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# SIM7000 Series\_ AT Command Manual

LPWA Module

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## Version History

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
		5.2.27 AT+NBSC	Add AT command
		Chapter 7	Add IP
		Chapter 9	Add HTTP
V1.02	2017.12.18	Chapter 10	Add PINGs
		Chapter 13	Add GNSS
			Delete ATZ,AT&F,AT&V
		All	Modify parameter save mode and max response time
		1.7.1	Add AUTO_SAVE_REBOOT
		1.7.2	Add Max response time
		2.2.2 ATD	Delete parameters <;>
		3.2.14 AT+CREG	Change description of parameters
		5.2.28 AT+CAPNMODE	Add AT command
		5.2.29 AT+CRRSTATE	Add AT command
		5.2.30 AT+CBANDCFG	Add AT command
		8.2.2 AT+CIPSTART	Change range of parameter <n> from 0...5 to 0...7
		8.2.32 AT+CIPTKA	Add AT command
		8.2.33 AT+CIPOPTION	Add AT command
		Chapter 11	Add FTP
Chapter 12	Add NTP		
V1.03	2018.05.08	13.3.10 AT+CGNSTST	Add AT Command
		3.2.17 AT+CPOL	Modify parameters
		3.2.24 AT+CNUM	Add AT Command
		5.2.1 AT+CEDRXS	Modify range of <AcT-type>
		5.2.31 AT+CNACT	Add AT Command
		5.2.32 AT+CEDUMP	Add AT Command
		5.2.33 AT+CNBS	Add AT Command
		5.2.34 AT+CNDS	Add AT Command
5.2.35 AT+CENG	Add AT Command		

		9.2.9 AT+HTTPTOFS	Add AT Command
		Chapter 13	Add OneNet
		Chapter 14	Add Telecom IOT
		Chapter 15	Add GNSS
		Chapter 16	Add File system
		Chapter 17	Add SAT
		Chapter 18	Add SSL
			Delete AT+CASSL
		5.2.36 AT+CNACTCFG	Add AT Command
		5.2.37 AT+CTLIIC	Add AT Command
		5.2.38 AT+CWIIC	Add AT Command
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		5.2.45 AT+CEDRX	Add AT Command
		6.2.7 AT+CEREG	Add AT Command
		9.2.10 AT+HTTPTOFSRL	Add AT Command
		13.2.16	Add AT Command
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		13.2.18 +MIPLWRITE	Add AT Command
		13.2.19 +MIPLEXECUTE	Add AT Command
		13.2.20 +MIPLOBERVE	Add AT Command
		13.2.21 +MIPLDISCOVER	Add AT Command
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		18.2.9 AT+CASWITCH	Add AT Command
		Chapter 19	Add PING
		Chapter 20	Add Supported Unsolicited Result Codes
		AT+CNBP	Delete AT Command
V1.05	2020.01.20	5.2.45 AT+CPSMRDP	Add AT Command
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		5.2.48 AT+CPSMSTATUS	Add AT Command

		5.2.49 AT+CEDRXRDP	Add AT Command
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		15.2.18 AT+CGNSSUPLCFG	Add AT Command
		15.2.19 AT+CGNSSUPL	Add AT Command
V1.06	2020.07.28	All	

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THIS DOCUMENT IS A REFERENCE GUIDE TO ALL THE AT COMMANDS.

# 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 SIM7080 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 SIM7080 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**

<b>Test Command</b> AT+<x>=?	The mobile equipment returns the list of parameters and value ranges set with the corresponding Write Command or by internal processes.
<b>Read Command</b> AT+<x>?	This command returns the currently set value of the parameter or parameters.

<b>Write Command</b> <b>AT+&lt;x&gt;=&lt;...&gt;</b>	This command sets the user-definable parameter values.
<b>Execution Command</b> <b>AT+&lt;x&gt;</b>	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 SIM7080 Series AT Command interface defaults to the **IRA** character set. The SIM7080 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. SIM7080 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 SIM7080 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 dialing
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

<b>AT+GCAP</b>	Request complete TA capabilities list
<b>AT+GMI</b>	Request manufacturer identification
<b>AT+GMM</b>	Request TA model identification
<b>AT+GMR</b>	Request TA revision identification of software release
<b>AT+GOI</b>	Request global object identification
<b>AT+GSN</b>	Request TA serial number identification (IMEI)
<b>AT+ICF</b>	Set TE-TA control character framing
<b>AT+IFC</b>	Set TE-TA local data flow control
<b>AT+IPR</b>	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 <b>A/</b>	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 <b>ATD&lt;n&gt;[&lt;mgsms&gt;]</b>	<p>Response</p> <p>This command can be used to set up outgoing data calls. It also serves to control supplementary services.</p> <p>Note: This command may be aborted generally by receiving an <b>ATH</b> Command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.</p> <p>If error is related to ME functionality <b>+CME ERROR: &lt;err&gt;</b></p> <p>If no dial tone and (parameter setting <b>ATX2</b> or <b>ATX4</b>) <b>NO DIALTONE</b></p>
---	---

	<p>If busy and (parameter setting <b>ATX3</b> or <b>ATX4</b>) <b>BUSY</b></p> <p>If a connection cannot be established <b>NO CARRIER</b></p> <p>If the remote station does not answer <b>NO ANSWER</b></p> <p>If connection successful and non-voice call. <b>CONNECT&lt;text&gt;</b> TA switches to data mode. Note: <b>&lt;text&gt;</b> output only if <b>ATX&lt;value&gt;</b> parameter setting with the <b>&lt;value&gt;</b> &gt;0</p> <p>When TA returns to command mode after call release <b>OK</b></p>
	<p>Parameters</p> <p><b>&lt;n&gt;</b> String of dialing digits and optionally V.25ter modifiers dialing digits: <b>0-9, *, #, +, A, B, C</b> Following V.25ter modifiers are ignored: <b>,(comma), T, P, !, W, @</b></p> <p><b>Emergency call:</b></p> <p><b>&lt;n&gt;</b> Standardized emergency number 112 (no SIM needed)</p> <p><b>&lt;mgsm&gt;</b> String of <b>GSM</b> modifiers:</p> <ul style="list-style-type: none"> <li><b>I</b> Activates <b>CLIR</b> (Disables presentation of own number to called party)</li> <li><b>i</b> Deactivates <b>CLIR</b> (Enable presentation of own number to called party)</li> <li><b>G</b> Activates Closed User Group invocation for this call only</li> <li><b>g</b> Deactivates Closed User Group invocation for this call only</li> </ul>
Parameter Saving Mode	NO_SAVE
Max Response Time	Timeout set with AT57 (data call)
Reference V.25ter	Note

### 2.2.3 ATE Set Command Echo Mode

#### ATE Set Command Echo Mode

Execution Command	Response This setting determines whether or not the TA echoes characters received
-------------------	--

<b>ATE&lt;value&gt;</b>	from TE during Command state. <b>OK</b>
	Parameters
	<b>&lt;value&gt;</b> 0    Echo mode off 1    Echo mode on
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
V.25ter	

## 2.2.4 ATH Disconnect Existing Connection

### ATH Disconnect Existing Connection

Execution Command <b>ATH</b>	Response Disconnect existing call by local TE from Command line and terminate call <b>OK</b> 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	Note
V.25ter	

## 2.2.5 ATI Display Product Identification Information

### ATI Display Product Identification Information

Execution Command <b>ATI</b>	Response TA issues product information text  Example: <b>SIM7000 R1351</b>  <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
V.25ter	



## 2.2.6 ATL Set Monitor speaker loudness

### ATL Set Monitor speaker loudness

Execution Command <b>ATL&lt;value&gt;</b>	Response <b>OK</b>
Parameter Saving Mode	Parameters <b>&lt;value&gt;</b> 0..3 Volume
Max Response Time	NO_SAVE
Reference V.25ter	-
	Note No effect in GSM

## 2.2.7 ATM Set Monitor Speaker Mode

### ATM Set Monitor Speaker Mode

Execution Command <b>ATM&lt;value&gt;</b>	Response <b>OK</b>
Parameter Saving Mode	Parameters <b>&lt;value&gt;</b> 0..2 Mode
Max Response Time	NO_SAVE
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 <b>+++</b>	<p>Response</p> <p>The <b>+++</b> 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.</p> <p><b>OK</b></p> <p>To prevent the <b>+++</b> escape sequence from being misinterpreted as data, it should comply to following sequence:</p> <p>No characters entered for T1 time (1 second)</p> <p>"+++" characters entered with no characters in between (1 second)</p> <p>No characters entered for T1 timer (1 second)</p> <p>Switch to Command mode, otherwise go to step 1.</p>
---------------------------------	--

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

### 2.2.9 ATO Switch from Command Mode to Data Mode

#### ATO Switch from Command Mode to Data Mode

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

### 2.2.10 ATQ Set Result Code Presentation Mode

#### ATQ Set Result Code Presentation Mode

Execution Command <b>ATQ&lt;n&gt;</b>	<p>Response</p> <p>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.</p> <p>If &lt;n&gt;=0:</p> <p><b>OK</b></p> <p>If &lt;n&gt;=1:</p> <p>(none)</p>
	<p>Parameters</p> <p>&lt;n&gt; 0 TA transmits result code</p> <p>1 Result codes are suppressed and not transmitted</p>

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

### 2.2.11 ATSO Set Number of Rings before Automatically Answering the Call

#### ATSO Set Number of Rings before Automatically Answering the Call

Read Command <b>ATSO?</b>	Response <n>  <b>OK</b>
	Parameters See Write Command
Write Command <b>ATSO=&lt;n&gt;</b>	Response This parameter setting determines the number of rings before auto-answer. <b>OK</b> or <b>ERROR</b>
	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 AT3 Set Command Line Termination Character

#### AT3 Set Command Line Termination Character

Read Command <b>AT3?</b>	Response <n>
-----------------------------	-----------------

	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>ATS3=&lt;n&gt;</b></p>	<p>Response This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output. <b>OK</b> or <b>ERROR</b></p> <p>Parameters <b>&lt;n&gt;</b> <u>13</u> Command line termination character</p>
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

<p>Read Command <b>ATS4?</b></p>	<p>Response <b>&lt;n&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>ATS4=&lt;n&gt;</b></p>	<p>Response This parameter setting determines the character generated by the TA for result code and information text. <b>OK</b> or <b>ERROR</b></p> <p>Parameters <b>&lt;n&gt;</b> <u>10</u> Response formatting character</p>
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note Default 10 = LF. It only supports default value.

## 2.2.14 AT55 Set Command Line Editing Character

### AT55 Set Command Line Editing Character

Read Command <b>AT55?</b>	Response <n>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT55=&lt;n&gt;</b>	Response This parameter setting determines the character recognized by TA as a request to delete from the command line the immediately preceding character. <b>OK</b> or <b>ERROR</b>
	Parameters <n> 0-8-127 Response formatting character
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note Default 8 = Backspace.

## 2.2.15 AT56 Pause Before Blind Dialing

### AT56 Pause Before Blind Dialing

Read Command <b>AT56?</b>	Response <n>  <b>OK</b>
Write Command <b>AT56=&lt;n&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <n> 0-2-999 Time
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note No effect in GSM

## 2.2.16 AT57 Set Number of Seconds to Wait for Connection Completion

### AT57 Set Number of Seconds to Wait for Connection Completion

Read Command <b>AT57?</b>	Response <n>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT57=&lt;n&gt;</b>	Response This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call. <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;n&gt;</b> 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 AT50=<n>, call setup may fail. The correlation between AT57 and AT50 is important Example: Call may fail if AT57=30 and AT50=20. AT57 is only applicable to data call.

## 2.2.17 AT58 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command

### AT58 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command

Read Command <b>AT58?</b>	Response <n>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT58=&lt;n&gt;</b>	Response <b>OK</b> or <b>ERROR</b>

	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	Note
V.25ter	No effect in GSM

## 2.2.18 AT510 Set Disconnect Delay after Indicating the Absence of Data Carrier

### AT510 Set Disconnect Delay after Indicating the Absence of Data Carrier

Read Command <b>AT510?</b>	Response <n> <b>OK</b>
	Parameters See Write Command
Write Command <b>AT510=&lt;n&gt;</b>	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. <b>OK</b> or <b>ERROR</b>
	Parameters <n> 1-14-255 Number of tenths seconds of delay
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
V.25ter	

## 2.2.19 ATV TA Response Format

### ATV TA Response Format

Execution Command <b>ATV&lt;value&gt;</b>	Response This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses. When <value>=0 <b>0</b>
--	---

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

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

<p>Execution Command</p> <p><b>ATX&lt;value&gt;</b></p>	<p>Response</p> <p>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.</p>
---	--



	<p><b>OK</b></p> <p><b>ERROR</b></p> <p>Parameters</p> <p><b>&lt;value&gt;</b> 0 <b>CONNECT</b> result code only returned, dial tone and busy detection are both disabled.</p> <p>1 <b>CONNECT&lt;text&gt;</b> result code only returned, dial tone and busy detection are both disabled.</p> <p>2 <b>CONNECT&lt;text&gt;</b> result code returned, dial tone detection is enabled, busy detection is disabled.</p> <p>3 <b>CONNECT&lt;text&gt;</b> result code returned, dial tone detection is disabled, busy detection is enabled.</p> <p>4 <b>CONNECT&lt;text&gt;</b> result code returned, dial tone and busy detection are both enabled.</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
V.25ter	

### 2.2.21 AT&C Set DCD Function Mode

AT&C Set DCD Function Mode	
	<p>Response</p> <p>This parameter determines how the state of circuit 109 (<b>DCD</b>) relates to the detection of received line signal from the distant end.</p> <p><b>OK</b></p> <p><b>ERROR</b></p> <p>Parameters</p> <p><b>&lt;value&gt;</b> 0 <b>DCD</b> line is always ON</p> <p>1 <b>DCD</b> line is ON only in the presence of data carrier</p>
Execution Command	
<b>AT&amp;C&lt;value&gt;</b>	
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
V.25ter	

### 2.2.22 AT&D Set DTR Function Mode

AT&D Set DTR Function Mode	
----------------------------	--

Execution Command <b>AT&amp;D[&lt;value&gt;]</b>	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. <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;value&gt;</b> 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 <b>AT&amp;E[&lt;value&gt;]</b>	This parameter setting determines to report Serial connection rate or Wireless connection speed. It is valid only ATX above 0. Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;value&gt;</b> 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	Response
-------------------	----------

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

### 2.2.25 AT+GMI Request Manufacturer Identification

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

### 2.2.26 AT+GMM Request TA Model Identification

<b>AT+GMM Request TA Model Identification</b>	
Test Command <b>AT+GMM=?</b>	Response <b>OK</b>
Execution Command <b>AT+GMM</b>	TA reports one or more lines of information text which permit the user to identify the specific model of device. <model>
	<b>OK</b>

	Parameters <b>&lt;model&gt;</b> 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 <b>AT+GMR=?</b>	Response <b>OK</b>
Execution Command <b>AT+GMR</b>	TA reports one or more lines of information text which permit the user to identify the revision of software release. <b>Revision: &lt;revision&gt;</b> <b>OK</b>
	Parameters <b>&lt;revision&gt;</b> 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 <b>AT+GOI=?</b>	Response <b>OK</b>
Execution Command <b>AT+GOI</b>	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. <b>&lt;Object Id&gt;</b> <b>OK</b>
	Parameters <b>&lt;Object Id&gt;</b> Identifier of device type see X.208, 209 for the format of <Object Id>

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
V.25ter	

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

AT+GSN Request TA Serial Number Identification(IMEI)	
Test Command <b>AT+GSN=?</b>	Response <b>OK</b>
Execution Command <b>AT+GSN</b>	Response TA reports the IMEI (international mobile equipment identifier) number in information text which permit the user to identify the individual ME device. <b>&lt;sn&gt;</b> <b>OK</b>
	Parameters <b>&lt;sn&gt;</b> IMEI of the telephone(International Mobile station Equipment Identity)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
V.25ter	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 <b>AT+ICF=?</b>	Response <b>+ICF: (list of supported &lt;format&gt;s),(list of supported &lt;parity&gt;s)</b> <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+ICF?</b>	Response <b>+ICF: &lt;format&gt;,&lt;parity&gt;</b> <b>OK</b>
	Parameters See Write Command

<p>Write Command <b>AT+ICF=&lt;format&gt;[,&lt;parity&gt;]</b></p>	<p>Response This parameter setting determines the serial interface character framing format and parity received by TA from TE.</p> <p><b>OK</b></p> <p>Parameters</p> <p><b>&lt;format&gt;</b>    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</p> <p><b>&lt;parity&gt;</b>    0    odd                   1    even                   3    space (0)</p>
<p>Parameter Saving Mode</p>	<p>-</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference V.25ter</p>	<p>Note The Command is applied for Command state; In &lt;format&gt; parameter, "0 parity" means no parity; The &lt;parity&gt; field is ignored if the &lt;format&gt; field specifies no parity and string "+ICF: &lt;format&gt;,255" will be response to "AT+ICF?" Command.</p>

### 2.2.31 AT+ICF Set TE-TA Local Data Flow Control

AT+ICF Set TE-TA Local Data Flow Control	
<p>Test Command <b>AT+ICF=?</b></p>	<p>Response <b>+ICF:</b> (list of supported &lt;dce_by_dte&gt;s),(list of supported &lt;dte_by_dce&gt;s)</p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+ICF?</b></p>	<p>Response <b>+ICF:</b> &lt;dce_by_dte&gt;,&lt;dte_by_dce&gt;</p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+ICF=&lt;dce_by_dte&gt;[,&lt;dte_by_dce&gt;]</b></p>	<p>Response This parameter setting determines the data flow control on the serial interface for data mode.</p> <p><b>OK</b></p>

	<p>Parameters</p> <p><b>&lt;dce_by_dte&gt;</b> Specifies the method will be used by TE at receive of data from TA</p> <p style="padding-left: 40px;">0 No flow control 1 Software flow control 2 Hardware flow control</p> <p><b>&lt;dte_by_dce&gt;</b> Specifies the method will be used by TA at receive of data from TE</p> <p style="padding-left: 40px;">0 No flow control 1 Software flow control 2 Hardware flow control</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
V.25ter	

### 2.2.32 AT+IPR Set TE-TA Fixed Local Rate

AT+IPR Set TE-TA Fixed Local Rate	
<p>Test Command</p> <p><b>AT+IPR=?</b></p>	<p>Response</p> <p><b>+IPR:</b> (list of supported auto detectable &lt;rate&gt;s),(list of supported fixed-only &lt;rate&gt;s)</p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+IPR?</b></p>	<p>Response</p> <p><b>+IPR: &lt;rate&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+IPR=&lt;rate&gt;</b></p>	<p>Response</p> <p>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.</p> <p><b>OK</b></p> <p>Parameters</p> <p><b>&lt;rate&gt;</b> Baud rate per second</p> <p>0 300</p>

	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

SIMCom  
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## 3 AT Commands According to 3GPP TS 27.007

### 3.1 Overview of AT Command According to 3GPP TS 27.007

Command	Description
<b>AT+CGMI</b>	Request manufacturer identification
<b>AT+CGMM</b>	Request model identification
<b>AT+CGMR</b>	Request TA revision identification of software release
<b>AT+CGSN</b>	Request product serial number identification (identical with +GSN)
<b>AT+CSCS</b>	Select TE character set
<b>AT+CIMI</b>	Request international mobile subscriber identity
<b>AT+CLCK</b>	Facility lock
<b>AT+CMEE</b>	Report mobile equipment error
<b>AT+COPS</b>	Operator selection
<b>AT+CPAS</b>	Phone activity status
<b>AT+CPIN</b>	Enter PIN
<b>AT+CPWD</b>	Change password
<b>AT+CRC</b>	Set cellular result codes for incoming call indication
<b>AT+CREG</b>	Network registration
<b>AT+CRSM</b>	Restricted SIM access
<b>AT+CSQ</b>	Signal quality report
<b>AT+CPOL</b>	Preferred operator list
<b>AT+COPN</b>	Read operator names
<b>AT+CFUN</b>	Set phone functionality
<b>AT+CCLK</b>	Clock
<b>AT+CSIM</b>	Generic SIM access
<b>AT+CBC</b>	Battery charge
<b>AT+CUSD</b>	Unstructured supplementary service data
<b>AT+CNUM</b>	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 <b>AT+CGMI=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGMI</b>	Response TA returns manufacturer identification text. <b>&lt;manufacturer&gt;</b>  <b>OK</b> Parameters <b>&lt;manufacturer&gt;</b> 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 <b>AT+CGMM=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGMM</b>	Response TA returns product model identification text. <b>&lt;model&gt;</b>  <b>OK</b> Parameters <b>&lt;model&gt;</b> 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 <b>AT+CGMR=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGMR</b>	Response TA returns product software version identification text. <b>Revision: &lt;revision&gt;</b> <b>OK</b>
Parameter Saving Mode	Parameters <b>&lt;revision&gt;</b> Product software version identification text
Max Response Time	NO_SAVE
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 <b>AT+CGSN=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGSN</b>	Response see +GSN <b>&lt;sn&gt;</b> <b>OK</b>
Parameter Saving Mode	Parameters <b>&lt;sn&gt;</b> International mobile equipment identity (IMEI)
Max Response Time	NO_SAVE
Reference	-
3GPP TS 27.007 [13]	Note

### 3.2.5 AT+CSCS Select TE Character Set

#### AT+CSCS Select TE Character Set

Test Command	Response <b>+CSCS: (list of supported &lt;chset&gt;s)</b>
--------------	--

<b>AT+CSCS=?</b>	<p><b>OK</b></p> <p>Parameters</p> <p><b>&lt;chset&gt;</b> "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)</p>
Read Command <b>AT+CSCS?</b>	<p>Response</p> <p><b>+CSCS: &lt;chset&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Test Command</p>
Write Command <b>AT+CSCS=&lt;chset&gt;</b>	<p>Response</p> <p>Sets which character set <b>&lt;chset&gt;</b> are used by the TE. The TA can then convert character strings correctly between the TE and ME character sets.</p> <p><b>OK</b></p> <p>If error is related to ME functionality:  <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p>See Test Command</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.007 [13]	

### 3.2.6 AT+CIMI Request International Mobile Subscriber Identity

<b>AT+CIMI Request International Mobile Subscriber Identity</b>	
Test Command <b>AT+CIMI=?</b>	<p>Response</p> <p><b>OK</b></p>
Execution Command <b>AT+CIMI</b>	<p>Response</p> <p>TA returns <b>&lt;IMSI&gt;</b> for identifying the individual SIM which is attached to ME.  <b>&lt;IMSI&gt;</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality:  <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;IMSI&gt;</b> International Mobile Subscriber Identity (string without double</p>

	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 <b>AT+CLCK=?</b>	Response <b>+CLCK:</b> (list of supported <fac>s)  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CLCK=&lt;fac&gt;,&lt;mode&gt;[,&lt;passwd&gt;[,&lt;class&gt;]]</b>	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 <b>OK</b> If <mode>=2 and Command is successful <b>+CLCK:</b> <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[...]]  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> <err>
	Parameters <b>&lt;fac&gt;</b>  "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" BAO (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	Note
3GPP TS 27.007 [14]	<ul style="list-style-type: none"> <li>● CME errors if SIM not inserted or PIN is not entered.</li> </ul>

### 3.2.8 AT+CMEE Report Mobile Equipment Error

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

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

### 3.2.9 AT+COPS Operator Selection

AT+COPS Operator Selection	
<p>Test Command <b>AT+COPS=?</b></p>	<p>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.</p> <p><b>+COPS:</b> (list of supported <b>&lt;stat&gt;</b>, long alphanumeric <b>&lt;oper&gt;</b>, short alphanumeric <b>&lt;oper&gt;</b>, numeric <b>&lt;oper&gt;</b>, <b>&lt;netact&gt;</b>)s[, (list of supported <b>&lt;mode&gt;</b>s), (list of supported <b>&lt;format&gt;</b>s)]</p> <p><b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters See Write Command</p>
<p>Read Command</p>	<p>Response TA returns the current mode and the currently selected operator. If no</p>

<p><b>AT+COPS?</b></p>	<p>operator is selected, &lt;format&gt; and &lt;oper&gt; are omitted.  <b>+COPS:</b> &lt;mode&gt;[,&lt;format&gt;,&lt;oper&gt;,&lt;netact&gt;]</p> <p><b>OK</b>          If error is related to ME functionality:  <b>+CME ERROR:</b> &lt;err&gt;</p>
<p>Write Command  <b>AT+COPS=&lt;mode&gt;,[&lt;format&gt;,&lt;oper&gt;]</b></p>	<p>Parameters          See Write Command</p> <p>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 &lt;mode&gt;=4). The selected operator name format shall apply to further read commands (AT+COPS?).</p> <p><b>OK</b>          If error is related to ME functionality:  <b>+CME ERROR:</b> &lt;err&gt;</p> <p>Parameters</p> <p><b>&lt;stat&gt;</b>    0 Unknown                        1 Operator available                        2 Operator current                        3 Operator forbidden</p> <p><b>&lt;oper&gt;</b>    Refer to [27.007]                        operator in format as per &lt;format&gt;</p> <p><b>&lt;mode&gt;</b>    0 Automatic mode; &lt;oper&gt; field is ignored                        1 Manual (&lt;oper&gt; field shall be present, and &lt;AcT&gt; optionally)                        2 manual deregister from network                        3 set only &lt;format&gt; (for read Command +COPS?) - not shown in Read Command response                        4 Manual/automatic (&lt;oper&gt; field shall be present); if manual selection fails, automatic mode (&lt;mode&gt;=0) is entered</p> <p><b>&lt;format&gt;</b>   0 Long format alphanumeric &lt;oper&gt;                        1 Short format alphanumeric &lt;oper&gt;                        2 Numeric &lt;oper&gt;; GSM Location Area Identification number</p> <p><b>&lt;netact&gt;</b>   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</p>
<p>Parameter Saving Mode</p>	<p>AUTO_SAVE</p>
<p>Max Response Time</p>	<p>Test command: 45 seconds          Write command: 120 seconds</p>
<p>Reference          3GPP TS 27.007 [14]</p>	<p>Note</p>



### 3.2.10 AT+CPAS Phone Activity Status

AT+CPAS Phone Activity Status	
Test Command <b>AT+CPAS=?</b>	Response <b>+CPAS:</b> (list of supported <pas>s)  <b>OK</b>
	Parameters See Execution Command
Execution Command <b>AT+CPAS</b>	Response TA returns the activity status of ME. <b>+CPAS:</b> <pas>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> <err>
	Parameters <b>&lt;pas&gt;</b> <ul style="list-style-type: none"> <li>0 Ready (MT allows commands from TA/TE)</li> <li>3 Ringing (MT is ready for commands from TA/TE, but the ringer is active)</li> <li>4 Call in progress (MT is ready for commands from TA/TE, but a call is in progress)</li> </ul>
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 <b>AT+CPIN=?</b>	Response <b>OK</b>
Read Command <b>AT+CPIN?</b>	Response TA returns an alphanumeric string indicating whether some password is required or not. <b>+CPIN:</b> <code>  <b>OK</b>

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

### 3.2.12 AT+CPWD Change Password

AT+CPWD Change Password	
<p>Test Command</p> <p><b>AT+CPWD=?</b></p>	<p>Response</p> <p>TA returns a list of pairs which present the available facilities and the maximum length of their password.</p> <p><b>+CPWD:</b> (list of supported &lt;fac&gt;s, list of supported &lt;pwdlength&gt;s)</p> <p><b>OK</b></p> <p>Parameters</p> <p><b>&lt;fac&gt;</b> See Write Command</p> <p><b>&lt;pwdlength&gt;</b> Integer max. length of password</p>
<p>Write Command</p> <p><b>AT+CPWD=&lt;fac&gt;,&lt;old</b></p>	<p>Response</p> <p>TA sets a new password for the facility lock function.</p> <p><b>OK</b></p>

<b>pwd&gt;,&lt;newpwd&gt;</b>	Parameters
	<p><b>&lt;fac&gt;</b></p> <p>"AB" All Barring services</p> <p>"AC" All inComing barring services(only for &lt;mode&gt;=0)</p> <p>"AG" All outGoing barring services(only for &lt;mode&gt;=0)</p> <p>"AI" BAIC (Barr All Incoming Calls)</p> <p>"AO" BAOC (Barr All Outgoing Calls)</p> <p>"IR" BIC- Roam (Barr Incoming Calls when Roaming outside the home country)</p> <p>"OI" BOIC (Barr Outgoing International Calls)</p> <p>"OX" BOIC- exHC (Barr Outgoing International Calls except to Home Country)</p> <p>"SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code.</p> <p>"P2" SIM PIN2</p> <p><b>&lt;oldpwd&gt;</b> 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,&lt;oldpwd&gt; is not to enter.</p> <p><b>&lt;newpwd&gt;</b> String type (string should be included in quotation marks): new password</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference	Note
3GPP TS 27.007 [13]	

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

<b>AT+CRC Set Cellular Result Codes for Incoming Call Indication</b>	
Test Command <b>AT+CRC=?</b>	<p>Response</p> <p><b>+CRC: (list of supported &lt;mode&gt;s)</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Read Command <b>AT+CRC?</b>	<p>Response</p> <p><b>+CRC: &lt;mode&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>

Write Command <b>AT+CRG=[&lt;mode&gt;]</b>	Response TA controls whether or not the extended format of incoming call indication is used. <b>OK</b>
	Parameters <b>&lt;mode&gt;</b> 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 <b>+CRING: &lt;type&gt;</b> instead of the normal <b>RING</b> .
	Parameters <b>&lt;type&gt;</b> 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 <b>AT+CREG=?</b>	Response <b>+CREG:</b> (list of supported <n>s)  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CREG?</b>	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. <b>+CREG: &lt;n&gt;,&lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;,&lt;netact&gt;]</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Write Command	Response

<p><b>AT+CREG[=&lt;n&gt;]</b></p>	<p>TA controls the presentation of an unsolicited result code <b>+CREG: &lt;stat&gt;</b> when &lt;n&gt;=1 and there is a change in the ME network registration status.</p> <p><b>OK</b></p> <p>Parameters</p> <p><b>&lt;n&gt;</b>            0    Disable network registration unsolicited result code                          1    Enable network registration unsolicited result code                          2    Enable network registration unsolicited result code with location information(2 is only for 7000 series module which support GPRS.)</p> <p><b>CREG: &lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;,&lt;netact&gt;]</b></p> <p><b>&lt;stat&gt;</b>          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</p> <p><b>&lt;lac&gt;</b>            String type (string should be included in quotation marks); two byte location area code in hexadecimal format</p> <p><b>&lt;ci&gt;</b>             String type (string should be included in quotation marks); two byte cell ID in hexadecimal format</p> <p><b>&lt;netact&gt;</b>        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</p> <p>Unsolicited Result Code</p> <p>If &lt;n&gt;=1 and there is a change in the MT network registration status  <b>+CREG: &lt;stat&gt;</b></p> <p>If &lt;n&gt;=2 and there is a change in the MT network registration status or a change of the network cell:  <b>+CREG: &lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;,&lt;netact&gt;]</b></p> <p>Parameters          See Write Command</p>
<p>Parameter Saving Mode</p>	<p>-</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference          3GPP TS 27.007 [13]</p>	<p>Note</p>

### 3.2.15 AT+CRSM Restricted SIM Access

## AT+CRSM Restricted SIM Access

Test Command <b>AT+CRSM=?</b>	Response <b>OK</b>
Write Command <b>AT+CRSM=&lt;Command&gt;[,&lt;fileId&gt;[,&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;[,&lt;data&gt;]]]</b>	<p>Response <b>+CRSM: &lt;sw1&gt;,&lt;sw2&gt;[,&lt;response&gt;]</b></p> <p><b>OK</b> <b>ERROR</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters <b>&lt;Command&gt;</b></p> <p>176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS</p> <p>All other values are reserved; refer GSM 11.11.</p> <p><b>&lt;fileId&gt;</b> Integer type; this is the identifier for an elementary data file on SIM. Mandatory for every Command except STATUS</p> <p><b>&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;</b> Integer type, range 0 – 255 Parameters to be passed on by the ME to the SIM; refer GSM 11.11.</p> <p><b>&lt;data&gt;</b> Information which shall be written to the SIM (hex-decimal character format)</p> <p><b>&lt;sw1&gt;,&lt;sw2&gt;</b> 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.</p> <p><b>&lt;response&gt;</b> Response of a successful completion of the Command previously issued (hexadecimal character format)</p>
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 <b>AT+CSQ=?</b>	Response <b>+CSQ: (list of supported &lt;rssi&gt;s),(list of supported &lt;ber&gt;s)</b>
---------------------------------	---

