the Mode When Receiving an IP Packet
AT+CIPFLT	Set the Rules of IP Filter

10.2 Detailed Descriptions of Commands

10.2.1 AT+CIPPING PING Request

AT+CIPPING PING Request	
Test Command **AT+CIPPING=?**	Response **+CIPPING: (**list of supported **<retryNum>**s**),(**list of supported <**dataLen**>s**),(**list of supported <**timeout**>s**),(**list of supported **<ttl>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CIPPING?**	Response **+CIPPING: <retryNum>,<dataLen>,<timeout>,<ttl>** **OK**
	Parameters See Write Command
Write Command **AT+CIPPING=<IPaddr>[,<retryNum>[,<dataLen>[,<timeout>,<ttl>]]]**	Response **+CIPPING: <replyId>,<Ip Address>,<replyTime>,<ttl>[<CR><LF>** **+CIPPING: <replyId>,<Ip Address>,<replyTime>,<ttl>[...]]** **OK** or **ERROR** or **+CME ERROR: <err>**

	Parameters <**IPaddr**> Address of the remote host, string type. This parameter can be either: - IP address in the format: "xxx.xxx.xxx.xxx" - Host name solved by a DNS query <**retryNum**> The number of Ping Echo Requset to send 1-100 Default: 4 <**dataLen**> The length of Ping Echo Request data 0-1024 Default: 8 <**timeout**> The timeout, in units of 100 ms, waiting for a single Echo Reply 1-600 Default: 100(10 seconds) <**ttl**> Time to live 1-255 Default: 64 <**replyId**> Echo Reply number <**IP Address**> IP Address of the remote host <**replyTime**> Time, in ms, required to receive the response
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Before sending PING Request the GPRS context must be activated. ● When the Echo Request timeout expires (no reply received on time), the response will contains **<replyTime>** setting to 600 and **<ttl>** setting to 255. ● When executing this command, if PDP context is deactivated for some reasons, such as out of service, etc.the **"+PDP: DEACT"** URC is reported and the command will end immediately. ● If executing the command in NB-IOT network,please config **<timeout>** to 300(30 second).For example: **AT+CIPPING="www.google.cn",4,8,300,64**

10.2.2 AT+CIPCTL Set the Mode When Receiving an IP Packet

AT+CIPCTL Set the Mode When Receiving an IP Packet	
Test Command **AT+CIPCTL=?**	Response **+CIPCTL: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command

Read Command **AT+CIPCTL?**	Response **+CIPCTL: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CIPCTL=<mode>**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters <**mode**> 0 Disable to send Echo Reply 1 Enable to send Echo Reply to every IP address pinging it 2 Enable to send Echo Reply only to a subset of IP Addresses pinging it. This subset of IP Addresses can be set by "AT+CIPFLT" command.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note The value of **<mode>** is stored in non volatile memory.

10.2.3 AT+CIPFLT Set the Rules of IP Filter

AT+CIPFLT Set the Rules of IP Filter	
Test Command **AT+CIPFLT=?**	Response **+CIPFLT: (**list of supported **<action>**s**),(**list of supported **<item>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CIPFLT?**	Response **+CIPFLT: <item>**,**<ipAddr>**,**<mask>** **[<CR><LF>+CIPFLT: <item>**,**<ipAddr>**,**<mask>** **[…]]** **OK**
	Parameter See Write Command

Write Command **AT+CIPFLT=<action>[,<item>][,<ipAddr>,<mask>]**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameter **<action>** 0 Remove the rule specified by <item>. <item> must be given. 1 Add the rule specified by <item>. If <item> is not given, it can find an empty item automatically. <ipAddr> and <mask> must be given. 2 Delete all of rules <**item**> The item of IP filter rule 1-20 <**ipAddr**> Remote IP address,string type. It can be any valid IP address in the format of "xxx.xxx.xxx.xxx" <**mask**> Mask to be applied to the **<ipAddr>**,string type. It can be any valid IP address mask in the format of "xxx.xxx.xxx.xxx"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● When a packet comes from the IP address **coming_IP**, All rules will be scanned to match the following criteria: **<coming_IP> & <mask> = <ipAddr> & <mask>** If the criterion is matched, the IP packet will be accepted and the rule scan is finished. If the criterion is not matched, the IP packet will be ignored. ● The rule is stored in non volatile memory.

11 AT Commands for FTP Application

SIM7000 series has an embedded TCP/IP stack that is driven by AT commands and enables the host application to easily access the Internet FTP service. This chapter is a reference guide to all the AT commands and responses defined for using with the TCP/IP stack in FTP Service.

11.1 Overview

Command	Description
AT+FTPPORT	Set FTP control port
AT+FTPMODE	Set active or passive FTP mode
AT+FTPTYPE	Set the type of data to be transferred
AT+FTPPUTOPT	Set FTP put type
AT+FTPCID	Set FTP bearer profile identifier
AT+FTPREST	Set resume broken download
AT+FTPSERV	Set FTP server address
AT+FTPUN	Set FTP user name
AT+FTPPW	Set FTP password
AT+FTPGETNAME	Set download file name
AT+FTPGETPATH	Set download file path
AT+FTPPUTNAME	Set upload file name
AT+FTPPUTPATH	Set upload file path
AT+FTPGET	Download file
AT+FTPPUT	Set upload file
AT+FTPDELE	Delete specified file in FTP server
AT+FTPSIZE	Get the size of specified file in FTP server
AT+FTPSTATE	Get the FTP state
AT+FTPEXTPUT	Extend upload file
AT+FTPMKD	Make directory on the remote machine
AT+FTPRMD	Remove directory on the remote machine
AT+FTPLIST	List contents of directory on the remote machine
AT+FTPEXTGET	Extend download file
AT+FTPETPUT	Upload File
AT+FTPETGET	Download File
AT+FTPQUIT	Quit current FTP session
AT+FTPRENAME	Rename the Specified File on the Remote Machine
AT+FTPMDTM	Get the Last Modification Timestamp of Specified File on the Remote Machine

11.2 Detailed Descriptions of Commands

11.2.1 AT+FTPPORT Set FTP Control Port

AT+FTPPORT Set FTP Control Port	
Test Command **AT+FTPPORT=?**	Response **OK**
Read Command **AT+FTPPORT?**	Response **+FTPPORT: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPPORT=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** The value of FTP Control port, from 1 to 65535. Default value is 21
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Numbers above 65535 are illegal as the port identification fields are 16 bits long in the TCP header.

11.2.2 AT+FTPMODE Set Active or Passive FTP Mode

AT+FTPMODE Set Active or Passive FTP Mode	
Test Command **AT+FTPMODE=?**	Response **OK**
Read Command **AT+FTPMODE?**	Response **+FTPMODE: <value>** **OK**
	Parameters See Write Command

Write Command **AT+FTPMODE=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** 0 Active FTP mode 1 Passive FTP mode
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.3 AT+FTPTYPE Set the Type of Data to Be Transferred

AT+FTPTYPE Set the Type of Data to Be Transferred	
Test Command **AT+FTPTYPE=?**	Response **OK**
Read Command **AT+FTPTYPE?**	Response **+FTPTYPE: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPTYPE=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** "A" For FTP ASCII sessions "I" For FTP Binary sessions
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note When this value is set to A, all the data sent by the stack to the FTP server is made of 7 bits characters (NVT-ASCII: the MSB is set to 0). As a consequence binary data containing 8 bits characters will be corrupted

	during the transfer if the FTPTYPE is set to A.

11.2.4 AT+FTPPUTOPT Set FTP Put Type

AT+FTPPUTOPT Set FTP Put Type	
Test Command **AT+FTPPUTOPT=?**	Response **OK**
Read Command **AT+FTPPUTOPT?**	Response **+FTPPUTOPT: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPPUTOPT=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** "APPE" For appending file "STOU" For storing unique file "STOR" For storing file
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.5 AT+FTPCID Set FTP Bearer Profile Identifier

AT+FTPCID Set FTP Bearer Profile Identifier	
Test Command **AT+FTPCID=?**	Response **OK**
	Parameters See Write Command
Read Command **AT+FTPCID?**	Response **+FTPCID: <value>** **OK**

	Parameter See Write Command
Write Command **AT+FTPCID=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** Bearer profile identifier refer to AT+SAPBR
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.6 AT+FTPREST Set Resume Broken Download

AT+FTPREST Set Resume Broken Download	
Test Command **AT+FTPREST=?**	Response **OK**
Read Command **AT+FTPREST?**	Response **+FTPREST: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPREST=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** Broken point to be resumed
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.7 AT+FTPSERV Set FTP Server Address

AT+FTPSERV Set FTP Server Address	
Test Command **AT+FTPSERV=?**	Response **OK**
Read Command **AT+FTPSERV?**	Response **+FTPSERV: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPSERV=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** 32-bit number in dotted-decimal notation (i.e. xxx.xxx.xxx.xxx) or alphanumeric ASCII text string up to 49 characters if DNS is available
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.8 AT+FTPUN Set FTP User Name

AT+FTPUN Set FTP User Name	
Test Command **AT+FTPUN=?**	Response **OK**
	Parameters See Write Command
Read Command **AT+FTPUN?**	Response **+FTPUN: <value>** **OK**
	Parameters See Write Command

Write Command **AT+FTPUN=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** Alphanumeric ASCII text string up to 49 characters.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.9 AT+FTPPW Set FTP Password

AT+FTPPW Set FTP Password	
Test Command **AT+FTPPW=?**	Response **OK**
	Parameters See Write Command
Read Command **AT+FTPPW?**	Response **+FTPPW: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPPW=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** Alphanumeric ASCII text string up to 49 characters.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.10 AT+FTPGETNAME Set Download File Name

AT+FTPGETNAME Set Download File Name	
Test Command **AT+FTPGETNAME=?**	Response **OK**
Read Command **AT+FTPGETNAME?**	Response **+FTPGETNAME: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPGETNAME=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** Alphanumeric ASCII text string up to 99 characters
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.11 AT+FTPGETPATH Set Download File Path

AT+FTPGETPATH Set Download File Path	
Test Command **AT+FTPGETPATH=?**	Response **OK**
Read Command **AT+FTPGETPATH?**	Response **+FTPGETPATH: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPGETPATH=<value>**	Response **OK** If error is related to ME functionality:

	+CME ERROR: <err>
	Parameters **<value>** Alphanumeric ASCII text string up to 255 characters
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.12 AT+FTPPUTNAME Set Upload File Name

AT+FTPPUTNAME Set Upload File Name	
Test Command **AT+FTPPUTNAME=?**	Response **OK**
Read Command **AT+FTPPUTNAME?**	Response **+FTPPUTNAME: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPPUTNAME=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** Alphanumeric ASCII text string up to 99 characters
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.13 AT+FTPPUTPATH Set Upload File Path

AT+FTPPUTPATH Set Upload File Path	
Test Command **AT+FTPPUTPATH=?**	Response **OK**
Read Command **AT+FTPPUTPATH?**	Response **+FTPPUTPATH: <value>** **OK**
	Parameters See Write Command
Write Command **AT+FTPPUTPATH=<value>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<value>** Alphanumeric ASCII text string up to 255 characters
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.14 AT+FTPGET Download File

AT+FTPGET Download File	
Test Command **AT+FTPGET=?**	Response **OK**
Write Command **AT+FTPGET=<mode>[,<reqlength>]**	Response If mode is 1 and it is a successful FTP get session: **OK** **+FTPGET: 1,1** If data transfer finished: **+FTPGET: 1,0** If mode is 1 and it is a failed FTP get session:

	OK **+FTPGET: 1,<error>** If mode is 2: **+FTPGET: 2,<cnflength>** **012345678…** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 1 For opening FTP get session 2 For reading FTP download data. **<reqlength>** Requested number of data bytes (1-1460)to be read **<cnflength>** Confirmed number of data bytes to be read, which may be less than <**length**>. 0 indicates that no data can be read. **<error>** 61 Net error 62 DNS error 63 Connect error 64 Timeout 65 Server error 66 Operation not allow 70 Replay error 71 User error 72 Password error 73 Type error 74 Rest error 75 Passive error 76 Active error 77 Operate error 78 Upload error 79 Download error 80 Manual quit
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note When "**+FTPGET: 1,1**" is shown, then use "**AT+FTPGET=2,<reqlength>**" to read data. If the module still has unread data, "**+FTPGET: 1,1**" will be shown again in a certain time.

