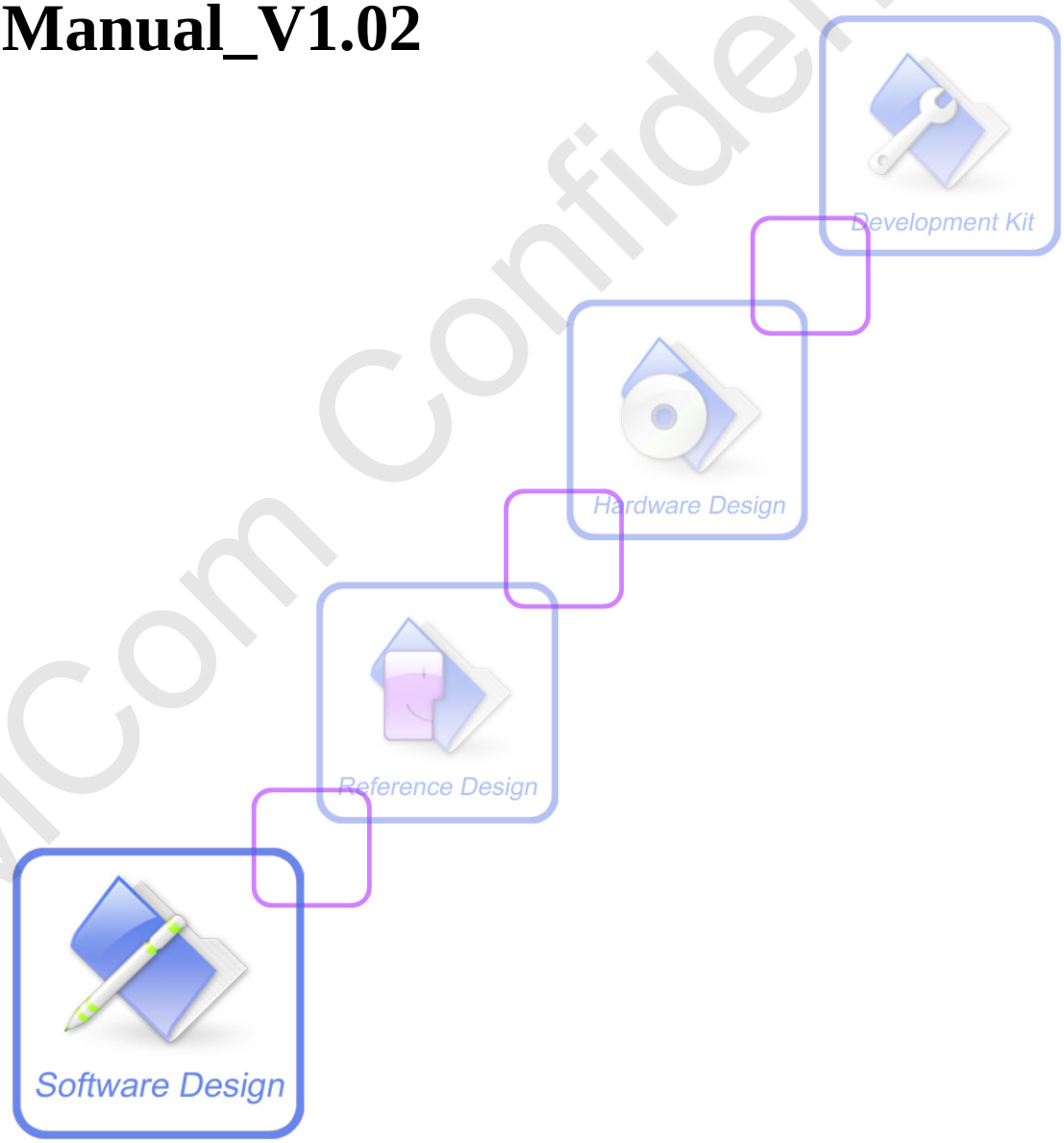
SIM7080 Series_AT Command Manual_V1.02



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Version History

Version	Date	Chapter	What is new
V1.00	2019-06-17		New version
V1.01	2019-11-07	AT+CGNSURC,AT+CGNSPORT,AT+CGNSCFG,AT+CGNSTST,AT+CGNSRTMS	Delete commands
		3.2.25 AT+CVHU	Add command
		3.2.26 AT+CLIP	Add command
		3.2.27 AT+CLCC	Add command
		5.2.46 AT+CREBOOT	Add command
		8.2.9 AT+SGNSCFG	Add command
		8.2.10 AT+SGNSCMD	Add command
		12.2.4 AT+CASERVER	Add command
		13.2.7 AT+SHCPARA	Add command
		15 AT Commands for FTP Application	Add charpter
		16 AT Commands for NTP Application	Add charpter
		17.2.11 +SMSUB	Add command
		20 ATC Differences among SIM7080 Series	Add charpter
V1.02	2020-02-26	1.1 Scope	Add SIM7070G-NG and SIM7090G
		5.2.47 AT+SPKMUTESW	Add command
		5.2.48 AT+ANTENALLCFG	Add command
		6.2.5 AT+CGREG	Add parameter <rac>
		6.2.8 AT+CGAUTH	Add command
		8.2.9 AT+SGNSCFG	Modify command
		12.2.5 AT+CASEND	Modify command
		12.2.7 AT+CAACK	Add command
		12.2.8 AT+CASTATE	Add command
		13.2.13 AT+HTTPTOFS	Add command
		13.2.14 AT+HTTPTOFSRL	Add command

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		15.2.29 AT+FTPSSL	Add command
		19 AT Commands for DNS	Add charpter
		20 AT Commands for LBS	Add charpter

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1 Introduction

1.1 Scope of the document

This document presents the AT Command Set for SIMCom SIM7080 Series, including SIM7080G, SIM7070G, SIM7070E, SIM7070G-NG and SIM7090G.