	<p><b>OK</b></p> <p>Response</p> <p><b>+CSQ: &lt;rssi&gt;,&lt;ber&gt;</b></p>														
Execution Command <b>AT+CSQ</b>	<p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Execution Command returns received signal strength indication &lt;rssi&gt; and channel bit error rate &lt;ber&gt; from the ME. Test Command returns values supported by the TA.</p> <p>Parameters</p> <p><b>&lt;rssi&gt;</b></p> <table border="0"> <tr> <td>0</td> <td>- 115 dBm or less</td> </tr> <tr> <td>1</td> <td>- 111 dBm</td> </tr> <tr> <td>2...30</td> <td>- 110... - 54 dBm</td> </tr> <tr> <td>31</td> <td>- 52 dBm or greater</td> </tr> <tr> <td>99</td> <td>not known or not detectable</td> </tr> </table> <p><b>&lt;ber&gt;</b> (in percent):</p> <table border="0"> <tr> <td>0...7</td> <td>As RXQUAL values in the table in GSM 05.08 [20] subclause 7.2.4</td> </tr> <tr> <td>99</td> <td>Not known or not detectable</td> </tr> </table>	0	- 115 dBm or less	1	- 111 dBm	2...30	- 110... - 54 dBm	31	- 52 dBm or greater	99	not known or not detectable	0...7	As RXQUAL values in the table in GSM 05.08 [20] subclause 7.2.4	99	Not known or not detectable
0	- 115 dBm or less														
1	- 111 dBm														
2...30	- 110... - 54 dBm														
31	- 52 dBm or greater														
99	not known or not detectable														
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	Note														
3GPP TS 27.007 [13]															

### 3.2.17 AT+CPOL Preferred Operator List

AT+CPOL Preferred Operator List	
Test Command <b>AT+CPOL=?</b>	<p>Response</p> <p><b>+CPOL: (list of supported &lt;index&gt;s),(list of supported &lt;format&gt;s)</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Read Command <b>AT+CPOL?</b>	<p>Response</p> <p><b>+CPOL:</b></p> <p><b>&lt;index1&gt;,&lt;format&gt;,&lt;oper1&gt;[,&lt;GSM&gt;,&lt;GSM_compact&gt;,&lt;UTRAN&gt;,&lt;E-UTRAN&gt;][&lt;CR&gt;&lt;LF&gt;+CPOL:</b></p> <p><b>&lt;index2&gt;,&lt;format&gt;,&lt;oper2&gt;[,&lt;GSM&gt;,&lt;GSM_compact&gt;,&lt;UTRAN&gt;,&lt;E-UTRAN&gt;][...]</b></p>

	<p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <hr/> <p>Parameters</p> <p>See Write Command</p>
Write Command	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <hr/> <p>Parameters</p> <p><b>&lt;index&gt;</b> Integer type: order number of operator in SIM preferred operator list</p> <p><b>&lt;format&gt;</b> Indicates whether alphanumeric or numeric format used (see <b>+COPS</b> Command)</p> <p>0 Long format alphanumeric <b>&lt;oper&gt;</b></p> <p>1 Short format alphanumeric <b>&lt;oper&gt;</b></p> <p>2 Numeric <b>&lt;oper&gt;</b></p> <p><b>&lt;oper&gt;</b> String type(string should be included in quotation marks)</p> <p><b>&lt;GSM&gt;</b> GSM access technology</p> <p>0 Access technology is not selected</p> <p>1 Access technology is selected</p> <p><b>&lt;GSM_compact&gt;</b> GSM compact access technology</p> <p>0 Access technology is not selected</p> <p>1 Access technology is selected</p> <p><b>&lt;UTRAN&gt;</b> UTRAN access technology</p> <p>0 Access technology is not selected</p> <p>1 Access technology is selected</p> <p><b>&lt;E-UTRAN&gt;</b> E-UTRAN access technology</p> <p>0 Access technology is not selected</p> <p>1 Access technology is selected</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
3GPP TS 27.007 [13]	

### 3.2.18 AT+COPN Read Operator Names

#### AT+COPN Read Operator Names

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



<b>AT+COPN</b>	<p><b>+COPN:</b> &lt;numeric1&gt;,&lt;alpha1&gt; [&lt;CR&gt;&lt;LF&gt;+COPN: &lt;numeric2&gt;,&lt;alpha2&gt; [...]]</p> <p><b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> &lt;err&gt;</p> <p>Parameters &lt;numericn&gt; String type (string should be included in quotation marks): operator in numeric format (see <b>+COPS</b>) &lt;alphan&gt; String type (string should be included in quotation marks): operator in long alphanumeric format (see <b>+COPS</b>)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.007 [13]	

### 3.2.19 AT+CFUN Set Phone Functionality

<b>AT+CFUN Set Phone Functionality</b>	
Test Command <b>AT+CFUN=?</b>	<p>Response <b>+CFUN:</b> (list of supported &lt;fun&gt;s),(list of supported &lt;rst&gt;s)</p> <p><b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> &lt;err&gt;</p> <p>Parameters See Write Command</p>
Read Command <b>AT+CFUN?</b>	<p>Response <b>+CFUN:</b> &lt;fun&gt;</p> <p><b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> &lt;err&gt;</p> <p>Parameters See Write Command</p>
Write Command <b>AT+CFUN=&lt;fun&gt;[,&lt;rst&gt;]</b>	<p>Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> &lt;err&gt;</p> <p>Parameters &lt;fun&gt;</p>

	<p>0 Minimum functionality</p> <p><u>1</u> Full functionality (Default)</p> <p>4 Disable phone both transmit and receive RF circuits.</p> <p>5 Factory Test Mode</p> <p>6 Reset</p> <p>7 Offline Mode</p> <p><b>&lt;rst&gt;</b></p> <p><u>0</u> Do not Reset the MT before setting it to <b>&lt;fun&gt;</b> power level.</p> <p>1 Reset the MT before setting it to <b>&lt;fun&gt;</b> power level.</p>
Parameter Saving Mode	-
Max Response Time	10s
Reference 3GPP TS 27.007 [13]	<p>Note</p> <ul style="list-style-type: none"> <li>• The <b>&lt;fun&gt;</b> power level will be written to flash except minimum functionality.</li> <li>• <b>AT+CFUN=1,1</b> can be used to reset module purposely at minimum/full functionality mode.</li> <li>• Response string "OK" will be returned after module resets if baud rate is set to fixed baud rate.</li> </ul>

### 3.2.20 AT+CCLK Clock

AT+CCLK Clock	
Test Command <b>AT+CCLK=?</b>	Response <b>OK</b>
Read Command <b>AT+CCLK?</b>	<p>Response <b>+CCLK: &lt;time&gt;</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters See Write Command</p>
Write Command <b>AT+CCLK=&lt;time&gt;</b>	<p>Response <b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters <b>&lt;time&gt;</b> 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</p>

	equals to "10/05/06,00:01:52+08".
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.007 [13]	Only time zone is auto saved.

### 3.2.21 AT+CSIM Generic SIM Access

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

### 3.2.22 AT+CBC Battery Charge

AT+CBC Battery Charge	
Test Command <b>AT+CBC=?</b>	Response <b>+CBC: (list of supported &lt;bcs&gt;s),(list of supported &lt;bcl&gt;s),(&lt;voltage&gt;)</b>  <b>OK</b>
	Parameters See Execution Command
Execution Command	Response

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

### 3.2.23 AT+CUSD Unstructured Supplementary Service Data

<b>AT+CUSD Unstructured Supplementary Service Data</b>	
<p>Test Command</p> <p><b>AT+CUSD=?</b></p>	<p>Response</p> <p><b>+CUSD: (list of supported &lt;n&gt;s)</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+CUSD?</b></p>	<p>Response</p> <p><b>+CUSD: &lt;n&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CUSD=&lt;n&gt;,&lt;str&gt;,&lt;dc&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;n&gt;</b> A numeric parameter which indicates control of the unstructured supplementary service data</p> <p>0 disable the result code presentation in the TE</p> <p>1 enable the result code presentation in the TE</p> <p>2 cancel session (not applicable to read Command response)</p>

	<p><b>&lt;str&gt;</b> String type (string should be included in quotation marks) USSD-string</p> <p><b>&lt;dc&gt;</b> Cell Broadcast Data Coding Scheme in integer format (default 0)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
GSM 03.38 [25]	When ussd is not support or return error,TE will print +CUSD:4.

### 3.2.24 AT+CNUM Subscriber Number

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

## 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+CREG	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	Response
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<p><b>AT+CMGD=?</b></p>	<p><b>+CMGD:</b> (list of supported &lt;index&gt;s),(list of supported &lt;delflag&gt;s)</p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CMGD=&lt;index&gt;[,&lt;delflag&gt;]</b></p>	<p>Response TA deletes message from preferred message storage &lt;mem1&gt; location &lt;index&gt;.</p> <p><b>OK</b></p> <p><b>ERROR</b> If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b></p> <p>Parameters &lt;index&gt; Integer type; value in the range of location numbers supported by the associated memory</p> <p>&lt;delflag&gt; 0 Delete the message specified in &lt;index&gt; 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</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>5s(delete 1 message) 25s(delete 50 messages) 25s(delete 150 messages)</p>
<p>Reference 3GPP TS 27.005</p>	<p>Note</p>

#### 4.2.2 AT+CMGF Select SMS Message Format

<p><b>AT+CMGF Select SMS Message Format</b></p>	
<p>Test Command <b>AT+CMGF=?</b></p>	<p>Response <b>+CMGF:</b> (list of supported &lt;mode&gt;s)</p> <p><b>OK</b></p> <p>Parameter</p>

	See Write Command
Read Command <b>AT+CMGF?</b>	Response <b>+CMGF: &lt;mode&gt;</b>  <b>OK</b>
	Parameter See Write Command
Write Command <b>AT+CMGF=[&lt;mode&gt;]</b>	Response TA sets parameter to denote which input and output format of messages to use. <b>OK</b>
	Parameter <b>&lt;mode&gt;</b> <u>0</u> 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 <b>AT+CMGL=?</b>	Response <b>+CMGL: (list of supported &lt;stat&gt;s)</b>  <b>OK</b>
	Parameter See Write Command
Write Command <b>AT+CMGL=&lt;stat&gt;[,&lt;mode&gt;]</b>	Parameters 1) If text mode: <b>&lt;stat&gt;</b> <u>"REC UNREAD"</u> Received unread messages "REC READ"    Received read messages "STO UNSENT"    Stored unsent messages "STO SENT"      Stored sent messages "ALL"            All messages  <b>&lt;mode&gt;</b> <u>0</u> Normal 1 Not change status of the specified SMS record 2) If PDU mode: <b>&lt;stat&gt;</b> <u>0</u> 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 TP-User-Data-Header-Indication is not set:

- if TE character set other than "HEX" (refer Command Select TE Character Set **+CSCS** in 3GPP TS 27.007): 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

	<p>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.</p> <p><b>&lt;scts&gt;</b> GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer <b>&lt;dt&gt;</b>)</p> <p><b>&lt;toda&gt;</b> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <b>&lt;da&gt;</b> is + (IRA 43) default is 145, otherwise default is 129)</p> <p><b>&lt;tooa&gt;</b> GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer <b>&lt;toda&gt;</b>)</p>
Execution Command <b>AT+CMGL</b>	<p>1) If text mode: the same as <b>AT+CMGL="REC UNREAD"</b>, received unread messages</p> <p>2) If PDU mode: the same as <b>AT+CMGL=0</b>, received unread messages</p> <p>See more messages please refer to Write Command.</p> <p>Parameters See Write Command</p>
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

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

,<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 **<dc>** 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 **<dc>** 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

**<dc>** 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 **<toa>**

**<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>**)

<b>&lt;stat&gt;</b>	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

	<p><b>&lt;tda&gt;</b> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <b>&lt;da&gt;</b> is + (IRA 43) default is 145, otherwise default is 129)</p> <p><b>&lt;tooa&gt;</b> GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer <b>&lt;tda&gt;</b>)</p> <p><b>&lt;tosca&gt;</b> GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <b>&lt;tda&gt;</b>)</p> <p><b>&lt;vp&gt;</b> Depending on SMS-SUBMIT <b>&lt;fo&gt;</b> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <b>&lt;dt&gt;</b>)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference	Note
3GPP TS 27.005	

#### 4.2.5 AT+CMGS Send SMS Message

AT+CMGS Send SMS Message	
Test Command	Response
<b>AT+CMGS=?</b>	<b>OK</b>
Write Command	Parameters
1) If text mode (+CMGF=1):	<p><b>&lt;da&gt;</b> 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 <b>+CSCS</b> in 3GPP TS 27.007); type of address given by <b>&lt;tda&gt;</b></p> <p><b>&lt;tda&gt;</b> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <b>&lt;da&gt;</b> is + (IRA 43) default is 145, otherwise default is 129)</p> <p><b>&lt;length&gt;</b> Integer type value (not exceed 160 bytes) indicating in the text mode (<b>+CMGF=1</b>) the length of the message body <b>&lt;data&gt;</b> (or <b>&lt;cdata&gt;</b>) in characters; or in PDU mode (<b>+CMGF=0</b>), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)</p>
<p><b>AT+CMGS=&lt;da&gt;[,&lt;tda&gt;]</b></p> <p><b>&lt;CR&gt;text is entered &lt;ctrl-Z/ESC&gt;</b></p> <p>ESC quits without sending</p>	
2) If PDU mode (+CMGF=0):	Response
<p><b>AT+CMGS=&lt;length&gt;</b></p> <p><b>&lt;CR&gt;PDU is given &lt;ctrl-Z/ESC&gt;</b></p>	<p>TA sends message from a TE to the network (SMS-SUBMIT). Message reference value <b>&lt;mr&gt;</b> is returned to the TE on successful message delivery. Optionally (when <b>+CSMS &lt;service&gt;</b> value is 1 and network supports) <b>&lt;scts&gt;</b> is returned. Values can be used to identify message upon unsolicited delivery status report result code.</p> <p>1) If text mode(<b>+CMGF=1</b>) and sending successful:</p> <p><b>+CMGS: &lt;mr&gt;</b></p>



	<p><b>OK</b></p> <p>2) If PDU mode(<b>+CMGF=0</b>) and sending successful: <b>+CMGS: &lt;mr&gt;</b></p> <p><b>OK</b></p> <p>3)If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b></p>
	<p>Parameter <b>&lt;mr&gt;</b> GSM 03.40 TP-Message-Reference in integer format</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	60s
Reference 3GPP TS 27.005	<p>Note</p> <ul style="list-style-type: none"> <li>● Reject incoming call when sending messages.</li> </ul>

#### 4.2.6 AT+CMGW Write SMS Message to Memory

##### AT+CMGW Write SMS Message to Memory

Test Command <b>AT+CMGW=?</b>	Response <b>OK</b>
Write Command 1) If text mode (+CMGF=1): <b>AT+CMGW=&lt;oa/da&gt;[,&lt;tooa/toda&gt;][,&lt;stat&gt;]</b> <CR> text is entered <ctrl-Z/ESC> <ESC> quits without sending	<p>Response</p> <p>TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <b>&lt;mem2&gt;</b>. Memory location <b>&lt;index&gt;</b> of the stored message is returned. By default message status will be set to 'stored unsend', but parameter <b>&lt;stat&gt;</b> allows also other status values to be given.</p> <p>If writing is successful: <b>+CMGW: &lt;index&gt;</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b></p>
2) If PDU mode (+CMGF=0): <b>AT+CMGW=&lt;length&gt;[,&lt;stat&gt;]</b> <CR>PDU is given <ctrl-Z/ESC>	<p>Parameters</p> <p><b>&lt;oa&gt;</b> 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 currently selected TE character set (specified by +CSCS in 3GPP TS 27.007);type of address given by <b>&lt;tooa&gt;</b></p> <p><b>&lt;da&gt;</b> 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 <b>&lt;toda&gt;</b></p> <p><b>&lt;tooa&gt;</b> GSM 04.11 TP-Originating-Address Type-of-Address octet in</p>

	<p>integer format (default refer <b>&lt; toda &gt;</b>)</p> <p><b>&lt; toda &gt;</b> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <b>&lt; da &gt;</b> is + (IRA 43) default is 145, otherwise default is 129)</p> <ul style="list-style-type: none"> <li>129 Unknown type(ISDN format number)</li> <li>161 National number type(ISDN format)</li> <li>145 International number type(ISDN format)</li> <li>177 Network specific number(ISDN format)</li> </ul> <p><b>&lt; length &gt;</b> Integer type value (not exceed 160 bytes) indicating in the text mode (<b>+CMGF=1</b>) the length of the message body <b>&lt; data &gt;</b> (or <b>&lt; cdata &gt;</b>) in characters;</p> <p style="padding-left: 40px;">or in PDU mode (<b>+CMGF=0</b>), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)</p> <p><b>&lt; stat &gt;</b> in the text mode (<b>+CMGF=1</b>):</p> <ul style="list-style-type: none"> <li>"STO UNSENT" Stored unsent messages</li> <li>"STO SENT" Stored sent messages</li> </ul> <p>in PDU mode (<b>+CMGF=0</b>):</p> <ul style="list-style-type: none"> <li>0 Received unread messages</li> <li>1 Received read messages</li> <li>2 Stored unsent messages</li> <li>3 Stored sent messages</li> </ul> <p><b>&lt; pdu &gt;</b> 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.</p> <p><b>&lt; index &gt;</b> Index of message in selected storage <b>&lt; mem2 &gt;</b></p>
<p>Execution Command</p> <p><b>AT+CMGW</b></p>	<p>Response</p> <p>TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <b>&lt; mem2 &gt;</b>. Memory location <b>&lt; index &gt;</b> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <b>&lt; stat &gt;</b> allows also other status values to be given.</p> <p>If writing is successful:</p> <p><b>+CMGW: &lt; index &gt;</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CMS ERROR: &lt; err &gt;</b></p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>5s</p>
<p>Reference</p> <p>3GPP TS 27.005</p>	<p>Note</p>



## 4.2.7 AT+CMSS Send SMS Message from Storage

### AT+CMSS Send SMS Message from Storage

Test Command <b>AT+CMSS=?</b>	Response <b>OK</b>
Write Command <b>AT+CMSS=&lt;index&gt;[,&lt;da&gt;,&lt;toda&gt;]</b>	<p>Response</p> <p>TA sends message with location value &lt;index&gt; from message storage &lt;mem2&gt; to the network (SMS-SUBMIT). If new recipient address &lt;da&gt; is given, it shall be used instead of the one stored with the message. Reference value &lt;mr&gt; is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code.</p> <p>1) If text mode(<b>+CMGF=1</b>) and sending successful: <b>+CMSS: &lt;mr&gt;</b></p> <p><b>OK</b></p> <p>2) If PDU mode(<b>+CMGF=0</b>) and sending successful: <b>+CMSS: &lt;mr&gt;</b></p> <p><b>OK</b></p> <p>3) If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;index&gt;</b> Integer type; value in the range of location numbers supported by the associated memory</p> <p><b>&lt;da&gt;</b> 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 <b>+CSCS</b> in 3GPP TS 27.007); type of address given by <b>&lt;toda&gt;</b></p> <p><b>&lt;toda&gt;</b> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of &lt;da&gt; is + (IRA 43) default is 145, otherwise default is 129)</p> <p><b>&lt;mr&gt;</b> GSM 03.40 TP-Message-Reference in integer format</p>
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 <b>AT+CNMI=?</b>	Response <b>+CNMI:</b> (list of supported <b>&lt;mode&gt;s</b> ),(list of supported <b>&lt;mt&gt;s</b> ),(list of supported <b>&lt;bm&gt;s</b> ),(list of supported <b>&lt;ds&gt;s</b> ),(list of supported <b>&lt;bfr&gt;s</b> )  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CNMI?</b>	Response <b>+CNMI:</b> <b>&lt;mode&gt;</b> , <b>&lt;mt&gt;</b> , <b>&lt;bm&gt;</b> , <b>&lt;ds&gt;</b> , <b>&lt;bfr&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CNMI=&lt;mode&gt;[,&lt;mt&gt;[,&lt;bm&gt;[,&lt;ds&gt;[,&lt;bfr&gt;]]]]</b>	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.  <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> 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. <b>&lt;mt&gt;</b> (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: <b>+CMTI:</b> <b>&lt;mem&gt;</b> , <b>&lt;index&gt;</b> 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>*,[*<toa>*,*<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>*,[*<toa>*,*<fo>*,*<pid>*,*<dcs>*,*<sca>*,*<tosca>*,*<length>*]*<CR>*<LF><data>

	<p>2. Indicates that new cell broadcast message has been received If <b>&lt;bm&gt;=2</b> (PDU mode enabled): <b>+CBM: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b> If <b>&lt;bm&gt;=2</b> (text mode enabled): <b>+CBM: &lt;sn&gt;,&lt;mid&gt;,&lt;dcs&gt;,&lt;page&gt;,&lt;pages&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b></p> <p>3. Indicates that new SMS status report has been received If <b>&lt;ds&gt;=1</b> (PDU mode enabled): <b>+CDS: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b> If <b>&lt;ds&gt;=1</b> (text mode enabled): <b>+CDS: &lt;fo&gt;,&lt;mr&gt;[,&lt;ra&gt;][,&lt;tora&gt;],&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;</b></p>
Parameter Saving Mode	-
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>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 <b>&lt;mt&gt;=2,&lt;mt&gt;=3</b> or <b>&lt;ds&gt;=1</b>, make sure <b>&lt;mode&gt;=1</b>, otherwise it will return error..</li> </ul>

#### 4.2.9 AT+CPMS Preferred SMS Message Storage

AT+CPMS Preferred SMS Message Storage	
<p>Test Command</p> <p><b>AT+CPMS=?</b></p>	<p>Response</p> <p><b>+CPMS: (list of supported &lt;mem1&gt;s),(list of supported &lt;mem2&gt;s),(list of supported &lt;mem3&gt;s)</b></p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CPMS?</b></p>	<p>Parameters</p> <p>See Write Command</p> <p>Response</p> <p><b>+CPMS: &lt;mem1&gt;,&lt;used1&gt;,&lt;total1&gt;,&lt;mem2&gt;,&lt;used2&gt;,&lt;total2&gt;,&lt;mem3&gt;,&lt;used3&gt;,&lt;total3&gt;</b></p> <p><b>OK</b></p> <p><b>ERROR</b></p>
<p>Write Command</p> <p><b>AT+CPMS=&lt;mem1&gt;[,&lt;mem2&gt;[,&lt;mem3&gt;]]</b></p>	<p>Parameters</p> <p>See Write Command</p> <p>Response</p> <p>TA selects memory storages <b>&lt;mem1&gt;,&lt;mem2&gt;</b> and <b>&lt;mem3&gt;</b> to be used for reading, writing, etc.</p> <p><b>+CPMS: &lt;used1&gt;,&lt;total1&gt;,&lt;used2&gt;,&lt;total2&gt;,&lt;used3&gt;,&lt;total3&gt;</b></p>

	<p><b>OK</b></p> <p><b>ERROR</b></p> <p>Parameters</p> <p><b>&lt;mem1&gt;</b> Messages to be read and deleted from this memory storage "SM"SIM message storage</p> <p><b>&lt;mem2&gt;</b> Messages will be written and sent to this memory storage "SM"SIM message storage</p> <p><b>&lt;mem3&gt;</b> Received messages will be placed in this memory storage if routing to PC is not set ("+CNMI") "SM"SIM message storage</p> <p><b>&lt;usedx&gt;</b> Integer type; Number of messages currently in &lt;memx&gt;</p> <p><b>&lt;totalx&gt;</b> Integer type; Number of messages storable in &lt;memx&gt;</p>
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	
<p>Test Command</p> <p><b>AT+CRES=?</b></p>	<p>Response</p> <p><b>+CRES:</b> list of supported <b>&lt;profile&gt;s</b></p> <p><b>OK</b></p> <p>Parameter</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CRES=&lt;profile&gt;</b></p>	<p>Response</p> <p>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.</p> <p><b>OK</b></p> <p><b>ERROR</b></p> <p>Parameter</p> <p><b>&lt;profile&gt;</b> 0 Restore SM service settings from profile 0</p>
<p>Execution Command</p> <p><b>AT+CRES</b></p>	<p>Response</p> <p>Same as <b>AT+CRES=0</b>.</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CMS ERROR &lt;err&gt;</b></p>
Parameter Saving Mode	NO_SAVE

Max Response Time	5s
Reference	Note
3GPP TS 27.005	

#### 4.2.11 AT+CSAS Save SMS Settings

AT+CSAS Save SMS Settings	
Test Command <b>AT+CSAS=?</b>	Response <b>+CSAS:</b> list of supported <profile>s  <b>OK</b>
	Parameter See Write Command
Write Command <b>AT+CSAS=&lt;profile&gt;</b>	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. <b>OK</b> <b>ERROR</b>
	Parameter <b>&lt;profile&gt;</b> 0 Save SM service setting in profile 0
Execution Command <b>AT+CSAS</b>	Response Same as <b>AT+CSAS=0</b> <b>OK</b>  If error is related to ME functionality: <b>+CMS ERROR &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference	Note
3GPP TS 27.005	

#### 4.2.12 AT+CSCA SMS Service Center Address

AT+CSCA SMS Service Center Address	
Test Command <b>AT+CSCA=?</b>	Response <b>OK</b>
Read Command	Response

<b>AT+CSCA?</b>	<b>+CSCA: &lt;sca&gt;,&lt;tosca&gt;[,&lt;scaAlpha&gt;]</b>
	<b>OK</b>
	Parameters See Write Command
	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.
	<b>OK</b>
	If error is related to ME functionality:
	<b>+CME ERROR: &lt;err&gt;</b>
Write Command <b>AT+CSCA=&lt;sca&gt;[,&lt;tosca&gt;]</b>	Parameters <b>&lt;sca&gt;</b> 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> <b>&lt;tosca&gt;</b> Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <toda>) <b>&lt;scaAlpha&gt;</b> 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 <b>AT+CSDH=?</b>	Response <b>+CSDH: (list of supported &lt;show&gt;s)</b>
	<b>OK</b>
	Parameter See Write Command
Read Command <b>AT+CSDH?</b>	Response <b>+CSDH: &lt;show&gt;</b>



	<p><b>OK</b></p> <p>Parameter See Write Command</p>
Write Command <b>AT+CSDH=&lt;show&gt;</b>	<p>Response TA determines whether detailed header information is shown in text mode result codes.</p> <p><b>OK</b></p> <p>Parameter <b>&lt;show&gt;</b>    0    Do not show header values defined in commands +CSCA and +CSMP (&lt;sca&gt;,&lt;tosca&gt;,&lt;fo&gt;,&lt;vp&gt;,&lt;pid&gt; and &lt;dcs&gt;) nor &lt;length&gt;,&lt;toda&gt; or &lt;tooa&gt; in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode                   1    Show the values in result codes</p>
Execution Command <b>AT+CSDH</b>	<p>Response <b>OK</b></p>
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 <b>AT+CSMP=?</b>	<p>Response <b>OK</b></p> <p>Parameters See Write Command</p>
Read Command <b>AT+CSMP?</b>	<p>Response <b>+CSMP: &lt;fo&gt;,&lt;vp&gt;,&lt;pid&gt;,&lt;dcs&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
Write Command <b>AT+CSMP=[&lt;fo&gt;,&lt;vp&gt;,&lt;pid&gt;,&lt;dcs&gt;]</b>	<p>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 (&lt;vp&gt; is in range 0... 255) or define the absolute time of the validity period termination (&lt;vp&gt; is a string).</p> <p>Note: The Command writes the parameter &lt;fo&gt; in NON-VOLATILE memory.</p> <p><b>OK</b></p>



	<p>Parameters</p> <p><b>&lt;fo&gt;</b> 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 <b>&lt;fo&gt;</b> is set to 49.</p> <p><b>&lt;vp&gt;</b> Depending on SMS-SUBMIT <b>&lt;fo&gt;</b> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <b>&lt;dt&gt;</b>)</p> <p><b>&lt;pid&gt;</b> GSM 03.40 TP-Protocol-Identifier in integer format (default 0).</p> <p><b>&lt;dc&gt;</b> GSM 03.38 SMS Data Coding Scheme in Integer format.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.005	

#### 4.2.15 AT+CSMS Select Message Service

AT+CSMS Select Message Service	
<p>Test Command</p> <p><b>AT+CSMS=?</b></p>	<p>Response</p> <p><b>+CSMS:</b> (list of supported <b>&lt;service&gt;</b>s)</p> <p><b>OK</b></p> <p>Parameter</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+CSMS?</b></p>	<p>Response</p> <p><b>+CSMS:</b> <b>&lt;service&gt;</b>,<b>&lt;mt&gt;</b>,<b>&lt;mo&gt;</b>,<b>&lt;bm&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CSMS=&lt;service&gt;</b></p>	<p>Response</p> <p><b>+CSMS:</b> <b>&lt;mt&gt;</b>,<b>&lt;mo&gt;</b>,<b>&lt;bm&gt;</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR:</b> <b>&lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;service&gt;</b> 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))</p> <p>1 GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+</p>

	<p>version; the requirement of &lt;service&gt; setting 1 is mentioned under corresponding command descriptions)</p> <p><b>&lt;mt&gt;</b> Mobile Terminated Messages:  0 Type not supported  1 Type supported</p> <p><b>&lt;mo&gt;</b> Mobile Originated Messages:  0 Type not supported  1 Type supported</p> <p><b>&lt;bm&gt;</b> Broadcast Type Messages:  0 Type not supported  1 Type supported</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.005	

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## 5 AT Commands Special for SIMCom

### 5.1 Overview

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

<b>AT+CEDUMP</b>	Set whether the module reset when the module is crashed
<b>AT+CNBS</b>	Configure Band Scan Optimization for NB-IOT
<b>AT+CNDS</b>	Configure Service Domain Preference For NB-IOT
<b>AT+CENG</b>	Switch on or off Engineering Mode
<b>AT+CNACTCFG</b>	Configure IP Protocol Type
<b>AT+CTLIC</b>	Control the Switch of IIC
<b>AT+CWIIC</b>	Write Values to Register of IIC Device
<b>AT+CRIIC</b>	Read Values from Register of IIC Device
<b>AT+CMCFG</b>	Manage Mobile Operator Configuration
<b>AT+CSIMLOCK</b>	SIM Lock
<b>AT+CRATSRCH</b>	Configure parameter for better RAT search
<b>AT+SPWM</b>	Generate the Pulse-Width-Modulation
<b>AT+CASRIP</b>	Show Remote IP Address and Port When Received Data
<b>AT+CEDRX</b>	Configure EDRX parameters
<b>AT+CPSMRDP</b>	Read PSM Dynamic Parameters
<b>AT+CPSMCFG</b>	Configure PSM version and Minimum Threshold Value
<b>AT+CPSMCFGEXT</b>	Configure Modem Optimization of PSM
<b>AT+CPSMSTATUS</b>	Enable Deep Sleep Wakeup Indication
<b>AT+CEDRXRDP</b>	eDRX Read Dynamic Parameters
<b>AT+CRAI</b>	Configure Release Assistance Indication in NB-IOT network