11.2.15 AT+FTPPUT Set Upload File

AT+FTPPUT Set Upload File	
Test Command **AT+FTPPUT=?**	Response **OK**
Write Command **AT+FTPPUT=<mode>[,<reqlength>]**	Response If mode is 1 and it is a successful FTP get session: **OK** **+FTPPUT: 1,1,<maxlength>** If mode is 1 and it is a failed FTP get session: **OK** **+FTPPUT: 1,<error>** If mode is 2 and <**reqlength**> is not 0 **+FTPPUT: 2,<cnflength>** **……** //Input data **OK** **+FTPPUT: 1,1,1360** If mode is 2 and <**reqlength**> is 0, it will respond OK, and FTP session will be closed **OK** If data transfer finished. **+FTPPUT: 1,0** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 1 For opening FTP put session 2 For writing FTP upload data. **<reqlength>** Requested number of data bytes(0-<**maxlength**>) to be transmitted **<cnflength>** Confirmed number of data bytes to be transmitted **<maxlength>** The max length of data can be sent at a time. It depends on the network status. **<error>** See "**AT+FTPGET**"
Parameter Saving Mode	NO_SAVE
Max Response	75 seconds(In case no response is received from server)

Time	
Reference	Note When "**+FTPPUT: 1,1,<maxlength>**" is shown, then use "**AT+FTPPUT=2, <reqlength>**" to write data.

11.2.16 AT+FTPDELE Delete Specified File in FTP Server

AT+FTPDELE Delete Specified File in FTP Server	
Test Command **AT+FTPDELE=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+FTPDELE**	Response If successed: **OK** **+FTPDELE: 1,0** If failed: **OK** **+FTPDELE: 1,<error>** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<error>** See "**AT+FTPGET**"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note The file to be deleted is specified by the "**AT+FTPGETNAME**" and "**AT+FTPGETPATH**" commands.

11.2.17 AT+FTPSIZE Get the Size of Specified File in FTP Server

AT+FTPSIZE Get the Size of Specified File in FTP Server	
Test Command **AT+FTPSIZE=?**	Response **OK**

	Parameters See Execution Command
Execution Command **AT+FTPSIZE**	Response If successed: **OK** **+FTPSIZE: 1,0,<size>** If failed: **OK** **+FTPSIZE: 1,<error>,0** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<error>** See "**AT+FTPGET**" **<size>** The file size. Unit: byte
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note The file is specified by the "**AT+FTPGETNAME**" and "**AT+FTPGETPATH**" commands.

11.2.18 AT+FTPSTATE Get the FTP State

AT+FTPSTATE Get the FTP State	
Test Command **AT+FTPSTATE=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+FTPSTATE**	Response **+FTPSTATE: <state>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**

	Parameters **<state>** 0 Idle 1 In the FTP session, including FTPGET, FTPPUT, FTPDELE and FTPSIZE operation.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.19 AT+FTPEXTPUT Extend Upload File

AT+FTPEXTPUT Extend Upload File	
Test Command **AT+FTPEXTPUT=?**	Response **OK**
Write Command **AT+FTPEXTPUT=<mode>[,<pos>,<len>,<timeout>]**	Response If mode is 0 or 1 **OK** If mode is 2 **+FTPEXTPUT: <address>,<len>** **……** //Input data **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 0 use default FTPPUT method 1 use extend FTPPUT method 2 send data to RAM through serial port, then FTPPUT method will get the data from RAM. **<pos>** data offset address 0-300k **<len>** data length 0-300k **<timeout>** timeout value of serial port. 1000ms-1000000ms <**file name**> File name length should less or equal 50 characters. <**err**> See "AT+FTPGET"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)

Reference	Note ● When extend FTPPUT mode is activated, input data then execute "**AT+FTPPUT=1**" to transmit, after session is complete, if successful, it returns "**+FTPPUT: 1,0**", otherwise it returns "**+FTPPUT: 1,<error>**", <**error**> see "**AT+FTPGET**".

11.2.20 AT+FTPMKD Make Directory on the Remote Machine

AT+FTPMKD Make Directory on the Remote Machine	
Test Command **AT+FTPMKD=?**	Response **OK**
Execution Command **AT+FTPMKD**	Response If success: **OK** **+FTPMKD: 1,0** If failed: **OK** **+FTPMKD: 1,<error>** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<error>** See "**AT+FTPGET**"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note The created folder is specified by the "**AT+FTPGETPATH**" command.

11.2.21 AT+FTPRMD Remove Directory on the Remote Machine

AT+FTPRMD Remove Directory on the Remote Machine	
Test Command **AT+FTPRMD=?**	Response **OK**
Execution Command **AT+FTPRMD**	Response If success: **OK**

	+FTPRMD: 1,0 If failed: **OK** **+FTPRMD: 1,<error>** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<error>** See "**AT+FTPGET**"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note The removed folder is specified by the "**AT+FTPGETPATH**" command.

11.2.22 AT+FTPLIST List Contents of Directory on the Remote Machine

AT+FTPLIST List Contents of Directory on the Remote Machine	
Test Command **AT+FTPLIST=?**	Response **OK**
Write Command **AT+FTPLIST=<mode>[,<reqlength>]**	Response If mode is 1 and it is a successful FTP get session: **OK** **+FTPLIST: 1,1** If data transfer is finished: **+FTPLIST: 1,0** If mode is 1 and it is a failed FTP get session: **OK** **+FTPLIST: 1,<error>** If mode is 2: **+FTPLIST: 2,<cnflength>** **012345678…** **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 1 For opening FTP get file list session 2 For reading FTP file list <**reqlength**> Requested number of data bytes (1-1460) to be read <**cnflength**> Confirmed number of data bytes to be read, which may be less than <reqlength>. 0 indicates that no data can be read. <**error**> See "**AT+FTPGET**"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note ● When "**+FTPLIST: 1,1**" is shown, "**AT+FTPLIST=2,<reqlength>**" can be used to read data. If the module still has unread data, "**+FTPLIST: 1,1**" will be shown again in a certain time. ● If using "AT+FTPGETPATH" to set a directory path, it will returned the files contents under this directory; if set a file path, it will return the information of the file specified.

11.2.23 AT+FTPEXTGET Extend Download File

AT+FTPEXTGET	**Extend Download File**
Test Command **AT+FTPEXTGET=?**	Response **OK**
	Parameters See Write Command
Read Command **AT+FTPEXTGET?**	Response **+FTPEXTGET: <mode>,<length>** **OK**
	Parameters See Write Command
Write Command 1) if mode is 0 or 1 **AT+FTPEXTGET=<mode>** 3)if mode is 3 **AT+FTPEXTGET=<mode>,<pos>,<len>**	Response If mode is 0: **OK** If mode is 1 and successfully download data: **OK** **+FTPEXTGET: 1,0**

	If mode is 1 and failed to download data: **OK** **+FTPEXTGET: 1,<error>** If mode is 3 and successfully download data: **+FTPEXTGET: 3,<length>** **0123456…** **OK** If <file name> is already exist in flash: **ERROR**
	Parameters **<mode>** 0 use default FTPGET method. 1 open extend FTP get session and download data to RAM. 3 read the downloaded data from RAM, then output it to the serial port. **<file name>** File name length should less than or equal to 50 characters. <**pos**> data offset should less than <length>. <**len**> data length 0-300k. <**length**> The length of the downloaded data from the remote machine. <**error**> See "AT+FTPGET"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note ● The data it can get is 300k at most.

11.2.24 AT+FTPETPUT Upload File

AT+FTPETPUT	**Upload File**
Test Command **AT+FTPETPUT=?**	Response **OK**
	Parameters See Write Command
Write Command **AT+FTPETPUT=<mode>**	Response If mode is 1 and successfully open PUT session: **OK** **+FTPETPUT: 1,1** If mode is 1 and failed to open PUT session:

	OK **+FTPETPUT: 1,<error>** If mode is 2: **+FTPETPUT: 2,1** **…** *//Input data* **<ETX>** *//To notify the module that all data has been sent, switch from data mode to command mode* **OK** If data transfer finished: **+FTPETPUT: 1,0** If data transfer failed: **+FTPETPUT: 1,<error>**
	Parameters **<mode>** 1 For opening FTPETPUT session. 2 For writing FTP upload data. <**error**> See "AT+FTPEXTGET"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● The TCP/IP stack will only interpret an <ETX> character as the end of the file to be transferred if it's not preceded by a <DLE> character. As a consequence the attached host must send <ETX> characters preceded by <DLE> characters and it must also code <DLE> characters in <DLE><DLE>.

11.2.25 AT+FTPETGET Download File

AT+FTPETGET	**Download File**
Test Command **AT+FTPETGET=?**	Response **OK**
	Parameters See Write Command
Write Command **AT+FTPETGET=<mode>**	Response If mode is 1 and successfully open GET session: **OK** **+FTPETGET: 1,1**

	If data transfer finished: **0123456789…** **<ETX>** *//To notify the user that all data transfer has been finished, switch from data mode to command mode.* **+FTPETGET: 1,0** If mode is 1 and failed to download data: **OK** **+FTPETGET: 1,<error>**
	Parameters **<mode>** 1 Open FTPETGET session and download data. <error> See "AT+FTPEXTGET"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Each <ETX> character present in the payload data of the FTP flow will be coded by the TCP/IP stack on the serial port as <DLE><ETX>. Each <DLE> character will be coded as <DLE><DLE>. The attached host must then decode the FTP flow to remove these escape characters.

11.2.26 AT+FTPQUIT Quit Current FTP Session

AT+FTPQUIT Quit Current FTP Session	
Test Command **AT+FTPQUIT=?**	Response **OK**
Execution Command **AT+FTPQUIT**	Response If the current operation is GET method: **OK** **+FTPGET: 1,80** If the current operation is PUT method: **OK** **+FTPPUT: 1,80** If FTP is in idle state:

	ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

11.2.27 AT+FTPRENAME Rename the Specified File on the Remote Machine

AT+FTPRENAME Rename the Specified File on the Remote Machine	
Test Command **AT+FTRENAME=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+FTPRENAME**	Response If success: **OK** **+FTPRENAME: 1,0** If failed: **OK** **+FTPRENAME: 1,<error>** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<error>** See "AT+FTPGET"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● The file is specified by the "AT+FTPGETNAME" and "AT+FTPGETPATH" commands. ● The new file name is set by "AT+FTPPUTNAME" and "AT+FTPPUTPATH" command.