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

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

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

1.4.1 Basic syntax

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

1.4.2 S Parameter syntax

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

1.4.3 Extended Syntax

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

Table 1: Types of AT commands and responses

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

1.4.4 Combining AT commands on the same Command line

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

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

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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.

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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.

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2 AT Commands According to V.25TER

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

2.1 Overview of AT Commands According to V.25TER

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

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AT+GOI	Request global object identification
AT+GSN	Request TA serial number identification (IMEI)
AT+ICF	Set TE-TA control character framing
AT+IFC	Set TE-TA local data flow control
AT+IPR	Set TE-TA fixed local rate

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

2.2.1 A/ Re-issues the Last Command Given

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

2.2.2 ATD Mobile Originated Call to Dial A Number

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

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	If connection successful and non-voice call. **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK**
	Parameters **<n>** String of dialing digits and optionally V.25ter modifiers dialing digits: **0-9,*, #,+,A,B,C** Following V.25ter modifiers are ignored: **,(comma),T,P,!,W,@** **Emergency call:** **<n>** Standardized emergency number 112 (no SIM needed) **<mgsm>** String of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates Closed User Group invocation for this call only **g** Deactivates Closed User Group invocation for this call only
Parameter Saving Mode	NO_SAVE
Max Response Time	Timeout set with ATS7 (data call)
Reference V.25ter	Note

2.2.3 ATE Set Command Echo Mode

ATE Set Command Echo Mode	
Execution Command **ATE<value>**	Response This setting determines whether or not the TA echoes characters received from TE during Command state. **OK**
	Parameters **<value>** 0 Echo mode off 1 Echo mode on
Parameter Saving Mode	NO_SAVE
Max Response	-

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Time	
Reference V.25ter	Note

2.2.4 ATH Disconnect Existing Connection

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

2.2.5 ATI Display Product Identification Information

ATI Display Product Identification Information	
Execution Command **ATI**	Response TA issues product information text Example: **SIM7080 R1351** **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.6 ATL Set Monitor speaker loudness

ATL Set Monitor speaker loudness	
Execution Command **ATL<value>**	Response **OK**
	Parameters

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	<value> 0..3 Volume
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.7 ATM Set Monitor Speaker Mode

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

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

+++ Switch from Data Mode or PPP Online Mode to Command Mode	
Execution Command +++	Response The +++ character sequence causes the TA to cancel the data flow over the AT interface and switch to Command mode. This allows you to enter AT Command while maintaining the data connection to the remote server. **OK** To prevent the +++ escape sequence from being misinterpreted as data, it should comply to following sequence: No characters entered for T1 time (1 second) "+++" characters entered with no characters in between (1 second) No characters entered for T1 timer (1 second) Switch to Command mode, otherwise go to step 1.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note To return from Command mode back to data mode: Enter **ATO**.

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2.2.9 ATO Switch from Command Mode to Data Mode

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

2.2.10 ATQ Set Result Code Presentation Mode

ATQ Set Result Code Presentation Mode	
Execution Command **ATQ<n>**	Response This parameter setting determines whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting. If <**n**>=0: **OK** If <**n**>=1: (none)
	Parameters **<n>** 0 TA transmits result code 1 Result codes are suppressed and not transmitted
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

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2.2.11 ATS0 Set Number of Rings before Automatically Answering the Call

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

2.2.12 ATS3 Set Command Line Termination Character

ATS3 Set Command Line Termination Character	
Read Command **ATS3?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS3=<n>**	Response This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output.

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	OK or **ERROR**
	Parameters **<n>** 13 Command line termination character
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note Default 13=CR. It only supports default value.

2.2.13 ATS4 Set Response Formatting Character

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

2.2.14 ATS5 Set Command Line Editing Character

ATS5 Set Command Line Editing Character	
Read Command **ATS5?**	Response **<n>** **OK**

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

2.2.15 ATS6 Pause Before Blind Dialling

ATS6 Pause Before Blind Dialling	
Read Command **ATS6?**	Response **<n>** **OK**
Write Command **ATS6=<n>**	Response **OK** or **ERROR**
	Parameters **<n>** 0-2-999 Time
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.16 ATS7 Set Number of Seconds to Wait for Connection Completion

ATS7 Set Number of Seconds to Wait for Connection Completion	
Read Command **ATS7?**	Response **<n>**

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

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

ATS8 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command	
Read Command **ATS8?**	Response **<n>** **OK**
	Parameters See Write Command
Write Command **ATS8=<n>**	Response **OK** or **ERROR**
	Parameters **<n>** 0-2-255 The value of this register determines how long the modem should pause when it sees a comma in the dialing string.
Parameter Saving Mode	-

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Max Response Time	-
Reference V.25ter	Note No effect in GSM

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

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

2.2.19 ATV TA Response Format

ATV TA Response Format	
Execution Command **ATV<value>**	Response This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses. When <**value**>=0 **0** When <**value**>=1 **OK**
	Parameters **<value>** 0 Information response: **<text><CR><LF>** Short result code format: **<numeric code><CR>**