## 5.2 Detailed Descriptions of Commands

### 5.2.1 AT+CPOWD Power off

<b>AT+CPOWD Power Off</b>	
Response	[NORMAL POWER DOWN]
Write Command	Parameter
<b>AT+CPOWD=&lt;n&gt;</b>	<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 <b>AT+CADC=?</b>	Response <b>+CADC:</b> (list of supported <status>s),(list of supported <value>s)  <b>OK</b> Parameters <status>    1 Success 0 Fail <value>     Integer 0,100-1700
Read Command <b>AT+CADC?</b>	Response <b>+CADC:</b> <status>,<value>  <b>OK</b> 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 <b>AT+CFGRI=?</b>	Response <b>+CFGRI: (0-2)</b>  <b>OK</b> Parameters See Write Command
Read Command <b>AT+CFGRI?</b>	Response <b>+CFGRI: &lt;status&gt;</b>  <b>OK</b> Parameters See Write Command
Write Command <b>AT+CFGRI=&lt;status&gt;</b>	Response <b>OK</b> <b>ERROR</b> Parameters

	<p><b>&lt;status&gt;</b>    <u>0</u>    Off</p> <p>                  1    On(TCPIP, FTP and URC control RI pin)</p> <p>                  2    On(only TCPIP control RI pin)</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● RI pin can not controll by "AT+CFGRI" command when module has call service or receiving SMS.</li> </ul>

## 5.2.4 AT+CLTS Get Local Timestamp

AT+CLTS Get Local Timestamp	
<p>Test Command</p> <p><b>AT+CLTS=?</b></p>	<p>Response</p> <p><b>+CLTS: "yy/MM/dd, hh:mm:ss+/-zz"</b></p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CLTS?</b></p>	<p>Response</p> <p><b>+CLTS: &lt;mode&gt;</b></p> <p><b>OK</b></p>
	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p>
	<p>Parameters</p> <p><b>&lt;mode&gt;</b></p> <p>      <u>0</u>    Disable</p> <p>      1    Enable</p>
<p>Write Command</p> <p><b>AT+CLTS=&lt;mode&gt;</b></p>	<p>Unsolicited Result Code</p> <p>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.</p> <p>1. Refresh network name by network:</p> <p><b>*PSNWID: "&lt;mcc&gt;", "&lt;mnc&gt;", "&lt;full network name&gt;",&lt;full network name CI&gt;,"&lt;short network name&gt;",&lt;short network name CI&gt;</b></p> <p>2. Refresh time and time zone by network:</p> <p>This is UTC time, the time queried by AT+CCLK command is local time.</p> <p><b>*PSUTTZ: &lt;year&gt;,&lt;month&gt;,&lt;day&gt;,&lt;hour&gt;,&lt;min&gt;,&lt;sec&gt;,"&lt;time zone&gt;",&lt;dst&gt;</b></p> <p>3. Refresh network time zone by network:</p>

**+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 <b>AT+CBAND=?</b>	Response <b>+CBAND:</b> (list of supported <op_band>s)  <b>OK</b>
	Parameter See Write Command
Read Command <b>AT+CBAND?</b>	Response <b>+CBAND:</b> <op_band>  <b>OK</b>
	Parameter See Write Command
Write Command <b>AT+CBAND=&lt;op_band&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameter <b>&lt;op_band&gt;</b> 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 <ul style="list-style-type: none"> <li>● Radio settings are stored in non-volatile memory.</li> <li>● Only for GSM</li> </ul>

### 5.2.6 AT+CNSMOD Show Network System Mode

AT+CNSMOD Show Network System Mode	
Test Command <b>AT+CNSMOD=?</b>	Response <b>+CNSMOD:</b> (list of supported <n>s)  <b>OK</b>
	Parameter See Write Command
Read Command	Response



<b>AT+CNSMOD?</b>	<b>+CNSMOD: &lt;n&gt;,&lt;stat&gt;</b>
	<b>OK</b>
	Parameter See Write Command
	Response
	<b>OK</b>
	<b>ERROR:</b>
	Parameter
	<b>&lt;n&gt;</b>
	<b>0</b> Disable auto report the network system mode information
	<b>1</b> Auto report the network system mode information, command:
	<b>+CNSMOD: &lt;stat&gt;</b>
	<b>&lt;stat&gt;</b>
	<b>0</b> no service
	<b>1</b> GSM
	<b>3</b> EGPRS
	<b>7</b> LTE M1
	<b>9</b> LTE NB
Write Command	
<b>AT+CNSMOD=&lt;n&gt;</b>	
Parameter Saving Mode	-
Max Response Time	
Reference	

### 5.2.7 AT+CSCLK Configure Slow Clock

AT+CSCLK Configure Slow Clock	
	Response
	<b>+CSCLK: (list of supported &lt;n&gt;s)</b>
Test Command	
<b>AT+CSCLK=?</b>	<b>OK</b>
	Parameter See Write Command
	Response
	<b>+CSCLK: &lt;n&gt;</b>
Read Command	
<b>AT+CSCLK?</b>	<b>OK</b>
	Parameter See Write Command
	Response
	<b>OK</b>
	or
	<b>ERROR</b>
Write Command	
<b>AT+CSCLK=&lt;n&gt;</b>	

	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

### 5.2.8 AT+CCID Show ICCID

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

### 5.2.9 AT+CDEVICE View Current Flash Device Type

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

## 5.2.10 AT+GSV Display Product Identification Information

### AT+GSV Display Product Identification Information

Execution Command <b>AT+GSV</b>	Response TA returns product information text  Example: <b>SIMCOM_Ltd</b> <b>SIMCOM_SIM7000</b> <b>Revision: 1351B01SIM7000</b>  <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

## 5.2.11 AT+SGPIO Control the GPIO

### AT+SGPIO Control the GPIO

Test Command <b>AT+SGPIO=?</b>	Response <b>+SGPIO: (0-1),(0-4),(0-1),(0-1)</b>  <b>OK</b>
Write Command <b>AT+SGPIO=&lt;operation&gt;,&lt;GPIO&gt;,&lt;function&gt;,&lt;level&gt;</b>	Parameters See Write Command  Response <b>OK</b> or <b>ERROR</b>  Parameters <b>&lt;operation&gt;</b> 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". <b>&lt;GPIO&gt;</b> The GPIO you want to be set. (It has relations with the hardware, please refer to the hardware manual) <b>&lt;function&gt;</b> Only when <b>&lt;operation&gt;</b> is set to 0, this option takes effect. 0 Set the GPIO to input. 1 Set the GPIO to output

	<b>&lt;level&gt;</b> 0 Set the GPIO low level 1 Set the GPIO high level
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 5.2.12 AT+SLEDS Set the Timer Period of Net Light

AT+SLEDS Set the Timer Period of Net Light	
Test Command <b>AT+SLEDS=?</b>	Response <b>+SLEDS: (1-3),(0,40-65535),(0,40-65535)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+SLEDS?</b>	Response <b>+SLEDS: &lt;mode&gt;,&lt;timer_on&gt;,&lt;timer_off&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+SLEDS=&lt;mode&gt;,&lt;timer_on&gt;,&lt;timer_off&gt;</b>	Response <b>OK</b> <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> <ol style="list-style-type: none"> <li>1 Set the timer period of net light while SIM7000 series does not register to the network</li> <li>2 Set the timer period net light while SIM7000 series has already registered to the network</li> <li>3 Set the timer period net light while SIM7000 series is in the state of PPP communication</li> </ol> <b>&lt;timer_on&gt;</b> Timer period of "LED ON" in decimal format which range is 0 or 40-65535(ms) <b>&lt;timer_off&gt;</b> 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

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

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

Test Command <b>AT+CNETLIGHT=?</b>	Response <b>+CNETLIGHT: (0,1)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CNETLIGHT?</b>	Response <b>+CNETLIGHT: &lt;mode&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CNETLIGHT=&lt;mode&gt;</b>	Response <b>OK</b> <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> <b>0</b> Close the net light <b>1</b> Open the net light to shining
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

### 5.2.14 AT+CSGS Netlight Indication of GPRS Status

#### AT+CSGS Netlight Indication of GPRS Status

Test Command <b>AT+CSGS=?</b>	Response <b>+CSGS: (0-2)</b>  <b>OK</b>
----------------------------------	--

	Parameters See Write Command
Read Command <b>AT+CSGS?</b>	Response <b>+CSGS: &lt;mode&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CSGS=&lt;mode&gt;</b>	Response <b>OK</b> <b>ERROR</b>  Parameters <b>&lt;mode&gt;</b> <ul style="list-style-type: none"> <li>0 Disable</li> <li>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.</li> <li>2 Enable, the netlight will blink according to <b>AT+SLEDS</b> in GPRS data transmission service.</li> </ul>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 5.2.15 AT+CGPIO Control the GPIO by PIN Index

#### AT+CGPIO Control the GPIO by PIN Index

Test Command <b>AT+CGPIO=?</b>	Response <b>+CGPIO: (0-1),(list of supported &lt;pin&gt;s),(0-1),(0-1)</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CGPIO=&lt;operation&gt;,&lt;pin&gt;,&lt;function&gt;,&lt;level&gt;</b>	Response <b>OK</b> or <b>ERROR</b>  Parameters <b>&lt;operation&gt;</b> <ul style="list-style-type: none"> <li>0 Set the GPIO function including the GPIO output .</li> <li>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</li> </ul>

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

### 5.2.16 AT+CBATCHK Set VBAT Checking Feature ON/OFF

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

### 5.2.17 AT+CNMP Preferred Mode Selection

AT+CNMP Preferred Mode Selection	
Test Command <b>AT+CNMP=?</b>	Response <b>+CNMP:</b> (list of supported <mode>s)  <b>OK</b>
Read Command <b>AT+CNMP?</b>	Response <b>+CNMP:</b> <mode>  <b>OK</b>
Write Command <b>AT+CNMP=&lt;mode&gt;</b>	Parameters See Write Command  Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note Default value of parameter <mode> is different among SIM7000 series project.

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

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



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

### 5.2.19 AT+CPSMS Power Saving Mode Setting

AT+CPSMS Power Saving Mode Setting	
Test Command <b>AT+CPSMS=?</b>	Response <b>+CPSMS:</b> (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)  <b>OK</b>
Read Command <b>AT+CPSMS?</b>	Response <b>+CPSMS:</b> <mode>,[<Requested_Periodic-RAU>],[<Requested_GPRS-READY-timer>],[<Requested_Periodic-TAU>],[<Requested_Active-Time>]  <b>OK</b> Parameters See Write Command
Write Command <b>AT+CPSMS=[&lt;mode&gt;,[&lt;Requested_Periodic-RAU&gt;],[&lt;Requested_GPRS-READY-timer&gt;],[&lt;Requested_Periodic-TAU&gt;],[&lt;Requested_Active-Time&gt;]]]</b>	Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b> Parameters <b>&lt;mode&gt;</b> 0 Disable the use of PSM 1 Enable the use of PSM <b>&lt;Requested_Periodic-RAU&gt;</b> Not supported

	<p>&lt;Requested_GPRS-READY-timer&gt; Not supported</p> <p>&lt;Requested_Periodic-TAU&gt;</p> <p>String type; one byte in an 8 bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN. The requested extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.</p> <p>&lt;Requested_Active-Time&gt;</p> <p>String type; one byte in an 8 bit format. Requested Active Time value (T3324) to be allocated to the UE. The requested Active Time value is coded as one byte (octet 3) of the GPRS Timer 2 information element coded as bit format (e.g. "00100100" equals 4 minutes). For the coding and the value range, see the GPRS Timer 2 IE in 3GPP TS 24.008 [8] Table 10.5.163/3GPP TS 24.008. See also 3GPP TS 23.682 [149], 3GPP TS 23.060 [47] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

### 5.2.20 AT+CEDRXS Extended-DRX Setting

AT+CEDRXS Extended-DRX Setting	
Test Command <b>AT+CEDRXS=?</b>	Response <b>+CEDRXS:</b> (list of supported <n>s),<AcT-type>,<Requested_eDRX_value>  <b>OK</b>
Read Command <b>AT+CEDRXS?</b>	Response <b>+CEDRXS:</b> <AcT-type>,<Requested_eDRX_value>  <b>OK</b>
Write Command <b>AT+CEDRXS=&lt;n&gt;,&lt;AcT-type&gt;,&lt;Requested_e</b>	Parameters See Write Command  Response <b>OK</b> If failed:

<b>DRX_value&gt;</b>	<p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;n&gt;</b></p> <ul style="list-style-type: none"> <li>0 Disable the use of eDRX</li> <li>1 Enable the use of eDRX</li> <li>2 Enable the use of eDRX and auto report</li> <li>3 Disable the use of eDRX(Reserved)</li> </ul> <p><b>&lt;AcT-type&gt;</b></p> <ul style="list-style-type: none"> <li>4 CAT-M</li> <li>5 NB-IoT</li> </ul> <p><b>&lt;Requested_eDRX_value&gt;</b> Requested eDRX value. 4 bit format. "0000"-"1111"</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● 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)</li> </ul>

### 5.2.21 AT+CPSI Inquiring UE System Information

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

**+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:

$$\mathbf{SINR} = 2 * \mathbf{<RSSNR>} - 20$$

The range of **SINR** is from -20 to 30

Parameter Saving Mode

-

Max Response Time

-

Reference

Note

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

AT+CGNAPN Get Network APN in CAT-M Or NB-IOT	
Test Command <b>AT+CGNAPN=?</b>	Response <b>+CGNAPN:</b> (list of supported <valid>s),<length>  <b>OK</b>
Execution Command <b>AT+CGNAPN</b>	Response <b>+CGNAPN:</b> <valid>,<Network_APN>  <b>OK</b> If failed: <b>+CME ERROR:</b> <err>
	Parameters <b>&lt;valid&gt;</b> 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. <b>&lt;length&gt;</b> Max the length of <network_APN>. <b>&lt;Network_APN&gt;</b> 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 <ul style="list-style-type: none"> <li>In CAT-M or NB-IOT,after UE sending attach request message,If core network responds attach accept message that includes APN parameter,&lt;Netwok_APN&gt; is valid.</li> </ul>

## 5.2.23 AT+CSDP Service Domain Preference

AT+CSDP Service Domain Preference	
Test Command <b>AT+CSDP=?</b>	Response <b>+CSDP:</b> (list of supported <domain>s)  <b>OK</b>
Read Command <b>AT+CSDP?</b>	Response <b>+CSDP:</b> <domain>  <b>OK</b>

	Parameters See Write Command
Write Command <b>AT+CSDP=&lt;domain&gt;</b>	Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;domain&gt;</b> 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

### 5.2.24 AT+MCELLLOCK Lock the special CAT-M cell

<b>AT+MCELLLOCK Lock the special CAT-M cell</b>	
Test Command <b>AT+MCELLLOCK=?</b>	Response <b>+MCELLLOCK: (0,1),(0-65535),(0-503)</b> <b>OK</b>
Read Command <b>AT+MCELLLOCK?</b>	Response <b>+MCELLLOCK: &lt;mode&gt;[,&lt;earfcn&gt;,&lt;pci&gt;]</b> <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+MCELLLOCK=&lt;mode&gt;[,&lt;earfcn&gt;,&lt;pci&gt;]</b>	Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>
	Parameter <b>&lt;mode&gt;</b> 0 Unlock 1 Lock <b>&lt;earfcn&gt;</b> A number in the range 0-65535 representing the EARFCN to search <b>&lt;pci&gt;</b> 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

### 5.2.25 AT+NCELLLOCK Lock the special NB-IOT cell

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

### 5.2.26 AT+NBSC Configure NB-IOT Scrambling Feature

AT+NBSC Configure NB-IOT Scrambling Feature	
Test Command <b>AT+NBSC=?</b>	Response <b>+NBSC: (list of supported &lt;mode&gt;s)</b>  <b>OK</b>
Read Command	Response <b>+NBSC: &lt;mode&gt;</b>

<b>AT+NBSC?</b>	<p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+NBSC=&lt;mode&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b></p> <p>    0 Disable the scrambling feature in NB-IOT network.</p> <p>    1 Enable the scrambling feature in NB-IOT network.</p>
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>Please configure UE in accordance with the base station, Otherwise UE can not register NB-IOT network.</li> </ul>

### 5.2.27 AT+CAPNMODE Select the Mode of Application Configure APN

<b>AT+CAPNMODE Select the Mode of Application Configure APN</b>	
<p>Test Command</p> <p><b>AT+CAPNMODE=?</b></p>	<p>Response</p> <p><b>+CAPNMODE:</b> (list of supported &lt;mode&gt;s)</p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CAPNMODE?</b></p>	<p>Response</p> <p><b>+CAPNMODE:</b> &lt;mode&gt;</p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CAPNMODE=&lt;mode&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b> 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.</p> <p>0 Automatic mode. Applications (AT+CSTT and AT+SAPBR) do not need to config APN, it will use the APN from base station delivering.</p>



	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 <ul style="list-style-type: none"> <li>If module are using in GPRS network,you must config <b>&lt;mode&gt;</b> to 1</li> </ul>

### 5.2.28 AT+CRRSTATE Query RRC State

AT+CRRSTATE Query RRC State	
Test Command <b>AT+CRRSTATE=?</b>	Response <b>+CRRSTATE:</b> (list of supported <b>&lt;n&gt;s</b> )  <b>OK</b>
Read Command <b>AT+CRRSTATE?</b>	Response <b>+CRRSTATE:</b> <b>&lt;n&gt;</b> , <b>&lt;state&gt;</b>  <b>OK</b>
Write Command <b>AT+CRRSTATE=&lt;n&gt;</b>	Parameters See Write Command  Response <b>OK</b> If failed: <b>+CME ERROR:</b> <b>&lt;err&gt;</b>  Parameters <b>&lt;n&gt;</b> Integer type 0 Disable unsolicited result code 1 Enable unsolicited result code " <b>+CRRSTATE: &lt;state&gt;</b> " <b>&lt;state&gt;</b> Integer type,indicates RRC connection state 0 Idle 1 Connected 255 Other
Parameter Saving Mode	-
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> <li>The command is only valid that module registering in CAT-M or NB-IOT network.</li> </ul>

### 5.2.29 AT+CBANDCFG Configure CAT-M Or NB-IOT Band

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

Test Command <b>AT+CBANDCFG=?</b>	Response <b>+CBANDCFG: (CAT-M,NB-IOT),(list of supported &lt;band&gt;s)</b>  <b>OK</b>
Read Command <b>AT+CBANDCFG?</b>	Response <b>+CBANDCFG: "CAT-M",&lt;band&gt;[,&lt;band&gt;...]</b> <b>&lt;CR&gt;&lt;LF&gt;+CBANDCFG: "NB-IOT",&lt;band&gt;[,&lt;band&gt;...]</b>  <b>OK</b>
Write Command <b>AT+CBANDCFG=&lt;mode&gt;,&lt;band&gt;[,&lt;band&gt;...]</b>	Parameters See Write Command  Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>  Parameters <b>&lt;mode&gt;</b> string type; network system mode. "CAT-M" LTE Cat.M1(eMTC) "NB-IOT" Narrow Band Internet of Things <b>&lt;band&gt;</b> Integer type;The value of <b>&lt;band&gt;</b> must is in the band list of getting from <b>AT+CBANDCFG=?</b>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> <li>The command can take effect immediately,It does not need to reboot module.</li> </ul>

### 5.2.30 AT+CNACT APP Network Active

#### AT+CNACT APP Network Active

Read Command <b>AT+CNACT?</b>	Response <b>+CNACT: &lt;status&gt;,&lt;ip_addr&gt;</b>  <b>OK</b>
Write Command <b>AT+CNACT=&lt;mode&gt;[,&lt;apn&gt;]</b>	Parameters See Write Command  Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>

	<p>Parameters</p> <p><b>&lt;mode&gt;</b></p> <p>0 Deactive</p> <p>1 Active</p> <p>2 Auto Active</p> <p><b>&lt;apn&gt;</b></p> <p>(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.</p> <p><b>&lt;status&gt;</b></p> <p>0 Deactivated</p> <p>1 Activated</p> <p>2 In operation</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>"+APP PDP: ACTIVE" will be reported if the app network activated, and "+APP PDP: DEACTIVE" will be reported if the app network deactivated.</p> <p>Auto Active means the will active automatically if the activation failed.</p>

### 5.2.31 AT+CNCFG PDP Configure

AT+CNCFG PDP Configure	
<p>Test Command</p> <p><b>AT+CNCFG=?</b></p>	<p>Response</p> <p><b>+CNCFG:</b> (list of supported &lt;ip_type&gt;s), &lt;len_APN&gt;, &lt;len_username&gt;, &lt;len_password&gt;, (list of supported &lt;authentication&gt;s)</p> <p><b>OK</b></p>
<p>Read Command</p> <p><b>AT+CNCFG?</b></p>	<p>Response</p> <p><b>+CNCFG:</b> &lt;ip_type&gt;, &lt;APN&gt;, &lt;username&gt;, &lt;password&gt;, &lt;authentication&gt;</p> <p><b>OK</b></p>
<p>Write Command</p> <p><b>AT+CNCFG=&lt;ip_type&gt;[,&lt;APN&gt;[,&lt;username&gt;,&lt;password&gt;[,&lt;authentication&gt;]]]</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>
Parameter Saving Mode	-
Max Response Time	-
Reference	

## Defined Values

<action>	0 Deactive 1 Active 2 Auto Active
<ip_type>	Packet Data Protocol type) A Integer type parameter which specifies the type of packet data protocol. 0 Dual PDN Stack 1 Internet Protocol Version 4 2 Internet Protocol Version 6
<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.
<username>	Username for authentication.
<password>	Password for authentication.
<authentication>	0 NONE 1 PAP 2 CHAP 3 PAP or CHAP
<len_APN>	Integer type. Maximum length of parameter <APN>.
<len_name>	Integer type. Maximum length of parameter <username>.
<len_password>	Integer type. Maximum length of parameter <password>.

### 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

	Response <b>+CEDUMP: &lt;mode&gt;</b>
Read Command <b>AT+CEDUMP?</b>	<b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters See Write Command
Write Command <b>AT+CEDUMP=&lt;mode&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>

	Parameters <b>&lt;fun&gt;</b> <u>0</u> 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 <b>AT+CNBS=?</b>	Response <b>+CNBS: (1-5)</b>  <b>OK</b>
Read Command <b>AT+CNBS?</b>	Response <b>+CNBS: &lt;n&gt;</b>  <b>OK</b>
Write Command <b>AT+CNBS=&lt;n&gt;</b>	Parameters See Write Command  Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>  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.  <b>&lt;n&gt;</b> 1 UE tries SNR level 0 band scan 2 UE tries SNR level 0 and level 1 band scan <u>3</u> 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	<p>Note</p> <ul style="list-style-type: none"> <li>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.</li> </ul>

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

AT+CNDS Configure Service Domain Preference For NB-IOT	
Test Command <b>AT+CNDS=?</b>	Response <b>+CNDS: (list of supported &lt;domain&gt;s)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CNDS?</b>	Response <b>+CNDS: &lt;domain&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CNDS=&lt;domain&gt;</b>	Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;domain&gt;</b> <ol style="list-style-type: none"> <li>1 PS(Packet Switched Domain) ONLY</li> <li>2 CS(Circuit Switched Domain) + PS(Packet Switched Domain)</li> </ol>
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>The command of <b>AT+CSDP</b> 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 <b>AT+CNDS</b>.</li> </ul>

### 5.2.35 AT+CENG Switch On or Off Engineering Mode

**AT+CENG Switch On or Off Engineering Mode**

<p>Test Command <b>AT+CENG=?</b></p>	<p>Response TA returns the list of supported modes. <b>+CENG:</b> (list of supported &lt;mode&gt;s),(list of supported &lt;Ncell&gt;s)  <b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CENG?</b></p>	<p>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. &lt;cell&gt; carry with them corresponding network interaction.  If camping on a gsm cell: <b>+CENG:</b> &lt;mode&gt;,&lt;Ncell&gt;,&lt;cell num&gt;,&lt;System Mode&gt;  [<b>+CENG:</b> &lt;cell&gt;,"&lt;bcch&gt;,&lt;rxl&gt;,&lt;bsic&gt;,&lt;cellid&gt;,&lt;mcc&gt;,&lt;mnc&gt;,&lt;lac&gt;"&lt;CR&gt;&lt;LF&gt;<b>+CENG:</b> &lt;cell&gt;,"&lt;bcch&gt;,&lt;rxl&gt;,&lt;bsic&gt;,&lt;cellid&gt;,&lt;mcc&gt;,&lt;mnc&gt;,&lt;lac&gt;"...]  <b>OK</b>  If camping on a CAT-M or NB-IOT cell: <b>+CENG:</b> &lt;mode&gt;,&lt;Ncell&gt;,&lt;cell num&gt;,&lt;System Mode&gt;  [<b>+CENG:</b> &lt;cell&gt;,"&lt;earfcn&gt;,&lt;pci&gt;,&lt;rsrp&gt;,&lt;rsqi&gt;,&lt;rsrq&gt;,&lt;sinr&gt;,&lt;tac&gt;,&lt;cellid&gt;,&lt;mcc&gt;,&lt;mnc&gt;,&lt;tx power&gt;"&lt;CR&gt;&lt;LF&gt;<b>+CENG:</b> &lt;cell&gt;,"&lt;earfcn&gt;,&lt;pci&gt;,&lt;rsrp&gt;,&lt;rsqi&gt;,&lt;rsrq&gt;,&lt;sinr&gt;"...]  <b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CENG=&lt;mode&gt;[,&lt;Ncell&gt;]</b></p>	<p>Switch on or off engineering mode. <b>OK</b> If failed: <b>+CME ERROR:</b> &lt;err&gt;</p> <p>Parameters</p>

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

Parameter Saving Mode

-

Max Response Time

-

Reference

Note

### 5.2.36 AT+CNACTCFG Configure IP Protocol Type

#### AT+CNACTCFG Configure IP Protocol Type

Test Command

Response

**+CNACTCFG: ("IPV4","IPV6","IPV4V6")**



AT+CNACTCFG=?	<p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CNACTCFG?	<p>Response</p> <p><b>+CNACTCFG: &lt;IPType&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CNACTCFG=<IPType>	<p>Response</p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;IPType&gt;</b></p> <p>"IPV4" IPv4 protocol</p> <p>"IPV6" IPv6 protocol</p> <p>"IPV4V6" IPv4 and IPv6 protocol</p>
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=?	<p>Response</p> <p><b>+CTLIIC: (0,1)</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CTLIIC?	<p>Response</p> <p><b>+CTLIIC: &lt;mode&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CTLIIC=<mode>	<p>Response</p> <p><b>OK</b></p> <p>or</p>

	<b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> 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

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

### 5.2.39 AT+CR IIC Read Values from Register of IIC Device

<b>AT+CR IIC Read Values from Register of IIC Device</b>	
Test Command <b>AT+CR IIC=?</b>	Response <b>OK</b>
Write Command <b>AT+CR IIC=&lt;addr&gt;,&lt;reg&gt;,&lt;len&gt;</b>	Response <b>+CR IIC: &lt;data&gt;</b>  <b>OK</b>

	or <b>ERROR</b>
	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 <b>AT+CMCFG=?</b>	Response TA returns the list of supported modes. <b>+CMCFG: (list of supported &lt;mode&gt;s),&lt;length&gt;</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CMCFG?</b>	Response <b>+CMCFG: &lt;mode&gt;,&lt;config_num&gt;</b> <b>[+CMCFG: &lt;index&gt;,&lt;config_name&gt;,&lt;config_version&gt;,&lt;state&gt;...]</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CMCFG=&lt;mode&gt;[,&lt;config_name&gt;]</b>	when <mode>=0,1,2 or 3 and command successful: <b>OK</b>  when <mode>=4 and command successful: <b>+CMCFG: 4,&lt;flag&gt;,&lt;config_name&gt;</b>  <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <mode>    0    Manually select mobile operator configuration 1    Automatically select mobile operator configuration according to ICCID information in SIM card 2 <u>Activate</u> specified mobile operator configuration,

	<p><b>&lt;config_name&gt;</b> must be provided.</p> <p>3 Deactivation specified mobile operator configuration, <b>&lt;config_name&gt;</b> must be provided.</p> <p><b>&lt;length&gt;</b> Integer type,the maximum length of <b>&lt;config_name&gt;</b></p> <p><b>&lt;config_num&gt;</b> Integer type,the number of mobile network configuration</p> <p><b>&lt;index&gt;</b> Integer type,the index of mobile network configuration</p> <p><b>&lt;config_name&gt;</b> String type,the name of mobile network configuration.</p> <p>"Default" Default network configuration</p> <p>"ATT" ATT network configuration, not support VOLTE</p> <p>"Verizon" Verizon network configuration,not support VOLTE</p> <p><b>&lt;config_version&gt;</b> Hex type,the version of mobile network configuration</p> <p><b>&lt;state&gt;</b> Integer type,the state of mobile network configuration</p> <p>0 Inactive</p> <p>1 Active</p> <p><b>&lt;flag&gt;</b> Integer type,it indicates whether module has activated a network configuration.If network configuration has been activated,The third parameter <b>&lt;config_name&gt;</b> is the name of activating network configuration.</p> <p>0 Network configuration has been activated</p> <p>1 Not any network configuration is activated</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>After setting <b>AT+CMCFG=1</b>,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</li> <li>If module needs to select mobile operator configuration manually, you should do as the following steps. <ol style="list-style-type: none"> <li>Setting manual mode AT+CMCFG=0</li> <li><u>Activate</u> specified configuration AT+CMCFG=2,<b>&lt;config_name&gt;</b></li> <li>Reboot the module AT+CFUN=1,1</li> </ol> </li> </ul>

### 5.2.41 AT+CSIMLOCK SIM Lock

AT+CSIMLOCK SIM Lock	
Test Command	Response TA returns the list of supported modes.

<p><b>AT+CSIMLOCK=?</b></p>	<p><b>+CSIMLOCK:</b> (list of supported &lt;facility&gt;s),(list of supported &lt;mode&gt;s), &lt;pwlength&gt;,&lt;pclength&gt;</p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CSIMLOCK?</b></p>	<p>Response <b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CSIMLOCK=&lt;facility&gt;,&lt;mode&gt;[,&lt;password&gt;[,&lt;pers_code_list&gt;]]</b></p>	<p>If &lt;mode&gt;≠2 and Command is successful <b>OK</b></p> <p>If &lt;mode&gt;=2 and Command is successful <b>+CSIMLOCK: &lt;status&gt;,&lt;pers_code_list&gt;</b> <b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>If failed:</p> <p>Parameters</p> <p><b>&lt;facility&gt;</b> String type,Phone security locks set by factory or customer. which can be: "PN" Network Personalisation</p> <p><b>&lt;mode&gt;</b> 0 unlock 1 lock 2 query status</p> <p><b>&lt;pwlength&gt;</b> Integer type,maximum length of &lt;password&gt;,the maximum length is 16.</p> <p><b>&lt;pclength&gt;</b> Integer type,maximum length of &lt;pers_code_list&gt;,the maximum length is 160.</p> <p><b>&lt;password&gt;</b> String type,password is used to lock or unlock a &lt;facility&gt;.</p> <p><b>&lt;pers_code_list&gt;</b> String type,code list for device personalization.The contents depend on the selected &lt;facility&gt;. If &lt;facility&gt; is "PN": <b>&lt;pers_code_list&gt;</b> 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: <b>"460-00;460-01"</b></p> <p><b>&lt;status&gt;</b> Integer type,the status of lock 0 lock is inactive 1 lock is active</p>
<p>Parameter Saving Mode</p>	<p>-</p>
<p>Max Response Time</p>	<p>-</p>

Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● Lock device Customer can send AT command to lock the device that can only use some specific SIM card. <b>AT+CSIMLOCK="PN",1, "0123456789ABCDEF","460-00;460-01"</b></li> <li>● Unlock device If the device is locking, Customer can send AT command to unlock the device. <b>AT+CSIMLOCK="PN",0, "ABCDEFGH12345678"</b></li> <li>● Query device status customer may send AT command as follow to query status of the device <b>AT+CSIMLOCK="PN",2</b></li> </ul>
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### 5.2.42 AT+CRATSRCH Configure Parameter for Better RAT Search

AT+CRATSRCH Configure Parameter for Better RAT Search	
Test Command <b>AT+CRATSRCH=?</b>	Response TA returns the list of supported modes. <b>+CRATSRCH:</b> (list of supported <rat_timer>s),(list of supported <srch_align>),  <b>OK</b>
Read Command <b>AT+CRATSRCH?</b>	Parameters See Write Command  Response <b>+CRATSRCH:</b> <rat_timer>,<srch_align>  <b>OK</b>
Write Command <b>AT+CRATSRCH=&lt;rat_timer&gt;,&lt;srch_align&gt;</b>	Parameters <b>&lt;rat_timer&gt;</b> 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: <b>CAT-M &gt; NB-IOT &gt; GSM</b> If UE has registered successfully GSM network,it will try to search CAT-M and NB-IOT network after the timer expiring.