11.2.28 AT+FTPMDTM Get the Last Modification Timestamp of Specified File on the Remote Machine

AT+FTPMDTM Get the Last Modification Timestamp of Specified File on the Remote Machine	
Test Command **AT+FTPMDTM=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+FTPMDTM**	Response If success: **OK** **+FTPMDTM: 1,0,<timestamp>** If failed: **OK** **+FTPMDTM: 1,<error>** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<error>** See "AT+FTPGET" **<timestamp>** The last modification timestamp of the specified file.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note The file is specified by the "AT+FTPGETNAME" and "AT+FTPGETPATH" commands.

12 AT Command for NTP function

12.1 Overview

Command	Description
AT+CNTPCID	Set GPRS bearer profile's ID
AT+CNTP	Synchrosize network time

12.2 Detailed Descriptions of Commands

12.2.1 AT+CNTPCID Set GPRS Bearer Profile's ID

AT+CNTPCID Set GPRS Bearer Profile's ID	
Test Command **AT+CNTPCID=?**	Response **+ CNTPCID: (**range of supporded **<cid>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CNTPCID?**	Response **+ CNTPCID: <cid>** **OK**
	Parameters See Write Command
Write Command **AT+CNTPCID=<cid>**	Response **OK** If error is related to ME functionality: **ERROR**
	Parameters **<cid>** Bearer profile identifier, refer to AT+SAPBR
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

12.2.2 AT+CNTP Sychronize Network Time

AT+CNTP Synchronize Network Time

Test Command **AT+CNTP=?**	Response **+CNTP: (**length of **<ntp server>),**(range of **<time zone>),(**range of **<cid>),** (range of **<mode>)** **OK**
	Parameter See Write Command
Read Command **AT+CNTP?**	Response **+ CNTP: <ntp sever>,<time zone>,<cid>,<mode>** **OK**
	Parameter See Write Command
Write Command **AT+CNTP=<ntp server>[,<time zone>][,<cid>][,<mode>]**	Response **OK**
	Parameter **<ntp server>** NTP server's url **<time zone>** Local time zone, the range is (-47 to 48), in fact, time zone range (-12 to 12), but taking into account that some countries and regions will use half time zone, or even fourth time zone, so the entire extended four time zones X, so that when the time zone of the input integers are used, without the need for decimal. Time zone in front of the West if it is a negative number indicates the time zone. **<cid>** Bearer profile identifier, refer to AT+SAPBR **<mode>** print network time on uart and set to local time 0 Just set network to localtime 1 Just output network time to AT port 2 Set network to localtime and output network time to AT port
Execution command **AT+CNTP**	Response **OK** **+CNTP: <code>[,<time>]**
	Parameter **<code>** 1 Network time synchronization is successful 61 Network Error 62 DNS resolution error 63 Connection Erro 64 Service response error 65 Service Response Timeout **<time>** Network time
Parameter Saving Mode	-

Max Response Time	-
Reference	Note ● After successful synchronization time, you can use AT+CCLK to query local time.

13 AT Commands for OneNet Application

13.1 Overview

Command	Description
AT+MIPLCREATE	Create OneNet configuration
AT+MIPLDELETE	Delete OneNet configuration
AT+MIPLOPEN	Connect to OneNet
AT+MIPLADDOBJ	Add object
AT+MIPLDELOBJ	Delete object
AT+MIPLCLOSE	Disconnect to OneNet
AT+MIPLNOTIFY	Notify data to OneNet
AT+MIPLREADRSP	Send response on read command
AT+MIPLWRITERSP	Send response on write command
AT+MIPLEXECUTERSP	Send response on execute command
AT+MIPLOBSERVERSP	Send response on observe command
AT+MIPLDISCOVERRSP	Send response on discover command
AT+MIPLPARAMETERRSP	Send response on parameter command
AT+MIPLUPDATE	Update registeration
AT+MIPLVER	Version of OneNet SDK
AT+MIPLBOOTSTRAP	Bootstrap mode
+MIPLREAD	Read request to user
+MIPLWRITE	Write request to user
+MIPLEXECUTE	Execute request to user
+MIPLOBSERVE	Observe request to user
+MIPLDISCOVER	Discover request to user
+MIPLPARAMETER	Set parameter request to user
+MIPLEVENT	Event indication to user

13.2 Detailed Descriptions of Commands

13.2.1 AT+MIPLCREATE Create OneNet configuration

AT+MIPLCREATE	Create OneNet configuration
Test Command **AT+MIPLCREATE=?**	Response **+MIPLCREATE: <size>,<config>,<index>,<totalsize>,<flag>**

	OK
	Parameters See Write Command
Execution Command **AT+MIPLCREATE**	Response **<ref>** **OK**
Write Command **AT+MIPLCREATE=<size>,<config>,<index>,<totalsize>,<flag>**	Response **<ref>** **OK**
	Parameters **<size>** Current <config> size **<config>** Config in hex format **<index>** Current config index **<totalsize>** Total config size **<flag>** Indicate the input is over or not
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.2 AT+MIPLDELETE Delete OneNet configuration

AT+MIPLDELETE Delete OneNet configuration	
Test Command **AT+MIPLDELETE=?**	Response **+MIPLDELETE: <ref>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLDELETE=<ref>**	Response **OK**
	Parameters **<ref>** Config id
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.3 AT+MIPLOPEN Connect to OneNet

AT+MIPLOPEN Connect to OneNet	
Test Command **AT+MIPLOPEN=?**	Response **+MIPLOPEN: <ref>,<lifetime>,<param>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLOPEN=<ref>,<lifetime>,<param>**	Response **OK**
	Parameters **<ref>** Config id **<lifetime>** Lifetime to update automatically **<param>** Reserved
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.4 AT+MIPLADDOBJ Add object

AT+MIPLADDOBJ Add object	
Test Command **AT+MIPLADDOBJ=?**	Response **+MIPLADDOBJ: <ref>,<objectid>,<instancecount>,<instanceBitmap>,<attributeCount>,<actionCount>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLADDOBJ=<ref>,<objectid>,<instancecount>,<instanceBitmap>,<attributeCount>,<actionCount>**	Response **OK**
	Parameters **<ref>** Config id **<objectid>** Object id **<instancecount>** Count of instance **<instanceBitmap>** Bitmap of instance **<attributeCount>** Count of attribute resource **<actionCount>** Count of action resource
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note

13.2.5 AT+MIPLDELOBJ Delete Object

AT+MIPLDELOBJ	**Delete object**
Test Command **AT+MIPLDELOBJ=?**	Response **+MIPLDELOBJ: <ref>,<objectid>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLDELOBJ=<ref>,<objectid>**	Response **OK**
	Parameters **<ref>** Config id **<object>** Object id
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.6 AT+MIPLCLOSE Disconnect to OneNet

AT+MIPLCLOSE	**Disconnect to OneNet**
Test Command **AT+MIPLCLOSE=?**	Response **+MIPLCLOSE: <ref>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLCLOSE=<ref>**	Response **OK**
	Parameters **<ref>** Config id
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.7 AT+MIPLNOTIFY Notify Data to OneNet

AT+MIPLNOTIFY	Notify Data to OneNet
Test Command **AT+MIPLNOTIFY=?**	Response **+MIPLNOTIFY:** **<ref>,<msgid>,<objectid>,<instanceid>,<resourceid>,<valuetype>,<len>,<value>,<index>,<flag>[,<ackid>]** **OK**
	Parameters See Write Command
Write Command **AT+MIPLNOTIFY=<ref>,<msgid>,<objectid>,<instanceid>,<resourceid>,<valuetype>,<len>,<value>,<index>,<flag>[,<ackid>]**	Response **OK**
	Parameters **<ref>** Config id **<objectid>** Object id **<instanceid>** Instance id **<resourceid>** Resource id **<valuetype>** Type of value 1 String 2 Opaque 3 Integer 4 Float 5 Bool **<len>** Length **<value>** Value string **<index>** Index of current input **<flag>** Indicate the input is over or not **<ackid>** Need ack or not
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.8 AT+MIPLREADRSP Send Response on Read Command

AT+MIPLREADRSP	Send Response on Read Command
Test Command **AT+MIPLREADRSP=?**	Response **+MIPLREADRSP:** **<ref>,<msgid>,<result>,<objectid>,<instanceid>,<resourceid>,<valuetype>,<len>,<value>,<index>,<flag>**

	OK
	Parameters See Write Command
Write Command **AT+MIPLREADRSP=<ref>,<msgid>,<result>,<objectid>,<instanceid>,<resourceid>,<valuetype>,<len>,<value>,<index>,<flag>**	Response **OK**
	Parameters **<ref>** Config id **<msgid>** Message id **<result>** Result **<objectid>** Object id **<instanceid>** Instance id **<resourceid>** Resource id **<valuetype>** Type of value 1 String 2 Opaque 3 Integer 4 Float 5 Bool **<len>** Length **<value>** Value string **<index>** Index of current input **<flag>** Indicate the input is over or not
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.9 AT+MIPLWRITERSP Send Response on Write Command

AT+MIPLWRITERSP Send Response on Write Command	
Test Command **AT+MIPLWRITERSP=?**	Response **+MIPLWRITERSP: <ref>,<msgid>,<result>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLWRITERSP=<ref>,<msgid>,<result>**	Response **OK**
	Parameters **<ref>** Config id **<msgid>** Message id **<result>** Result

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.10 AT+MIPLEXECUTERSP Send Response on Execute Command

AT+MIPLEXECUTERSP Send Response on Execute Command	
Test Command **AT+MIPLEXECUTERSP=?**	Response **+MIPLEXECUTERSP: <ref>,<msgid>,<result>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLEXECUTERSP=<ref>,<msgid>,<result>**	Response **OK**
	Parameters **<ref>** Config id **<msgid>** Message id **<result>** Result
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.11 AT+MIPLOBSERVERSP Send Response On Observe Command

AT+MIPLOBSERVERSP Send Response on Observe Command	
Test Command **AT+MIPLOBSERVERSP=?**	Response **+MIPLOBSERVERSP: <ref>,<msgid>,<result>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLOBSERVERSP=<ref>,<msgid>,<result>**	Response **OK**
	Parameters **<ref>** Config id **<msgid>** Message id **<result>** Result

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.12 AT+MIPLDISCOVERRSP Send Response on Discover Command

AT+MIPLDISCOVERRSP Send Response on Discover Command	
Test Command **AT+MIPLDISCOVERRSP=?**	Response **+MIPLDISCOVERRSP: <ref>,<msgid>,<result>,<length>,<valuestring>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLDISCOVERRSP=<ref>,<msgid>,<result>,<length>,<valuestring>**	Response **OK**
	Parameters **<ref>** Config id **<msgid>** Message id **<result>** Result **<length>** Number of resourceid **<valuestring>** Resource id string
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.13 AT+MIPLPARAMETERRSP Send Response on Parameter Command

AT+MIPLPARAMETERRSP Send Response on Parameter Command	
Test Command **AT+MIPLPARAMETERRSP=?**	Response **+MIPLPARAMETERRSP: <ref>,<msgid>,<result>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLPARAMETERRSP=<ref>,<msgid>,<result>**	Response **OK**
	Parameters