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	1 Information response: **<CR><LF><text><CR><LF>** Long result code format: **<CR><LF><verbose code><CR><LF>** The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note

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

2.2.20 ATX Set CONNECT Result Code Format and Monitor Call Progress

ATX Set CONNECT Result Code Format and Monitor Call Progress	
Execution Command **ATX<value>**	Response This parameter setting determines whether or not the TA detected the presence of dial tone and busy signal and whether or not TA transmits particular result codes. **OK** or **ERROR**

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	Parameters **<value>** 0 **CONNECT** result code only returned, dial tone and busy detection are both disabled. 1 **CONNECT<text>** result code only returned, dial tone and busy detection are both disabled. 2 **CONNECT<text>** result code returned, dial tone detection is enabled, busy detection is disabled. 3 **CONNECT<text>** result code returned, dial tone detection is disabled, busy detection is enabled. 4 **CONNECT<text>** result code returned, dial tone and busy detection are both enabled.
Parameter Saving Mode	-
Max Response Time	-
Reference V.25ter	Note

2.2.21 AT&C Set DCD Function Mode

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

2.2.22 AT&D Set DTR Function Mode

AT&D Set DTR Function Mode	
Execution	Response

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

2.2.23 AT&E Set CONNECT Result Code Format About Speed

AT&E Set CONNECT Result Code Format About Speed	
Execution Command **AT&E[<value>]**	This parameter setting determines to report Serial connection rate or Wireless connection speed. It is valid only ATX above 0. Response **OK** or **ERROR**
	Parameters **<value>** 0 Wireless connection speed in integer format. 1 Serial connection rate in integer format. Such as: "115200"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.24 AT+GCAP Request Complete TA Capabilities List

AT+GCAP Request Complete TA Capabilities List	
Execution Command	Response TA reports a list of additional capabilities.

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AT+GCAP	**+GCAP:** list of supported **<name>**s **OK**
	Parameters **<name>** +CGSM GSM function is supported
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.25 AT+GMI Request Manufacturer Identification

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

2.2.26 AT+GMM Request TA Model Identification

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

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	Parameters **<model>** Product model identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.27 AT+GMR Request TA Revision Identification of Software Release

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

2.2.28 AT+GOI Request Global Object Identification

AT+GOI Request Global Object Identification	
Test Command **AT+GOI=?**	Response **OK**
Execution Command **AT+GOI**	Response TA reports one or more lines of information text which permit the user to identify the device, based on the ISO system for registering unique object identifiers. **<Object Id>** **OK**

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	Parameters **<Object Id>** Identifier of device type see X.208, 209 for the format of <Object Id>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

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

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

2.2.30 AT+ICF Set TE-TA Control Character Framing

AT+ICF Set TE-TA Control Character Framing	
Test Command **AT+ICF=?**	Response **+ICF: (**list of supported **<format>**s**),(**list of supported **<parity>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+ICF?**	Response **+ICF: <format>,<parity>**

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

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

AT+IFC Set TE-TA Local Data Flow Control	
Test Command **AT+IFC=?**	Response **+IFC: (**list of supported **<dce_by_dte>**s**),(**list of supported **<dte_by_dce>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
	Parameters

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

2.2.32 AT+IPR Set TE-TA Fixed Local Rate

AT+IPR Set TE-TA Fixed Local Rate	
Test Command **AT+IPR=?**	Response **+IPR: (**list of supported auto detectable <**rate**>s**),(**list of supported fixed-only **<rate>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+IPR?**	Response **+IPR: <rate>** **OK**
	Parameters See Write Command
Write Command **AT+IPR=<rate>**	Response This parameter setting determines the data rate of the TA on the serial interface. The rate of Command takes effect following the issuance of any

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	result code associated with the current Command line. **OK**
	Parameters **<rate>** Baud rate per second 0 300 600 1200 2400 4800 9600 19200 38400 57600 115200 230400 921600 2000000 2900000 3000000 3200000 3686400 4000000
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference V.25ter	Note

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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
AT+CGMI	Request manufacturer identification
AT+CGMM	Request model identification
AT+CGMR	Request TA revision identification of software release
AT+CGSN	Request product serial number identification (identical with +GSN)
AT+CSCS	Select TE character set
AT+CIMI	Request international mobile subscriber identity
AT+CLCK	Facility lock
AT+CMEE	Report mobile equipment error
AT+COPS	Operator selection
AT+CPAS	Phone activity status
AT+CPIN	Enter PIN
AT+CPWD	Change password
AT+CRC	Set cellular result codes for incoming call indication
AT+CREG	Network registration
AT+CRSM	Restricted SIM access
AT+CSQ	Signal quality report
AT+CPOL	Preferred operator list
AT+COPN	Read operator names
AT+CFUN	Set phone functionality
AT+CCLK	Clock
AT+CSIM	Generic SIM access
AT+CBC	Battery charge
AT+CNUM	Subscriber Number
AT+CMUX	Multiplexer Control
AT+CVHU	Voice Hang Up Control
AT+CLIP	Calling Line Identification Presentation
AT+CLCC	List Current Calls of ME

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

3.2.1 AT+CGMI Request Manufacturer Identification

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

3.2.2 AT+CGMM Request Model Identification

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

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3.2.3 AT+CGMR Request TA Revision Identification of Software Release