	<b>&lt;srch_align&gt;</b> Integer type, <b>&lt;srch_align&gt;</b> 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 <b>AT+SPWM=?</b>	Response <b>+SPWM:</b> (list of supported<div>s),(list of supported<level>s)  <b>OK</b>
Write Command <b>AT+SPWM=&lt;div&gt;,&lt;level&gt;</b>	Parameters See Write Command  Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>  Parameters <b>&lt;div&gt;</b> The range of <div> is 0-31, the output frequency equals to (192KHz)/(period+1). <b>&lt;level&gt;</b> 0-100: tone level, which can be converted to duty ratio.
Reference	Note <ul style="list-style-type: none"> <li>The equation of final frequency and &lt;period&gt; is this: frequency=192KHz/(period+1), when <b>div</b> is 0 or 1, the period is 1. When <b>div</b> is 2, the period is 1.5. When <b>div</b> is 3, the period is 2. When <b>div</b> is 4, the period is 2.5.....</li> <li>The equation of &lt;level&gt; and duty factor is: duty factor=(level+1).</li> </ul>

### 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 <b>AT+CASRIP?</b>	Response <b>+CASRIP: &lt;mode&gt;</b>  <b>OK</b>

	Parameters See Write Command
Write Command <b>AT+CASRIP=&lt;mode&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> 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 <b>AT+CEDRX=?</b>	Response <b>+CEDRX: (0-3),(0-1),(0-15),(0-15)</b>  <b>OK</b>
Read Command <b>AT+CEDRX?</b>	Response <b>+CEDRX: &lt;mode&gt;,&lt;enabled&gt;,&lt;ptw&gt;,&lt;cycle_length&gt;</b> ... <b>OK</b>
Write Command <b>AT+CEDRX=&lt;mode&gt;,&lt;enabled&gt;,&lt;ptw&gt;,&lt;cycle_length&gt;</b>	Parameters See Write Command  Response <b>OK</b> If failed: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;mode&gt;</b> 0 GSM 1 LTE 2 NB-IoT 3 CAT-M <b>&lt;enabled&gt;</b> 0 Disable 1 Enable <b>&lt;ptw&gt;</b> Page time window 0-15



	<b>&lt;cycle_length&gt;</b> 0-15
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● 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)</li> <li>● 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)</li> <li>● There has no effect if &lt;mode&gt; is 0 or 1.</li> <li>● The edrx parameters can take effect after module restarting</li> </ul>

### 5.2.46 AT+CPSMRDP Read PSM Dynamic Parameters

AT+CPSMRDP Read PSM Dynamic Parameters	
Test Command <b>AT+CPSMRDP=?</b>	<p>Response</p> <p><b>+CPSMRDP: (0,1)</b></p> <p>OK</p>
Execution Command <b>AT+CPSMRDP</b>	<p>Response</p> <p><b>+CPSMRDP:</b> <b>&lt;mode&gt;,&lt;Requested_active_Time&gt;,&lt;Requested_Periodic_TAU&gt;,&lt;Network_Active_Time&gt;,&lt;Network_T3412_EXT_value&gt;,&lt;Network_T3412_value&gt;</b></p> <p>OK</p> <p>Parameters</p> <p><b>&lt;mode&gt;</b> Integer type.Disable or enable the use of PSM in the UE.            0 Disable the use of PSM            1 Enable the use of PSM</p> <p><b>&lt;Requested_active_Time&gt;</b> Integer type.Requested active time value(T3324) to be configed by UE in E-UTRAN network.Unit: second.</p> <p><b>&lt;Requested_Periodic_TAU&gt;</b> Integer type.Requested extended periodic TAU value (T3412_EXT) to be configed by UE in E-UTRAN network.Unit: second.</p> <p><b>&lt;Network_Active_Time&gt;</b> Integer type.Network assign active timer value(T3324) in E-UTRAN network.If &lt;network_Active_Time&gt; is 0,it shows that network does not support PSM feature.Unit:second.</p> <p><b>&lt;Network_T3412_EXT_value&gt;</b> Integer type.Network assign extended periodic TAU value(T3412_EXT) in E-UTRAN network.Unit:second.</p> <p><b>&lt;Network_T3412_value&gt;</b> Integer type.Network assign periodic TAU</p>

	value(T3412) in E-UTRAN network.Unit:second.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> <li>● If &lt;Network_T3412_EXT_value&gt; is greater than 0,UE will start TAU procedure according to &lt;Network_T3412_EXT_value&gt;.</li> </ul>

### 5.2.47 AT+CPSMCFG Configure PSM version and Minimum Threshold Value

AT+CPSMCFG Configure PSM version and Minimum Threshold Value	
Test Command <b>AT+CPSMCFG=?</b>	Response TA returns the list of supported modes. <b>+CPSMCFG:</b> (list of supported <threshold>s),(list of supported <psm_version>s)  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CPSMCFG?</b>	Response <b>+CPSMCFG: &lt;threshold&gt;,&lt;psm_version&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CPSMCFG=&lt;threshold&gt;[,&lt;psm_version&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;threshold&gt;</b> Integer type.Minimum threshold value(in second) to enter PSM.The range from 60 to 86400.The default value is 60 seconds. <b>&lt;psm_version&gt;</b> Integer type.Bitmask to indicate PSM modes(1-Enable/0-Disable).Each bit is configured independently.The range from 0 to 15.The default value is 15. BIT 0 PSM without network coordination BIT 1 Rel 12 PSM without context retention BIT 2 Rel 12 PSM with context retention BIT 3 PSM in between eDRX cycles
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

## 5.2.48 AT+CPSMCFGEXT Configure Modem Optimization of PSM

### AT+CPSMCFGEXT Configure Modem Optimization of PSM

<p>Test Command</p> <p><b>AT+CPSMCFGEXT=?</b></p>	<p>Response</p> <p>TA returns the list of supported modes.</p> <p><b>+CPSMCFGEXT:</b> (list of supported <b>&lt;psm_opt_mask&gt;</b>s),(list of supported <b>&lt;max_oos_full_scans&gt;</b>s),(list of supported <b>&lt;psm_duration_due_to_oos&gt;</b>s),(list of supported <b>&lt;psm_randomization_window&gt;</b>s),(list of supported <b>&lt;max_oos_time&gt;</b>s),(list of supported <b>&lt;early_wake_up_time&gt;</b>s)</p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+CPSMCFGEXT?</b></p>	<p>Response</p> <p><b>+CPSMCFGEXT:</b> <b>&lt;psm_opt_mask&gt;</b>,<b>&lt;max_oos_full_scans&gt;</b>,<b>&lt;psm_duration_due_to_oos&gt;</b>,<b>&lt;psm_randomization_window&gt;</b>,<b>&lt;max_oos_time&gt;</b>,<b>&lt;early_wake_up_time&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CPSMCFGEXT=&lt;psm_opt_mask&gt;[,&lt;max_oos_full_scans&gt;[,&lt;psm_duration_due_to_oos&gt;[,&lt;psm_randomization_window&gt;[,&lt;max_oos_time&gt;[,&lt;early_wake_up_time&gt;]]]]]</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;psm_opt_mask&gt;</b> Integer type.The range is from 0 to 15.The default value is 10.</p> <p>1<sup>st</sup> bit of <b>&lt;psm_opt_mask&gt;</b> is used to enable/disable PSM ENTER request without sending PSM_READY_REQ to NAS.This is a quick PSM operation.</p> <p>2<sup>nd</sup> bit of <b>&lt;psm_opt_mask&gt;</b> is used to enable/disable Out of Service(OoS) status indication from Modem to AP.</p> <p>3<sup>rd</sup> bit of <b>&lt;psm_opt_mask&gt;</b> is used to enable/disable limited service status indication from Modem to AP.</p> <p>4<sup>th</sup> bit of <b>&lt;psm_opt_mask&gt;</b> is used to enable/disable deep-sleep mode.If PSM duration is less than the threshold value.If enabled,it puts the device in deep-sleep mode,if PSM is not entered due to not meeting threshold value.</p>

	<p><b>&lt;max_oos_full_scans&gt;</b> Integer type. Maximum number of full scans to wait before modem declares SYS_PSM_STATUS_OOS to clients. The range is from 1 to 100. The default value is 2.</p> <p><b>&lt;psm_duration_due_to_oos&gt;</b> Integer type. PSM duration used by PSM daemon upon OOS/Limited Service indication, due to service outage. The range is from 120 to 4294967295. The default value is 120. The unit is second.</p> <p><b>&lt;psm_randomization_window&gt;</b> Integer type. PSM wakeup randomization window to avoid network congestion due to all the PSM devices waking up at the same time. The Range is from 1 to 1000. The default value is 5. The unit is 5.</p> <p><b>&lt;max_oos_time&gt;</b> Integer type. Maximum time in seconds to wait before declaring SYS_PSM_STATUS_OOS to clients. The range is from 1 to 65535. The unit is second.</p> <p><b>&lt;early_wakeup_time&gt;</b> Integer type. Device wakes up early to account for boot-up and acquisition delay. While programming PMIC, PSM daemon reduces PSM duration by this duration. The range is from 1 to 1000. The default value is 3. The unit is second.</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

### 5.2.49 AT+CPSMSTATUS Enable Deep Sleep Wakeup Indication

AT+CPSMSTATUS Enable Deep Sleep Wakeup Indication	
Test Command <b>AT+CPSMSTATUS=?</b>	Response <b>+CPSMSTATUS: (0-1)</b>  <b>OK</b>  Parameters See Write Command
Read Command <b>AT+CPSMSTATUS?</b>	Response <b>+CPSMSTATUS: &lt;enable&gt;</b>  <b>OK</b>  Parameters See Write Command
Write Command <b>AT+CPSMSTATUS=&lt;enable&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>

	Parameters <b>&lt;enable&gt;</b> 0 Disable indication when modem wakes up from deep sleep 1 Enable indication when modem wakes up from deep sleep
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

### 5.2.50 AT+CEDRXRDP eDRX Read Dynamic Parameters

AT+CEDRXRDP eDRX Read Dynamic Parameters	
Test Command <b>AT+CEDRXRDP=?</b>	Response <b>OK</b>
	Parameters See Write Command
Execution Command <b>AT+CEDRXRDP</b>	Response <b>+CEDRXRDP:</b> <b>&lt;AcT-type&gt;[,&lt;Requested_eDRX_value&gt;[,&lt;NW-provided_eDRX_value&gt;[,&lt;Paging_time_window&gt;]]]</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;AcT-type&gt;</b> Integer type, indicates the type of access technology. This AT-command is used to specify the relationship between the type of access technology and the requested eDRX value 0 Access technology is not using Edrx 4 E-UTRAN(CAT-M1) 5 E-UTRAN(NB-S1 mode) <b>&lt;Requested_Edrx_value&gt;</b> String type; half a byte in a 4-bit format. The Edrx value refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see sub-clause 10.5.5.32 of 3GPP TS 24.008). For the coding and the value range, see Extended DRX parameters information element in 3GPP TS 24.008 Table 10.5.5.32/3GPP TS 24.008. <b>&lt;NW-provided_eDRX_value&gt;</b> String type; half a byte in a 4-bit format. The edrx value Refers to bit 4 to 1 of octet 3 of the Extended DRX parameters information element (see sub-clause 10.5.5.32 of 3GPP TS 24.008). For the coding and the value range, see the Extended DRX parameters information element in 3GPP TS

	24.008 Table 10.5.5.32/3GPP TS 24.008. <b>&lt;Paging_time_window&gt;</b> String type;half a byte in a 4-bit format.The paging time window refers to bit 8 to 5 octet 3of the Extended DRX. Parameters information element (see sub-clause 10.5.5.32 of 3GPP TS 24.008).For the coding and the value range,see the Extended DRX parameters information element in 3GPP TS 24.008 Table 10.5.5.32/3GPP TS 24.008.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

### 5.2.51 AT+CRAI Configure Release Assistance Indication in NB-IOT network

AT+CRAI Configure Release Assistance Indication in NB-IOT network	
Test Command <b>AT+CRAI=?</b>	Response <b>+CRAI:</b> (list of supported <b>&lt;rai&gt;s</b> ),(list of supported <b>&lt;valid&gt;s</b> ), <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CRAI?</b>	Response <b>+CRAI:</b> <b>&lt;rai&gt;</b> , <b>&lt;valid_time&gt;</b> <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CRAI=&lt;rai&gt;[,&lt;valid_time&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> <b>&lt;err&gt;</b>
	Parameters <b>&lt;rai&gt;</b> Integer type. Indicates the value of the release assistance indication, refer <b>3GPP TS 24.301[83]</b> subclause 9.9.4.25.V 0 No information available 1 The MT expects that exchange of data will be completed with the transmission of the ESM DATA TRANSPORT message. 2 The MT expects that exchange of data will be completed with the receipt of an ESM DATA TRANSPORT message. <b>&lt;valid_time&gt;</b> Integer type. <b>&lt;valid_time&gt;</b> is valid time of release assistance indication. 0 The valid time is 1

	1 unlimited time
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"><li>● Before UE sends the last packet of data, AT+CRAI should be executed firstly.</li></ul>

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## 6 AT Commands for GPRS Support

### 6.1 Overview

Command	Description
<b>AT+CGATT</b>	Attach or detach from GPRS service
<b>AT+CGDCONT</b>	Define PDP context
<b>AT+CGACT</b>	PDP context activate or deactivate
<b>AT+CGPADDR</b>	Show PDP address
<b>AT+CGREG</b>	Network registration status
<b>AT+CGSMS</b>	Select service for MO SMS messages
<b>AT+CEREG</b>	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 <b>AT+CGATT=?</b>	Response <b>+CGATT:</b> (list of supported <state>s)  <b>OK</b>
Read Command <b>AT+CGATT?</b>	Parameters See Write Command  Response <b>+CGATT:</b> <state>  <b>OK</b>
Write Command <b>AT+CGATT=&lt;state&gt;</b>	Parameters See Write Command  Response <b>OK</b> If error is related to ME functionality:



	<p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;state&gt;</b>      Indicates the state of GPRS attachment</p> <p>                  0    Detached</p> <p>                  1    Attached</p> <p>Other values are reserved and will result in an ERROR response to the Write Command.</p>
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	
<p>Test Command</p> <p><b>AT+CGDCONT=?</b></p>	<p>Response</p> <p><b>+CGDCONT: (range of supported &lt;cid&gt;s),&lt;PDP_type&gt;,,,(list of supported &lt;d_comp&gt;s),(list of supported &lt;h_comp&gt;s)(list of &lt;ipv4_ctrl&gt;s),(list of &lt;emergency_flag&gt;s)</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+CGDCONT?</b></p>	<p>Response</p> <p><b>+CGDCONT: [&lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;,&lt;ipv4_ctrl&gt;,&lt;emergency_flag&gt;[&lt;CR&gt;&lt;LF&gt;+CGDCONT: &lt;cid&gt;,&lt;PDP_type&gt;,&lt;APN&gt;,&lt;PDP_addr&gt;,&lt;d_comp&gt;,&lt;h_comp&gt;,&lt;ipv4_ctrl&gt;,&lt;emergency_flag&gt;[...]]]</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CGDCONT=&lt;cid&gt;[,&lt;PDP_type&gt;[,&lt;APN&gt;[,&lt;PDP_addr&gt;[,&lt;d_comp&gt;[,&lt;h_comp&gt;]],&lt;ipv4_ctrl&gt;[,&lt;emergency_flag&gt;]]]]]</b></p>	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p> <p>Parameters</p> <p><b>&lt;cid&gt;</b>            (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</p>

	<p>(minimum value=1) is returned by the test form of the command. 1...24</p> <p><b>&lt;PDP_type&gt;</b> (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</p> <p><b>&lt;APN&gt;</b> (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.</p> <p><b>&lt;PDP_addr&gt;</b> A string parameter that identifies the MT in the address space applicable to the PDP. Format: "&lt;n&gt;.&lt;n&gt;.&lt;n&gt;.&lt;n&gt;" where &lt;n&gt;=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.</p> <p><b>&lt;d_comp&gt;</b> A numeric parameter that controls PDP data compression 0 Off (default if value is omitted) 1 On 2 V.42bis</p> <p><b>&lt;h_comp&gt;</b> A numeric parameter that controls PDP head compression 0 Off (default if value is omitted) 1 On 2 RFC1144 3 RFC2507 4 RFC3095</p> <p><b>&lt;ipv4_ctrl&gt;</b> Parameter that controls how the MT/TA requests to get the IPv4 address information: 0 Address Allocation through NAS Signaling 1 on</p> <p><b>&lt;emergency_flag&gt;</b> Emergency_flag: 0 Off (default if value is omitted) 1 On</p>
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 <b>AT+CGACT=?</b>	Response <b>+CGACT:</b> (list of supported <state>s)  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CGACT?</b>	Response <b>+CGACT:</b> <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>...]
	<b>OK</b> Parameters See Write Command
Write Command <b>AT+CGACT=&lt;state&gt;[,&lt;cid&gt;[,&lt;cid&gt;[,...]]]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;state&gt;</b> 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. <b>&lt;cid&gt;</b> 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 <ul style="list-style-type: none"> <li>This command is used to test PDPs with network simulators. Successful activation of PDP on real network is not guaranteed.</li> </ul>

### 6.2.4 AT+CGPADDR Show PDP Address

AT+CGPADDR Show PDP Address	
Test Command	Response <b>+CGPADDR:</b> (list of defined <cid>s)

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

	<p><b>OK</b></p> <p>Parameters See Write Command</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>• &lt;cid&gt; values 17 to 24 are supported from MPSS JO 1.0+ onwards.</li> <li>• Write command returns address provided by the network if a connection has been established.</li> </ul>

### 6.2.5 AT+CGREG Network Registration Status

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

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 <b>AT+CGSMS=?</b>	Response <b>+CGSMS:</b> (list of currently available <service>s)  <b>OK</b>  Parameters See Write Command
Read Command <b>AT+CGSMS?</b>	Response <b>+CGSMS:</b> <service>  <b>OK</b>  Parameters See Write Command
Write Command <b>AT+CGSMS=&lt;service&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> <err>  Parameters <b>&lt;service&gt;</b> 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 <b>AT+CEREG=?</b>	Response <b>+CEREG:</b> (list of supported <n>s)

	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CEREG?</b></p>	<p>Response</p> <p>when &lt;n&gt;=0, 1, 2 and command successful: <b>+CEREG: &lt;n&gt;,&lt;stat&gt;[,&lt;tac&gt;],[&lt;rac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b></p> <p><b>OK</b></p> <p>when &lt;n&gt;=4 and command successful: <b>+CEREG: &lt;n&gt;,&lt;stat&gt;[,&lt;tac&gt;],[&lt;rac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;][,],[&lt;Active-Time&gt;],[&lt;Periodic-TAU&gt;]]]</b></p> <p><b>OK</b></p> <p>If error is related to wrong AT syntax or operation not allowed: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CEREG[=&lt;n&gt;]</b></p>	<p>Response</p> <p><b>OK</b> or <b>ERROR</b></p> <p>Parameters</p> <p>&lt;n&gt;     0   Disable network registration unsolicited result code          1   Enable network registration unsolicited result code <b>+CEREG: &lt;stat&gt;</b>          2   Enable network registration and location information unsolicited result code              <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;rac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;]]</b>          4   For a UE that wants to apply PSM, enable network registration and location information unsolicited result code              <b>+CEREG: &lt;stat&gt;[,&lt;tac&gt;],[&lt;rac&gt;],[&lt;ci&gt;],[&lt;AcT&gt;][,],[&lt;Active-Time&gt;],[&lt;Periodic-RAU&gt;]]]</b></p> <p>&lt;stat&gt;</p> <p>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.</p> <p>1 Registered, home network.</p> <p>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.</p> <p>3 Registration denied, The GPRS service is disabled, the UE is not allowed to attach for GPRS if it is requested by the user.</p>



	<p>4 Unknown</p> <p>5 Registered, roaming</p> <p><b>&lt;tacl&gt;</b> String type (string should be included in quotation marks); two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)</p> <p><b>&lt;ci&gt;</b> String type (string should be included in quotation marks); two bytes cell ID in hexadecimal format</p> <p><b>&lt;AcT&gt;</b></p> <ul style="list-style-type: none"> <li>0 User-specified GSM access technology</li> <li>7 User-specified LTE M1 A GB access technology</li> <li>9 User-specified LTE NB S1 access technology</li> </ul> <p><b>&lt;Active-Time&gt;</b></p> <p>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).</p> <p><b>&lt;Periodic-RAU&gt;</b></p> <p>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).</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

# 7 AT Commands for IP Application

## 7.1 Overview

Command	Description
<b>AT+SAPBR</b>	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

<b>AT+SAPBR Bearer Settings for Applications Based on IP</b>	
Test Command <b>AT+SAPBR=?</b>	<p>Response</p> <p><b>+SAPBR: (0-4),(1-3), "ConParamTag","ConParamValue"</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Write Command <b>AT+SAPBR=&lt;cmd_type&gt;,&lt;cid&gt;[,&lt;ConParamTag&gt;,&lt;ConParamValue&gt;]</b>	<p>Response</p> <p><b>OK</b></p> <p>If <b>&lt;cmd_type&gt;=2</b></p> <p><b>+SAPBR: &lt;cid&gt;,&lt;Status&gt;,&lt;IP_Addr&gt;</b></p> <p><b>OK</b></p> <p>If <b>&lt;cmd_type&gt;=4</b></p> <p><b>+SAPBR: &lt;ConParamTag&gt;,&lt;ConParamValue&gt;</b></p> <p><b>OK</b></p> <p>Unsolicited Result Code</p> <p><b>+SAPBR &lt;cid&gt;: DEACT</b></p> <p>Parameters</p> <p><b>&lt;cmd_type&gt;</b></p>

	<ul style="list-style-type: none"> <li>0 Close bearer</li> <li>1 Open bearer</li> <li>2 Query bearer</li> <li>3 Set bearer parameters</li> <li>4 Get bearer parameters</li> </ul>
	<b>&lt;cid&gt;</b> Bearer profile identifier
	<b>&lt;Status&gt;</b>
	<ul style="list-style-type: none"> <li>0 Bearer is connecting</li> <li>1 Bearer is connected</li> <li>2 Bearer is closing</li> <li>3 Bearer is closed</li> </ul>
	<b>&lt;ConParamTag&gt;</b> Bearer parameter
	"APN" Access point name string: maximum 64 characters
	"USER" User name string: maximum 32 characters
	"PWD" Password string: maximum 32 characters
	<b>&lt;ConParamValue&gt;</b> Bearer parameter value
	<b>&lt;IP_Addr&gt;</b> The IP address of bearer
Parameter Saving Mode	NO_SAVE
Max Response Time	When <b>&lt;cmd_type&gt;</b> is 1, 85 seconds When <b>&lt;cmd_type&gt;</b> 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
<b>AT+CIPMUX</b>	Start up multi-IP connection
<b>AT+CIPSTART</b>	Start up TCP or UDP connection
<b>AT+CIPSEND</b>	Send data through TCP or UDP connection
<b>AT+CIPQSEND</b>	Select data transmitting mode
<b>AT+CIPACK</b>	Query previous connection data transmitting state
<b>AT+CIPCLOSE</b>	Close TCP or UDP connection
<b>AT+CIPSHUT</b>	Deactivate GPRS PDP context
<b>AT+CLPORT</b>	Set local port
<b>AT+CSTT</b>	Start task and set APN, user name, password
<b>AT+CIICR</b>	Bring up wireless connection with GPRS
<b>AT+CIFSR</b>	Get local IP address
<b>AT+CIFSREX</b>	Get Local IP Address extend
<b>AT+CIPSTATUS</b>	Query current connection status
<b>AT+CDNSCFG</b>	Configure domain name server
<b>AT+CDNSGIP</b>	Query the IP address of given domain name
<b>AT+CIPHEAD</b>	Add an IP head at the beginning of a package received
<b>AT+CIPATS</b>	Set auto sending timer
<b>AT+CIPSPRT</b>	Set prompt of '>' when module sends data
<b>AT+CIPSERVER</b>	Configure module as server
<b>AT+CIPCSGP</b>	Set GPRS for connection mode
<b>AT+CIPSRIP</b>	Show remote IP address and port when received data
<b>AT+CIPDPDP</b>	Set whether to check state of GPRS network timing
<b>AT+CIPMODE</b>	Select TCPIP application mode
<b>AT+CIPCCFG</b>	Configure transparent transfer mode
<b>AT+CIPSHOWTP</b>	Display transfer protocol in IP head when received data
<b>AT+CIPUDPMODE</b>	UDP extended mode
<b>AT+CIPRXGET</b>	Get data from network manually
<b>AT+CIPRDTIMER</b>	Set remote delay timer
<b>AT+CIPSGTXT</b>	Select GPRS PDP context

<b>AT+CIPSENDHEX</b>	Set CIPSEND Data Format to HEX
<b>AT+CIPHEXS</b>	Set Output-data Format with suffix
<b>AT+CIPTKA</b>	Set TCP keepalive parameters
<b>AT+CIPOPTION</b>	Enable or Disable TCP nagle algorithm

## 8.2 Detailed Descriptions of Commands

### 8.2.1 AT+CIPMUX Start Up Multi-IP Connection

<b>AT+CIPMUX Start Up Multi-IP Connection</b>	
Test Command <b>AT+CIPMUX=?</b>	Response <b>+CIPMUX: (0,1)</b>  <b>OK</b> Parameters See Write Command
Read Command <b>AT+CIPMUX?</b>	Response <b>+CIPMUX: &lt;n&gt;</b>  <b>OK</b> Parameters See Write Command
Write Command <b>AT+CIPMUX=&lt;n&gt;</b>	Response <b>OK</b> Parameters <b>&lt;n&gt;</b> 0    Single IP connection 1    Multi IP connection
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> <li>● Only in IP initial state, <b>AT+CIPMUX=1</b> is effective;</li> <li>● Only when multi IP connection and GPRS application are both shut down, <b>AT+CIPMUX=0</b> is effective.</li> </ul>

### 8.2.2 AT+CIPSTART Start Up TCP or UDP Connection

## AT+CIPSTART Start Up TCP or UDP Connection

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

	<p><b>&lt;n&gt;</b> 0..7 A numeric parameter which indicates the connection number</p> <p><b>&lt;mode&gt;</b> A string parameter which indicates the connection type</p> <p style="padding-left: 40px;">"TCP" Establish a TCP connection</p> <p style="padding-left: 40px;">"UDP" Establish a UDP connection</p> <p><b>&lt;IP address&gt;</b> A string parameter which indicates remote server IP address</p> <p><b>&lt;port&gt;</b> Remote server port</p> <p><b>&lt;domain name&gt;</b> A string parameter which indicates remote server domain name</p> <p><b>&lt;state&gt;</b> A string parameter which indicates the progress of connecting</p> <p style="padding-left: 40px;">0 IP INITIAL</p> <p style="padding-left: 40px;">1 IP START</p> <p style="padding-left: 40px;">2 IP CONFIG</p> <p style="padding-left: 40px;">3 IP GPRSACT</p> <p style="padding-left: 40px;">4 IP STATUS</p> <p style="padding-left: 40px;">5 TCP CONNECTING/UDP CONNECTING/ SERVER LISTENING</p> <p style="padding-left: 40px;">6 CONNECT OK</p> <p style="padding-left: 40px;">7 TCP CLOSING/UDP CLOSING</p> <p style="padding-left: 40px;">8 TCP CLOSED/UDP CLOSED</p> <p style="padding-left: 40px;">9 PDP DEACT</p> <p style="padding-left: 40px;">In Multi-IP state:</p> <p style="padding-left: 80px;">0 IP INITIAL</p> <p style="padding-left: 80px;">1 IP START</p> <p style="padding-left: 80px;">2 IP CONFIG</p> <p style="padding-left: 80px;">3 IP GPRSACT</p> <p style="padding-left: 80px;">4 IP STATUS</p> <p style="padding-left: 80px;">5 IP PROCESSING</p> <p style="padding-left: 80px;">9 PDP DEACT</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	When mode is multi-IP state, the max response time 75 seconds. When mode is single state, and the state is IP INITIAL, the max response time is 160 seconds.
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● 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 <b>"AT+CIPSHUT"</b> before user establishes a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS.</li> <li>● When module is in multi-IP state, before this command is executed, it is necessary to process <b>"AT+CSTT, AT+CIICR, AT+CIFSR"</b>.</li> </ul>

### 8.2.3 AT+CIPSEND Send Data Through TCP or UDP Connection

#### AT+CIPSEND Send Data Through TCP or UDP Connection

<p>Test Command <b>AT+CIPSEND=?</b></p>	<p>Response 1) For single IP connection (+CIPMUX=0) <b>+CIPSEND: &lt;length&gt;</b></p> <p><b>OK</b> 2) For multi IP connection (+CIPMUX=1) <b>+CIPSEND: (0-7),&lt;length&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CIPSEND?</b></p>	<p>Response 1) For single IP connection (+CIPMUX=0) <b>+CIPSEND: &lt;size&gt;</b></p> <p><b>OK</b> 2) For multi IP connection (+CIPMUX=1) <b>+CIPSEND: &lt;n&gt;,&lt;size&gt;</b></p> <p><b>OK</b></p> <p>Parameters <b>&lt;n&gt;</b> A numeric parameter which indicates the connection number <b>&lt;size&gt;</b> A numeric parameter which indicates the data length sent at a time</p>
<p>Write Command 1) If single IP connection (+CIPMUX=0) <b>AT+CIPSEND=&lt;length&gt;</b></p> <p>2) If multi IP connection (+CIPMUX=1) <b>AT+CIPSEND=&lt;n&gt;[,&lt;length&gt;]</b></p>	<p>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: <b>+CME ERROR &lt;err&gt;</b> If sending is successful: When +CIPQSEND=0 <b>SEND OK</b> When +CIPQSEND=1 <b>DATA ACCEPT: &lt;length&gt;</b> If sending fails: <b>SEND FAIL</b> If multi IP connection is established (+CIPMUX=1) If connection is not established or module is disconnected: If error is related to ME functionality: <b>+CME ERROR &lt;err&gt;</b> If sending is successful: When +CIPQSEND=0</p>



	<p><b>&lt;n&gt;,SEND OK</b> When +CIPQSEND=1 <b>DATA ACCEPT: &lt;n&gt;,&lt;length&gt;</b> If sending fails: <b>&lt;n&gt;,SEND FAIL</b></p> <hr/> <p>Parameters <b>&lt;n&gt;</b>            A numeric parameter which indicates the connection number <b>&lt;length&gt;</b>        A numeric parameter which indicates the length of sending data, it must be less than &lt;size&gt;</p>
<p>Execution Command <b>AT+CIPSEND</b> Response "&gt;", then type data for send,tap CTRL+Z to send, tap ESC to cancel the operation</p>	<p>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: <b>+CME ERROR &lt;err&gt;</b> If sending is successful: When +CIPQSEND=0 <b>SEND OK</b> When +CIPQSEND=1 <b>DATA ACCEPT: &lt;length&gt;</b> If sending fails: <b>SEND FAIL</b></p> <p>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 <b>&lt;size&gt;</b> bytes which can be sent at a time.</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>When +CIPQSEND=0 and the remote server no response, after 645 seconds, "<b>CLOSE</b>" will be reported.</p>
<p>Reference</p>	<p>Note</p> <ul style="list-style-type: none"> <li>● The data length which can be sent depends on network status.</li> <li>● Set the time that send data automatically with the Command of AT+CIPATS.</li> <li>● Only send data at the status of established connection.</li> </ul>