	<ref> Config id **<msgid>** Message id **<result>** Result
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.14 AT+MIPLUPDATE Update Registeration

AT+MIPLUPDATE	**Update Registeration**
Test Command **AT+MIPLUPDATE=?**	Response **+MIPLUPDATE: <ref>,<lifetime>,<flag>** **OK**
	Parameters See Write Command
Write Command **AT+MIPLUPDATE=<ref>,<lifetime>,<flag>**	Response **OK**
	Parameters **<ref>** Config id **<lifetime>** Lifetime to update **<flag>** Update with object update or not
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.15 AT+MIPLVER Version of OneNet SDK

AT+MIPLVER	**Version of OneNet SDK**
Read Command **AT+MIPLVER?**	Response **+MIPLVER: <version>** **OK**
	Parameters **<version>** Version of SDK
Parameter Saving Mode	-
Max Response Time	-

Reference	Note

13.2.16 AT+MIPLBOOTSTRAP Bootstrap Mode

AT+MIPLBOOTSTRAP Bootstrap Mode	
Write Command **AT+MIPLBOOTSTRAP=<mode>**	Response **OK** Parameters **<mode>** Bootstrap mode 0 Disable 1 Enable
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

13.2.17 +MIPLREAD Read Request to User

+MIPLREAD Read Request to User	
	Response **+MIPLREAD:** **<ref>,<msgid>,<objectid>,<instanceid>,<resourceid>** Parameters **<ref>** Integer, OneNET instance returned by AT+MIPLCREATE **<msgid>** Integer, message id **<objectid>** Integer, object id **<instanceid>** Integer, instance id, read all resources of all instances of the object if instanceid equals -1 **<resourceid>** Integer, resource id, read all resources of the instance if resourceid equals -1

13.2.18 +MIPLWRITE Write Request to User

+MIPLWRITE Write Request to User	
	Response **+ MIPLWRITE:** **<ref>,<msgid>,<objectid>,<instanceid>,<resourceid>,<valuetype>,<len>,<value>,<flag>,<index>** Parameters **<ref>** Integer, OneNET instance returned by AT+MIPLCREATE **<msgid>** Integer, message id

	<objectid> Integer, object id **<instanceid>** Integer, instance id **<resourceid>** Integer, resource id **<valuetype>** Integer, write data value type 1 String 2 Opaque 3 Integer 0 Float 5 Bool **<len>** Integer, write data length. It can be ommited, if valuetype is Integer or Float, or Bool **<value>** Integer, write data value <**flag**> Integer, message flag 1 First message; 2 Middle message; 0 Last message <**index**> Integer, message index, from 0 to 1024

13.2.19 +MIPLEXECUTE Execute Request to User

+MIPLEXECUTE Execute Request to User	
	Response **+MIPLEXECUTE:** **<ref>,<msgid>,<objectid>,<instanceid>,<resourceid>,<len>,<arguments>**
	Parameters **<ref>** Integer, OneNET instance returned by AT+MIPLCREATE **<msgid>** Integer, message id **<objectid>** Integer, object id **<instanceid>** Integer, instance id **<resourceid>** Integer, resource id **<len>** Integer, parameter length **<arguments>** String, parameter string

13.2.20 +MIPLOBSERVE Observe Request to User

+MIPLOBSERVE Observe Request to User	
	Response **+ MIPLOBSERVE:** **<ref>,<msgid>,<flag>,<objectid>,<instanceid>,<resourceid>**
	Parameters **<ref>** Integer, OneNET instance returned by AT+MIPLCREATE **<msgid>** Integer, message id <**flag**> Integer, observe flag.

	1 Indicates observe 0 Indicates cancel observe **<objectid>** Integer, object id **<instanceid>** Integer, instance id, observe all resources of all instances of the object if instanceid equals -1 **<resourceid>** Integer, resource id, observe all resources of the instance if resourceid equals -1

13.2.21 +MIPLDISCOVER Discover Request to User

+MIPLDISCOVER Discover Request to User	
	Response **+MIPLDISCOVER: <ref>,<msgid>,<objectid>**
	Parameters **<ref>** Integer, OneNET instance returned by AT+MIPLCREATE **<msgid>** Integer, message id **<objectid>** Integer, object id

13.2.22 +MIPLPARAMETER Set Parameter Request to User

+MIPLPARAMETER Set Parameter Request to User	
	Response **+MIPLPARAMETER: <ref>,<msgid>,<objectid>,<instanceid>,<resourceid>,<len>,<parameter>**
	Parameters **<ref>** Integer, OneNET instance returned by AT+MIPLCREATE **<msgid>** Integer, message id <**objectid**> Integer, object id **<instanceid>** Integer, instance id, observe all resources of all instances of the object if instanceid equals -1 **<resourceid>** Integer, resource id, observe all resources of the instance if resourceid equals -1 <**len**> Integer, parameter length <**parameter**> String, parameter string, must start with "and end with" pmin=xxx; pmax=xxx; gt=xxx; lt=xxx; stp=xxx

13.2.23 +MIPLEVENT Event Indication to User

+MIPLEVENT Event Indication to User	
	Response **+MIPLEVENT: <ref>,<evtid>**
	Parameters **<ref>** Integer, OneNET instance returned by AT+MIPLCREATE

	<evtid> Integer, event id 1 BOOTSTRAP_START 2 BOOTSTRAP_SUCCESS 3 BOOTSTRAP_FAILED 4 CONNECT_SUCCESS 5 CONNECT_FAILED 6 REG_SUCCESS 7 REG_FAILED 8 REG_TIMEOUT 9 LIFETIME_TIMEOUT 10 STATUS_HALT 11 UPDATE_SUCCESS 12 UPDATE_FAILED 13 UPDATE_TIMEOUT 14 UPDATE_NEED 15 UNREG_DONE 20 RESPONSE_FAILED 21 RESPONSE_SUCCESS 25 NOTIFY_FAILED 26 NOTIFY_SUCCESS

14 AT Commands for Telecom IOT Application

14.1 Overview

Command	Description
AT+SIMLCREATE	Create configuration
AT+SIMLMODE	Connection mode
AT+SIMLOPEN	Connect to Telecom IOT
AT+SIMLSEND	Send data to Telecom IOT
AT+SIMLCLOSE	Disconnect to Telecom IOT

14.2 Detailed Descriptions of Commands

14.2.1 AT+SIMLCREATE Create Configuration

AT+SIMLCREATE	Create Configuration
Test Command **AT+SIMLCREATE=?**	Response **+SIMLCREATE: <config>** **OK**
	Parameters See Write Command
Write Command **AT+SIMLCREATE=<config>**	Response **OK**
	Parameters **<config>** Config in hex format
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.2 AT+SIMLMODE Connection Mode

AT+SIMLMODE	Connection Mode
Test Command **AT+SIMLMODE=?**	Response **+SIMLMODE: <mode>** **OK**

	Parameters See Write Command
Write Command **AT+SIMLMODE=<mode>**	Response **OK**
	Parameters **<mode>** Connection mode 1 Other 2 China Telecom IOT
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.3 AT+SIMLOPEN Connect to Telecom IOT

AT+SIMLOPEN Connect to Telecom IOT	
Test Command **AT+SIMLOPEN=?**	Response **+SIMLOPEN: <lifetime>** **OK**
	Parameters See Write Command
Write Command **AT+SIMLOPEN=<lifetime>**	Response **OK**
	Parameters **<lifetime>** Reserved
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.4 AT+SIMLSEND Send Data to Telecom IOT

AT+SIMLSEND Send Data to Telecom IOT	
Test Command **AT+SIMLSEND=?**	Response **+SIMLSEND: <data>,<flag>** **OK**
	Parameters See Write Command

Write Command **AT+SIMLSEND=<data>,<flag>**	Response **OK**
	Parameters **<data>** String in hex format <**flag**> 0 Input over 1 Input not over
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.5 AT+SIMLCLOSE Disconnect to Telecom IOT

AT+SIMLCLOSE Disconnect to Telecom IOT	
Execution Command **AT+SIMLCLOSE**	Response **OK**
	Parameters
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

15 AT Commands for GNSS Application

SIM7000 series modules provide GNSS AT command is as follows:

15.1 Overview

Command	Description
AT+CGNSPWR	GNSS Power Control
AT+CGNSINF	GNSS Navigation Information Parsed From NMEA Sentences
AT+CGNSURC	GNSS Navigation URC Report
AT+CGNSPORT	GNSS NMEA Out Port Set
AT+CGNSCOLD	GNSS Cold Start
AT+CGNSWARM	GNSS Warm Start
AT+CGNSHOT	GNSS Hot Start
AT+CGNSMOD	GNSS Work Mode Set
AT+CGNSCFG	GNSS NMEA Out Configure
AT+CGNSTST	GNSS NMEA Data Out Put To AT Port
AT+CGNSXTRA	GNSS XTRA Function Open
AT+CGNSCPY	GNSS XTRA File Copy
AT+CGNSRTMS	GNSS NMEA out frequency configure

15.2 Detailed Descriptions of Commands

15.2.1 AT+CGNSPWR GNSS Power Control

AT+CGNSPWR GNSS Power Control	
Test Command **AT+CGNSPWR=?**	Response **+CGNSPWR: (**list of supported **<mode>**s **)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSPWR?**	Response TA returns the current status of GNSS Power supply **+CGNSPWR: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CGNSPWR=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 Turn off GNSS power supply 1 Turn on GNSS power supply
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	NMEA data will not out put to usb's NMEA port when set AT+CGNSPWR=1 through uart port except config it by AT+CGNSCFG=1.