AT+CGMR Request TA Revision Identification of Software Release	
Test Command **AT+CGMR=?**	Response **OK**
Execution Command **AT+CGMR**	Response TA returns product software version identification text. **Revision: <revision>** **OK**
	Parameters **<revision>** Product software version identification text
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.4 AT+CGSN Request Product Serial Number Identification

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

3.2.5 AT+CSCS Select TE Character Set

AT+CSCS Select TE Character Set

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Test Command **AT+CSCS=?**	Response **+CSCS: (**list of supported **<chset>**s**)** **OK**
	Parameters **<chset>** "GSM" GSM 7 bit default alphabet (3GPP TS 23.038); "UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99 "IRA" International reference alphabet (ITU-T T.50)
Read Command **AT+CSCS?**	Response **+CSCS: <chset>** **OK**
	Parameters See Test Command
Write Command **AT+CSCS=<chset>**	Response Sets which character set **<chset>** are used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Test Command
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.6 AT+CIMI Request International Mobile Subscriber Identity

AT+CIMI Request International Mobile Subscriber Identity	
Test Command **AT+CIMI=?**	Response **OK**
Execution Command **AT+CIMI**	Response TA returns <**IMSI**>for identifying the individual SIM which is attached to ME. **<IMSI>**

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	OK If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<IMSI>** International Mobile Subscriber Identity (string without double quotes)
Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference 3GPP TS 27.007 [13]	Note

3.2.7 AT+CLCK Facility Lock

AT+CLCK Facility Lock	
Test Command **AT+CLCK=?**	Response **+CLCK: (**list of supported **<fac>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]**	Response This Command is used to lock, unlock or interrogate a ME or a network facility <**fac**>. Password is normally needed to do such actions. When querying the status of a network service (<**mode**>=2) the response line for 'not active' case (<**status**>=0) should be returned only if service is not active for any <**class**>. If <**mode**>≠2 and Command is successful **OK** If <**mode**>=2 and Command is successful **+CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[…]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<fac>** "AB" All Barring services(only for <mode>=0)

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	"AC" All inComing barring services(only for <mode>=0) "AG" All outGoing barring services(only for <mode>=0) "AI" BAIC (Barr All Incoming Calls) "AO" BAOC (Barr All Outgoing Calls) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "OI" BOIC (Barr Outgoing International Calls) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) "SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code. "FD" SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) "PN" Network Personalization, Correspond to NCK code "PU" Network subset Personalization Correspond to NSCK code "PP" Service Provider Personalization Correspond to SPCK code **<mode>** 0 unlock 1 lock 2 query status **<passwd>** String type (Shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD) **<class>** 1-255 1 Voice (telephony) 2 Data refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) 4 Fax (facsimile services) 7 All classes **<status>** 0 Not active 1 Active
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference 3GPP TS 27.007 [14]	Note ● CME errors if SIM not inserted or PIN is not entered.

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3.2.8 AT+CMEE Report Mobile Equipment Error

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

3.2.9 AT+COPS Operator Selection

AT+COPS Operator Selection	
Test Command **AT+COPS=?**	Response TA returns a list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network,

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	networks referenced in SIM, and other networks. **+COPS: (**list of supported**<stat>,**long alphanumeric**<oper>,**short alphanumeric**<oper>,**numeric **<oper>,<netact>)**s**[,,(**list of supported **<mode>**s**),(**list of supported **<format>**s**)]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Read Command **AT+COPS?**	Response TA returns the current mode and the currently selected operator. If no operator is selected,<**format**> and <**oper**> are omitted. **+COPS: <mode>[,<format>,<oper>,<netact>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+COPS=<mode>,[<format>[,<oper>]]**	Response TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected (except <**mode**>=4). The selected operator name format shall apply to further read commands (**AT+COPS?**). **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<stat>** 0 Unknown 1 Operator available 2 Operator current 3 Operator forbidden **<oper>** Refer to [27.007] operator in format as per <**format**> **<mode>** 0 Automatic mode; <**oper**> field is ignored 1 Manual (<**oper**> field shall be present, and <**AcT**> optionally) 2 manual deregister from network 3 set only <**format**> (for read Command **+COPS?**) - not shown in Read Command response

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	4 Manual/automatic (<**oper**> field shall be present); if manual selection fails, automatic mode (<**mode**>=0) is entered **<format>** 0 Long format alphanumeric <**oper**> 1 Short format alphanumeric <**oper**> 2 Numeric <**oper**>; GSM Location Area Identification number **<netact>** 0 User-specified GSM access technology 1 GSM compact 3 GSM EGPRS 7 User-specified LTE M1 A GB access technology 9 User-specified LTE NB S1 access technology
Parameter Saving Mode	AUTO_SAVE
Max Response Time	Test command: 45 seconds Write command: 120 seconds
Reference 3GPP TS 27.007 [14]	Note

3.2.10 AT+CPAS Phone Activity Status

AT+CPAS Phone Activity Status	
Test Command **AT+CPAS=?**	Response **+CPAS: (**list of supported **<pas>**s**)** **OK**
	Parameters See Execution Command
Execution Command **AT+CPAS**	Response TA returns the activity status of ME. **+CPAS: <pas>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<pas>** 0 Ready (MT allows commands from TA/TE) 3 Ringing (MT is ready for commands from TA/TE, but the ringer is active) 4 Call in progress (MT is ready for commands from TA/TE, but a call is in progress)

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

3.2.11 AT+CPIN Enter PIN

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

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	<new pin> String type; If the PIN required is SIM PUK or SIMPUK2: new password
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.007 [13]	Note