## 8.2.4 AT+CIPQSEND Select Data Transmitting Mode

Test Command <b>AT+CIPQSEND=?</b>	Response <b>+CIPQSEND: (0,1)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CIPQSEND?</b>	Response <b>+CIPQSEND: &lt;n&gt;</b>  <b>OK</b>
	Parameter See Write Command
Write Command <b>AT+CIPQSEND=&lt;n&gt;</b>	Response <b>OK</b>
	Parameters <b>&lt;n&gt;</b> 0 Normal mode – when the server receives TCP data, it will response SEND OK. 1 Quick send mode – when the data is sent to module, it will response <b>DATA ACCEPT: &lt;length&gt;</b> (For single IP connection (+CIPMUX=0)) or <b>DATA ACCEPT: &lt;n&gt;,&lt;length&gt;</b> (For multi IP connection (+CIPMUX=1)) while not responding <b>SEND OK</b> .
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 8.2.5 AT+CIPACK Query Previous Connection Data Transmitting State

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

If single IP connection (+CIPMUX=0) <b>AT+CIPACK</b>	<b>+CIPACK: &lt;txlen&gt;,&lt;acklen&gt;,&lt;nacklen&gt;</b>  <b>OK</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 8.2.6 AT+CIPCLOSE Close TCP or UDP Connection

<b>AT+CIPCLOSE Close TCP or UDP Connection</b>	
Test Command <b>AT+CIPCLOSE=?</b>	Response <b>OK</b>
Write Command 1) If single IP connection (+CIPMUX=0) <b>AT+CIPCLOSE=&lt;n&gt;</b> 2) If multi IP connection (+CIPMUX=1) <b>AT+CIPCLOSE=&lt;id&gt;,&lt;n&gt;</b>	Response: 1) For single IP connection (+CIPMUX=0) <b>CLOSE OK</b> 2) For multi IP connection (+CIPMUX=1) <b>&lt;id&gt;,&lt;n&gt;,CLOSE OK</b>  Parameters <b>&lt;n&gt;</b> 0    Slow close 1    Quick close <b>&lt;id&gt;</b> A numeric parameter which indicates the connection number
Execution Command <b>AT+CIPCLOSE</b>	Response If close is successfully: <b>CLOSE OK</b> If close fails: <b>ERROR</b>
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 <b>AT+CIPSHUT=?</b>	Response <b>OK</b>
Execution Command <b>AT+CIPSHUT</b>	Response If close is successful: <b>SHUT OK</b> If close fails: <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	65 seconds
Reference	Note <ul style="list-style-type: none"> <li>● If this command is executed in multi-connection mode, all of the IP connection will be shut.</li> <li>● User can close gprs pdp context by AT+CIPSHUT. After it is closed, the status is IP INITIAL.</li> <li>● 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.</li> </ul>

## 8.2.8 AT+CLPORT Set Local Port

### AT+CLPORT Set Local Port

Test Command <b>AT+CLPORT=?</b>	Response 1) For single IP connection (+CIPMUX=0) <b>+CLPORT: ("TCP","UDP"),(0-65535)</b>  <b>OK</b> 2) For multi IP connection (+CIPMUX=1) <b>+CLPORT: (0-7),("TCP","UDP"),(0-65535)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CLPORT?</b>	Response 1) For single IP connection (+CIPMUX=0) <b>+CLPORT: &lt;TCP port&gt;,&lt;UDP port&gt;</b>  <b>OK</b> 2) For multi IP connection (+CIPMUX=1)

	<p>+CLPORT: 0,&lt;TCP port&gt;,&lt;UDP port&gt;          +CLPORT: 1,&lt;TCP port&gt;,&lt;UDP port&gt;          +CLPORT: 2,&lt;TCP port&gt;,&lt;UDP port&gt;          +CLPORT: 3,&lt;TCP port&gt;,&lt;UDP port&gt;          +CLPORT: 4,&lt;TCP port&gt;,&lt;UDP port&gt;          +CLPORT: 5,&lt;TCP port&gt;,&lt;UDP port&gt;          +CLPORT: 6,&lt;TCP port&gt;,&lt;UDP port&gt;          +CLPORT: 7,&lt;TCP port&gt;,&lt;UDP port&gt;</p> <p><b>OK</b></p> <p>Parameters          See Write Command</p>
Write Command 1) For single IP connection (+CIPMUX=0) <b>AT+CLPORT=&lt;mode&gt;,&lt;port&gt;</b> 2) For multi IP connection (+CIPMUX=1) <b>AT+CLPORT=&lt;n&gt;,&lt;mode&gt;,&lt;port&gt;</b>	<p>Response <b>OK</b> or <b>ERROR</b></p> <p>Parameters          &lt;n&gt; 0..7 A numeric parameter which indicates the connection number this used in multi IP connection          &lt;mode&gt; A string parameter which indicates the connection type            "TCP" TCP local port            "UDP" UDP local port          &lt;port&gt; 0-65535 A numeric parameter which indicates the local port. Default value is 0, a port can be dynamically allocated a port.</p>
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 <b>AT+CSTT=?</b>	<p>Response <b>+CSTT: "APN","USER","PWD"</b></p> <p><b>OK</b></p> <p>Parameters          See Write Command</p>
Read Command <b>AT+CSTT?</b>	<p>Response <b>+CSTT: &lt;apn&gt;,&lt;user name&gt;,&lt;password&gt;</b></p> <p><b>OK</b></p>

	Parameters See Write Command
Write Command <b>AT+CSTT=&lt;apn&gt;,&lt;user name&gt;,&lt;password&gt;</b>	Response <b>OK</b> or <b>ERROR</b> Parameters <b>&lt;apn&gt;</b> A string parameter which indicates the GPRS access point name. The max length is 50 bytes.Default value is "CMNET". <b>&lt;user name&gt;</b> A string parameter which indicates the GPRS user name. The max length is 50 bytes. <b>&lt;password&gt;</b> A string parameter which indicates the GPRS password. The max length is 50 bytes.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Execution Command <b>AT+CSTT</b>	Response <b>OK</b> or <b>ERROR</b>
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

<b>AT+CIICR Bring Up Wireless Connection with GPRS</b>	
Test Command <b>AT+CIICR=?</b>	Response <b>OK</b>
Execution Command <b>AT+CIICR</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	85 seconds
Reference	Note <ul style="list-style-type: none"> <li>● 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.</li> <li>● 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.</li> </ul>

### 8.2.11 AT+CIFSR Get Local IP Address

AT+CIFSR Get Local IP Address	
Test Command <b>AT+CIFSR=?</b>	Response <b>OK</b>
Execution Command <b>AT+CIFSR</b>	Response <b>&lt;IP address&gt;</b> or <b>ERROR</b>
Parameter Saving Mode	Parameter <b>&lt;IP address&gt;</b> A string parameter which indicates the IP address assigned from GPRS
Max Response Time	NO_SAVE
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 <b>AT+CIFSREX=?</b>	Response <b>OK</b>
Execution Command <b>AT+CIFSREX</b>	Response <b>+CIFSREX: &lt;IP address&gt;</b>  <b>OK</b>
Parameter Saving Mode	Parameter <b>&lt;IP address&gt;</b> A string parameter which indicates the IP address assigned from GPRS
	NO_SAVE

Max Response Time	-
Reference	<p>Note</p> <p>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:</p> <p>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 &lt;state&gt; parameter);</p> <p>IP STATUS, IP PROCESSING in multi-connection mode (see &lt;state&gt; parameter).</p>

### 8.2.13 AT+CIPSTATUS Query Current Connection Status

AT+CIPSTATUS Query Current Connection Status	
Test Command <b>AT+CIPSTATUS=?</b>	Response <b>OK</b>
Write Command If multi IP connection mode (+CIPMUX=1) <b>AT+CIPSTATUS=&lt;n&gt;</b>	Response <b>+CIPSTATUS: &lt;n&gt;,&lt;bearer&gt;,&lt;TCP/UDP&gt;,&lt;IP address&gt;,&lt;port&gt;,&lt;client state&gt;</b> <b>OK</b> Parameters See Execution Command
Execution Command <b>AT+CIPSTATUS</b>	<p>Response</p> <p>1) If in single connection mode (+CIPMUX=0) <b>OK</b></p> <p><b>STATE: &lt;state&gt;</b></p> <p>2) If in multi-connection mode (+CIPMUX=1) <b>OK</b></p> <p><b>STATE: &lt;state&gt;</b></p> <p>If the module is set as server <b>S: 0,&lt;bearer&gt;,&lt;port&gt;,&lt;server state&gt;</b> <b>C: &lt;n&gt;,&lt;bearer&gt;,&lt;TCP/UDP&gt;,&lt;IP address&gt;,&lt;port&gt;,&lt;client state&gt;</b></p> <p>Parameters</p> <p><b>&lt;n&gt;</b>                    0-7 A numeric parameter which indicates the connection number</p> <p><b>&lt;bearer&gt;</b>              0-1 GPRS bearer, default is 0</p> <p><b>&lt;server state&gt;</b>        OPENING LISTENING</p>



	<p>CLOSING</p> <p><b>&lt;client state&gt;</b> INITIAL</p> <p>CONNECTING</p> <p>CONNECTED</p> <p>REMOTE CLOSING</p> <p>CLOSING</p> <p>CLOSED</p> <p><b>&lt;state&gt;</b> A string parameter which indicates the progress of connecting</p> <p>0 IP INITIAL</p> <p>1 IP START</p> <p>2 IP CONFIG</p> <p>3 IP GPRSACT</p> <p>4 IP STATUS</p> <p>5 TCP CONNECTING/UDP CONNECTING /SERVER LISTENING</p> <p>6 CONNECT OK</p> <p>7 TCP CLOSING/UDP CLOSING</p> <p>8 TCP CLOSED/UDP CLOSED</p> <p>9 PDP DEACT</p> <p>In Multi-IP state:</p> <p>0 IP INITIAL</p> <p>1 IP START</p> <p>2 IP CONFIG</p> <p>3 IP GPRSACT</p> <p>4 IP STATUS</p> <p>5 IP PROCESSING</p> <p>9 PDP DEACT</p>
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	
Response	+CDNSCFG: ("Primary DNS"),("Secondary DNS")
Test Command	OK
<b>AT+CDNSCFG=?</b>	Parameters See Write Command

Read Command <b>AT+CDNSCFG?</b>	Response <b>PrimaryDns: &lt;pri_dns&gt;</b> <b>SecondaryDns: &lt;sec_dns&gt;</b>  <b>OK</b>
	Parameter See Write Command
Write Command <b>AT+CDNSCFG=&lt;pri_dns&gt;[,&lt;sec_dns&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;pri_dns&gt;</b> A string parameter which indicates the IP address of the primary domain name server. Default value is 0.0.0.0. <b>&lt;sec_dns&gt;</b> 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 <b>AT+CDNSGIP=?</b>	Response <b>OK</b>
Write Command <b>AT+CDNSGIP=&lt;domain name&gt;</b>	Response <b>OK</b> or <b>ERROR</b> If successful, return: <b>+CDNSGIP: 1,&lt;domain name&gt;,&lt;IP1&gt;[,&lt;IP2&gt;]</b> If fail, return: <b>+CDNSGIP:0,&lt;dns error code&gt;</b>
	Parameters <b>&lt;domain name&gt;</b> A string parameter which indicates the domain name <b>&lt;IP1&gt;</b> A string parameter which indicates the first IP address corresponding to the domain name <b>&lt;IP2&gt;</b> A string parameter which indicates the second IP address corresponding to the domain name <b>&lt;dns error code&gt;</b> 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 <b>AT+CIPHEAD=?</b>	Response <b>+CIPHEAD:</b> (list of supported <b>&lt;mode&gt;</b> s)  <b>OK</b>
Read Command <b>AT+CIPHEAD?</b>	Parameter See Write Command Response <b>+CIPHEAD:</b> <b>&lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+CIPHEAD=&lt;mode&gt;</b>	Parameters See Write Command Response <b>OK</b> or <b>ERROR</b> Parameters <b>&lt;mode&gt;</b> A numeric parameter which indicates whether an IP header is added to the received data or not. <b>0</b> Not add IP header <b>1</b> Add IP header, the format is: 1) For single IP connection (+CIPMUX=0) <b>+IPD,&lt;data length&gt;</b> : 2) For multi IP connection (+CIPMUX=1) <b>+RECEIVE,&lt;n&gt;,&lt;data length&gt;</b> :
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 <b>AT+CIPATS=?</b>	Response <b>+CIPATS:</b> (list of supported <mode>s),(list of supported <time>)  <b>OK</b>  Parameters See Write Command
Read Command <b>AT+CIPATS?</b>	Response <b>+CIPATS:</b> <mode>,<time>  <b>OK</b>  Parameters See Write Command
Write Command <b>AT+CIPATS=&lt;mode&gt;[,&lt;time&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>  Parameters <b>&lt;mode&gt;</b> 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 <b>&lt;time&gt;</b> 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 <b>AT+CIPSPRT=?</b>	Response <b>+CIPSPRT:</b> (list of supported <send prompt>s)  <b>OK</b>  Parameters See Write Command
Read Command	Response

<b>AT+CIPSPRT?</b>	<b>+CIPSPRT: &lt;send prompt&gt;</b>
	<b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CIPSPRT=&lt;send prompt&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;send prompt&gt;</b> 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

<b>AT+CIPSERVER Configure Module as Server</b>	
Test Command <b>AT+CIPSERVER=?</b>	Response <b>+CIPSERVER: (0-CLOSE SERVER, 1-OPEN SERVER),(1-65535)</b> <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CIPSERVER?</b>	Response <b>+CIPSERVER: &lt;mode&gt;[,&lt;port&gt;,&lt;channel id&gt;,&lt;bearer&gt;]</b> <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CIPSERVER=&lt;mode&gt;[,&lt;port&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>

	<p>Parameters</p> <p><b>&lt;mode&gt;</b>     0    Close server                   1    Open server</p> <p><b>&lt;port&gt;</b>       1..65535   Listening port</p> <p><b>&lt;channel id&gt;</b> Channel id</p> <p><b>&lt;bearer&gt;</b>     GPRS bearer</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>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.</p>

### 8.2.20 AT+CIPCSGP Set GPRS for Connection Mode

AT+CIPCSGP Set GPRS for Connection Mode	
<p>Test Command</p> <p><b>AT+CIPCSGP=?</b></p>	<p>Response</p> <p><b>+CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+CIPCSGP?</b></p>	<p>Response</p> <p><b>+CIPCSGP: &lt;mode&gt;,&lt;apn&gt;,&lt;user name&gt;,&lt;password&gt;[,&lt;rate&gt;]</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CIPCSGP=&lt;mode&gt; [,&lt;apn&gt;,&lt;user name&gt;,&lt;password&gt;]</b></p>	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b>       A numeric parameter which indicates the wireless connection mode</p> <p>                  1    set GPRS as wireless connection mode</p> <p><b>&lt;apn&gt;</b>         A string parameter which indicates the access point name</p> <p><b>&lt;user name&gt;</b>   A string parameter which indicates the user name</p> <p><b>&lt;password&gt;</b>    A string parameter which indicates the password</p>
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 <b>AT+CIPSRIP=?</b>	Response <b>+CIPSRIP:</b> (list of supported <mode>s)  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CIPSRIP?</b>	Response <b>+CIPSRIP:</b> <mode>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CIPSRIP=&lt;mode&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> 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) <b>RCV FROM:&lt;IP ADDRESS&gt;:&lt;PORT&gt;</b> 1) For multi IP connection (+CIPMUX=1) <b>+RECEIVE,&lt;n&gt;,&lt;data length&gt;,&lt;IP ADDRESS&gt;:&lt;PORT&gt;</b>
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 <b>AT+CIPDPDP=?</b>	Response <b>+CIPDPDP:</b> (list of supported<mode>s, list of supported <interval>,list of supported <timer>)

	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CIPDPPDP?</b></p>	<p>Response <b>+CIPDPPDP: &lt;mode&gt;,&lt;interval&gt;,&lt;timer&gt;</b></p>
	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CIPDPPDP=&lt;mode&gt;[,&lt;interval&gt;,&lt;timer&gt;]</b></p>	<p>Response <b>OK</b> or <b>ERROR</b></p> <p>Parameters <b>&lt;mode&gt;</b>              0 Not set detect PDP              1 Set detect PDP</p> <p><b>&lt;interval&gt;</b>              1&lt;=interval&lt;=180(s), default value is 10.</p> <p><b>&lt;timer&gt;</b>              1&lt;=timer&lt;=10, default value is 3.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>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.</p>

### 8.2.23 AT+CIPMODE Select TCPIP Application Mode

AT+CIPMODE Select TCPIP Application Mode	
<p>Test Command <b>AT+CIPMODE=?</b></p>	<p>Response <b>+CIPMODE: (0-NORMAL MODE,1-TRANSPARENT MODE)</b></p>
	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CIPMODE?</b></p>	<p>Response <b>+CIPMODE: &lt;mode&gt;</b></p>
	<p><b>OK</b></p>



	Parameters See Write Command
Write Command <b>AT+CIPMODE=&lt;mode&gt;</b> <b>&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> <u>0</u> 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 <b>AT+CIPCCFG=?</b>	Response <b>+CIPCCFG:</b> <b>(NmRetry:3-8),(WaitTm:1-10),(SendSz:1-1460),(esc:0,1) ,(Rxmode:0,1),(RxSize:50-1460),(Rxtimer:20-1000)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CIPCCFG?</b>	Response <b>+CIPCCFG:</b> <b>&lt;NmRetry&gt;,&lt;WaitTm&gt;,&lt;SendSz&gt;,&lt;esc&gt;,&lt;Rxmode&gt;,&lt;RxSize&gt;,&lt;Rxtimer&gt;</b> <b>&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CIPCCFG=&lt;NmRetry&gt;,&lt;WaitTm&gt;,&lt;SendSz&gt;,&lt;esc&gt;[,&lt;Rxmode&gt;,&lt;RxSize&gt;,&lt;Rxtimer&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;NmRetry&gt;</b> Number of retries to be made for an IP packet.Default value is 5. <b>&lt;WaitTm&gt;</b> Number of 100ms intervals to wait for serial input before sending the packet. Default value is 2.

	<p><b>&lt;SendSz&gt;</b> Size in bytes of data block to be received from serial port before sending. Default value is 1024.</p> <p><b>&lt;esc&gt;</b> Whether turn on the escape sequence, default is TRUE.</p> <p>0 Turn off the escape sequence</p> <p>1 Turn on the escape sequence</p> <p><b>&lt;Rxmode&gt;</b> Whether to set time interval during output data from serial port.</p> <p>0 output data to serial port without interval</p> <p>1 output data to serial port within &lt;Rxtimer&gt; interval.</p> <p><b>&lt;RxSize&gt;</b> Output data length for each time. Default value is 1460.</p> <p><b>&lt;Rxtimer&gt;</b> Time interval (ms) to wait for serial port to output data again. Default value: 50ms</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>This command will be effective only in single connection mode (+CIPMUX=0)</p>

### 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	
<p>Test Command</p> <p><b>AT+CIPSHOWTP=?</b></p>	<p>Response</p> <p><b>+CIPSHOWTP:</b> (list of supported &lt;mode&gt;s)</p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+CIPSHOWTP?</b></p>	<p>Response</p> <p><b>+CIPSHOWTP:</b> &lt;mode&gt;</p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CIPSHOWTP=&lt;mode&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b> A numeric parameter which indicates whether to display transfer protocol in IP header to received data or not</p> <p>0 Not display transfer protocol</p> <p>1 Display transfer protocol, the format is "+IPD,</p>

	<data size>,<TCP/UDP>:<data>"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● This command will be effective only in single connection mode (+CIPMUX=0).</li> <li>● Only when +CIPHEAD is set to 1, the setting of this command will work.</li> </ul>

### 8.2.26 AT+CIPUDPMODE UDP Extended Mode

AT+CIPUDPMODE UDP Extended Mode	
Test Command <b>AT+CIPUDPMODE=?</b>	Response 1) For single IP connection (+CIPMUX=0) <b>+CIPUDPMODE: (0-2),("0-255).(0-255).(0-255).(0-255"),(1-65535)</b>  <b>OK</b> 2) For multi IP connection (+CIPMUX=1) <b>+CIPUDPMODE: (0-5),(0-2),("0-255).(0-255).(0-255).(0-255"),(1-65535)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CIPUDPMODE?</b>	Response 1) For single IP connection (+CIPMUX=0) <b>+CIPUDPMODE: &lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b>  <b>OK</b> 2) For multi IP connection (+CIPMUX=1) <b>+CIPUDPMODE: 0,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b> <b>+CIPUDPMODE: 1,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b> <b>+CIPUDPMODE: 2,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b> <b>+CIPUDPMODE: 3,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b> <b>+CIPUDPMODE: 4,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b> <b>+CIPUDPMODE: 5,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b> <b>+CIPUDPMODE: 6,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b> <b>+CIPUDPMODE: 7,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b>  <b>OK</b>
	Parameter See Write Command
Write Command 1) For single IP	Response <b>OK</b>

connection (+CIPMUX=0) <b>AT+CIPUDPMODE=&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b>	or <b>ERROR</b>
2) For multi IP connection (+CIPMUX=1) <b>AT+CIPUDPMODE=&lt;n&gt;,&lt;mode&gt;[,&lt;IP address&gt;,&lt;Port&gt;]</b>	<p><b>&lt;n&gt;</b>                    0-7 A numeric parameter which indicates the connection number</p> <p><b>&lt;mode&gt;</b>                0    UDP Normal Mode                           1    UDP Extended Mode                           2    Set UDP address to be sent</p> <p><b>&lt;IP address&gt;</b>        A string parameter which indicates remote IP address</p> <p><b>&lt;port&gt;</b>                 Remote port</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 8.2.27 AT+CIPRXGET Get Data from Network Manually

<b>AT+CIPRXGET Get Data from Network Manually</b>	
Test Command <b>AT+CIPRXGET=?</b>	<p>Response If single IP connection (+CIPMUX=0) <b>+CIPRXGET:</b> (list of supported <b>&lt;mode&gt;</b>s),(list of supported <b>&lt;reqlength&gt;</b>)</p> <p><b>OK</b> If multi IP connection (+CIPMUX=1) <b>+CIPRXGET:</b> (list of supported <b>&lt;mode&gt;</b>s), (list of supported <b>&lt;id&gt;</b>s), (list of supported <b>&lt;reqlength&gt;</b>)</p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
Read Command <b>AT+CIPRXGET?</b>	<p>Response <b>+CIPRXGET: &lt;mode&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
Write Command 1) If single IP connection (+CIPMUX=0) <b>AT+CIPRXGET=&lt;mode&gt;[,&lt;reqlength&gt;]</b>	<p>Response <b>OK</b> or <b>ERROR</b></p> <p>1)For single IP connection If "AT+CIPSRIP=1" is set, IP address and port are contained.</p>

2) If multi IP connection  
(+CIPMUX=1)