15.2.2 AT+CGNSINF GNSS Navigation Information Parsed From NMEA Sentences

AT+CGNSINF GNSS Navigation Information Parsed From NMEA Sentences	
Test Command **AT+CGNSINF=?**	Response **OK**
	Parameters See Execution Command
Execution	Response

Command **AT+CGNSINF**	**+CGNSINF: <GNSS run status>,<Fix status>,<UTC date & Time>,<Latitude>,<Longitude>,<MSL Altitude>,<Speed Over Ground>,<Course Over Ground>,<Fix Mode>,<Reserved1>,<HDOP>,<PDOP>,<VDOP>,<Reserved2>,<GNSS Satellites in View>,<GNSS Satellites Used>,<GLONASS Satellites Used>,<Reserved3>,<C/N0 max>,<HPA>,<VPA>** **OK**
	Parameters **<GNSS run status>** 0 GNSS off 1 GNSS on **<Fix status>** 0 Not fixed position 1 Fixed position See below table 2-3.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

Table 2-1: AT+CGNSINF return Parameters

Index	Parameter	Unit	Range	Length
1	GNSS run status	--	0-1	1
2	Fix status	--	0-1	1
3	UTC date & Time	yyyyMMddhhmmss.sss	yyyy: [1980,2039] MM : [1,12] dd: [1,31] hh: [0,23] mm: [0,59] ss.sss:[0.000,60.999]	18
4	Latitude	±dd.dddddd	[-90.000000,90.000000]	10
5	Longitude	±ddd.dddddd	[-180.000000,180.000000]	11
6	MSL Altitude	meters		8
7	Speed Over Ground	Km/hour	[0,999.99]	6
8	Course Over Ground	degrees	[0,360.00]	6
9	Fix Mode	--	0,1,2[1]	1
10	Reserved1			0
11	HDOP	--	[0,99.9]	4

12	PDOP	--	[0,99.9]	4
13	VDOP	--	[0,99.9]	4
14	Reserved2			0
15	GPS Satellites in View	--	[0,99]	2
16	GNSS Satellites Used	--	[0,99]	2
17	GLONASS Satellites in View	--	[0,99]	2
18	Reserved3			0
19	C/N0 max	dBHz	[0,55]	2
20	HPA[2]	meters	[0,9999.9]	6
21	VPA[2]	meters	[0,9999.9]	6
				Total：(94) chars

15.2.3 AT+CGNSURC GNSS Navigation URC Report

AT+CGNSURC GNSS Navigation URC Report	
Test Command **AT+CGNSURC=?**	Response **+CGNSURC: (0-255)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSURC?**	Response TA returns the current URC setting **+CGNSURC: <Navigation mode>** **OK**
	Parameters See Write Command
	Unsolicited Result Code **+UGNSINF: <GNSS run status>,<Fix status>,<UTC date & Time>,** **<Latitude>,<Longitude>,<MSL Altitude>,<Speed Over Ground>,** **<Course Over Ground>,<Fix Mode>,<Reserved1>,<HDOP>,** **<PDOP>,<VDOP>,<Reserved2>,<Satellites in View>,** **<Satellites Used>,<Reserved3>,<C/N0 max>,<HPA>,<VPA>**
Write Command **AT+CGNSURC=<Navigation mode>**	Response **OK** or **ERROR**
	Parameters **<Navigation mode>:** 0 Turn off navigation data URC report 1 Turn on navigation data URC report, and report every GNSS FIX 2 Turn on navigation data URC report, and report every 2 GNSS FIX … 255 Turn on navigation data URC report, and report every 255 GNSS FIX
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Factory setting is "AT+CGNSURC=0". ● URC **"+UGNSINF: "**parameters are the same as **"+CGNSINF:"** return.

15.2.4 AT+CGNSPORT GNSS NMEA Out Port Set

AT+CGNSPORT GNSS NMEA Out Port Set	
Test Command **AT+CGNSPORT=?**	Response **+CGNSPORT: (**list of supported **<port>)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSPORT?**	Response **+CGNSPORT: <port>** **OK**
Write Command **AT+CGNSPORT=<port>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<port>** num of the port NMEA out 3 NMEA port 4 NONE
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note Module must reboot to make it effect if <port> value is changed.

15.2.5 AT+CGNSCOLD GNSS Cold Start

AT+CGNSCOLD GNSS Cold Start	
Test Command **AT+CGNSCOLD=?**	Response **OK**
Execution Command **AT+CGNSCOLD**	Response If AT+CGNSXTRA=0 **OK** Else if AT+CGNSXTRA=1 **OK** **+CGNSXTRA: <mod>**

	Parameters **<mod>** 0 Aid XTRA file success 1 XTRA file is not exist 2 XTRA file is not effective
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

15.2.6 AT+CGNSWARM GNSS Warm Start

AT+CGNSWARM GNSS Warm Start	
Test Command **AT+CGNSWARM=?**	Response **OK**
Execution Command **AT+CGNSWARM**	Response **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

15.2.7 AT+CGNSHOT GNSS Hot Start

AT+CGNSHOT GNSS Hot Start	
Test Command **AT+CGNSHOT=?**	Response **OK**
Execution Command **AT+CGNSHOT**	Response **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

15.2.8 AT+CGNSMOD GNSS Work Mode Set

AT+CGNSMOD	GNSS Work Mode Set
Test Command **AT+CGNSMOD=?**	Response **+CGNSMOD: (**list of supported **<gps mode>),(** list of supported **<glo mode>s),(** list of supported **<bd mode>s),(** list of supported **<gal mode>s)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSMOD?**	Response **+CGNSMOD: <gps mode>,<glo mode>,<bd mode>,<gal mode>** **OK**
Write Command **AT+CGNSMOD=<gps mode>,<glo mode>,<bd mode>,<gal mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<GPS mode>** GPS work mode 1 Start GPS NMEA out **<glo mode>** GLONASS work mode 0 Stop GLONASS NMEA out 1 Start GLONASS NMEA out **<bd mode>** BEIDOU work mode 0 Stop BEIDOU NMEA out 1 Start BEIDOU NMEA out 2 BEIDOU outside of us **<ga mode>** GALILEAN work mode 0 Stop GALILEAN NMEA out 1 Start GALILEAN NMEA out 2 GALILEAN out side of us
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note

15.2.9 AT+CGNSCFG GNSS NMEA Out Configure

AT+CGNSCFG GNSS NMEA Out Configure	
Test Command **AT+CGNSCFG=?**	Response **+CGNSCFG: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSCFG?**	Response TA returns the current status of configure **+CGNSCFG: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CGNSCFG=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 Turn off GNSS NMEA data out put to USB's NMEA port when set AT+CGNSPWR=1/0 through UART 1 Turn on GNSS NMEA data out put to USB's NMEA port when set AT+CGNSPWR=1/0 through UART 2 Turn on GNSS NMEA data out put to UART3 port when set AT+CGNSPWR=1/0
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command only supported in UART port.

15.2.10 AT+CGNSTST GNSS NMEA Data Out Put To At Port

AT+CGNSTST GNSS NMEA Data Out Put To At Port	
Test Command **AT+CGNSTST=?**	Response **+CGNSTST: (0-1), (1-255)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSTST?**	Response TA returns the current status of configure **+CGNSTST: <TST>** **OK**
	Parameters See Write Command
Write Command **AT+CGNSTST=<TST>[,<cont>]**	Response **OK** or **ERROR**
	Parameters **<TST>** 0 Turn off GNSS NMEA data out put to AT port 1 Turn on GNSS NMEA data out put to AT port **<cont>** 1-255 the number of NMEA data package
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

15.2.11 AT+CGNSXTRA GNSS XTRA Function Open

AT+CGNSXTRA GNSS XTRA Function Open	
Test Command **AT+CGNSXTRA=?**	Response **+CGNSXTRA: (0-1)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSXTRA?**	Response TA returns the current status of configure **+CGNSXTRA: <enable>** **OK**
	Parameters See Write Command
Write Command **AT+CGNSXTRA=<enable>**	Response **OK** or **ERROR**
	Parameters **<enable>** 0 Disable XTRA function 1 Enable XTRA function
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

15.2.12 AT+CGNSCPY GNSS XTRA File Copy

AT+CGNSCPY GNSS XTRA File Copy	
Test Command **AT+CGNSCPY=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+CGNSCPY**	Response **+CGNSCPY: <ret>** **OK**

	Parameters **<ret>** 1 File not exist 0 Copy success
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

15.2.13 AT+CGNSRTMS GNSS NMEA Out Frequency Configure

AT+CGNSRTMS	**GNSS NMEA Out Frequency Configure**
Test Command **AT+CGNSRTMS=?**	Response **+CGNSRTMS: (**list of supported **<frequency>**s**)** **OK**
	Parameters See Read Command
Read Command **AT+CGNSRTMS?**	Response **+CGNSRTMS: <frequency >** **OK**
	Parameters **<frequency>** GNSS NMEA Out Frequency, range is 50-1000. Defaultvalue is 1000.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

16 AT Commands for File System

16.1 Overview

Command	Description
AT+CFSINIT	Get Flash Data Buffer
AT+CFSWFILE	Write File to the Flash Buffer Allocated by CFSINIT
AT+CFSRFILE	Read File from Flash
AT+CFSDFILE	Delete the File from the Flash
AT+CFSGFIS	Get File Size
AT+CFSREN	Rename a file
AT+CFSGFRS	Get the size of file system
AT+CFSTERM	Free the Flash Buffer Allocated by CFSINIT
AT+CBAINIT	Initialize the ap backup file system
AT+CBALIST	Set the files which want to backup
AT+CBAPPS	Start to backup ap file system allocated by CBAINIT and CBALIST
AT+CBART	Restore the file into ap file system

16.2 Detailed Descriptions of Commands

16.2.1 AT+CFSINIT Get Flash Data Buffer

AT+CFSINIT Get Flash Data Buffer	
Execution Command **AT+CFSINIT**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.2 AT+CFSWFILE Write File to the Flash Buffer Allocated by CFSINIT

AT+CFSWFILE Write File to the Flash Buffer Allocated by CFSINIT	
Test Command **AT+CFSWFILE=?**	Response **+CFSWFILE: (0-3),"fileName",(0-1),(1-10240),(100-10000)** **OK**
	Parameters See Write Command
Write Command **AT+CFSWFILE=<index>,<file name>,<mode>,<file size>,<input time>**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters **<index>** Directory of AP filesystem: 0 "/custapp/" 1 "/fota/" 2 "/datatx/" 3 "/customer/" **<file name>** File name length should less or equal 50 characters **<mode>** 0 If the file already existed, write the data at the beginning of the file. 1 If the file already existed, add the data at the end of the file. **<file size>** File size should be less than 10240 bytes. **<input time>** Millisecond, should send file during this period or you can't send file when timeout. The value should be less than 10000 ms.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.3 AT+CFSRFILE Read File from Flash

AT+CFSRFILE Read File from Flash

Test Command **AT+CFSRFILE=?**	Response **+CFSRFILE: (0-3),"fileName",(0-1),(1-10240),(0-filesize)** **OK**
	Parameters See Write Command
Write Command **AT+CFSRFILE=<index>,<file name>,<mode>,<file size>,<position>**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters **<index>** Directory of AP filesystem: 0 "/custapp/" 1 "/fota/" 2 "/datatx/" 3 "/customer/" **<file name>** File name length should be less than or equal to 50 characters, **<mode>** 0 Read data at the beginning of the file . 1 Read data at the <position> of the file . **<file size>** The size of the file that you want to read should be less than 10240. **<position>** The starting position that will be read in the file. When <write mode>=0, <position> is invalid. Read data from the beginning to the end of the file. When <write mode>=1, <position> is valid. Read data from the <position> to the end of the file.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.4 AT+CFSDFILE Delete the File from the Flash

AT+CFSDFILE	**Delete the File from the Flash**

Test Command **AT+CFSDFILE=?**	Response **+CFSDFILE: (0-3),"fileName"** **OK**
	Parameters See Write Command
Write Command **AT+CFSDFILE=<index>,<file name>**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters **<index>** Directory of AP filesystem: 0 "/custapp/" 1 "/fota/" 2 "/datatx/" 3 "/customer/" **<file name>** File name length should be less than or equal to 50 characters.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.5 AT+CFSGFIS Get File Size

AT+CFSGFIS Get File Size	
Test Command **AT+CFSGFIS=?**	Response **+CFSGFIS: (0-3),"fileName"** **OK**
	Parameters See Write Command
Write Command **AT+CFSGFIS=<index>,<file name>**	Response **ERROR** or **+CME ERROR: <err>** or

	+CFSGFIS:<n> **OK**
	Parameters **<file name>** File name length should be less than or equal to 50 characters. **<n>** File size **<index>** Directory of AP filesystem: 0 "/custapp/" 1 "/fota/" 2 "/datatx/" 3 "/customer/"
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.6 AT+CFSREN Rename a File