3.2.12 AT+CPWD Change Password

AT+CPWD Change Password	
Test Command **AT+CPWD=?**	Response TA returns a list of pairs which present the available facilities and the maximum length of their password. **+CPWD: (**list of supported **<fac>**s,list of supported **<pwdlength>**s**)** **OK**
	Parameters **<fac>** See Write Command **<pwdlength>** Integer max. length of password
Write Command **AT+CPWD=<fac>,<oldpwd>,<newpwd>**	Response TA sets a new password for the facility lock function. **OK**
	Parameters **<fac>** "AB" All Barring services "AC" All inComing barring services(only for <mode>=0) "AG" All outGoing barring services(only for <mode>=0) "AI" BAIC (Barr All Incoming Calls) "AO" BAOC (Barr All Outgoing Calls) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) "OI" BOIC (Barr Outgoing International Calls) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) "SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code. "P2" SIM PIN2 **<oldpwd>** String type (string should be included in quotation marks): password specified for the facility from the user interface or with

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	command. If an old password has not yet been set,<oldpwd> is not to enter. **<newpwd>** String type (string should be included in quotation marks): new password
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference 3GPP TS 27.007 [13]	Note

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

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

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	REL SYNC	Synchronous non-transparent
	FAX	Facsimile
	VOICE	Voice
Parameter Saving Mode	NO_SAVE	
Max Response Time	-	
Reference 3GPP TS 27.007 [13]	Note	

3.2.14 AT+CREG Network Registration

AT+CREG Network Registration	
Test Command **AT+CREG=?**	Response **+CREG: (**list of supported **<n>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CREG?**	Response TA returns the status of result code presentation and an integer <**stat**> which shows whether the network has currently indicated the registration of the ME. Location information elements <**lac**> and <**ci**> are returned only when <n>=2 and ME is registered in the network. **+CREG: <n>,<stat>[,<lac>,<ci>,<netact>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CREG[=<n>]**	Response TA controls the presentation of an unsolicited result code **+CREG: <stat>** when <**n**>=1 and there is a change in the ME network registration status. **OK**
	Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CREG: <stat>** 2 Enable network registration unsolicited result code with location information(2 is only for 7000 series module which support GPRS.) **CREG: <stat>[,<lac>,<ci>,<netact>]** **<stat>** 0 Not registered, MT is not currently searching a new

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	operator to register to 1 Registered, home network 2 Not registered, but MT is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming **<lac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format **<ci>** String type (string should be included in quotation marks); two byte cell ID in hexadecimal format **<netact>** 0 User-specified GSM access technology 1 GSM compact 3 GSM EGPRS 7 User-specified LTE M1 A GB access technology 9 User-specified LTE NB S1 access technology
	Unsolicited Result Code If <n>=1 and there is a change in the MT network registration status **+CREG: <stat>** If <n>=2 and there is a change in the MT network registration status or a change of the network cell: **+CREG: <stat>[,<lac>,<ci>,<netact>]**
	Parameters See Write Command
Parameter Saving Mode	-
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.15 AT+CRSM Restricted SIM Access

AT+CRSM Restricted SIM Access	
Test Command **AT+CRSM=?**	Response **OK**
Write Command **AT+CRSM=<Command>[,<fileId>[,<P1>,<P2>,<P3>[,<data>]]]**	Response **+CRSM: <sw1>,<sw2>[,<response>]** **OK** **ERROR** If error is related to ME functionality:

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	+CME ERROR: <err>
	Parameters **<Command>** 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS All other values are reserved; refer GSM 11.11. **<fileId>** Integer type; this is the identifier for an elementary data file on SIM. Mandatory for every Command except STATUS **<P1>,<P2>,<P3>** Integer type, range 0 – 255 Parameters to be passed on by the ME to the SIM; refer GSM 11.11. **<data>** Information which shall be written to the SIM (hex-decimal character format) **<sw1>,<sw2>** Integer type, range 0 - 255 Status information from the SIM about the execution of the actual Command. These parameters are delivered to the TE in both cases, on successful or failed execution of the Command; refer GSM 11.11. **<response>** Response of a successful completion of the Command previously issued (hexadecimal character format)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 GSM 11.11	Note

3.2.16 AT+CSQ Signal Quality Report

AT+CSQ Signal Quality Report	
Test Command **AT+CSQ=?**	Response **+CSQ: (**list of supported **<rssi>**s**),(**list of supported **<ber>**s**)** **OK**
Execution Command **AT+CSQ**	Response **+CSQ: <rssi>,<ber>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**

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	Execution Command returns received signal strength indication <**rssi**> and channel bit error rate <ber> from the ME. Test Command returns values supported by the TA.
	Parameters **<rssi>** 0 -115 dBm or less 1 -111 dBm 2...30 -110... -54 dBm 31 -52 dBm or greater 99 not known or not detectable **<ber>** (in percent): 0...7 As RXQUAL values in the table in GSM 05.08 [20] subclause 7.2.4 99 Not known or not detectable
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.17 AT+CPOL Preferred Operator List

AT+CPOL Preferred Operator List	
Test Command **AT+CPOL=?**	Response **+CPOL: (**list of supported **<index>**s**),(**list of supported **<format>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1>[,<GSM>,<GSM_compact>,<UTRAN>,<E-UTRAN>][<CR><LF>+CPOL: <index2>,<format>,<oper2>[,<GSM,<GSM_compact>,<UTRAN>,<E-UTRAN>][…]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command