**AT+CIPRXGET=<mode>  
>[,<id>,<reqlength>]**

```
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

	<p><b>&lt;reqlength&gt;</b> Requested number of data bytes (1-1460 bytes)to be read. If <b>&lt;mode&gt;=4</b>,the range of <b>&lt;reqlength&gt;</b> is 0-2920bytes.</p> <p><b>&lt;cnflength&gt;</b> Confirmed number of data bytes to be read, which may be less than <b>&lt;length&gt;</b>. 0 indicates that no data can be read.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>To enable this function, parameter <b>&lt;mode&gt;</b> must be set to 1 before connection.</p>

### 8.2.28 AT+CIPRDTIMER Set Remote Delay Timer

AT+CIPRDTIMER Set Remote Delay Timer	
<p>Test Command</p> <p><b>AT+CIPRDTIMER=?</b></p>	<p>Response</p> <p><b>+CIPRDTIMER: (100-4000),(100-7000)</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p><b>AT+CIPRDTIMER?</b></p>	<p>Response</p> <p><b>+CIPRDTIMER: &lt;rdsigtimer&gt;,&lt;rdmuxtimer&gt;</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CIPRDTIMER=&lt;rdsigtimer&gt;,&lt;rdmuxtimer&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;rdsigtimer&gt;</b> Remote delay timer of single connection. Default value is 2000.</p> <p><b>&lt;rdmuxtimer&gt;</b> Remote delay timer of multi-connections. Default value is 3500.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>This command is used to shorten the disconnect time locally when the remote server has been disconnected.</p>

### 8.2.29 AT+CIPSGTXT Select GPRS PDP context

AT+CIPSGTXT Select GPRS PDP context	
Test Command <b>AT+CIPSGTXT=?</b>	Response <b>+CIPSGTXT: (0,1)</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CIPSGTXT=&lt;mode&gt;</b> <b>&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;mode&gt;</b> 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 <b>AT+CIPSENDHEX=?</b>	Response <b>+ CIPSENDHEX: (0,1)</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CIPSENDHEX=&lt;m</b> <b>ode&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;mode&gt;</b> 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
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### 8.2.31 AT+CIPHEXS Set Output-data Format with suffix

AT+CIPHEXS Set Output-data Format with suffix	
Test Command <b>AT+CIPHEXS=?</b>	Response <b>+CIPHEXS: (list of supported &lt;mode&gt;s)</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CIPHEXS=&lt;mode&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;mode&gt;</b> 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 <b>AT+CIPTKA=?</b>	Response <b>+CIPTKA: (list of supported &lt;mode&gt;s),(list of supported &lt;keepIdle&gt;s),(list of supported &lt;keepInterval&gt;),(list of supported &lt;keepCount&gt;s)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CIPTKA?</b>	Response <b>+CIPTKA: &lt;mode&gt;,&lt;keepIdle&gt;,&lt;keepInterval&gt;,&lt;keepCount&gt;</b>  <b>OK</b>



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

e>	<p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>ERROR</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b> Config to enable or disable TCP nagle algorithm</p> <p>0 Enable TCP nagle algorithm</p> <p>1 Disable TCP nagle algorithm</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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# 9 AT Commands for HTTP(S) 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(S) service. This chapter is a reference guide to all the AT commands and responses defined to use with the TCP/IP stack in HTTP(S) Service.

## 9.1 Overview

AT Command	Description
<b>AT+SHSSL</b>	Select SSL Configure
<b>AT+SHCONF</b>	Set HTTP(S) Parameter
<b>AT+SHCONN</b>	HTTP(S) Connection
<b>AT+SHBOD</b>	Set Body
<b>AT+SHBODEXT</b>	Set Extension Body
<b>AT+SHAHEAD</b>	Add Head
<b>AT+SHPARA</b>	Set HTTP(S) Para
<b>AT+SHCPARA</b>	Clear HTTP(S) Para
<b>AT+SHCHEAD</b>	Clear Head
<b>AT+SHSTATE</b>	Query HTTP(S) Connection Status
<b>AT+SHREQ</b>	Set Request Type
<b>AT+SHREAD</b>	Read Response Value
<b>AT+SHDISC</b>	Disconnect HTTP(S)
<b>AT+HTTPTOFS</b>	Download file to ap file system
<b>AT+HTTPTOFSRL</b>	State of download file to ap file system

## 9.2 Detailed Descriptions of Commands

### 9.2.1 AT+SHSSL Select SSL Configure

AT+SHSSL Select SSL Configure	
Test command <b>AT+SHSSL=?</b>	Response <b>+SHSSL: (0-5), "ca list","cert name"</b>  <b>OK</b>
Read command <b>AT+SHSSL?</b>	Response <b>+SHSSL: &lt;index&gt;,&lt;ca list&gt;,&lt;cert name&gt;</b>  <b>OK</b>
Write command <b>AT+SHSSL=&lt;index&gt;,&lt;ca list&gt;,&lt;certname&gt;</b>	Response <b>OK</b> or <b>ERROR</b> Parameters <b>&lt;index&gt;</b> CSSLCFG set Configure index <b>&lt;ca list&gt;</b> Ca Certificate name <b>&lt;cert name&gt;</b> Cert Certificate name
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	-

### 9.2.2 AT+SHCONF Set HTTP(S) Parameter

AT+SHCONF Set HTTP(S) Parameter	
Test command <b>AT+SHCONF=?</b>	Response <b>+SHCONF: "HTTPParamTag","HTTPParamValue"</b>  <b>OK</b>
Read command <b>AT+SHCONF?</b>	Response <b>+SHCONF: &lt;HTTPParamTag&gt;,&lt;HTTPParamValue&gt;</b>  <b>OK</b>
Write command <b>AT+SHCONF=&lt;HTTPParamTag&gt;,&lt;HTTPParamValue&gt;</b>	Response <b>OK</b> or <b>ERROR</b> Parameters <b>&lt;HTTPParamTag&gt;</b> <b>&lt;HTTPParamValue&gt;</b> <b>"URL"</b> Server URL address(max is 64 bytes)

	"server domain[: tcpPort]"
"TIMEOUT"	Hold once request time. Unit is second.Default 60s. range: 30-1800
"BODYLEN"	Set body max length(max is 1024 bytes)
"HEADERLEN"	Set head max length(max is 350 bytes)
"IPVER"	Set IP version 0 IPv4 1 IPv6
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must set URL,BODYLEN,HEADERLEN value, TIMEOUT default is 60 s, URL format must "http://xxx.xx.xx" or "https://xxx.xx.xx"

### 9.2.3 AT+SHCONN HTTP(S) Connection

#### AT+SHCONN HTTP(S) Connection

Execution command <b>AT+SHCONN</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	-

### 9.2.4 AT+SHBOD Set Body

#### AT+SHBOD Set Body

Test command <b>AT+SHBOD=?</b>	Response <b>+SHBOD: "body",&lt;bodylen&gt;</b>  <b>OK</b>
Read command <b>AT+SHBOD?</b>	Response <b>+SHBOD: &lt;body&gt;,&lt;bodylen&gt;</b>  <b>OK</b>
Write command <b>AT+SHBOD=&lt;body&gt;,&lt;bodylen&gt;</b>	Response <b>OK</b> or

	<b>ERROR</b>
	Parameters <body> Set body value (max length is SHCONF Set value) <bodylen> Set body length (max length is SHCONF Set value)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection

### 9.2.5 AT+SHBODEXT Set Extension Body

AT+SHBODEXT Set Extension Body	
Test Command <b>AT+SHBODEXT=?</b>	Response <b>+SHBODEXT:</b> (range of supported <bodylen>s),(range of supported <timeout>s)  <b>OK</b>
Read Command <b>AT+SHBODEXT?</b>	Response <b>+SHBODEXT:</b> <body>,<len_body>  <b>OK</b>
Write Command <b>AT+SHBODEXT=&lt;len_body&gt;,&lt;timeout&gt;</b> <b>&lt;CR&gt;text is entered</b> <b>&lt;ctrl-Z/ESC&gt;</b> <b>ESC quits without sending</b>	Response <b>OK</b> or <b>ERROR</b> Parameters <body> Set body value (max length is SHCONF Set value) <len_body> Length of <body>. Max value is <bodylen>. <bodylen> Max length set by "AT+SHCONF="BODYLEN",<bodylen>" <timeout> Timeout for automatically sending edited data (100-10000 ms)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection

### 9.2.6 AT+SHAHEAD Add Head

#### AT+SHAHEAD Add Head

Test command <b>AT+SHAHEAD=?</b>	Response <b>+SHAHEAD: "type", "value"</b>
	<b>OK</b>
Read command <b>AT+SHAHEAD?</b>	Response <b>+SHAHEAD: &lt;type&gt;, &lt;value&gt;</b>
	<b>OK</b>
Write command <b>AT+SHAHEAD=&lt;type&gt;, &lt;value&gt;</b>	Response <b>OK</b> OR <b>ERROR</b>
	Parameters <b>&lt;type&gt;</b> Head type (max length is SHCONF Set value) <b>&lt;value&gt;</b> Head value (max length is SHCONF Set value) Note: The sum of type and value max length is 350
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection

### 9.2.7 AT+SHCHEAD Clear Head

<b>AT+SHCHEAD Clear Head</b>	
Execution Command <b>AT+SHCHEAD</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Must be executed after the connection

### 9.2.8 AT+SHPARA Set HTTP(S) Para

<b>AT+SHPARA Set HTTP(S) Para</b>	
Test command <b>AT+SHPARA=?</b>	Response <b>+SHPARA: "key", "value"</b>

	<b>OK</b>
Read command <b>AT+SHPARA?</b>	Response <b>+SHPARA: &lt;key&gt;,&lt;value&gt;</b>
	<b>OK</b>
Write command <b>AT+SHPARA=&lt;key&gt;,&lt;value&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;key&gt;</b> Set key (max is 64 bytes) <b>&lt;value&gt;</b> Set value (max is 64 bytes)
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection.

### 9.2.9 AT+SHCPARA Clear HTTP(S) Para

<b>AT+SHCPARA Clear HTTP(S) Para</b>	
Test Command <b>AT+SHCPARA=?</b>	Response <b>OK</b>
Execution Command <b>AT+SHCPARA</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Must be executed after the connection.

### 9.2.10 AT+SHSTATE Query HTTP(S) Connection Status

<b>AT+SHSTATE Query HTTP(S) Connection Status</b>	
Read command <b>AT+SHSTATE?</b>	Response <b>+SHSTATE: &lt;status&gt;</b>
	<b>OK</b>
	Parameters <b>&lt;status&gt;</b>



	0	Expression HTTP(S) disconnect state;
	1	Expression HTTP(S) connect state;
Parameter Saving Mode	-	
Max Response Time	-	
Reference	-	

### 9.2.11 AT+SHREQ Set Request Type

AT+SHREQ Set Request Type	
Test command <b>AT+SHREQ=?</b>	Response <b>+SHREQ: url,(1-5)</b>  <b>OK</b>
Read command <b>AT+SHREQ?</b>	Response <b>+SHREQ: &lt;url&gt;,&lt;type&gt;</b>  <b>OK</b>
Write command <b>AT+SHREQ=&lt;url&gt;,&lt;type&gt;</b> <b>&gt;</b>	Response <b>OK</b> or <b>ERROR</b> Unsolicited Result Code <b>+SHREQ: &lt;type string&gt;,&lt;StatusCode&gt;,&lt;DataLen&gt;</b>  Parameters <b>&lt;url&gt;</b> Request server domain (max is 512 bytes) <b>&lt;type&gt;</b> 1 GET 2 PUT 3 POST 4 PATCH 5 HEAD  <b>&lt;type string&gt;</b> String of type are GET ,PUT,POST,PATCH,HEAD. <b>&lt;timeout&gt;</b> Waiting for Response time(default is 60 sec) <b>&lt;StatusCode&gt;</b> HTTP(S) 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

	<p>205 Reset Content</p> <p>206 Partial Content</p> <p>300 Multiple Choices</p> <p>301 Moved Permanently</p> <p>302 Found</p> <p>303 See Other</p> <p>304 Not Modified</p> <p>305 Use Proxy</p> <p>307 Temporary Redirect</p> <p>400 Bad Request</p> <p>401 Unauthorized</p> <p>402 Payment Required</p> <p>403 Forbidden</p> <p>404 Not Found</p> <p>405 Method Not Allowed</p> <p>406 Not Acceptable</p> <p>407 Proxy Authentication Required</p> <p>408 Request Time-out</p> <p>409 Conflict</p> <p>410 Gone</p> <p>411 Length Required</p> <p>412 Precondition Failed</p> <p>413 Request Entity Too Large</p> <p>414 Request-URI Too Large</p> <p>415 Unsupported Media Type</p> <p>416 Requested range not satisfiable</p> <p>417 Expectation Failed</p> <p>500 Internal Server Error</p> <p>501 Not Implemented</p> <p>502 Bad Gateway</p> <p>503 Service Unavailable</p> <p>504 Gateway Time-out</p> <p>505 HTTP(S) Version not supported</p> <p><b>&lt;DataLen&gt;</b> The length of data got</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Must be executed after the connection

### 9.2.12 AT+SHREAD Read Response Value

## AT+SHREAD Read Response Value

Test command <b>AT+SHREAD=?</b>	Response <b>+SHREAD: (0-306176),(1-306176)</b>
	<b>OK</b>
Write command <b>AT+SHREAD=&lt;startaddress&gt;,&lt;datalen&gt;</b>	Response <b>OK</b> <b>+SHREAD: &lt;data_len&gt;</b> <b>&lt;data&gt;</b>  <b>+SHREAD: &lt;data_len&gt;</b> <b>&lt;data&gt;</b>  ..... or <b>ERROR</b>
	If<datalen> is bigger than the data size received, it's error If <datalen> is bigger than 2048, will got multi URC +SHREAD
	Parameters <b>&lt;startaddress&gt;</b> Start address of data <b>&lt;datalen&gt;</b> Set read values length <b>&lt;data_len&gt;</b> Return data length max is 2048 bytes once, if more than 2048 bytes, will return many timer until all data are read out <b>&lt;data&gt;</b> Response data
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Read data after request

### 9.2.13 AT+SHDISC Disconnect HTTP(S)

<b>AT+SHDISC Disconnect HTTP(S)</b>	
Execution Command <b>AT+SHDISC</b>	Response <b>OK</b> or <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	-

## 9.2.14 AT+HTTPTOFS Download File to AP File System

### AT+HTTPTOFS Download File to AP File System

<p>Test Command <b>AT+HTTPTOFS=?</b></p>	<p>Response <b>+HTTPTOFS: (1-255),(1-127)</b></p> <p><b>OK</b></p>
<p>Read Command <b>AT+HTTPTOFS?</b></p>	<p>Response <b>+HTTPTOFS: &lt;status&gt;,&lt;url&gt;,&lt;file_path&gt;</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+HTTPTOFS=&lt;url&gt;,&lt;file_path&gt;[,&lt;timeout&gt;[,&lt;retrycnt&gt;]]</b></p>	<p>Response <b>OK</b></p> <p><b>+HTTPTOFS: &lt;StatusCode&gt;,&lt;DataLen&gt;</b></p> <p>Parameters</p> <p><b>&lt;status&gt;</b></p> <ul style="list-style-type: none"> <li>0 Idle</li> <li>1 Busy</li> </ul> <p><b>&lt;url&gt;</b> The url</p> <p><b>&lt;file_path&gt;</b> File path and name on AP side, For example: "/customer/test.bin","custapp/ test.bin ","/fota/test.bin"</p> <p><b>&lt;timeout&gt;</b> Timeout of HTTP request. Unit is second. Range is 10-1000, default value is 50.</p> <p><b>&lt;retrycnt&gt;</b> Retry times of HTTP request. Range is 5-100, default value is 5.</p> <p><b>&lt;StatusCode&gt;</b> HTTP Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616)</p> <ul style="list-style-type: none"> <li>100 Continue</li> <li>200 OK</li> <li>206 Partial Content</li> <li>400 Bad Request</li> <li>404 Not Found</li> <li>408 Request Time-out</li> <li>500 Internal Server Error</li> <li>600 Not HTTP PDU</li> <li>601 Network Error</li> <li>602 No memory</li> <li>603 DNS Error</li> <li>604 Stack Busy</li> </ul>

	620 SSL continue 65535 Other Errors
	<b>&lt;DataLen&gt;</b> The length of data download
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 9.2.15 AT+HTTPTOFSRL State of Download File to AP File System

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

# 10 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.

## 10.1 Overview

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

**AT+FTPMDTM**

Get the Last Modification Timestamp of Specified File on the Remote Machine

## 10.2 Detailed Descriptions of Commands

### 10.2.1 AT+FTPPORT Set FTP Control Port

<b>AT+FTPPORT Set FTP Control Port</b>	
Test Command <b>AT+FTPPORT=?</b>	Response <b>OK</b>
Read Command <b>AT+FTPPORT?</b>	Response <b>+FTPPORT: &lt;value&gt;</b>  <b>OK</b> Parameters See Write Command
Write Command <b>AT+FTPPORT=&lt;value&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b> Parameters <b>&lt;value&gt;</b> 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.

### 10.2.2 AT+FTPMODE Set Active or Passive FTP Mode

<b>AT+FTPMODE Set Active or Passive FTP Mode</b>	
Test Command <b>AT+FTPMODE=?</b>	Response <b>OK</b>
Read Command <b>AT+FTPMODE?</b>	Response <b>+FTPMODE: &lt;value&gt;</b>  <b>OK</b>

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

### 10.2.3 AT+FTPTYPE Set the Type of Data to Be Transferred

<b>AT+FTPTYPE Set the Type of Data to Be Transferred</b>	
Test Command <b>AT+FTPTYPE=?</b>	Response <b>OK</b>
Read Command <b>AT+FTPTYPE?</b>	Response <b>+FTPTYPE: &lt;value&gt;</b>  <b>OK</b> Parameters See Write Command
Write Command <b>AT+FTPTYPE=&lt;value&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b> Parameters <b>&lt;value&gt;</b> "A"    For FTP ASCII sessions "!"    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.



## 10.2.4 AT+FTPPUTOPT Set FTP Put Type

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

## 10.2.5 AT+FTPCID Set FTP Bearer Profile Identifier

AT+FTPCID Set FTP Bearer Profile Identifier	
Test Command <b>AT+FTPCID=?</b>	Response <b>OK</b> Parameters See Write Command
Read Command <b>AT+FTPCID?</b>	Response <b>+FTPCID: &lt;value&gt;</b>  <b>OK</b> Parameter See Write Command
Write Command <b>AT+FTPCID=&lt;value&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>

	Parameters <b>&lt;value&gt;</b> Bearer profile identifier refer to AT+SAPBR
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 10.2.6 AT+FTPREST Set Resume Broken Download

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

### 10.2.7 AT+FTPSERV Set FTP Server Address

AT+FTPSERV Set FTP Server Address	
Test Command <b>AT+FTPSERV=?</b>	Response <b>OK</b>
Read Command <b>AT+FTPSERV?</b>	Response <b>+FTPSERV: &lt;value&gt;</b>  <b>OK</b> Parameters

	See Write Command
Write Command <b>AT+FTPSERV=&lt;value&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;value&gt;</b> 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

### 10.2.8 AT+FTPUN Set FTP User Name

<b>AT+FTPUN Set FTP User Name</b>	
Test Command <b>AT+FTPUN=?</b>	Response <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+FTPUN?</b>	Response <b>+FTPUN: &lt;value&gt;</b>
	<b>OK</b>
	Parameters See Write Command
Write Command <b>AT+FTPUN=&lt;value&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;value&gt;</b> Alphanumeric ASCII text string up to 49 characters.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 10.2.9 AT+FTPPW Set FTP Password

### AT+FTPPW Set FTP Password

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

### 10.2.10 AT+FTPGETNAME Set Download File Name

#### AT+FTPGETNAME Set Download File Name

Test Command <b>AT+FTPGETNAME=?</b>	Response <b>OK</b>
Read Command <b>AT+FTPGETNAME?</b>	Response <b>+FTPGETNAME: &lt;value&gt;</b> <b>OK</b> Parameters See Write Command
Write Command <b>AT+FTPGETNAME=&lt;value&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b> Parameters <b>&lt;value&gt;</b> Alphanumeric ASCII text string up to 99 characters
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 10.2.11 AT+FTPGETPATH Set Download File Path

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

### 10.2.12 AT+FTPPUTNAME Set Upload File Name

AT+FTPPUTNAME Set Upload File Name	
Test Command <b>AT+FTPPUTNAME=?</b>	Response <b>OK</b>
Read Command <b>AT+FTPPUTNAME?</b>	Response <b>+FTPPUTNAME: &lt;value&gt;</b>  <b>OK</b> Parameters See Write Command
Write Command <b>AT+FTPPUTNAME=&lt;value&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>

	Parameters <b>&lt;value&gt;</b> Alphanumeric ASCII text string up to 99 characters
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 10.2.13 AT+FTPPUTPATH Set Upload File Path

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

### 10.2.14 AT+FTPGET Download File

AT+FTPGET Download File	
Test Command <b>AT+FTPGET=?</b>	Response <b>OK</b>
Write Command <b>AT+FTPGET=&lt;mode&gt;[, &lt;reqlength&gt;]</b>	Response If mode is 1 and it is a successful FTP get session: <b>OK</b> <b>+FTPGET: 1,1</b>

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.

## 10.2.15 AT+FTPPUT Set Upload File

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



Reference	Note When "+FTPPUT: 1,1,<maxlength>" is shown, then use "AT+FTPPUT=2,<reqlength>" to write data.
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### 10.2.16 AT+FTPDELE Delete Specified File in FTP Server

AT+FTPDELE Delete Specified File in FTP Server	
Test Command <b>AT+FTPDELE=?</b>	Response <b>OK</b>
	Parameters See Execution Command
Execution Command <b>AT+FTPDELE</b>	Response If succeeded: <b>OK</b>  <b>+FTPDELE: 1,0</b>  If failed: <b>OK</b>  <b>+FTPDELE: 1,&lt;error&gt;</b>  If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;error&gt;</b> 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.

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

AT+FTPSIZE Get the Size of Specified File in FTP Server	
Test Command <b>AT+FTPSIZE=?</b>	Response <b>OK</b>
	Parameters See Execution Command
Execution Command	Response

<b>AT+FTPSIZE</b>	If succeeded: <b>OK</b>
	<b>+FTPSIZE: 1,0,&lt;size&gt;</b>
	If failed: <b>OK</b>
	<b>+FTPSIZE: 1,&lt;error&gt;,0</b>
	If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;error&gt;</b> See "AT+FTPGET" <b>&lt;size&gt;</b> 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.

### 10.2.18 AT+FTPSTATE Get the FTP State

<b>AT+FTPSTATE Get the FTP State</b>	
Test Command <b>AT+FTPSTATE=?</b>	Response <b>OK</b>
	Parameters See Execution Command
Execution Command <b>AT+FTPSTATE</b>	Response <b>+FTPSTATE: &lt;state&gt;</b>
	<b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;state&gt;</b> 0 Idle 1 In the FTP session, including FTPGET, FTPPUT, FTPDELE and FTPSIZE operation.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

## 10.2.19 AT+FTPEXTPUT Extend Upload File

### AT+FTPEXTPUT Extend Upload File

Test Command <b>AT+FTPEXTPUT=?</b>	Response <b>OK</b>
Write Command <b>AT+FTPEXTPUT=&lt;mode&gt;[,&lt;pos&gt;,&lt;len&gt;,&lt;timeout&gt;]</b>	<p>Response</p> <p>If mode is 0 or 1 <b>OK</b></p> <p>If mode is 2 <b>+FTPEXTPUT: &lt;address&gt;,&lt;len&gt;</b> ..... //Input data <b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b>    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.</p> <p><b>&lt;pos&gt;</b>     data offset address 0-300k</p> <p><b>&lt;len&gt;</b>     data length 0-300k</p> <p><b>&lt;timeout&gt;</b> timeout value of serial port. 1000ms-1000000ms</p> <p><b>&lt;file name&gt;</b> File name length should less or equal 50 characters.</p> <p><b>&lt;err&gt;</b>     See "AT+FTPGET"</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>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,&lt;error&gt;", &lt;error&gt; see "AT+FTPGET".</li> </ul>

## 10.2.20 AT+FTPMKD Make Directory on the Remote Machine

### AT+FTPMKD Make Directory on the Remote Machine

Test Command	Response
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<b>AT+FTPMKD=?</b>	<b>OK</b>
Execution Command <b>AT+FTPMKD</b>	Response If success: <b>OK</b>  <b>+FTPMKD: 1,0</b>
	If failed: <b>OK</b>  <b>+FTPMKD: 1,&lt;error&gt;</b>
	If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;error&gt;</b> 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.

### 10.2.21 AT+FTPRMD Remove Directory on the Remote Machine

<b>AT+FTPRMD Remove Directory on the Remote Machine</b>	
Test Command <b>AT+FTPRMD=?</b>	Response <b>OK</b>
Execution Command <b>AT+FTPRMD</b>	Response If success: <b>OK</b>  <b>+FTPRMD: 1,0</b>
	If failed: <b>OK</b>  <b>+FTPRMD: 1,&lt;error&gt;</b>
	If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;error&gt;</b> 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.

## 10.2.22 AT+FTPLIST List Contents of Directory on the Remote Machine

AT+FTPLIST List Contents of Directory on the Remote Machine	
Test Command <b>AT+FTPLIST=?</b>	Response <b>OK</b>
Write Command <b>AT+FTPLIST=&lt;mode&gt;[,&lt;reqlength&gt;]</b>	<p>Response</p> <p>If mode is 1 and it is a successful FTP get session: <b>OK</b></p> <p><b>+FTPLIST: 1,1</b></p> <p>If data transfer is finished: <b>+FTPLIST: 1,0</b></p> <p>If mode is 1 and it is a failed FTP get session: <b>OK</b></p> <p><b>+FTPLIST: 1,&lt;error&gt;</b></p> <p>If mode is 2: <b>+FTPLIST: 2,&lt;cnflength&gt;</b> <b>012345678...</b> <b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b></p> <ol style="list-style-type: none"> <li>1 For opening FTP get file list session</li> <li>2 For reading FTP file list</li> </ol> <p><b>&lt;reqlength&gt;</b> Requested number of data bytes (1-1460) to be read</p> <p><b>&lt;cnflength&gt;</b> Confirmed number of data bytes to be read, which may be less than &lt;reqlength&gt;. 0 indicates that no data can be read.</p> <p><b>&lt;error&gt;</b> See "AT+FTPGET"</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note <ul style="list-style-type: none"> <li>● When "+FTPLIST: 1,1" is shown, "AT+FTPLIST=2,&lt;reqlength&gt;" can</li> </ul>

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.

### 10.2.23 AT+FTPEXTGET Extend Download File

AT+FTPEXTGET Extend Download File	
Test Command <b>AT+FTPEXTGET=?</b>	Response <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+FTPEXTGET?</b>	Response <b>+FTPEXTGET: &lt;mode&gt;,&lt;length&gt;</b> <b>OK</b>
	Parameters See Write Command
Write Command 1) if mode is 0 or 1 <b>AT+FTPEXTGET=&lt;mode&gt;</b> 3)if mode is 3 <b>AT+FTPEXTGET=&lt;mode&gt;,&lt;pos&gt;,&lt;len&gt;</b>	Response If mode is 0: <b>OK</b>  If mode is 1 and successfully download data: <b>OK</b>  <b>+FTPEXTGET: 1,0</b>  If mode is 1 and failed to download data: <b>OK</b>  <b>+FTPEXTGET: 1,&lt;error&gt;</b>  If mode is 3 and successfully download data: <b>+FTPEXTGET: 3,&lt;length&gt;</b> <b>0123456...</b> <b>OK</b> If <file name> is already exist in flash: <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> 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.

	<p><b>&lt;file name&gt;</b> File name length should less than or equal to 50 characters.</p> <p><b>&lt;pos&gt;</b> data offset should less than &lt;length&gt;.</p> <p><b>&lt;len&gt;</b> data length 0-300k.</p> <p><b>&lt;length&gt;</b> The length of the downloaded data from the remote machine.</p> <p><b>&lt;error&gt;</b> See "AT+FTPGET"</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>The data it can get is 300k at most.</li> </ul>

## 10.2.24 AT+FTPETPUT Upload File

AT+FTPETPUT Upload File	
<p>Test Command</p> <p><b>AT+FTPETPUT=?</b></p>	<p>Response</p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+FTPETPUT=&lt;mode&gt;</b></p> <p><b>&gt;</b></p>	<p>Response</p> <p>If mode is 1 and successfully open PUT session:</p> <p><b>OK</b></p> <p><b>+FTPETPUT: 1,1</b></p> <p>If mode is 1 and failed to open PUT session:</p> <p><b>OK</b></p> <p><b>+FTPETPUT: 1,&lt;error&gt;</b></p> <p>If mode is 2:</p> <p><b>+FTPETPUT: 2,1</b></p> <p>... //Input data</p> <p><b>&lt;ETX&gt;</b> //To notify the module that all data has been sent, switch from data mode to command mode</p> <p><b>OK</b></p> <p>If data transfer finished:</p> <p><b>+FTPETPUT: 1,0</b></p> <p>If data transfer failed:</p> <p><b>+FTPETPUT: 1,&lt;error&gt;</b></p> <p>Parameters</p>

	<p><b>&lt;mode&gt;</b>    1 For opening FTPETPUT session.                  2 For writing FTP upload data.</p> <p><b>&lt;error&gt;</b>    See "AT+FTPEXTGET"</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● The TCP/IP stack will only interpret an &lt;ETX&gt; character as the end of the file to be transferred if it's not preceded by a &lt;DLE&gt; character. As a consequence the attached host must send &lt;ETX&gt; characters preceded by &lt;DLE&gt; characters and it must also code &lt;DLE&gt; characters in &lt;DLE&gt;&lt;DLE&gt;.</li> </ul>

### 10.2.25 AT+FTPGET Download File

AT+FTPGET Download File	
Test Command <b>AT+FTPGET=?</b>	<p>Response</p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
Write Command <b>AT+FTPGET=&lt;mode&gt; &gt;</b>	<p>Response</p> <p>If mode is 1 and successfully open GET session: <b>OK</b></p> <p><b>+FTPGET: 1,1</b></p> <p>If data transfer finished: <b>0123456789...</b></p> <p><b>&lt;ETX&gt;</b>    //To notify the user that all data transfer has been finished, switch from data mode to command mode.</p> <p><b>+FTPGET: 1,0</b></p> <p>If mode is 1 and failed to download data: <b>OK</b></p> <p><b>+FTPGET: 1,&lt;error&gt;</b></p> <p>Parameters</p> <p><b>&lt;mode&gt;</b>    1 Open FTPGET session and download data. <b>&lt;error&gt;</b>    See "AT+FTPEXTGET"</p>
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.

## 10.2.26 AT+FTPQUIT Quit Current FTP Session

### AT+FTPQUIT Quit Current FTP Session

Test Command <b>AT+FTPQUIT=?</b>	Response <b>OK</b>
Execution Command <b>AT+FTPQUIT</b>	Response  If the current operation is GET method: <b>OK</b>  <b>+FTPGET: 1,80</b>  If the current operation is PUT method: <b>OK</b>  <b>+FTPPUT: 1,80</b>  If FTP is in idle state: <b>ERROR</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

## 10.2.27 AT+FTPRENAME Rename the Specified File on the Remote Machine

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

Test Command <b>AT+FTPRENAME=?</b>	Response <b>OK</b>
Execution Command <b>AT+FTPRENAME</b>	Parameters See Execution Command
	Response If success: <b>OK</b>

	<p><b>+FTPFILENAME: 1,0</b></p> <p>If failed: <b>OK</b></p> <p><b>+FTPFILENAME: 1,&lt;error&gt;</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameter <b>&lt;error&gt;</b> See "AT+FTPGET"</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● The file is specified by the "AT+FTPGETNAME" and "AT+FTPGETPATH" commands.</li> <li>● The new file name is set by "AT+FTPPUTNAME" and "AT+FTPPUTPATH" command.</li> </ul>

### 10.2.28 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 <b>AT+FTPMDTM=?</b>	<p>Response <b>OK</b></p> <p>Parameters See Execution Command</p>
Execution Command <b>AT+FTPMDTM</b>	<p>Response If success: <b>OK</b></p> <p><b>+FTPMDTM: 1,0,&lt;timestamp&gt;</b></p> <p>If failed: <b>OK</b></p> <p><b>+FTPMDTM: 1,&lt;error&gt;</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameter <b>&lt;error&gt;</b> See "AT+FTPGET"</p>

	<b>&lt;timestamp&gt;</b> 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.

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# 11 AT Command for NTP function

## 11.1 Overview

Command	Description
<b>AT+CNTPCID</b>	Set GPRS bearer profile's ID
<b>AT+CNTP</b>	Synchronize network time

## 11.2 Detailed Descriptions of Commands

### 11.2.1 AT+CNTPCID Set GPRS Bearer Profile's ID

AT+CNTPCID Set GPRS Bearer Profile's ID	
Test Command <b>AT+CNTPCID=?</b>	Response <b>+ CNTPCID:</b> (range of supported <cid>s)  <b>OK</b>
Read Command <b>AT+CNTPCID?</b>	Parameters See Write Command  Response <b>+ CNTPCID:</b> <cid>  <b>OK</b>
Write Command <b>AT+CNTPCID=&lt;cid&gt;</b>	Parameters See Write Command  Response <b>OK</b> If error is related to ME functionality: <b>ERROR</b>
Parameter Saving Mode	-
Max Response Time	-

Reference

Note

## 11.2.2 AT+CNTP Synchronize Network Time

### AT+CNTP Synchronize Network Time

<p>Test Command <b>AT+CNTP=?</b></p>	<p>Response <b>+CNTP:</b> (length of <b>&lt;ntp server&gt;</b>),(range of <b>&lt;time zone&gt;</b>),(range of <b>&lt;cid&gt;</b>),(range of <b>&lt;mode&gt;</b>)</p> <p><b>OK</b></p> <p>Parameter See Write Command</p>
<p>Read Command <b>AT+CNTP?</b></p>	<p>Response <b>+CNTP:</b> <b>&lt;ntp sever&gt;</b>,<b>&lt;time zone&gt;</b>,<b>&lt;cid&gt;</b>,<b>&lt;mode&gt;</b></p> <p><b>OK</b></p> <p>Parameter See Write Command</p>
<p>Write Command <b>AT+CNTP=&lt;ntp server&gt;[,&lt;time zone&gt;][,&lt;cid&gt;][,&lt;mode&gt;]</b></p>	<p>Response <b>OK</b></p> <p>Parameter <b>&lt;ntp server&gt;</b> NTP server's url <b>&lt;time zone&gt;</b> 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. <b>&lt;cid&gt;</b> Bearer profile identifier, refer to AT+SAPBR <b>&lt;mode&gt;</b> 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</p>
<p>Execution command <b>AT+CNTP</b></p>	<p>Response <b>OK</b></p> <p><b>+CNTP:</b> <b>&lt;code&gt;</b>[,<b>&lt;time&gt;</b>]</p> <p>Parameter <b>&lt;code&gt;</b> 1 Network time synchronization is successful 61 Network Error 62 DNS resolution error 63 Connection Error 64 Service response error</p>

	65 Service Response Timeout
	<time> Network time
Parameter Saving Mode	-
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● After successful synchronization time, you can use AT+CCLK to query local time.</li> </ul>

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# 12 AT Commands for OneNet Application

## 12.1 Overview

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

## 12.2 Detailed Descriptions of Commands

### 12.2.1 AT+MIPLCREATE Create OneNet configuration

AT+MIPLCREATE Create OneNet configuration											
Test Command <b>AT+MIPLCREATE=?</b>	Response <b>+MIPLCREATE: &lt;size&gt;,&lt;config&gt;,&lt;index&gt;,&lt;totalsize&gt;,&lt;flag&gt;</b>  <b>OK</b>										
Execution Command <b>AT+MIPLCREATE</b>	Parameters See Write Command										
Write Command <b>AT+MIPLCREATE=&lt;size&gt;,&lt;config&gt;,&lt;index&gt;,&lt;totalsize&gt;,&lt;flag&gt;</b>	Response <b>&lt;ref&gt;</b>  <b>OK</b>  Parameters <table border="0"> <tr> <td><b>&lt;size&gt;</b></td> <td>Current &lt;config&gt; size</td> </tr> <tr> <td><b>&lt;config&gt;</b></td> <td>Config in hex format</td> </tr> <tr> <td><b>&lt;index&gt;</b></td> <td>Current config index</td> </tr> <tr> <td><b>&lt;totalsize&gt;</b></td> <td>Total config size</td> </tr> <tr> <td><b>&lt;flag&gt;</b></td> <td>Indicate the input is over or not</td> </tr> </table>	<b>&lt;size&gt;</b>	Current <config> size	<b>&lt;config&gt;</b>	Config in hex format	<b>&lt;index&gt;</b>	Current config index	<b>&lt;totalsize&gt;</b>	Total config size	<b>&lt;flag&gt;</b>	Indicate the input is over or not
<b>&lt;size&gt;</b>	Current <config> size										
<b>&lt;config&gt;</b>	Config in hex format										
<b>&lt;index&gt;</b>	Current config index										
<b>&lt;totalsize&gt;</b>	Total config size										
<b>&lt;flag&gt;</b>	Indicate the input is over or not										
Parameter Saving Mode	NO_SAVE										
Max Response Time	-										
Reference	Note										

### 12.2.2 AT+MIPLDELETE Delete OneNet configuration

AT+MIPLDELETE Delete OneNet configuration	
Test Command <b>AT+MIPLDELETE=?</b>	Response <b>+MIPLDELETE: &lt;ref&gt;</b>  <b>OK</b>
Write Command <b>AT+MIPLDELETE=&lt;ref&gt;</b>	Parameters See Write Command
	Response <b>OK</b>



>	Parameters <ref> Config id
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.3 AT+MIPLOPEN Connect to OneNet

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

### 12.2.4 AT+MIPLADDOBJ Add object

AT+MIPLADDOBJ Add object	
Test Command <b>AT+MIPLADDOBJ=?</b>	Response <b>+MIPLADDOBJ:</b> <b>&lt;ref&gt;,&lt;objectid&gt;,&lt;instancecount&gt;,&lt;instanceBitmap&gt;,&lt;attributeCount&gt;</b> <b>,&lt;actionCount&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+MIPLADDOBJ=&lt;ref&gt;,&lt;objectid&gt;,&lt;instance</b>	Response <b>OK</b>
	Parameters

<b>count&gt;,&lt;instanceBitmap&gt;,&lt;attributeCount&gt;,&lt;actionCount&gt;</b>	<b>&lt;ref&gt;</b> Config id
	<b>&lt;objectid&gt;</b> Object id
	<b>&lt;instancecount&gt;</b> Count of instance
	<b>&lt;instanceBitmap&gt;</b> Bitmap of instance
	<b>&lt;attributeCount&gt;</b> Count of attribute resource
	<b>&lt;actionCount&gt;</b> Count of action resource
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.5 AT+MIPLDELOBJ Delete Object

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

### 12.2.6 AT+MIPLCLOSE Disconnect to OneNet

AT+MIPLCLOSE Disconnect to OneNet	