AT+CFSREN Rename a File	
Test Command **AT+CFSREN=?**	Response **+CFSREN: (0-3),"old_name","new_name"** **OK**
	Parameters See Write Command
Write Command **AT+CFSREN=<index>,<old file name>,<new file name>**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters **<index>** Directory of AP filesystem: 0 "/custapp/" 1 "/fota/" 2 "/datatx/" 3 "/customer/"

	<old file name> File name length should be less than or equal to 50 characters. **<new file name>** File name length should be less than or equal to 50 characters.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.7 AT+CFSGFRS Get the Size of File System

AT+CFSGFRS Get the Size of file system	
Read Command **AT+CFSGFRS?**	Response **ERROR** or **+CME ERROR: <err>** or **+CFSGFRS:<n>** **OK**
	Parameters **<n>** the size of file system
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.8 AT+CFSTERM Free the Flash Buffer Allocated by CFSINIT

AT+CFSTERM Free the Flash Buffer Allocated by CFSINIT	
Execution Command **AT+CFSTERM**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters

Parameter Saving Mode	-
Max Response Time	-
Reference	Note

16.2.9 AT+CBAINIT Initialize the AP Backup File System

AT+CBAINIT Initialize the AP Backup File System	
Execution Command **AT+CBAINIT**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters
Parameter Saving Mode	-
Max Response Time	3 seconds
Reference	Note

16.2.10 AT+CBALIST Set the files Which Want to Backup

AT+CBALIST Set the Files Which Want to Backup	
Read Command **AT+CBALIST?**	Response **+CBALIST: <index>,<filename>** **OK**
	Parameters See Write Command
Write Command **AT+CBALIST=<index>,<filename>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<index>** 0-9 The file index. 10 Disable log 11 Enable log **<file name>**File name length should less than or equal to 80 characters.

Parameter Saving Mode	NO_SAVE
Max Response Time	
Reference	Note

16.2.11 AT+CBAPPS Start to Backup AP File System Allocated by CBAINIT and CBALIST

AT+CBAPPS Start to Backup AP File System Allocated by CBAINIT and CBALIST	
Execution Command **AT+CBAPPS**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters
Parameter Saving Mode	-
Max Response Time	3 seconds
Reference	Note

16.2.12 AT+CBART Restore the File into AP File System

AT+CBART Restore the File into AP File System	
Execution Command **AT+CBART**	Response **OK** or **ERROR** or **+CME ERROR: <err>**
	Parameters
Parameter Saving Mode	-
Max Response Time	3 seconds
Reference	Note The files should have been backup into ap file system

17 AT Commands for SIM Application Toolkit

17.1 Overview

Command	Description
AT+STIN	SAT indication
AT+STGI	Get SAT information
AT+STGR	SAT respond
AT+STK	STK switch

17.2 Detailed Descriptions of Commands

17.2.1 AT+STIN SAT Indication

AT+STIN SAT Indication	
Test Command **AT+STIN=?**	Response **OK**
	Parameters See Read Command
Read Command **AT+STIN?**	Response **+STIN: <cmd_id>** **OK** If the current proactive command has been changed: + **STIN: <cmd_id>**
	Parameters **<cmd_id>** Indicate the type of proactive command issued. 21 Display text 22 Get inkey 23 Get input 24 Select item 25 Set up menu
Parameter Saving Mode	-
Max Response Time	-
Reference	Notification that application will return to main menu automatically if user doesn't do any action in 2 minutes.

17.2.2 AT+STGI Get SAT Information

AT+STGI Get SAT Information	
Test Command **AT+STGI=?**	Response **OK**
	Parameters See Write Command
Write Command **AT+STGI=<cmd_id>**	Response If **<cmd_id>**=21: **+STGI:21,<prio>,<clear_mode>,<text_len>,<text>** **OK** If **<cmd_id>**=22: **+STGI:22,<rsp_format>,<help>,<text_len>,<text>** **OK** If **<cmd_id>**=23: **+STGI:23,<rsp_format>,<max_len>,<min_len>,<help>,<show><text_len>,<text>** **OK** If **<cmd_id>**=24: **+STGI:24,<help>,<softkey>,<present>,<title_len>,<title><item_num>** **+STGI:24,<item_id>,<item_len>,<item_data>** **[…]** **OK** If **<cmd_id>**=25: **+STGI:25,<help>,<softkey>,<title_len>,<title><item_num>** **+STGI:25,<item_id>,<item_len>,<item_data>** **[…]** **OK** or **ERROR**
	Parameters **<cmd_id>** See AT+STIN. **<prio>** Priority of display text. 0 Normal priority

	1 High priority **<clear_mode>** 0 Clear after a delay 1 Clear by user **<text_len>** Length of text **<rsp_format>** 0 SMS default alphabet 1 YES or NO 2 Numerical only 3 UCS2 **<help>** 0 Help unavailable 1 Help available **<max_len>** Maximum length of input **<min_len>** Minimum length of input **<show>** 0 Hide input text 1 Display input text **<softkey>** 0 No softkey preferred 1 Softkey preferred **<present>** Menu presentation format available for select item 0 Presentation not specified 1 Data value presentation 2 Navigation presentation **<title_len>** Length of title **<item_num>** Number of items in the menu **<item_id>** Identifier of item **<item_len>** Length of item **<title>** Title in ucs2 format **<item_data>** Content of the item in ucs2 format **<text>** Text in ucs2 format
Parameter Saving Mode	-
Max Response Time	-
Reference	Regularly this command is used upon receipt of an URC "+STIN" to request the parameters of the proactive command. Then the TA is expected to acknowledge the AT+STGI response with AT+STGR to confirm that the proactive command has been executed.

17.2.3 AT+STGR SAT Respond

AT+STGR SAT respond	
Test Command **AT+STGR=?**	Response **OK**
	Parameters See Write Command
Write Command **AT+STGR=<cmd_id>[,<data>]**	Response **OK** or **ERROR**
	Parameters **<cmd_id>** Identifier of proactive command. 22 Get inkey 23 Get input 24 Select item 25 Set up menu 83 Session end by user 84 Go backward **<data>** If **<cmd_id>**=22**:** Input a character If **<cmd_id>**=23**:** Input a string. If **<rsp_format>** is YES or NO, input of a character in case of ANSI character set requests one byte, e.g. "Y". If **<rsp_format>** is numerical only, input the characters in decimal number, e.g. "123". If **<rsp_format>** is UCS2, requests a 4 byte string, e.g. "0031". **<rsp_format>** refer to the response by AT+STGI=23. If **<cmd_id>**=24**:** Input the identifier of the item selected by user. If **<cmd_id>**=25**:** Input the identifier of the item selected by user. If **<cmd_id>**=83**:** **<data>**Ignore Note: It could return main menu during proactive command id is not 22 or 23. If **<cmd_id>**=84**:** **<data>** Ignore
Parameter Saving Mode	-

Max Response Time	-
Reference	Note

17.2.4 AT+STK STK Switch

AT+STK STK Switch	
Test Command **AT+STK=?**	Response **OK**
	Parameters See Write Command
Read Command **AT+STK?**	Response **+STK: <value>** **OK**
	Parameters See Write Command
Write Command **AT+STK=<value>**	Response **OK** or **ERROR**
	Parameters **<value>** 0 Disable STK 1 Enable STK
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

18 AT Commands for TCP/UDP Application Supported SSL

18.1 Overview

Command	Description
AT+CACID	Set TCP/UDP identifier
AT+CASSLCFG	Set SSL certificate and timeout parameters
AT+CAOPEN	Open a TCP/UDP connection
AT+CASEND	Send data via an established connection
AT+CARECV	Receive data via an established connection
AT+CACLOSE	Close a TCP/UDP connection
AT+CSSLCFG	Configure SSL parameters of a context identifier
AT+CACFG	Configure transparent transmission parameters
AT+CASWITCH	Switch to transparent transport mode

18.2 Detailed Descriptions of Commands

18.2.1 AT+CACID Set TCP/UDP Identifier

AT+CACID Set TCP/UDP Identifier	
Test Command **AT+CACID=?**	Response **+CACID: (**range of supported **<cid>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CACID?**	Response **[+CACID: <cid>]** **OK**
	Parameters See Write Command
Write Command **AT+CACID=<cid>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** TCP/UDP identifier

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

18.2.2 AT+CASSLCFG Set SSL Certificate and Timeout Parameters

AT+CASSLCFG Set SSL Certificate and Timeout Parameters	
Test Command **AT+CASSLCFG=?**	Response **+CASSLCFG: (**range of supported **<cid>s),"cacert",<caname>** **+CASSLCFG: (**range of supported **<cid>s),"clientcert",<certname>** **+CASSLCFG: (**range of supported **<cid>s),"psktable",<pskname>** **+CASSLCFG: (**range of supported **<cid>s),"timeout",(0-65535)** **+CASSLCFG: (**range of supported **<cid>s),"ssl",(0,1)** **+CASSLCFG: (**range of supported **<cid>s),"crindex",(0,5)** **+CASSLCFG: (**range of supported **<cid>s),"localport",(0-65536)** **+CASSLCFG: (**range of supported **<cid>s),"protocol",(0,1)** **OK**
	Parameters See Write Command
Read Command **AT+CASSLCFG?**	Response If <cid> has been set by AT+CACID: **+CASSLCFG: <cid>** **cacert:<caname>** **clientcert:<certname>** **psktable:<pskname>** **timeout:<timeout>** **ssl:<ssl>** **crindex:<crindex>** **localport:<localport>** **protocol:<protocol>** **OK** If no <cid> has been set by AT+CACID: **OK**
	Parameter See Write Command

Write Command **AT+CASSLCFG=<cid>,"cacert",<caname>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** TCP/UDP identifier, see AT+CACID **<caname>** Alphanumeric ASCII text string up to 64 characters. Root certificate name that has been configured by AT+CSSLCFG. **Note:** If the root certificate is empty, module will trust all certificates as default.
AT+CASSLCFG=<cid>,"clientcert",<certname>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<certname>** Alphanumeric ASCII text string up to 64 characters. Client certificate name that has been configured by AT+CSSLCFG.
AT+CASSLCFG=<cid>,"psktable",<pskname>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<pskname>** Alphanumeric ASCII text string up to 64 characters. PSK table name that has been configured by AT+CSSLCFG.
AT+CASSLCFG=<cid>,"ssl",<sslFlag>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<sslFlag>** Interger 0 Not support SSL 1 Support SSL
AT+CASSLCFG=<cid>,"crindex",<crindex>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<ctxindex>** The identifier of SSL configurations, see AT+CSSLCFG.