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

3.2.18 AT+COPN Read Operator Names

AT+COPN Read Operator Names	
Test Command **AT+COPN=?**	Response **OK**
Execution Command **AT+COPN**	Response **+COPN: <numeric1>,<alpha1>[<CR><LF>+COPN: <numeric2>,<alpha2>[…]]** **OK**

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	If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<numeric*n*>** String type (string should be included in quotation marks): operator in numeric format (see +COPS) **<alpha*n*>** String type (string should be included in quotation marks): operator in long alphanumeric format (see +COPS)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.19 AT+CFUN Set Phone Functionality

AT+CFUN Set Phone Functionality	
Test Command **AT+CFUN=?**	Response **+CFUN: (**list of supported **<fun>**s**),(**list of supported **<rst>**s**)** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Read Command **AT+CFUN?**	Response **+CFUN: <fun>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CFUN=<fun>[,<rst>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<fun>** 0 Minimum functionality 1 Full functionality (Default)

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	4 Disable phone both transmit and receive RF circuits. 5 Factory Test Mode 6 Reset 7 Offline Mode **<rst>** 0 Do not Reset the MT before setting it to <fun> power level. 1 Reset the MT before setting it to <fun> power level.
Parameter Saving Mode	-
Max Response Time	10s
Reference 3GPP TS 27.007 [13]	Note ● The <fun> power level will be written to flash except minimum functionality. ● AT+CFUN=1,1 can be used to reset module purposely at minimum/full functionality mode. ● Response string "OK" will be returned after module resets if baud rate is set to fixed baud rate.

3.2.20 AT+CCLK Clock

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

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	GMT+2 hours equals to "10/05/06,00:01:52+08".
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note Only time zone is auto saved.

3.2.21 AT+CSIM Generic SIM Access

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

3.2.22 AT+CBC Battery Charge

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

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

3.2.23 AT+CNUM Subscriber Number

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

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

3.2.24 AT+CMUX Multiplexer Control

AT+CMUX Multiplexer Control	
Test Command **AT+CMUX=?**	Response **+CMUX: (0),(0),(1-8),(1-1500),(0),(0),(2-1000)** **OK**
	Parameters See Write Command
Read Command **AT+CMUX?**	Response **+CMUX: <mode>,<subset>,<port_speed>,<N1>,<T1>,<N2>,<T2>** **OK**
	Parameters See Write Command
Write Command **AT+CMUX=<mode>[,<subset>,<port_speed>,<N1>,<T1>,<N2>,<T2>]**	Response If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters Parameters **<mode>** Multiplexer transparency mechanism 0 Basic option **<subset>** The way in which the multiplexer control channel is set up 0 UIH frames used only **<port_speed>** Transmission rate 1 9600 bits/t 2 19200 bits/t 3 38400 bits/t 4 57600 bits/t 5 115200 bit/s 6 230400 bits/t Proprietary values, available if MUX NEW PORT SPEED FTR is activated **<N1>** Maximum frame size 1-1500 Default:118

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	<T1> Acknowledgement timer in units of ten milliseconds 0 **<N2>** Maximum number of retransmissions 0 **<T2>** Max Response Timer for the multiplexer control channel in milliseconds 2-1000 Default:600
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note The multiplexing transmission rate is according to the current serial baud rate. It is recommended to enable multiplexing protocol under 115200 bit/s baud rate Multiplexer control channels are listed as follows: **Channel Number** **Type** **DLCI** None Multiplexer Control 0 1 3GPP TS 27.007 and 005 1 2 3GPP TS 27.007 and 005 2 3 3GPP TS 27.007 and 005 3 4 3GPP TS 27.007 and 005 4

3.2.25 AT+CVHU Voice Hang Up Control

AT+CVHU Voice Hang Up Control	
Test Command **AT+CVHU=?**	Response **+CVHU: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+CVHU?**	Response **+CVHU: <mode>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CVHU=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters

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	<mode> Integer type. Voice call hang up control. 0 ATH disconnects voice call 1 ATH ignored.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Part of the projects supported by this AT command, please refer to chapter 20 for details.

3.2.26 AT+CLIP Calling Line Identification Presentation

AT+CLIP Calling Line Identification Presentation	
Test Command **AT+CLIP=?**	Response **+CLIP: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CLIP?**	Response **+CLIP: <n>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CLIP=<n>**	Response TA enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<n>** 0 Disable +CLIP notification. 1 Enable +CLIP notification.
	Unsolicited Result Code When the presentation of the CLI at the TE is enabled (and calling subscriber allows), an unsolicited result code is returned after every RING (or **+CRING: <type>**) at a mobile terminating call. **+CLIP: <number>,<type>[,<subaddr>,<satype>,<alphaId>,<CLI validity>]** Parameters

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	<number> String type (string should be included in quotation marks) phone number of calling address in format specified by <type>. **<type>** Type of address octet in integer format; 129 Unknown type 161 National number type 145 International number type 177 Network specific number **<subaddr>** String type (subaddress of format specified by <satype>) **<satype>** Integer type (type of subaddress) **<alphaId>** String type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book. **<CLI validity>** 0 CLI valid 1 CLI has been withheld by the originator. 2 CLI is not available due to interworking problems or limitations of originating network.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Part of the projects supported by this AT command, please refer to chapter 20 for details.