Test Command <b>AT+MIPLCLOSE=?</b>	Response <b>+MIPLCLOSE: &lt;ref&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command	Response

<b>AT+MIPLCLOSE=&lt;ref&gt;</b>	<b>OK</b>
	Parameters <b>&lt;ref&gt;</b> Config id
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.7 AT+MIPLNOTIFY Notify Data to OneNet

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

## 12.2.8 AT+MIPLREADRSP Send Response on Read Command

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

## 12.2.9 AT+MIPLWRITERSP Send Response on Write Command

AT+MIPLWRITERSP Send Response on Write Command	
Test Command <b>AT+MIPLWRITERSP=?</b>	Response <b>+MIPLWRITERSP: &lt;ref&gt;,&lt;msgid&gt;,&lt;result&gt;</b>

	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+MIPLWRITERSP=&lt;ref&gt;,&lt;msgid&gt;,&lt;result&gt;</b></p>	<p>Response <b>OK</b></p> <p>Parameters  <b>&lt;ref&gt;</b> Config id  <b>&lt;msgid&gt;</b> Message id  <b>&lt;result&gt;</b> Result</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.10 AT+MIPLEXECUTERSP Send Response on Execute Command

#### AT+MIPLEXECUTERSP Send Response on Execute Command

<p>Test Command <b>AT+MIPLEXECUTERSP=?</b></p>	<p>Response <b>+MIPLEXECUTERSP: &lt;ref&gt;,&lt;msgid&gt;,&lt;result&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+MIPLEXECUTERSP=&lt;ref&gt;,&lt;msgid&gt;,&lt;result&gt;</b></p>	<p>Response <b>OK</b></p> <p>Parameters  <b>&lt;ref&gt;</b> Config id  <b>&lt;msgid&gt;</b> Message id  <b>&lt;result&gt;</b> Result</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.11 AT+MIPLOBSERVERSP Send Response On Observe Command

#### AT+MIPLOBSERVERSP Send Response on Observe Command

Test Command	Response
--------------	----------

AT+MIPLOBSERVERS P=?	+MIPLOBSERVERSP: <ref>,<msgid>,<result>
	OK
	Parameters See Write Command
Write Command AT+MIPLOBSERVERS P=<ref>,<msgid>,<result>	Response OK
	Parameters <ref> Config id <msgid> Message id <result> Result
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.12 AT+MIPLDISCOVERRSP Send Response on Discover Command

AT+MIPLDISCOVERRSP Send Response on Discover Command	
Test Command AT+MIPLDISCOVERRS P=?	Response +MIPLDISCOVERRSP: <ref>,<msgid>,<result>,<length>,<valuestring>
	OK
	Parameters See Write Command
Write Command AT+MIPLDISCOVERRS P=<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

### 12.2.13 AT+MIPLPARAMETERRSP Send Response on Parameter Command

### AT+MIPLPARAMETERRSP Send Response on Parameter Command

Test Command <b>AT+MIPLPARAMETER RSP=?</b>	Response <b>+MIPLPARAMETERRSP: &lt;ref&gt;,&lt;msgid&gt;,&lt;result&gt;</b>  <b>OK</b>
Write Command <b>AT+MIPLPARAMETER RSP=&lt;ref&gt;,&lt;msgid&gt;,&lt;r esult&gt;</b>	Parameters See Write Command  Response <b>OK</b> Parameters <b>&lt;ref&gt;</b> Config id <b>&lt;msgid&gt;</b> Message id <b>&lt;result&gt;</b> Result
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.14 AT+MIPLUPDATE Update Registration

#### AT+MIPLUPDATE Update Registration

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

### 12.2.15 AT+MIPLVER Version of OneNet SDK

### AT+MIPLVER Version of OneNet SDK

Read Command <b>AT+MIPLVER?</b>	Response <b>+MIPLVER: &lt;version&gt;</b>  <b>OK</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

### 12.2.16 AT+MIPLBOOTSTRAP Bootstrap Mode

#### AT+MIPLBOOTSTRAP Bootstrap Mode

Write Command <b>AT+MIPLBOOTSTRAP =&lt;mode&gt;</b>	Response <b>OK</b> Parameters <b>&lt;mode&gt;</b> Bootstrap mode 0 Disable 1 Enable
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 12.2.17 +MIPLREAD Read Request to User

#### +MIPLREAD Read Request to User

	Response <b>+MIPLREAD: &lt;ref&gt;,&lt;msgid&gt;,&lt;objectid&gt;,&lt;instanceid&gt;,&lt;resourceid&gt;</b> Parameters <b>&lt;ref&gt;</b> Integer, OneNET instance returned by AT+MIPLCREATE <b>&lt;msgid&gt;</b> Integer, message id <b>&lt;objectid&gt;</b> Integer, object id <b>&lt;instanceid&gt;</b> Integer, instance id, read all resources of all instances of the object if instanceid equals -1 <b>&lt;resourceid&gt;</b> Integer, resource id, read all resources of the instance if resourceid equals -1
--	--



## 12.2.18+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 omitted, 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

## 12.2.19+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

## 12.2.20+MIPOBSERVE Observe Request to User

### +MIPOBSERVE Observe Request to User

Response

**+ MIPOBSERVE:**

**<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

## 12.2.21+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

## 12.2.22+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

### 12.2.23+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

# 13 AT Commands for Telecom IOT Application

## 13.1 Overview

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

## 13.2 Detailed Descriptions of Commands

### 13.2.1 AT+SIMLCREATE Create Configuration

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

### 13.2.2 AT+SIMLMODE Connection Mode

AT+SIMLMODE Connection Mode	
Test Command <b>AT+SIMLMODE=?</b>	Response <b>+SIMLMODE: &lt;mode&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+SIMLMODE=&lt;mode&gt;</b>	Response <b>OK</b>
	Parameters <b>&lt;mode&gt;</b> Connection mode 1 Other 2 China Telecom IOT
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 13.2.3 AT+SIMLOPEN Connect to Telecom IOT

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

### 13.2.4 AT+SIMLSEND Send Data to Telecom IOT

AT+SIMLSEND Send Data to Telecom IOT	
Test Command <b>AT+SIMLSEND=?</b>	Response <b>+SIMLSEND: &lt;data&gt;,&lt;flag&gt;</b>  <b>OK</b>
Write Command <b>AT+SIMLSEND=&lt;data&gt;,&lt;flag&gt;</b>	Parameters See Write Command  Response <b>OK</b> Parameters <b>&lt;data&gt;</b> String in hex format <b>&lt;flag&gt;</b> 0 Input over 1 Input not over
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 13.2.5 AT+SIMLCLOSE Disconnect to Telecom IOT

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

# 14 AT Commands for GNSS Application

SIM7000 series modules provide GNSS AT command is as follows:

## 14.1 Overview

Command	Description
<b>AT+CGNSPWR</b>	GNSS Power Control
<b>AT+CGNSINF</b>	GNSS Navigation Information Parsed From NMEA Sentences
<b>AT+CGNSURC</b>	GNSS Navigation URC Report
<b>AT+CGNSPORT</b>	GNSS NMEA Out Port Set
<b>AT+CGNSCOLD</b>	GNSS Cold Start
<b>AT+CGNSWARM</b>	GNSS Warm Start
<b>AT+CGNSHOT</b>	GNSS Hot Start
<b>AT+CGNSMOD</b>	GNSS Work Mode Set
<b>AT+CGNSCFG</b>	GNSS NMEA Out Configure
<b>AT+CGNSTST</b>	GNSS NMEA Data Output to AT Port
<b>AT+CGNSXTRA</b>	GNSS XTRA Function Open
<b>AT+CGNSCPY</b>	GNSS XTRA File Copy
<b>AT+CGNSRTMS</b>	GNSS NMEA out frequency configure
<b>AT+CGNSHOR</b>	Configure Positioning Desired Accuracy
<b>AT+CGNSUTIPR</b>	Configure Baud Rate When NMEA Output From UART3
<b>AT+CGNSNMEA</b>	Configure NMEA output sentences
<b>AT+CGTP</b>	IZAT GNSS Configure
<b>AT+CGNSSUPLCFG</b>	GNSS SUPL Configure
<b>AT+CGNSSUPL</b>	GNSS SUPL Control

## 14.2 Detailed Descriptions of Commands

### 14.2.1 AT+CGNSPWR GNSS Power Control

AT+CGNSPWR GNSS Power Control	
Test Command <b>AT+CGNSPWR=?</b>	Response <b>+CGNSPWR:</b> (list of supported <mode>s )  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CGNSPWR?</b>	Response TA returns the current status of GNSS Power supply <b>+CGNSPWR:</b> <mode>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CGNSPWR=&lt;mode&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;mode&gt;</b> 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.

#### 14.2.2 AT+CGNSINF GNSS Navigation Information Parsed From NMEA Sentences

AT+CGNSINF GNSS Navigation Information Parsed From NMEA Sentences	
Test Command <b>AT+CGNSINF=?</b>	Response <b>OK</b>
	Parameters See Execution Command
Execution Command <b>AT+CGNSINF</b>	Response <b>+CGNSINF:</b> <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>



	<p><b>OK</b></p> <p>Parameters</p> <p><b>&lt;GNSS run status&gt;</b></p> <p>0 GNSS off</p> <p>1 GNSS on</p> <p><b>&lt;Fix status&gt;</b></p> <p>0 Not fixed position</p> <p>1 Fixed position</p> <p>See below table 15-1.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

Table 15- 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	yyyyMMddhhmm ss.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 <sup>[1]</sup>	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	GNSS Satellites in View	--	[0,99]	2
16	GPS Satellites Used	--	[0,99]	2
17	GLONASS Satellites used	--	[0,99]	2
18	Reserved3			0
19	C/N0 max	dBHz	[0,55]	2
20	HPA <sup>[2]</sup>	meters	[0,9999.9]	6
21	VPA <sup>[2]</sup>	meters	[0,9999.9]	6

Total: (94) chars

**Note:**

1. The range of <Fix Mode> depends on the GNSS chip used.
2. Reserved.

### 14.2.3 AT+CGNSURC GNSS Navigation URC Report

AT+CGNSURC GNSS Navigation URC Report	
Test Command <b>AT+CGNSURC=?</b>	Response <b>+CGNSURC: (0-255)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CGNSURC?</b>	Response TA returns the current URC setting <b>+CGNSURC: &lt;Navigation mode&gt;</b>  <b>OK</b>
	Parameters See Write Command
	Unsolicited Result Code <b>+UGNSINF: &lt;GNSS run status&gt;,&lt;Fix status&gt;,&lt;UTC date &amp; Time&gt;,&lt;Latitude&gt;,&lt;Longitude&gt;,&lt;MSL Altitude&gt;,&lt;Speed Over Ground&gt;,&lt;Course Over Ground&gt;,&lt;Fix Mode&gt;,&lt;Reserved1&gt;,&lt;HDOP&gt;,&lt;PDOP&gt;,&lt;VDOP&gt;,&lt;Reserved2&gt;,&lt;GNSS Satellites in View&gt;,&lt;GNSS Satellites Used&gt;,&lt;GLONASS Satellites Used&gt;,&lt;Reserved3&gt;,&lt;C/N0 max&gt;,&lt;HPA&gt;,&lt;VPA&gt;</b>
Write Command <b>AT+CGNSURC=&lt;Navigation mode&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;Navigation mode&gt;:</b> 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	<p>Note</p> <ul style="list-style-type: none"> <li>● Factory setting is "AT+CGNSURC=0".</li> <li>● URC "+UGNSINF:" parameters are the same as "+CGNSINF:" return.</li> </ul>
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#### 14.2.4 AT+CGNSPORT GNSS NMEA Out Port Set

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

#### 14.2.5 AT+CGNSCOLD GNSS Cold Start

AT+CGNSCOLD GNSS Cold Start	
Test Command <b>AT+CGNSCOLD=?</b>	<p>Response</p> <p><b>OK</b></p>
Execution Command <b>AT+CGNSCOLD</b>	<p>Response</p> <p>If AT+CGNSXTRA=0</p> <p><b>OK</b></p> <p>Else if AT+CGNSXTRA=1</p> <p><b>OK</b></p>

	<b>+CGNSXTRA: &lt;mod&gt;</b>
	Parameters
	<b>&lt;mod&gt;</b>
	<u>0</u> 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

#### 14.2.6 AT+CGNSWARM GNSS Warm Start

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

#### 14.2.7 AT+CGNSHOT GNSS Hot Start

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

## 14.2.8 AT+CGNSMOD GNSS Work Mode Set

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

## 14.2.9 AT+CGNSCFG GNSS NMEA Out Configure

AT+CGNSCFG GNSS NMEA Out Configure	
Test Command <b>AT+CGNSCFG=?</b>	Response <b>+CGNSCFG:</b> (list of supported <mode>) 

	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CGNSCFG?</b></p>	<p>Response TA returns the current status of configure <b>+CGNSCFG: &lt;mode&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CGNSCFG=&lt;mode&gt;</b></p>	<p>Response <b>OK</b> or <b>ERROR</b></p> <p>Parameters <b>&lt;mode&gt;</b>  <ul style="list-style-type: none"> <li>0 Turn off GNSS NMEA data output to USB's NMEA port when set AT+CGNSPWR=1/0 through UART</li> <li>1 Turn on GNSS NMEA data output to USB's NMEA port when set AT+CGNSPWR=1/0 through UART</li> <li>2 Turn on GNSS NMEA data output to UART3 port when set AT+CGNSPWR=1/0</li> </ul> </p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command only supported in UART port.

#### 14.2.10 AT+CGNSTST GNSS NMEA Data Output to AT Port

AT+CGNSTST GNSS NMEA Data Output to AT Port	
<p>Test Command <b>AT+CGNSTST=?</b></p>	<p>Response <b>+CGNSTST: (0-1), (1-255)</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CGNSTST?</b></p>	<p>Response TA returns the current status of configure <b>+CGNSTST: &lt;TST&gt;</b></p> <p><b>OK</b></p>

	Parameters See Write Command
Write Command <b>AT+CGNSTST=&lt;TST&gt;[,&lt;cont&gt;]</b>	Response <b>OK</b> or <b>ERROR</b> Parameters <b>&lt;TST&gt;</b> 0 Turn off GNSS NMEA data out put to AT port 1 Turn on GNSS NMEA data out put to AT port <b>&lt;cont&gt;</b> the number of NMEA data package 1-255
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### 14.2.11 AT+CGNSXTRA GNSS XTRA Function Open

AT+CGNSXTRA GNSS XTRA Function Open	
Test Command <b>AT+CGNSXTRA=?</b>	Response <b>+CGNSXTRA: (0-1)</b> <b>OK</b> Parameters See Write Command
Read Command <b>AT+CGNSXTRA?</b>	Response TA returns the current status of configure <b>+CGNSXTRA: &lt;enable&gt;</b> <b>OK</b> Parameters See Write Command
Write Command <b>AT+CGNSXTRA=&lt;enable&gt;</b>	Response <b>OK</b> or <b>ERROR</b> Parameters <b>&lt;enable&gt;</b> 0 Disable XTRA function 1 Enable XTRA function
Execution Command <b>AT+CGNSXTRA</b>	Response This command is used to query validate time of XTRA file. The XTRA file

	<p>exists if the download and copy are successful. If XTRA file is not exist <b>ERROR</b> Else if XTRA file is exist &lt;validDurationHours&gt;,&lt;Inject gpsOneXTR GPS time&gt;</p> <p><b>OK</b></p> <p>Parameters &lt;validDurationHours&gt; Validate time of XTRA file,Unit is Hour. Default value is 168. &lt;Inject gpsOneXTR GPS time&gt; Download time of XTRA file.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

#### 14.2.12 AT+CGNSCPY GNSS XTRA File Copy

AT+CGNSCPY GNSS XTRA File Copy	
Test Command <b>AT+CGNSCPY=?</b>	<p>Response <b>OK</b></p> <p>Parameters See Execution Command</p>
Execution Command <b>AT+CGNSCPY</b>	<p>Response <b>+CGNSCPY: &lt;ret&gt;</b></p> <p><b>OK</b></p> <p>Parameters &lt;ret&gt;</p> <ul style="list-style-type: none"> <li>1 File not exist</li> <li>0 Copy success</li> </ul>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### 14.2.13 AT+CGNSRTMS GNSS NMEA Out Frequency Configure

AT+CGNSRTMS GNSS NMEA Out Frequency Configure	
Test Command <b>AT+CGNSRTMS=?</b>	<p>Response <b>+CGNSRTMS: (list of supported &lt;frequency&gt;s)</b></p>



	<p><b>OK</b></p> <p>Parameters See Read Command</p>
<p>Read Command <b>AT+CGNSRTMS?</b></p>	<p>Response <b>+CGNSRTMS: &lt;frequency &gt;</b></p> <p><b>OK</b></p> <p>Parameters <b>&lt;frequency&gt;</b> GNSS NMEA Out Frequency, range is 50-1000. Defaultvalue is 1000.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

#### 14.2.14 AT+CGNSHOR Configure Positioning Desired Accuracy

AT+CGNSHOR Configure Positioning Desired Accuracy	
<p>Test Command <b>AT+CGNSHOR=?</b></p>	<p>Response <b>+CGNSHOR: (0-1800000)</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CGNSHOR?</b></p>	<p>Response TA returns the current status of configure <b>+CGNSHOR: &lt;acc&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CGNSHOR=&lt;acc&gt;</b></p>	<p>Response <b>OK</b> or <b>ERROR</b></p> <p>Parameters <b>&lt;acc&gt;</b> Configure the positioning desired accuracy threshold in meters. Range: 0-1800000 Default value is 50</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### 14.2.15 AT+CGNSUTIPR Configure Baud Rate When NMEA Output from UART3

AT+CGNSUTIPR Configure Baud Rate When NMEA Output from UART3	
Test Command <b>AT+CGNSUTIPR=?</b>	Response <b>+CGNSUTIPR: (9600,19200,38400,57600,115200)</b>  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CGNSUTIPR?</b>	Response TA returns the current status of configure <b>+CGNSUTIPR: &lt;ipr&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CGNSUTIPR=&lt;ipr&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;ipr&gt;</b> Baud rate when NMEA output from UART3. 9600 19200 38400 57600 <u>115200</u>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note When GPS is started, set AT+CGNSUTIPR=<ipr> first, then use AT+CGNSCFG=2 to configure UART3 output. After turning on GPS, you can use the set baud rate output in UART3.

### 14.2.16 AT+CGNSNMEA Configure NMEA Output Sentences

AT+CGNSNMEA Configure NMEA Output Sentences	
Test Command <b>AT+CGNSNMEA=?</b>	Response <b>+CGNSNMEA: (range of supported &lt;nmea&gt;s)</b>

	<p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Read Command <b>AT+CGNSNMEA?</b></p>	<p>Response <b>+CGNSNMEA: &lt;nmea&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
<p>Write Command <b>AT+CGNSNMEA=&lt;nmea&gt;</b></p>	<p>This command is used to configure NMEA output sentences which are generated by the GPS One engine when position data is available.</p> <p>Response <b>OK</b> or <b>ERROR</b></p> <p>Parameters <b>&lt;nmea&gt;</b> Range is 0-262143. Each bit enables an NMEA sentence output as follows:</p> <ul style="list-style-type: none"> <li>Bit 0 GPGGA (global positioning system fix data)</li> <li>Bit 1 GPRMC (recommended minimum specific GPS/TRANSIT data)</li> <li>Bit 2 GPGSV (GPS satellites in view)</li> <li>Bit 3 GPGSA (GPS DOP and active satellites)</li> <li>Bit 4 GPVTG (track made good and ground speed)</li> <li>Bit 5 PQXFI (Global Positioning System Extended Fix Data.)</li> <li>Bit 6 GLGSV (GLONASS satellites in view GLONASS fixes only)</li> <li>Bit 7 GNGSA (1. GPS/2. Glonass/3. GALILE DOP and Active Satellites.)</li> <li>Bit 8 GNGNS (fix data for GNSS receivers;output for GPS,GLONASS,GALILEO)</li> <li>Bit 9 Reserved</li> <li>Bit 10 GAGSV (GALILEO satellites in view)</li> <li>Bit 11 Reserved</li> <li>Bit 12 Reserved</li> <li>Bit 13 Reserved</li> <li>Bit 14 Reserved</li> <li>Bit 15 Reserved,</li> <li>Bit 16 BDGSA/PQGSA (BEIDOU/QZSS DOP and active satellites)</li> <li>Bit 17 BDGSV/PQGSV (BEIDOUQZSS satellites in view)</li> </ul> <p>Set the desired NMEA sentence bit(s). If multiple NMEA sentence formats are desired, "OR" the desired bits together.</p>
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	<p>Note:</p> <ul style="list-style-type: none"> <li>● Reserved default 0, set invalid.</li> </ul>

## 14.2.17 AT+CGTP IZAT GNSS Configure

AT+CGTP IZAT GNSS Configure	
Test Command <b>AT+CGTP=?</b>	Response <b>OK</b> Parameters See Write Command
Read Command <b>AT+CGTP?</b>	Response <b>+CGTP:</b> <b>&lt;feature_control&gt;,&lt;user_session_control&gt;,&lt;primary_svr_address&gt;,&lt;primary_svr_port&gt;,&lt;secondary_svr_address&gt;,&lt;secondary_svr_port&gt;</b> <b>OK</b> Parameters See Write Command
Write Command <b>AT+CGTP=&lt;feature_control&gt;,&lt;user_session_control&gt;,&lt;primary_svr_address&gt;,&lt;primary_svr_port&gt;,&lt;secondary_svr_address&gt;,&lt;secondary_svr_port&gt;,&lt;latitude&gt;</b>	Response If successfully: <b>OK</b> If failed: <b>ERROR</b> Parameters <b>&lt;feature_control&gt;</b> 0 GTP disabled 1 GTP enabled If you want to use IZAT function,this value must be 1 <b>&lt;user_session_control&gt;</b> 0 Connection to the XTS is never permitted 1 Connection to the XTS is always permitted If you want to use IZAT function,this value must be 1 <b>&lt;primary_svr_address&gt;</b> the IP address of the primary GTP Server. If you want to use IZAT function,this value must be gtp1.izatcloud.net <b>&lt;primary_svr_port&gt;</b> the port number of the primary If you want to use IZAT function,this value must be 443 <b>&lt;secondary_svr_address&gt;</b> the IP address of the secondary GTP Server. If you want to use IZAT function,this value must be gtp2.izatcloud.net <b>&lt;secondary_svr_port&gt;</b> the port number of the primary If you want to use IZAT function,this value must be 443 <b>&lt;latitude&gt;</b> Latitude (specified in WGS84 datum). Type: Floating point Units: Degrees Range: -90.0 to 90.0 Positive values indicate northern latitude

	<p>Negative values indicate southern latitude</p> <p><b>&lt;longitude&gt;</b> Longitude (specified in WGS84 datum).</p> <p>Type: Floating point</p> <p>Units: Degrees</p> <p>Range: -180.0 to 180.0</p> <p>Positive values indicate eastern longitude</p> <p>Negative values indicate western longitude</p> <p><b>&lt;date&gt;</b> Output format is yyyy-mm-dd</p> <p><b>&lt;time&gt;</b> UTC time output format is hh:mm:ss</p> <p><b>&lt;accuary&gt;</b> Horizontal position uncertainty (circular).</p> <p>Type: Floating point</p> <p>Units: Meters</p>
Execution Command	Response
<b>AT+CGTP</b>	<b>OK</b>
	<b>+GTPCELL: &lt;latitude&gt;,&lt;longitude&gt;,&lt;date&gt;,&lt;time&gt;,&lt;accuary&gt;</b>
	Parameters
	See Write Command
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> <li>● Before all IZAT related operations, we should ensure network is registered.</li> <li>● IZAT flow</li> </ul> <p>Step 1: Configure IZAT NV param by AT+CGTP=1.</p> <p>Step 2: Query IZAT NV param by AT+CGTP?</p> <p>Step 3: Start IZAT location by AT+CGTP</p> <ul style="list-style-type: none"> <li>● AT command example</li> </ul> <pre>//Query IZAT NV set AT+CGTP? +CGTP: 1,1,gtp1.izatcloud.net,443,gtp2.izatcloud.net,443</pre> <p>OK</p> <p>//If query result is not this , need set it</p> <pre>AT+CGTP=1 OK // Start IZAT location AT+CGTP OK</pre> <p>+GTPCELL:</p> <pre>32.943878,-117.214508,2019-08-23,17:28:03,1330.200928</pre>

## 14.2.18 AT+CGNSSUPLCFG GNSS SUPL Configure

AT+CGNSSUPLCFG GNSS SUPL Configure	
Test Command <b>AT+CGNSSUPLCFG=?</b>	<p>Response <b>+CGNSSUPLCFG: "APN","SUPLURL",(0-31),(1-4),(0-1)</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
Read Command <b>AT+CGNSSUPLCFG?</b>	<p>Response <b>+CGNSSUPLCFG: &lt;APN&gt;,&lt;URL&gt;,&lt;SRV&gt;,&lt;PDN&gt;,&lt;SECURITY&gt;</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
Write Command <b>AT+CGNSSUPLCFG=&lt;APN&gt;,&lt;SUPLURL&gt;,&lt;SRV&gt;,&lt;PDN&gt;,&lt;SECURITY&gt;</b>	<p>Response <b>OK</b> or <b>ERROR</b></p> <p>Parameters  <b>&lt;APN&gt;</b> APN name  <b>&lt;SUPLURL&gt;</b> Server address url  <b>&lt;SRV&gt;</b> Serving systems type            Bit 0 CDMA            Bit 1 HDR            Bit 2 GSM            Bit 3 WCDMA            Bit 4 LTE  <b>&lt;PDN&gt;</b>            1 IPV4            2 IPV6            3 IPV4V6            4 PPP  <b>&lt;SECURITY&gt;</b>            0 Disables security            1 Enables security</p>
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note

## 14.2.19 AT+CGNSSUPL GNSS SUPL Control

AT+CGNSSUPL GNSS SUPL Control	
Test Command <b>AT+CGNSSUPL=?</b>	Response <b>+CGNSSUPL:</b> (list of supported <mode>s)  <b>OK</b>
	Parameters See Write Command
Read Command <b>AT+CGNSSUPL?</b>	Response <b>+CGNSSUPL:</b> <mode>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CGNSSUPL=&lt;mode&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <mode> 0 Turn off GNSS SUPL 1 Turn on GNSS SUPL
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

# 15 AT Commands for File System

## 15.1 Overview

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

## 15.2 Detailed Descriptions of Commands

### 15.2.1 AT+CFSINIT Get Flash Data Buffer

AT+CFSINIT Get Flash Data Buffer	
Execution Command <b>AT+CFSINIT</b>	Response <b>OK</b> or <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	Parameters -



Max Response Time	-
Reference	Note

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

AT+CFSWFILE Write File to the Flash Buffer Allocated by CFSINIT	
Test Command <b>AT+CFSWFILE=?</b>	<p>Response</p> <p><b>+CFSWFILE: (0-3),"fileName",(0-1),(1-10240),(100-10000)</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Write Command <b>AT+CFSWFILE=&lt;index&gt;,&lt;file name&gt;,&lt;mode&gt;,&lt;file size&gt;,&lt;input time&gt;</b>	<p>Response</p> <p><b>OK</b></p> <p>or</p> <p><b>ERROR</b></p> <p>or</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;index&gt;</b></p> <p>Directory of AP filesystem:</p> <ul style="list-style-type: none"> <li>0 "/custapp/"</li> <li>1 "/fota/"</li> <li>2 "/datatx/"</li> <li>3 "/customer/"</li> </ul> <p><b>&lt;file name&gt;</b></p> <p>File name length should less or equal 50 characters</p> <p><b>&lt;mode&gt;</b></p> <ul style="list-style-type: none"> <li>0 If the file already existed, write the data at the beginning of the file.</li> <li>1 If the file already existed, add the data at the end of the file.</li> </ul> <p><b>&lt;file size&gt;</b></p> <p>File size should be less than 10240 bytes.</p> <p><b>&lt;input time&gt;</b> Millisecond, should send file during this period or you can't send file when timeout. The value should be less than 10000 ms.</p>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

### 15.2.3 AT+CFSRFILE Read File from Flash

AT+CFSRFILE Read File from Flash	
Test Command <b>AT+CFSRFILE=?</b>	Response <b>+CFSRFILE: (0-3),"fileName",(0-1),(1-10240),(0-filesize)</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CFSRFILE=&lt;index&gt;,&lt;file name&gt;,&lt;mode&gt;,&lt;file size&gt;,&lt;position&gt;</b>	Response <b>OK</b> or <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;index&gt;</b> Directory of AP filesystem: 0 "/custapp/" 1 "/fota/" 2 "/datatx/" 3 "/customer/"  <b>&lt;file name&gt;</b> File name length should be less than or equal to 50 characters,  <b>&lt;mode&gt;</b> 0 Read data at the beginning of the file . 1 Read data at the <position> of the file .  <b>&lt;file size&gt;</b> The size of the file that you want to read should be less than 10240.  <b>&lt;position&gt;</b> 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

### 15.2.4 AT+CFSDFILE Delete the File from the Flash

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

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

### 15.2.5 AT+CFSGFIS Get File Size

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

	<p><b>OK</b></p> <p>Parameters</p> <p><b>&lt;file name&gt;</b> File name length should be less than or equal to 50 characters.</p> <p><b>&lt;n&gt;</b> File size</p> <p><b>&lt;index&gt;</b> Directory of AP filesystem:</p> <ul style="list-style-type: none"> <li>0 "/custapp/"</li> <li>1 "/fota/"</li> <li>2 "/datatx/"</li> <li>3 "/customer/"</li> </ul>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

### 15.2.6 AT+CFSREN Rename a File

AT+CFSREN Rename a File	
<p>Test Command</p> <p><b>AT+CFSREN=?</b></p>	<p>Response</p> <p><b>+CFSREN: (0-3),"old_name","new_name"</b></p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CFSREN=&lt;index&gt;,&lt;old file name&gt;,&lt;new file name&gt;</b></p>	<p>Response</p> <p><b>OK</b> or <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;index&gt;</b> Directory of AP filesystem:</p> <ul style="list-style-type: none"> <li>0 "/custapp/"</li> <li>1 "/fota/"</li> <li>2 "/datatx/"</li> <li>3 "/customer/"</li> </ul> <p><b>&lt;old file name&gt;</b> File name length should be less than or equal to 50 characters.</p> <p><b>&lt;new file name&gt;</b> File name length should be less than or equal to 50 characters.</p>

Parameter Saving Mode	-
Max Response Time	-
Reference	Note

### 15.2.7 AT+CFSGFRS Get the Size of File System

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

### 15.2.8 AT+CFSTERM Free the Flash Buffer Allocated by CFSINIT

AT+CFSTERM Free the Flash Buffer Allocated by CFSINIT	
Execution Command <b>AT+CFSTERM</b>	Response <b>OK</b> or <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
	Parameters

## 15.2.9 AT+CBAINIT Initialize the AP Backup File System

### AT+CBAINIT Initialize the AP Backup File System

Execution Command <b>AT+CBAINIT</b>	Response <b>OK</b> or <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	3 seconds
Reference	Note

## 15.2.10 AT+CBALIST Set the files Which Want to Backup

### AT+CBALIST Set the Files Which Want to Backup

Read Command <b>AT+CBALIST?</b>	Response <b>+CBALIST: &lt;index&gt;,&lt;filename&gt;</b>  <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+CBALIST=&lt;index&gt;,&lt;filename&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
	Parameters <b>&lt;index&gt;</b> 0-9 The file index. 10 Disable log 11 Enable log <b>&lt;file name&gt;</b> File name length should less than or equal to 80 characters.
Parameter Saving Mode	NO_SAVE
Max Response Time	
Reference	Note

### 15.2.11 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 <b>AT+CBAPPS</b>	Response <b>OK</b> or <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	-
Max Response Time	3 seconds
Reference	Note

### 15.2.12 AT+CBART Restore the File into AP File System

#### AT+CBART Restore the File into AP File System

Execution Command <b>AT+CBART</b>	Response <b>OK</b> or <b>ERROR</b> or <b>+CME ERROR: &lt;err&gt;</b> Parameters
Parameter Saving Mode	-
Max Response Time	3 seconds
Reference	Note The files should have been backup into ap file system.

# 16 AT Commands for SIM Application Toolkit

## 16.1 Overview

Command	Description
<b>AT+STIN</b>	SAT indication
<b>AT+STGI</b>	Get SAT information
<b>AT+STGR</b>	SAT respond
<b>AT+STK</b>	STK switch

## 16.2 Detailed Descriptions of Commands

### 16.2.1 AT+STIN SAT Indication

AT+STIN SAT Indication	
Test Command <b>AT+STIN=?</b>	Response <b>OK</b>
	Parameters See Read Command
Read Command <b>AT+STIN?</b>	Response <b>+STIN: &lt;cmd_id&gt;</b>  <b>OK</b> If the current proactive command has been changed: <b>+ STIN: &lt;cmd_id&gt;</b>
	Parameters <b>&lt;cmd_id&gt;</b> 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.

## 16.2.2 AT+STGI Get SAT Information

AT+STGI Get SAT Information	
Test Command <b>AT+STGI=?</b>	<p>Response</p> <p><b>OK</b></p> <p>Parameters</p> <p>See Write Command</p>
Write Command <b>AT+STGI=&lt;cmd_id&gt;</b>	<p>Response</p> <p>If &lt;cmd_id&gt;=21: <b>+STGI:21,&lt;prio&gt;,&lt;clear_mode&gt;,&lt;text_len&gt;,&lt;text&gt;</b></p> <p><b>OK</b></p> <p>If &lt;cmd_id&gt;=22: <b>+STGI:22,&lt;rsp_format&gt;,&lt;help&gt;,&lt;text_len&gt;,&lt;text&gt;</b></p> <p><b>OK</b></p> <p>If &lt;cmd_id&gt;=23: <b>+STGI:23,&lt;rsp_format&gt;,&lt;max_len&gt;,&lt;min_len&gt;,&lt;help&gt;,&lt;show&gt;&lt;text_len&gt;,&lt;text&gt;</b></p> <p><b>OK</b></p> <p>If &lt;cmd_id&gt;=24: <b>+STGI:24,&lt;help&gt;,&lt;softkey&gt;,&lt;present&gt;,&lt;title_len&gt;,&lt;title&gt;&lt;item_num&gt;</b> <b>+STGI:24,&lt;item_id&gt;,&lt;item_len&gt;,&lt;item_data&gt;</b> [...]</p> <p><b>OK</b></p> <p>If &lt;cmd_id&gt;=25: <b>+STGI:25,&lt;help&gt;,&lt;softkey&gt;,&lt;title_len&gt;,&lt;title&gt;&lt;item_num&gt;</b> <b>+STGI:25,&lt;item_id&gt;,&lt;item_len&gt;,&lt;item_data&gt;</b> [...]</p>

**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.

### 16.2.3 AT+STGR SAT Respond

AT+STGR SAT respond	
Test Command <b>AT+STGR=?</b>	Response <b>OK</b>
	Parameters See Write Command
Write Command <b>AT+STGR=&lt;cmd_id&gt;[,&lt;data&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;cmd_id&gt;</b> 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 <b>&lt;data&gt;</b> 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: <b>&lt;data&gt;</b> Ignore Note: It could return main menu during proactive command id is not 22 or 23. If <cmd_id>=84: <b>&lt;data&gt;</b> Ignore
Parameter Saving Mode	-
Max Response Time	-

Reference

Note

## 16.2.4 AT+STK STK Switch

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

# 17 AT Commands for SSL Application

## 17.1 Overview of AT Commands for SSL Application

Command	Description
<b>AT+CSSLCFG</b>	Configure SSL parameters of context identifier

## 17.2 Detailed Descriptions of AT Commands for SSL Application

### 17.2.1 AT+CSSLCFG Configure SSL Parameters of Context Identifier

<b>AT+CSSLCFG Configure SSL Parameters of Context Identifier</b>	
Response	<p>+CSSLCFG: "sslversion",(0-5),(0-5)</p> <p>+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)</p> <p>+CSSLCFG: "ignorertctime",(0-5),(0-1)</p> <p>+CSSLCFG: "protocol",(0-5),(1-2)</p> <p>+CSSLCFG: "sni",(0-5),&lt;servername&gt;</p> <p>+CSSLCFG: "ctxindex",(0-5)</p> <p>+CSSLCFG: "convert",(1-3),(&lt;cname&gt;,[&lt;keyname&gt;],[&lt;passkey&gt;]])</p>
Test Command <b>AT+CSSLCFG=?</b>	<p>OK</p> <p>Parameters See Write Command</p>
Read Command <b>AT+CSSLCFG?</b>	<p>Response OK</p> <p>Parameters</p>

<p>Write Command <b>AT+CSSLCFG="sslversion",&lt;ctxindex&gt;,&lt;sslversion&gt;</b></p>	<p>See Write Command</p> <p>Response <b>OK</b></p> <p>If failed: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters <b>&lt;ctxindex&gt; (0-5)</b> <b>&lt;sslversion&gt;</b></p> <ul style="list-style-type: none"> <li>0 QAPI_NET_SSL_PROTOCOL_UNKNOWN</li> <li>1 QAPI_NET_SSL_PROTOCOL_TLS_1_0</li> <li>2 QAPI_NET_SSL_PROTOCOL_TLS_1_1</li> <li>3 QAPI_NET_SSL_PROTOCOL_TLS_1_2</li> <li>4 QAPI_NET_SSL_PROTOCOL_DTLS_1_0</li> <li>5 QAPI_NET_SSL_PROTOCOL_DTLS_1_2</li> </ul>
<p><b>AT+CSSLCFG="ciphersuite",&lt;ctxindex&gt;,&lt;cipher_index&gt;,&lt;ciphersuite&gt;</b></p>	<p>Response <b>OK</b></p> <p>If failed: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters <b>&lt;ctxindex&gt; (0-5)</b> <b>&lt;cipher_index&gt; (0-7)</b> <b>&lt;ciphersuite&gt;</b></p> <ul style="list-style-type: none"> <li>0x008A QAPI_NET_TLS_PSK_WITH_RC4_128_SHA</li> <li>0x008B QAPI_NET_TLS_PSK_WITH_3DES_EDE_CBC_SHA</li> <li>0x008C QAPI_NET_TLS_PSK_WITH_AES_128_CBC_SHA</li> <li>0x008D QAPI_NET_TLS_PSK_WITH_AES_256_CBC_SHA</li> <li>0x00A8 QAPI_NET_TLS_PSK_WITH_AES_128_GCM_SHA256</li> <li>0x00A9 QAPI_NET_TLS_PSK_WITH_AES_256_GCM_SHA384</li> <li>0x00AE QAPI_NET_TLS_PSK_WITH_AES_128_CBC_SHA256</li> <li>0x00AF QAPI_NET_TLS_PSK_WITH_AES_256_CBC_SHA384</li> <li>0x002F QAPI_NET_TLS_RSA_WITH_AES_128_CBC_SHA</li> <li>0x0033 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CBC_SHA</li> <li>0x0035 QAPI_NET_TLS_RSA_WITH_AES_256_CBC_SHA</li> <li>0x0039 QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CBC_SHA</li> <li>0x003C QAPI_NET_TLS_RSA_WITH_AES_128_CBC_SHA256</li> <li>0x003D QAPI_NET_TLS_RSA_WITH_AES_256_CBC_SHA256</li> <li>0x0067 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CBC_SHA256</li> <li>0x006B QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CBC_SHA256</li> <li>0x009C QAPI_NET_TLS_RSA_WITH_AES_128_GCM_SHA256</li> <li>0x009D QAPI_NET_TLS_RSA_WITH_AES_256_GCM_SHA384</li> <li>0x009E QAPI_NET_TLS_DHE_RSA_WITH_AES_128_GCM_SHA256</li> <li>0x009F QAPI_NET_TLS_DHE_RSA_WITH_AES_256_GCM_SHA384</li> <li>0xC004 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_128_CBC_SHA</li> <li>0xC005 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_256_CBC_SHA</li> <li>0xC009 QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA</li> </ul>