AT+CASSLCFG=<cid>,"protocol",<crindex>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<protocol>** Interger 0 TCP 1 UDP
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

18.2.3 AT+CAOPEN Open a TCP/UDP Connection

AT+CAOPEN Open a TCP/UDP Connection	
Test Command **AT+CAOPEN=?**	Response **+CAOPEN: (**range of supported **<cid>**s**),<server>,(1-65535)** **OK**
	Parameters See Write Command
Read Command **AT+CAOPEN?**	Response If <cid> has been set by AT+CACID: **+CAOPEN: <cid>,<server>,<port>** **OK** If no <cid> has been set by AT+CACID: **OK**
	Parameter See Write Command
Write Command **AT+CAOPEN=<cid>,<server>,<port>**	Response **+CAOPEN: <cid>,<result>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**

	Parameters **<cid>** see AT+CACID **<server>** Alphanumeric ASCII text string up to 64 characters. Server IP address or host name. **<port>** Interger. Server port. **<result>** 0 Success 1 Status error 2 Configure type error 3 Parameter invalid 4 TCP connect error 5 UDP create error 6 Configuration load error 7 Socket add error 8 Certificate's time expired 9 Certificate's common name does not match 10 Certificate's common name does not match and time expired 11 Connect failed error 12 Socket handle error 13 Data length error 14 Memory error 15 Data send error 16 SSL general error 17 Unknown error
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note After open a connection successfully, if module receives data, it will report **"+CADATAIND: <cid>"** to remind user to read data.

18.2.4 AT+CASEND Send Data via an Established Connection

AT+CASEND Send Data via an Established Connection	
Test Command **AT+CASEND=?**	Response **+CASEND: (**range of supported **<cid>**s**),(** range of supported **<datalen>)** **,(** range of supported **<inputtime>)** **OK**
	Parameters See Write Command

Write Command **AT+CASEND=<cid>,<datalen>[,inputtime]**	Response **+CASEND: <cid>,<datalen>** **……..** //Input data **OK** **+CASEND: <cid>,<result>,<sendlen>** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<datalen>** Requested number of data bytes to be transmitted **<inputtime>** Millisecond, should input data during this period or you can't input data when timeout. **<sendlen>** Data bytes that has been sent successfully **<result>** see AT+CAOPEN
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Set the input time that input data during this period or you can't input data when timeout. The default inputtime is 5000ms.

18.2.5 AT+CARECV Receive Data via an Established Connection

AT+CARECV Receive Data via an Established Connection	
Test Command **AT+CARECV=?**	Response **+CARECV: (**range of supported **<cid>**s**),(** range of supported **<readlen>)** **OK**
	Parameters See Write Command
Write Command **AT+CARECV=<cid>,<readlen>**	Response **+CARECV: <cid>,<recvlen>** **…….** //output data **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<readlen>** Requested number of data bytes to be read **<recvlen>** Data bytes that has been actually received

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

18.2.6 AT+CACLOSE Close a TCP/UDP Connection

AT+CACLOSE Close a TCP/UDP Connection	
Test Command **AT+CACLOSE=?**	Response **+CACLOSE: (**range of supported **<cid>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+CACLOSE=<cid>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

18.2.7 AT+CSSLCFG Configure SSL Parameters of a Context Identifier

AT+CSSLCFG Configure SSL Parameters of a Context Identifier	
Test Command **AT+CSSLCFG=?**	Response **+CSSLCFG: "sslversion",(0-5),(0-5)** **+CSSLCFG: "ciphersuite",(0-5),(0-7),(0x008A,0x008B,0x008C,0x008D,0x00A8,0x00A9,0x00AE,0x00AF,0x002F,0x0033,0x0035,0x0039,0xC02A,0xC02B,0xC02C,0xC02D,0xC02E,0xC02F,0xC030,0xC031,0xC032,0xC09C,0xC09D,0xC09E,0xC09F,0xC0A0,0xC09F,0xC0A1,0xC0A2,0xC0A3,0xCC13,0xCC14,0xCC15)** **+CSSLCFG: "ignorertctime",(0-5),(0-1)** **+CSSLCFG: "protocol",(0-5),(1-2)**

	+CSSLCFG: "ctxindex",(0-5) **+CSSLCFG: "convert",(1-3),(<cname>,[<keyname>[,<passkey>]])** **+CSSLCFG: "sni",(0-5),<servername>** **OK**
	Parameters See Write Command
Read Command **AT+CSSLCFG?**	Response **OK**
	Parameters See Write Command
Write Command **AT+CSSLCFG="sslversion",<ctxindex>,<sslversion>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** **(0-5)** **<sslversion>** 0 QAPI_NET_SSL_PROTOCOL_UNKNOWN 1 QAPI_NET_SSL_PROTOCOL_TLS_1_0 2 QAPI_NET_SSL_PROTOCOL_TLS_1_1 3 QAPI_NET_SSL_PROTOCOL_TLS_1_2 4 QAPI_NET_SSL_PROTOCOL_DTLS_1_0 5 QAPI_NET_SSL_PROTOCOL_DTLS_1_2
AT+CSSLCFG="ciphersuite",<ctxindex>,<cipher_index>,<ciphersuite>	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** **(0-5)** **<cipher_index>** **(0-7)** **<ciphersuite>** 0x008A QAPI_NET_TLS_PSK_WITH_RC4_128_SHA 0x008B QAPI_NET_TLS_PSK_WITH_3DES_EDE_CBC_SHA 0x008C QAPI_NET_TLS_PSK_WITH_AES_128_CBC_SHA 0x008D QAPI_NET_TLS_PSK_WITH_AES_256_CBC_SHA 0x00A8 QAPI_NET_TLS_PSK_WITH_AES_128_GCM_SHA256 0x00A9 QAPI_NET_TLS_PSK_WITH_AES_256_GCM_SHA384 0x00AE QAPI_NET_TLS_PSK_WITH_AES_128_CBC_SHA256 0x00AF QAPI_NET_TLS_PSK_WITH_AES_256_CBC_SHA384 0x002F QAPI_NET_TLS_RSA_WITH_AES_128_CBC_SHA 0x0033 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CBC_SHA 0x0035 QAPI_NET_TLS_RSA_WITH_AES_256_CBC_SHA

	0x0039 QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CBC_SHA 0x003C QAPI_NET_TLS_RSA_WITH_AES_128_CBC_SHA256 0x003D QAPI_NET_TLS_RSA_WITH_AES_256_CBC_SHA256 0x0067 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CBC_SHA256 0x006B QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CBC_SHA256 0x009C QAPI_NET_TLS_RSA_WITH_AES_128_GCM_SHA256 0x009D QAPI_NET_TLS_RSA_WITH_AES_256_GCM_SHA384 0x009E QAPI_NET_TLS_DHE_RSA_WITH_AES_128_GCM_SHA256 0x009F QAPI_NET_TLS_DHE_RSA_WITH_AES_256_GCM_SHA384 0xC004 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_128_CBC_SHA 0xC005 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_256_CBC_SHA 0xC009 QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA 0xC00A QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA 0xC00E QAPI_NET_TLS_ECDH_RSA_WITH_AES_128_CBC_SHA 0xC00F QAPI_NET_TLS_ECDH_RSA_WITH_AES_256_CBC_SHA 0xC013 QAPI_NET_TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA 0xC014 QAPI_NET_TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA 0xC023 QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256 0xC024 QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384 0xC025 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_128_CBC_SHA256 0xC026 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_256_CBC_SHA384 0xC027 QAPI_NET_TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256 0xC028 QAPI_NET_TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384 0xC029 QAPI_NET_TLS_ECDH_RSA_WITH_AES_128_CBC_SHA256 0xC02A QAPI_NET_TLS_ECDH_RSA_WITH_AES_256_CBC_SHA384 0xC02B

	QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 0xC02C QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 0xC02D QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_128_GCM_SHA256 0xC02E QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_256_GCM_SHA384 0xC02F QAPI_NET_TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 0xC030 QAPI_NET_TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384 0xC031 QAPI_NET_TLS_ECDH_RSA_WITH_AES_128_GCM_SHA256 0xC032 QAPI_NET_TLS_ECDH_RSA_WITH_AES_256_GCM_SHA384 0xC09C QAPI_NET_TLS_RSA_WITH_AES_128_CCM 0xC09D QAPI_NET_TLS_RSA_WITH_AES_256_CCM 0xC09E QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CCM 0xC09F QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CCM 0xC0A0 QAPI_NET_TLS_RSA_WITH_AES_128_CCM_8 0xC0A1 QAPI_NET_TLS_RSA_WITH_AES_256_CCM_8 0xC0A2 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CCM_8 0xC0A3 QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CCM_8 0xCC13 QAPI_NET_TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256 0xCC14 QAPI_NET_TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256 0xCC15 QAPI_NET_TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256
AT+CSSLCFG="ignorertctime",<ctxindex>,<ignorertctime>	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** **(0-5)** **<ignorertctime>** 0 Do not ignore the RTC time 1 Ignore the RTC time
AT+CSSLCFG="protocol",<ctxinde	Response **OK**

x>,<protocol>	If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** **(0-5)** **<protocol>** 1 QAPI_NET_SSL_TLS_E 2 QAPI_NET_SSL_DTLS_E
AT+CSSLCFG="ctxindex",<ctxindex>	Response **+CSSLCFG:** **<ctxindex>,<sslversion>,<ciphersuite>,<ignorertctime>,<protocol>,<sni>** **OK** If failed: **+CME ERROR: <err>**
	Parameters See other commands
AT+CSSLCFG="convert",<ssltype>,<cname>[,<keyname>[,<passkey>]]	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ssltype>** 1 QAPI_NET_SSL_CERTIFICATE_E 2 QAPI_NET_SSL_CA_LIST_E 3 QAPI_NET_SSL_PSK_TABLE_E <**cname**> String type (string should be included in quotation marks): name of cert file <**keyname**> String type (string should be included in quotation marks):name of key file <**passkey**> String type (string should be included in quotation marks):value of passkey
AT+CSSLCFG="sni",<ctxindex>,<servername>	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** **(0-5)** **<servername>** String type.Server Name Indication.SNI addresses this issue by having the client send the name of the virtual domain as part of the TLS negotiation.
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note

18.2.8 AT+CACFG Configure Transparent Transmission Parameters

AT+CACFG Configure Transparent Transmission Parameters		
Test Command **AT+CACFG=?**	Response **+CACFG: "transwaittm",(0-20)** **+CACFG: "transpktsize",(1-1460)** **OK**	
Read Command **AT+CACFG?**	Response **+CACFG:** **TRANSWAITTM:2** **TRANSPKTSIZE:1024** **OK**	
Write Command **AT+CACFG=<ParamTag>,<ParamValue>**	Response **OK** or **ERROR**	
	<ParaTag> **transwaittm** **transpktsize**	**<ParamValue>** Waiting to send time(100ms). default is 2 Waiting for the size of the sending packet(byte).default is 1024
Parameter Saving Mode	NO_SAVE	
Max Response Time	-	
Reference	Note	

18.2.9 AT+CASWITCH Switch to Transparent Transport Mode

AT+CASWITCH Switch to Transparent Transport Mode	
Test Command **AT+CASWITCH=?**	Response **+CASWITCH: (0-1),(0,1)** **OK**

Read Command **AT+CASWITCH?**	Response **+CASWITCH: 0,0** **OK**
Write Command **AT+CASWITCH=** **<cid>,<transmode>**	Response **OK** or **OK** **CONNECT** **… …** **OK** or **ERROR**
	Parameters **<cid>** see AT+CACID **<transmode>** 0 Non transparent transmission mode 1 Transparent transmission mode
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

19 AT Commands for PING

19.1 Overview

Command	Description
AT+SNPING4	Sends an IPv4 ping
AT+SNPING6	Sends an IPv6 ping

19.2 Detailed Descriptions of Commands

19.2.1 AT+SNPING4 Sends an IPv4 ping

AT+SNPING4 Sends an IPv4 ping	
Test command **AT+SNPING4=?**	Response **+SNPING4: "URL",(1-500),(1-1400),(0-60000)** **OK**
Write command **AT+SNPING4=<URL>,<count>,<size>,<timeout>**	Response **+SNPING4: <replyId>,<IP address>,<replyTime>** **OK** or **ERROR**
	Parameters **<URL>** String type :Address of the remote host **<count>** The number of Ping Echo Requset to send, range: 1~500 **<size>** Number of data bytes to send, range: 1~1400 <**timeout**> Ping request timeout value (in ms),range:0-60000 <**replyId**> Echo Reply number <**IP Address**> IP Address of the remote host <**replyTime**> Time, in ms, required to receive the response
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Before sending PING Request the GPRS context must be activated

19.2.2 AT+SNPING6 Sends an IPv6 ping

AT+SNPING6	Sends an IPv6 ping
Test command **AT+SNPING6=?**	Response **+SNPING6: "URL",(1-500),(1-1400),(0-60000)** **OK**
Write command **AT+SNPING6=<URL>,<count>,<size>,<timeout>**	Response **+SNPING6: <replyId>,<IP address>,<replyTime>** **OK** or **ERROR**
	Parameters **<URL>** String type :Address of the remote host **<count>** The number of Ping Echo Requset to send, range: 1~500 **<size>** Number of data bytes to send, range: 1~1400 <**timeout**> Ping request timeout value (in ms),range:0-60000 <**replyId**> Echo Reply number <**IP Address**> IP Address of the remote host <**replyTime**> Time, in ms, required to receive the response
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Before sending PING Request the GPRS context must be activated.