3.2.27 AT+CLCC List Current Calls of ME

AT+CLCC List Current Calls of ME	
Test Command **AT+CLCC=?**	Response **+CLCC: (**list of supported **<n>**s**)** **OK**
Read Command **AT+CLCC?**	Response **+CLCC: <n>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CLCC=<n>**	Response **OK**

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	Parameters **<n>** 0 Don't report a list of current calls of ME automatically when the current call status changes. 1 Report a list of current calls of ME automatically when the current call status changes.
Execution Command **AT+CLCC**	Response TA returns a list of current calls of ME. Note: If Command succeeds but no calls are available, no information response is sent to TE. **[+CLCC:** **<id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>,<alphaID>][** **<CR><LF>+CLCC:** **<id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>,<alphaID>][..** **.]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<idx>** 1..7 Call identification number This number can be used in +CHLD command operations **<dir>** 0 Mobile originated (MO) call 1 Mobile terminated (MT) call **<stat>** State of the call: 0 Active 1 Held 2 Dialing (MO call) 3 Alerting (MO call) 4 Incoming (MT call) 5 Waiting (MT call) 6 Disconnect **<mode>** Bearer/tele service: 0 Voice 1 Data 2 Fax **<mpty>** 0 Call is not one of multiparty (conference) call parties 1 Call is one of multiparty (conference) call parties **<number>** String type (string should be included in quotation marks) phone number in format specified by **<type>**. **<type>** Type of address **<alphaId>** String type (string should be included in quotation marks) alphanumeric representation of **<number>** corresponding to the entry found in phone book.

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Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Part of the projects supported by this AT command, please refer to chapter 20 for details.

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4 AT Commands According to 3GPP TS 27.005

The 3GPP TS 27.005 commands are for performing SMS and CBS related operations. SIM7080 Series supports both Text and PDU modes.

4.1 Overview of AT Commands According to 3GPP TS 27.005

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

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

4.2.1 AT+CMGD Delete SMS Message

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

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

4.2.2 AT+CMGF Select SMS Message Format

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

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

4.2.3 AT+CMGL List SMS Messages from Preferred Store

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

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	<**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

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converted to characters of the currently selected TE character set (refer Command **+CSCS** in 3GPP TS 27.007); type of address given by <**toda**>

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

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

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

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

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

<pdu> In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of

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

4.2.4 AT+CMGR Read SMS Message

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

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	,<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

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TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format:
- if <**dcs**> indicates that GSM 03.38 default alphabet is used:
- if TE character set other than "HEX" (refer Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number
- if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

<dcs> Depending on the Command or result code: GSM 03.38 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format

<fo> Depending on the Command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format

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

<mid> GSM 03.41 CBM Message Identifier in integer format

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

<pdu> In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format.

<pid> GSM 03.40 TP-Protocol-Identifier in integer format (default 0)

<sca> GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <**tosca**>

<scts> GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)

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	<stat> 0 "REC UNREAD" Received unread messages 1 "REC READ" Received read messages 2 "STO UNSENT" Stored unsent messages 3 "STO SENT" Stored sent messages 4 "ALL" All messages **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) **<tooa>** GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer<toda>) **<tosca>** GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <toda>) **<vp>** Depending on SMS-SUBMIT <fo> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>)
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.5 AT+CMGS Send SMS Message

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

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

4.2.6 AT+CMGW Write SMS Message to Memory

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

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

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

4.2.7 AT+CMSS Send SMS Message from Storage

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

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	in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) **<mr>** GSM 03.40 TP-Message-Reference in integer format
Parameter Saving Mode	NO_SAVE
Max Response Time	60s
Reference 3GPP TS 27.005	Note

4.2.8 AT+CNMI New SMS Message Indications

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

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Otherwise forward them directly to the TE.

2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

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

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

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

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

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

or

+CMT: <oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> (text mode enabled; about parameters in italics, refer Command Show Text Mode Parameters +CSDH).

Class 2 messages result in indication as defined in <mt>=1.

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

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

0 No CBM indications are routed to the TE.

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

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

or

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

<ds>

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

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

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

or

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

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

<bfr>

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

4.2.9 AT+CPMS Preferred SMS Message Storage

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

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

4.2.10 AT+CRES Restore SMS Settings

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

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

4.2.11 AT+CSAS Save SMS Settings

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

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	not be saved. **OK** or **ERROR**
	Parameter **<profile>** 0 Save SM service setting in profile 0
Execution Command **AT+CSAS**	Response Same as AT+CSAS=0 **OK** If error is related to ME functionality: **+CMS ERROR <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.12 AT+CSCA SMS Service Center Address

AT+CSCA SMS Service Center Address	
Test Command **AT+CSCA=?**	Response **OK**
Read Command **AT+CSCA?**	Response **+CSCA: <sca>,<tosca>[,<scaAlpha>]** **OK**
	Parameters See Write Command
Write Command **AT+CSCA=<sca>[,<tosca>]**	Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by send and writes commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero. Note: The Command writes the parameters in NON-VOLATILE memory. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<sca>** GSM 04.11 RP SC address Address-Value field in string

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	format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <tosca> **<tosca>** Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <toda>) **<scaAlpha>** String type(string should be included in quotation marks). Service center address alpha data
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference 3GPP TS 27.005	Note

4.2.13 AT+CSDH Show SMS Text Mode Parameters

AT+CSDH Show SMS Text Mode Parameters	
Test Command **AT+CSDH=?**	Response **+CSDH: (**list of supported **<show>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CSDH?**	Response **+CSDH: <show>** **OK**
	Parameter See Write Command
Write Command **AT+CSDH=<show>**	Response TA determines whether detailed header information is shown in text mode result codes. **OK**
	Parameter **<show>** 0 Do not show header values defined in commands +CSCA and +CSMP (<sca>,<tosca>,<fo>,<vp>,<pid> and <dcs>) nor <length>,<toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITs in text mode 1 Show the values in result codes
Execution Command	Response **OK**

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AT+CSDH	
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.14 AT+CSMP Set SMS Text Mode Parameters

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

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Reference 3GPP TS 27.005	Note ● The Command writes the parameter <fo> in NON-VOLATILE memory.