```

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
    6
0xCC14
    QAPI_NET_TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256
0xCC15
    QAPI_NET_TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256

```

**AT+CSSLCFG="ignore  
rtctime",<ctxindex>,<i  
gnorertctime>**

Response  
**OK**  
If failed:

	<p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;ctxindex&gt; (0-5)</b></p> <p><b>&lt;ignorertc&gt;</b></p> <p>    0 Do not ignore the RTC time</p> <p>    1 Ignore the RTC time</p>
<p><b>AT+CSSLCFG="protocol",&lt;ctxindex&gt;,&lt;protocol&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;ctxindex&gt; (0-5)</b></p> <p><b>&lt;protocol&gt;</b></p> <p>    1 QAPI_NET_SSL_TLS_E</p> <p>    2 QAPI_NET_SSL_DTLS_E</p>
<p><b>AT+CSSLCFG="ctxindex",&lt;ctxindex&gt;</b></p>	<p>Response</p> <p><b>+CSSLCFG:</b></p> <p><b>&lt;ctxindex&gt;,&lt;sslversion&gt;,&lt;ciphersuite&gt;,&lt;ignorertc&gt;,&lt;protocol&gt;,&lt;snini&gt;</b></p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p>See other commands</p>
<p><b>AT+CSSLCFG="convert",&lt;ssltype&gt;,&lt;cname&gt;[,&lt;keyname&gt;[,&lt;passkey&gt;]]</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;ssltype&gt;</b></p> <p>    1 QAPI_NET_SSL_CERTIFICATE_E</p> <p>    2 QAPI_NET_SSL_CA_LIST_E</p> <p>    3 QAPI_NET_SSL_PSK_TABLE_E</p> <p><b>&lt;cname&gt;</b> String type (string should be included in quotation marks): name of cert file</p> <p><b>&lt;keyname&gt;</b> String type (string should be included in quotation marks):name of key file</p> <p><b>&lt;passkey&gt;</b> String type (string should be included in quotation marks):value of passkey</p>
<p><b>AT+CSSLCFG="sni",&lt;ctxindex&gt;,&lt;servername&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If failed:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p>



	<p><b>&lt;ctxindex&gt;</b> (0-5)</p> <p><b>&lt;servername&gt;</b> 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.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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# 18 AT Commands for TCP/UDP Application

## 18.1 Overview

Command	Description
<b>AT+CACID</b>	Set TCP/UDP identifier
<b>AT+CASSLCFG</b>	Set SSL certificate and timeout parameters
<b>AT+CAOPEN</b>	Open a TCP/UDP connection
<b>AT+CASERVER</b>	Open a TCP/UDP Server
<b>AT+CASEND</b>	Send data via an established connection
<b>AT+CARECV</b>	Receive data via an established connection
<b>AT+CAACK</b>	Query Send Data Information
<b>AT+CASTATE</b>	Query TCP/UDP Connection State
<b>AT+CACLOSE</b>	Close a TCP/UDP connection
<b>AT+CACFG</b>	Configure transparent transmission parameters
<b>AT+CASWITCH</b>	Switch to transparent transport mode

## 18.2 Detailed Descriptions of Commands

### 18.2.1 AT+CACID Set TCP/UDP Identifier

<b>AT+CACID Set TCP/UDP Identifier</b>	
Test Command <b>AT+CACID=?</b>	Response <b>+CACID:</b> (range of supported <cid>s)  <b>OK</b>
Read Command	Parameters See Write Command
Read Command	Response

AT+CACID?	[+CACID: <cid>]  OK Parameters See Write Command
Write Command AT+CACID=<cid>	Response OK If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b> Parameters <b>&lt;cid&gt;</b> 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 <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"cacert",&lt;cname&gt;</b> <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"clientcert",&lt;certname&gt;</b> <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"psktable",&lt;pskname&gt;</b> <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"timeout",(0-65535)</b> <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"ssl",(0,1)</b> <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"crindex",(0,5)</b> <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"localport",(0-65536)</b> <b>+CASSLCFG: (range of supported &lt;cid&gt;s),"protocol",(0,1)</b>  OK Parameters See Write Command
Read Command AT+CASSLCFG?	Response If <cid> has been set by AT+CACID: <b>+CASSLCFG: &lt;cid&gt;</b> <b>cacert:&lt;cname&gt;</b> <b>clientcert:&lt;certname&gt;</b> <b>psktable:&lt;pskname&gt;</b> <b>timeout:&lt;timeout&gt;</b> <b>ssl:&lt;ssl&gt;</b> <b>crindex:&lt;crindex&gt;</b> <b>localport:&lt;localport&gt;</b>

	<p><b>protocol:&lt;protocol&gt;</b></p> <p><b>OK</b></p> <p>If no &lt;cid&gt; has been set by AT+CACID:</p> <p><b>OK</b></p> <p>Parameter</p> <p>See Write Command</p>
<p>Write Command</p> <p><b>AT+CASSLCFG=&lt;cid&gt;, "cacert",&lt;cname&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;cid&gt;</b> TCP/UDP identifier, see AT+CACID</p> <p><b>&lt;cname&gt;</b> Alphanumeric ASCII text string up to 64 characters. Root certificate name that has been configured by AT+CSSLCFG.</p> <p><b>Note:</b> If the root certificate is empty, module will trust all certificates as default.</p>
<p><b>AT+CASSLCFG=&lt;cid&gt;, "clientcert",&lt;certname&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;cid&gt;</b> see AT+CACID</p> <p><b>&lt;certname&gt;</b> Alphanumeric ASCII text string up to 64 characters. Client certificate name that has been configured by AT+CSSLCFG.</p>
<p><b>AT+CASSLCFG=&lt;cid&gt;, "psktable",&lt;pskname&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;cid&gt;</b> see AT+CACID</p> <p><b>&lt;pskname&gt;</b> Alphanumeric ASCII text string up to 64 characters. PSK table name that has been configured by AT+CSSLCFG.</p> <p>File content format is &lt;identity&gt;:&lt;hex string&gt;.</p>
<p><b>AT+CASSLCFG=&lt;cid&gt;, "ssl",&lt;sslFlag&gt;</b></p>	<p>Response</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters</p> <p><b>&lt;cid&gt;</b> see AT+CACID</p> <p><b>&lt;sslFlag&gt;</b> Interger</p> <ul style="list-style-type: none"> <li>0 Not support SSL</li> <li>1 Support SSL</li> </ul>
<p><b>AT+CASSLCFG=&lt;cid&gt;, "crindex",&lt;crindex&gt;</b></p>	<p>Response</p> <p><b>OK</b></p>

	<p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters <b>&lt;cid&gt;</b> see AT+CACID <b>&lt;ctxindex&gt;</b> The identifier of SSL configurations, see AT+CSSLCFG.</p>
<b>AT+CASSLCFG=&lt;cid&gt;,"protocol",&lt;crindex&gt;</b>	<p>Response <b>OK</b></p> <p>If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters <b>&lt;cid&gt;</b> see AT+CACID <b>&lt;protocol&gt;</b> Interger 0 TCP 1 UDP</p>
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 <b>AT+CAOPEN=?</b>	<p>Response <b>+CAOPEN: (range of supported &lt;cid&gt;s),&lt;server&gt;,(1-65535)</b></p> <p><b>OK</b></p> <p>Parameters See Write Command</p>
Read Command <b>AT+CAOPEN?</b>	<p>Response If &lt;cid&gt; has been set by AT+CACID: <b>+CAOPEN: &lt;cid&gt;,&lt;conn_type&gt;,&lt;server&gt;,&lt;port&gt;</b></p> <p><b>OK</b> If no &lt;cid&gt; has been set by AT+CACID: <b>OK</b></p> <p>Parameter See Write Command</p>
Write Command <b>AT+CAOPEN=&lt;cid&gt;[,&lt;conn_type&gt;],&lt;server&gt;,&lt;port&gt;</b>	<p>Response If &lt;asyncOpen_enable&gt; not set or set 0. <b>+CAOPEN: &lt;cid&gt;,&lt;result&gt;</b></p> <p><b>OK</b></p>

	<p>Otherwise <b>OK</b></p> <p><b>+CAOPEN: &lt;cid&gt;,&lt;result&gt;</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b></p> <p>Parameters <b>&lt;cid&gt;</b> see AT+CACID <b>&lt;conn_type&gt;</b> String type. Transfer type. IPV4 or IPV6 address can be automatically identified on the client. "TCP" "UDP" <b>&lt;server&gt;</b> Alphanumeric ASCII text string up to 64 characters.Server IP address or host name. <b>&lt;port&gt;</b> Interger. Server port. <b>&lt;result&gt;</b></p> <ul style="list-style-type: none"> <li>0 Success</li> <li>1 Socket error</li> <li>2 No memory</li> <li>3 Connection limit</li> <li>4 Parameter invalid</li> <li>6 Invalid IP address</li> <li>7 Not support the function</li> <li>12 Can't bind the port</li> <li>13 Can't listen the port</li> <li>20 Can't resolv the host</li> <li>21 Network not active</li> <li>23 Remote refuse</li> <li>24 Certificate's time expired</li> <li>25 Certificate's common name does not match</li> <li>26 Certificate's common name does not match and time expired</li> <li>27 Connect failed</li> </ul>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note After open a connection successfully, if module receives data, it will report <b>+CADATAIND: &lt;cid&gt;</b>" to remind user to read data.</p>

### 18.2.4 AT+CASERVER Open a TCP/UDP Server

#### AT+CASERVER Open a TCP/UDP Server

Test Command	Response
<b>AT+CASERVER=?</b>	<b>+CASERVER:</b> (range of supported <cid>s),(list of supported

	<conn_type>s),(range of supported <port>s)
	<b>OK</b>
Read Command <b>AT+CASERVER?</b>	Response [+CASERVER: <cid>,<conn_type>,<port> ] <b>OK</b>
Write Command <b>AT+CASERVER&lt;cid&gt;,&lt;conn_type&gt;,&lt;port&gt;</b>	Response <b>+CASERVER: &lt;cid&gt;,&lt;result&gt;</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

### Defined Values

<cid>	TCP/UDP identifier
<conn_type>	Transfer type "TCP" "TCP6" "UDP" "UDP6"
<port>	Integer. Server port.
<result>	0 Success 1 Socket error 2 No memory 3 Connection limit 4 Parameter invalid 6 Invalid IP address 7 Not support the function 12 Can't bind the port 13 Can't listen the port 20 Can't resolv the host 21 Network not active 23 Remote refuse 24 Certificate's time expired 25 Certificate's common name does not match 26 Certificate's common name does not match and time expired 27 Connect failed error

**NOTE**

- After a client access, it will report that.  
**+CANEW: <server\_cid>,<client\_cid>,<client\_ip>,<client\_port>**

## 18.2.5 AT+CASEND Send Data via an Established Connection

### AT+CASEND Send Data via an Established Connection

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



## 18.2.6 AT+CARECV Receive Data via an Established Connection

### AT+CARECV Receive Data via an Established Connection

Test Command <b>AT+CARECV=?</b>	Response <b>+CARECV:</b> (range of supported <cid>s),(range of supported <readlen>)  <b>OK</b>
Write Command <b>AT+CARECV=&lt;cid&gt;,&lt;readlen&gt;</b>	Parameters See Write Command  Response <b>+CARECV:</b> <cid>,<recvlen> ..... //output data <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> <err>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
	Parameters <cid> see AT+CACID <readlen> Requested number of data bytes to be read <recvlen> Data bytes that has been actually received

## 18.2.7 AT+CAACK Query Send Data Information

### AT+CAACK Query Send Data Informations

Test Command <b>AT+CAACK=?</b>	Response <b>+CAACK:</b> (range of supported <cid>s)  <b>OK</b>
Write Command <b>AT+CAACK=&lt;cid&gt;</b>	Response <b>+CAACK:</b> <totalsize>,<unacksize>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR:</b> <err>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	-

### Defined Values

<cid>	TCP/UDP identifier
<totalsize>	Total size of sent data.
<unacksize>	The size of unack data

## 18.2.8 AT+CASTATE Query TCP/UDP Connection State

AT+CASTATE Query TCP/UDP Connection State	
Read Command <b>AT+CASTATE?</b>	Response [+CASTATE: <cid>,<state> ] OK
Unsolicited Result Code	If the remote connection is disconnected. +CASTATE: <cid>,<state>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	-

### Defined Values

<cid>	TCP/UDP identifier
<state>	0 Closed by remote server or internal error 1 Connected to remote server 2 Listening (server mode)

## 18.2.9 AT+CACLOSE Close a TCP/UDP Connection

AT+CACLOSE Close a TCP/UDP Connection	
Test Command <b>AT+CACLOSE=?</b>	Response +CACLOSE: (range of supported <cid>s)  OK
Write Command <b>AT+CACLOSE=&lt;cid&gt;</b>	Parameters See Write Command  Response OK If error is related to ME functionality: +CME ERROR: <err>

	Parameters <b>&lt;cid&gt;</b> see AT+CACID
Unsolicited Result Code	If <autoClose_s>=1, this report will be reported when the remote connection is disconnected. <b>+CACLOSE:</b> (range of supported <cid>s)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

## 18.2.10 AT+CACFG Configure Transparent Transmission Parameters

### AT+CACFG Configure Transparent Transmission Parameters

	Response <b>+CACFG: "TRANSWAITTM"</b> ,(range of supported <wait_timeout>s) <b>+CACFG: "TRANSPKTSIZE"</b> ,(range of supported <size>s) <b>+CACFG: "SACK"</b> ,(list of supported <sack_enable>s) <b>+CACFG: "MSS"</b> ,(range of supported <mss_value>s) <b>+CACFG: "ACKDELAY"</b> ,(range of supported <ackDelay_ms>s) <b>+CACFG: "TCPIRT"</b> ,(range of supported <tcpIRT_ms>s) <b>+CACFG: "MAXRXT"</b> ,(range of supported <tcpMaxRXT_cnt>s) <b>+CACFG: "TCPOT"</b> ,(range of supported <tcpOT_ms>s) <b>+CACFG: "KEEPLIVE"</b> ,(list of supported <keepalive_enable>s)[,(range of supported <keepalive_idle>s), (range of supported <keepalive_intval>s), (range of supported <keepalive_cnt>s)] <b>+CACFG: "TCP_NODELAY"</b> ,(list of supported <tcpNodelay_enable>s) <b>+CACFG: "LINGER"</b> ,(list of supported <linger_enable>s)[,(range of supported <linger_ms>s)] <b>+CACFG: "SNDBUF"</b> ,(range of supported <sndBuf_size>) <b>+CACFG: "RCVBUF"</b> ,(range of supported <rcvBuf_size>) <b>+CACFG: "ATOCLOSE"</b> ,(list of supported <autoClose_enable>s)[,(range of supported <autoClose_s>s)] <b>+CACFG: "ACCEPTNUM"</b> ,(range of supported <acceptMax_num>s) <b>+CACFG: "ASYNCOPEN"</b> ,(list of supported <asyncOpen_enable>s) <b>+CACFG: "TIMEOUT"</b> ,(range of supported <cid>s),(range of supported <timeout>s) <b>+CACFG: "LOCALPORT"</b> ,(range of supported <cid>s),(range of supported <localport>s) <b>+CACFG: "REMOTEADDR"</b> ,(range of supported <cid>s),(range of supported <ip address>s),(range of supported <port>s)
Test Command <b>AT+CACFG=?</b>	OK

<p>Read Command <b>AT+CACFG?</b></p>	<p>Response  <b>+CACFG:</b>  <b>+TRANSWAITTM:</b> &lt;wait_timeout&gt;  <b>+TRANSPKTSIZE:</b> &lt;size&gt;  [  <b>+CACFG:</b> "SACK",&lt;sack_enable&gt;  <b>+CACFG:</b> "MSS",&lt;mss_value&gt;  <b>+CACFG:</b> "ACKDELAY",&lt;ackDelay_ms&gt;  <b>+CACFG:</b> "TCPIRT",&lt;tcpIRT_ms&gt;  <b>+CACFG:</b> "MAXRXT",&lt;tcpMaxRXT_cnt&gt;s)  <b>+CACFG:</b> "TCPOT",&lt;tcpOT_ms&gt;  <b>+CACFG:</b>  "KEEPALIVE",&lt;keepalive_enable&gt;[&lt;keepalive_idle&gt;,&lt;keepalive_intval&gt;,&lt;keepalive_cnt&gt;]  <b>+CACFG:</b> "TCP_NODELAY",&lt;tcpNodelay_enable&gt;  <b>+CACFG:</b> "LINGER",&lt;linger_enable&gt;[,&lt;linger_ms&gt;]  <b>+CACFG:</b> "SNDBUF",&lt;sndBuf_size&gt;  <b>+CACFG:</b> "RCVBUF",&lt;rcvBuf_size&gt;  <b>+CACFG:</b> "ATOCLOSE",&lt;autoClose_enable&gt;[,&lt;autoClose_s&gt;]  <b>+CACFG:</b> "ACCEPTNUM",&lt;acceptMax_num&gt;  <b>+CACFG:</b> "ASYNCOPEN",&lt;asyncOpen_enable&gt;  <b>+TIMEOUT:</b> &lt;cidx&gt;,&lt;timeoutx&gt;...  <b>+LOCALPORT:</b> &lt;cidx&gt;,&lt;localportx&gt;...  [<b>+REMOTEADDR,</b>&lt;cidx&gt;,&lt;ipadressx&gt;,&lt;portx&gt;...  ]]   <b>OK</b></p>
<p>Write Command <b>AT+CACFG="TRANSW AITTM",&lt;wait_timeout &gt;</b></p>	<p>Response  <b>OK</b>  or  <b>ERROR</b></p>
<p>Write Command <b>AT+CACFG="TRANSP KTSIZE",&lt;size&gt;</b></p>	<p>Response  <b>OK</b>  or  <b>ERROR</b></p>
<p>Write Command <b>AT+CACFG="SACK",&lt; sack_enable&gt;</b></p>	<p>Response  <b>OK</b>  or  <b>ERROR</b></p>
<p>Write Command <b>AT+CACFG="MSS",&lt;m ss_value&gt;</b></p>	<p>Response  <b>OK</b>  or  <b>ERROR</b></p>
<p>Write Command <b>AT+CACFG="</b></p>	<p>Response  <b>OK</b></p>

<b>ACKDELAY",&lt;ackDelay_ms&gt;</b>	or <b>ERROR</b>
Write Command <b>AT+CACFG="TCPIRT",&lt;tcpIRT_ms&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="TCPOT",&lt;tcpOT_ms&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="KEEPALIVE",&lt;keepalive_enable&gt;[&lt;keepalive_idle&gt;,&lt;keepalive_intval&gt;,&lt;keepalive_cnt&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="TCP_NODELAY",&lt;tcpNodelay_enable&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="LINGER",&lt;linger_enable&gt;[,&lt;linger_ms&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="SNDBUF",&lt;sndBuf_size&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="RCVBUF",&lt;rcvBuf_size&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="ATOCLOSE",&lt;autoClose_enable&gt;[,&lt;autoClose_s&gt;]</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="ACCEPTNUM",&lt;acceptMax_num&gt;</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command <b>AT+CACFG="ASYNCPEN",(0-1)</b>	Response <b>OK</b> or <b>ERROR</b>
Write Command	Response

AT+CACFG="TIMEOUT",<cid>,<timeoutx>	OK or ERROR
Write Command AT+CACFG="LOCALPORT",<cid>,<localport>	Response OK or ERROR
Write Command AT+CACFG="REMOTEADDR",<cid>,<ipaddress>,<localport>	Response OK or ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

### 18.2.11 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

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# 19 AT Commands for PING

## 19.1 Overview

Command	Description
<b>AT+SNPING4</b>	Sends an IPv4 ping
<b>AT+SNPING6</b>	Sends an IPv6 ping

## 19.2 Detailed Descriptions of Commands

### 19.2.1 AT+SNPING4 Sends an IPv4 ping

<b>AT+SNPING4 Sends an IPv4 ping</b>	
Test command <b>AT+SNPING4=?</b>	Response <b>+SNPING4: "URL",(1-500),(1-1400),(0-60000)</b>
	<b>OK</b>
Write command <b>AT+SNPING4=&lt;URL&gt;,&lt;count&gt;,&lt;size&gt;,&lt;timeou t&gt;</b>	Response <b>+SNPING4: &lt;replyId&gt;,&lt;IP address&gt;,&lt;replyTime&gt;</b>
	<b>OK</b> or <b>ERROR</b>
	Parameters <b>&lt;URL&gt;</b> String type :Address of the remote host <b>&lt;count&gt;</b> The number of Ping Echo Requeset to send, range: 1~500 <b>&lt;size&gt;</b> Number of data bytes to send, range: 1~1400 <b>&lt;timeout&gt;</b> Ping request timeout value (in ms),range:0-60000 <b>&lt;replyId&gt;</b> Echo Reply number <b>&lt;IP Address&gt;</b> IP Address of the remote host <b>&lt;replyTime&gt;</b> 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 Request 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 Error Codes and 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 personalization PIN required
41	network personalization PUK required
42	network subset personalization PIN required
43	network subset personalization PUK required
44	service provider personalization PIN required
45	service provider personalization PUK required
46	corporate personalization PIN required
47	corporate personalization PUK required
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 enclosure 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 registered
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
<b>+CRING: &lt;type&gt;</b>	Indicates incoming call to the TE if extended format is enabled.	<b>AT+CRC=1</b>
<b>+CREG:</b> <b>&lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;,&lt;netact&gt;]</b>	There is a change in the MT network registration status or a change of the network cell.	<b>AT+CREG=&lt;n&gt;</b>
<b>+CMTI: &lt;mem3&gt;,&lt;index&gt;</b>	Indicates that new message has been received.	<b>AT+CNMI</b> <b>&lt;mt&gt;=1</b>
<b>+CMTI:</b> <b>&lt;mem3&gt;,&lt;index&gt;,"MMS</b> <b>PUSH"</b>	Indicates that new MMS message has been received.	<b>AT+CNMI</b> <b>&lt;mt&gt;=1</b>
<b>+CMT:</b> <b>&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b>	Indicates that new message has been received.	<b>AT+CNMI</b> <b>&lt;mt&gt;=2 (PDU mode)</b>



<b>+CMT:</b> <oa>,<scts>[,<tooa>,<fo>,<pid>,<dcsc>,<sca>,<tosca>,<length>]<CR><LF><data>	Indicates that new message has been received.	<b>AT+CNMI</b> <mt>=2 (text mode)
<b>+CBM:</b> <length><CR><LF><pdu>	Indicates that new cell broadcast message has been received.	<b>AT+CNMI</b> <bm>=2 (PDU mode enabled):
<b>+CBM:</b> <sn>,<mid>,<dcsc>,<page>,<pages><CR><LF><data>	Indicates that new cell broadcast message has been received.	<b>AT+CNMI</b> <bm>=2 (text mode enabled):
<b>+CDS:</b> <length><CR><LF><pdu>	Indicates that new SMS status report has been received.	<b>AT+CNMI</b> <ds>=1 (PDU mode enabled):
<b>+CDS:</b> <fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>	Indicates that new SMS status report has been received.	<b>AT+CNMI</b> <ds>=1 (text mode enabled):
<b>*PSNWID:</b> "<mcc>",<mnc>",<full network name>",<full network name CI>",<short network name>",<short network name CI>	Refresh network name by network.	
<b>*PSUTTZ:</b> <year>,<month>,<day>,<hour>,<min>,<sec>,<time zone>",<dst>	Refresh time and time zone by network.	<b>AT+CLTS=1</b>
<b>+CTZV:</b> "<time zone>"	Refresh network time zone by network.	
<b>DST:</b> <dst>	Refresh Network Daylight Saving Time by network.	
<b>+CPIN:</b> <code>	Indicates whether some password is required or not.	
<b>+CPIN: NOT READY</b>	SIM Card is not ready.	<b>AT+CPIN</b>
<b>+CPIN: NOT INSERTED</b>	SIM Card is not inserted.	
<b>+CUSD:</b> <n>[,<str_urc>[,<dcsc>]]	Indicates an USSD response from the network, or network initiated operation.	<b>AT+CUSD=1</b>
<b>NORMAL POWER DOWN</b>	SIM7000 is powered down by the PWRKEY pin or AT command "AT+CPOWD=1".	
<b>UNDER-VOLTAGE POWER DOWN</b>	Under-voltage automatic power down.	
<b>UNDER-VOLTAGE WARNING</b>	under-voltage warning	
<b>OVER-VOLTAGE POWER DOWN</b>	Over-voltage automatic power down.	
<b>OVER-VOLTAGE WARNING</b>	over-voltage warning	
<b>RDY</b>	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).	<b>AT+IPR=&lt;rate&gt;</b> <rate> is not 0
<b>+CFUN:</b> <fun>	Phone functionality indication (This URC	<b>AT+IPR=&lt;rate&gt;</b>

	does not appear when auto-bauding function is active).	<rate> is not 0
[<n>.]CONNECT OK	TCP/ UDP connection is successful	<b>AT+CIPSTART</b>
CONNECT	TCP/UDP connection in channel mode is successful	
[<n>.]CONNECT FAIL	TCP/UDP connection fails	<b>AT+CIPSTART</b>
[<n>.]ALREADY CONNECT	TCP/UDP connection exists	<b>AT+CIPSTART</b>
[<n>.]SEND OK	Data sending is successful	
[<n>.]CLOSED	TCP/UDP connection is closed	
RCV FROM: <IP ADDRESS>: <PORT>	shows remote IP address and port (only in single connection mode)	<b>AT+CIPSRIP=1</b>
+IPD,<data size>,<TCP/UDP>:<data>	display transfer protocol in IP header to received data or not (only in single connection mode)	<b>AT+CIPHEAD AT+CIPSHOWTP</b>
+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	<b>AT+CDNSGIP</b>
+CDNSGIP:0,<dns error code>	DNS failed	
+PDP: DEACT	GPRS is disconnected by network	
+APP PDP: ACTIVE	Active the network of app side	<b>AT+CNACT=1</b>
+APP PDP: DEACTIVE	Deactive the network of app side	<b>AT+CNACT=0</b>

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