20 Supported Unsolicited Result Codes

20.1 Summary of CME ERROR Codes

Final result code **+CME ERROR: <err>** indicates an error related to mobile equipment or network. The operation is similar to ERROR result code. None of the following commands in the same Command line is executed. Neither ERROR nor OK result code shall be returned.
<**err**> values used by common messaging commands:

Code of <err>	Meaning
0	phone failure
1	no connection to phone
2	phone-adaptor link reserved
3	operation not allowed
4	operation not supported
5	PH-SIM PIN required
6	PH-FSIM PIN required
7	PH-FSIM PUK required
10	SIM not inserted
11	SIM PIN required
12	SIM PUK required
13	SIM failure
14	SIM busy
15	SIM wrong
16	incorrect password
17	SIM PIN2 required
18	SIM PUK2 required
20	memory full
21	invalid index
22	not found
23	memory failure
24	text string too long
25	invalid characters in text string
26	dial string too long
27	invalid characters in dial string
30	no network service
31	network timeout

32	network not allowed - emergency call only
40	network personalisation PIN required
41	network personalisation PUK required
42	network subset personalisation PIN required
43	network subset personalisation PUK required
44	service provider personalisation PIN required
45	service provider personalisation PUK required
46	corporate personalisation PIN required
47	corporate personalisation PUK required
99	resource limitation
100	unknown
103	Illegal MS
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	service option not supported
133	requested service option not subscribed
134	service option temporarily out of order
148	unspecified GPRS error
149	PDP authentication failure
150	invalid mobile class
160	DNS resolve failed
161	Socket open failed
171	MMS task is busy now
172	The MMS data is oversize
173	The operation is overtime
174	There is no MMS receiver
175	The storage for address is full
176	Not find the address
177	The connection to network is failed
178	Failed to read push message
179	This is not a push message
180	gprs is not attached
181	tcpip stack is busy
182	The MMS storage is full
183	The box is empty

184	failed to save MMS
185	It is in edit mode
186	It is not in edit mode
187	No content in the buffer
188	Not find the file
189	Failed to receive MMS
190	Failed to read MMS
191	Not M-Notification.ind
192	The MMS inclosure is full
193	Unknown
600	No Error
601	Unrecognized Command
602	Return Value Error
603	Syntax Error
604	Unspecified Error
605	Data Transfer Already
606	Action Already
607	Not At Cmd
608	Multi Cmd too long
609	Abort Cops
610	No Call Disc
611	BT SAP Undefined
612	BT SAP Not Accessible
613	BT SAP Card Removed
614	AT Not Allowed By Customer
753	missing required cmd parameter
754	invalid SIM command
755	invalid File Id
756	missing required P1/2/3 parameter
757	invalid P1/2/3 parameter
758	missing required command data
759	invalid characters in command data
765	Invalid input value
766	Unsupported mode
767	Operation failed
768	Mux already running
769	Unable to get control
770	SIM network reject

771	Call setup in progress
772	SIM powered down
773	SIM file not present
791	Param count not enough
792	Param count beyond
793	Param value range beyond
794	Param type not match
795	Param format invalid
796	Get a null param
797	CFUN state is 0 or 4

20.2 Summary of CMS ERROR Codes

Final result code **+CMS ERROR: <err>** indicates an error related to message service or network. The operation is similar to ERROR result code. None of the following commands in the same Command line is executed. Neither ERROR nor OK result code shall be returned.
<**err**> values used by common messaging commands:

Code of <err>	Meaning
1	Unassigned(unallocated) number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
10	Call barred
11	Reserved
16	Normal call clearing
17	User busy
18	No user responding
19	User alerting, no answer
21	Short message transfer rejected
22	Number changed
25	Pre-emption
26	Non-selected user clearing
27	Destination out of service
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY

32	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment Congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Requested facility not subscribed
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal or greater than ACM maximum
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional information element error
101	Message not compatible with protocol
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified
128	Telematic interworking not supported
129	Short message Type 0 not supported

130	Cannot replace short message
143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be acted
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
197	SM Rejected-Duplicate SM
198	TP-VPF not supported
199	TP-VP not supported
208	SIM SMS storage full
209	No SMS storage capability in SIM
210	Error in MS
211	Memory Capacity Exceeded
212	SIM Application Toolkit Busy
213	SIM data download error
224	CP retry exceed
225	RP trim timeout
226	SMS connection broken
255	Unspecified error cause
300	ME failure
301	SMS reserved
302	operation not allowed
303	operation not supported
304	invalid PDU mode
305	invalid text mode
310	SIM not inserted
311	SIM pin necessary
312	PH SIM pin necessary

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
323	invalid input parameter
324	invalid input format
325	invalid input value
330	SMSC address unknown
331	no network
332	network timeout
340	no cnma ack
500	Unknown
512	SMS no error
513	Message length exceeds maximum length
514	Invalid request parameters
515	ME storage failure
516	Invalid bearer service
517	Invalid service mode
518	Invalid storage type
519	Invalid message format
520	Too many MO concatenated messages
521	SMSAL not ready
522	SMSAL no more service
523	Not support TP-Status-Report & TP-Command in storage
524	Reserved MTI
525	No free entity in RL layer
526	The port number is already registerred
527	There is no free entity for port number
528	More Message to Send state error
529	MO SMS is not allow
530	GPRS is suspended
531	ME storage full
532	Doing SIM refresh

20.3 Summary of Unsolicited Result Codes

URC	Description	AT Command
+**CRING**: <type>	Indicates incoming call to the TE if extended format is enabled.	AT+CRC=1
+**CREG**: <stat>[,<lac>,<ci>,<netact>]	There is a change in the MT network registration status or a change of the network cell.	AT+CREG=<n>
+**CMTI**: <mem3>,<index>	Indicates that new message has been received.	AT+CNMI <mt>=1
+**CMTI**: <mem3>,<index>,"MMS PUSH"	Indicates that new MMS message has been received.	AT+CNMI <mt>=1
+**CMT**: <length><CR><LF><pdu>	Indicates that new message has been received.	AT+CNMI <mt>=2 (PDU mode)
+**CMT**: <oa>,<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>	Indicates that new message has been received.	AT+CNMI <mt>=2 (text mode)
+**CBM**: <length><CR><LF><pdu>	Indicates that new cell broadcast message has been received.	AT+CNMI <bm>=2 (PDU mode enabled):
+**CBM**: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>	Indicates that new cell broadcast message has been received.	AT+CNMI <bm>=2 (text mode enabled):
+**CDS**: <length><CR><LF><pdu>	Indicates that new SMS status report has been received.	AT+CNMI <ds>=1 (PDU mode enabled):
+**CDS**: <fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>	Indicates that new SMS status report has been received.	AT+CNMI <ds>=1 (text mode enabled):
***PSNWID**: "<mcc>", "<mnc>", "<full network name>",<full network name CI>,"<short network name>",<short network name CI>	Refresh network name by network.	AT+CLTS=1
***PSUTTZ**: <year>,<month>,<day>,<hour>,<min>,<sec>,"<time	Refresh time and time zone by network.	

zone>",<dst>		
+**CTZV**: "<time zone>"	Refresh network time zone by network.	
DST: <dst>	Refresh Network Daylight Saving Time by network.	
+**CPIN**: <code>	Indicates whether some password is required or not.	AT+CPIN
+**CPIN**: NOT READY	SIM Card is not ready.	
+**CPIN**: NOT INSERTED	SIM Card is not inserted.	
+**CUSD**: <n>[,<str_urc>[,<dcs>]]	Indicates an USSD response from the network, or network initiated operation.	AT+CUSD=1
NORMAL POWER DOWN	SIM7000 is powered down by the PWRKEY pin or AT command "AT+CPOWD=1".	
UNDER-VOLTAGE POWER DOWN	Under-voltage automatic power down.	
UNDER-VOLTAGE WARNNING	under-voltage warning	
OVER-VOLTAGE POWER DOWN	Over-voltage automatic power down.	
OVER-VOLTAGE WARNNING	over-voltage warning	
RDY	Power on procedure is completed, and the module is ready to operate at fixed baud rate. (This URC does not appear when auto-bauding function is active).	AT+IPR=<rate> <rate> is not 0
+**CFUN**: <fun>	Phone functionality indication (This URC does not appear when auto-bauding function is active).	AT+IPR=<rate> <rate> is not 0
[<n>,]**CONNECT OK**	TCP/ UDP connection is successful	AT+CIPSTART
CONNECT	TCP/UDP connection in channel mode is successful	
[<n>,]**CONNECT FAIL**	TCP/UDP connection fails	AT+CIPSTART
[<n>,]**ALREADY CONNECT**	TCP/UDP connection exists	AT+CIPSTART
[<n>,]**SEND OK**	Data sending is successful	
[<n>,]**CLOSED**	TCP/UDP connection is closed	
RECV FROM: <IP ADDRESS>: <PORT>	shows remote IP address and port (only in single connection mode)	AT+CIPSRIP=1
+**IPD**,<data size>,<TCP/UDP>:<data>	display transfer protocol in IP header to received data or not (only in single connection mode)	AT+CIPHEAD AT+CIPSHOWTP
+**RECEIVE**,<n>,<length>	Received data from remote client (only in multiple connection mode)	
REMOTE IP: <IP ADDRESS>	Remote client connected in	

+**CDNSGIP**: 1,<domain name>,<IP>[,<IP2>]	DNS successful	AT+CDNSGIP
+**CDNSGIP**:0,<dns error code>	DNS failed	
+**PDP:** DEACT	GPRS is disconnected by network	
+APP PDP: ACTIVE	Active the network of app side	AT+CNACT=1
+APP PDP: DEACTIVE	Deactive the network of app side	AT+CNACT=0

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