4.2.15 AT+CSMS Select Message Service

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

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

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5 AT Commands Special for SIMCom

5.1 Overview

Command	Description
AT+CPOWD	Power off
AT+CADC	Read ADC
AT+CFGRI	Indicate RI when using URC
AT+CLTS	Get local timestamp
AT+CBAND	Get and set mobile operation band
AT+CNSMOD	Show network system mode
AT+CSCLK	Configure slow clock
AT+CCID	Show ICCID
AT+GSV	Display product identification information
AT+SGPIO	Control the GPIO
AT+SLEDS	Set the timer period of net light
AT+CNETLIGHT	Close the net light or open it to shining
AT+CSGS	Netlight indication of GPRS status
AT+CGPIO	Control the GPIO by PIN Index
AT+CBATCHK	Set VBAT checking feature ON/OFF
AT+CNMP	Preferred mode selection
AT+CMNB	Preferred selection between CAT-M and NB-IoT
AT+CPSMS	Power Saving Mode Setting
AT+CPSI	Inquiring UE system information
AT+CGNAPN	Get Network APN in CAT-M or NB-IOT
AT+CSDP	Service Domain Preference
AT+MCELLLOCK	Lock the special CAT-M cell
AT+NCELLLOCK	Lock the special NB-IOT cell
AT+NBSC	Configure NB-IOT Scrambling Feature
AT+CRRCSTATE	Query RRC State
AT+CBANDCFG	Configure CAT-M or NB-IOT Band
AT+CEDUMP	Set whether the module reset when the module is crashed
AT+CNBS	Configure Band Scan Optimization for NB-IOT
AT+CNDS	Configure Service Domain Preference For NB-IOT
AT+CENG	Switch on or off Engineering Mode
AT+CTLIIC	Control the Switch of IIC

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AT+CWIIC	Write Values to Register of IIC Device
AT+CRIIC	Read Values from Register of IIC Device
AT+CMCFG	Manage Mobile Operator Configuration
AT+CSIMLOCK	SIM Lock
AT+CRATSRCH	Configure parameter for better RAT search
AT+CASRIP	Show Remote IP Address and Port When Received Data
AT+CPSMRDP	Read PSM Dynamic Parameters
AT+CPSMCFG	Configure PSM version and Minimum Threshold Value
AT+CPSMCFGEXT	Configure Modem Optimization of PSM
AT+CPSMSTATUS	Enable Deep Sleep Wakeup Indication
AT+CEDRXS	Entended-DRX Setting
AT+CEDRX	Configure eDRX parameters
AT+CEDRXRDP	eDRX Read Dynamic Parameters
AT+CRAI	Configure Release Assistance Indication in NB-IOT network
AT+CREBOOT	Reboot Module
AT+SPKMUTESW	Set Handsfree On/off
AT+ANTENALLCFG	Configure Antenna Tuner

5.2 Detailed Descriptions of Commands

5.2.1 AT+CPOWD Power off

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

5.2.2 AT+CADC Read ADC

AT+CADC Read ADC	
Test Command	Response

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AT+CADC=?	**+CADC: (**list of supported **<status>**s**),(**range of supported **<value>**s**)** **OK**
	Parameters **<status>** 1 Success 0 Fail **<value>** Integer,0-1875
Read Command **AT+CADC?**	Response **+CADC: <status>,<value>** **OK**
	Parameters See Test Command
Parameter Saving Mode	NO_SAVE
Max Response Time	2s
Reference	Note

5.2.3 AT+CFGRI Indicate RI When Using URC

AT+CFGRI Indicate RI When Using URC	
Test Command **AT+CFGRI=?**	Response **+CFGRI: (**range of supported **<status>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CFGRI?**	Response **+CFGRI: <status>** **OK**
	Parameters See Write Command
Write Command **AT+CFGRI=<status>**	Response **OK** or **ERROR**
	Parameters **<status>** 0 Off 1 On(TCPIP, FTP and URC control RI pin)

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	2 On(only TCPIP control RI pin)
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● RI pin can not controll by "**AT+CFGRI**" command when module has call service or receiving SMS.

5.2.4 AT+CLTS Get Local Timestamp

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

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

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	and use AT+CCLK to show current time. ● ***PSUTTZ** may report twice.

5.2.5 AT+CBAND Get and Set Mobile Operation Band

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

5.2.6 AT+CNSMOD Show Network System Mode

AT+CNSMOD Show Network System Mode	
Test Command **AT+CNSMOD=?**	Response **+CNSMOD:** (list of supported <**n**>s) **OK**

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

5.2.7 AT+CSCLK Configure Slow Clock

AT+CSCLK Configure Slow Clock	
Test Command **AT+CSCLK=?**	Response **+CSCLK: (**list of supported **<n>**s**)** **OK**
	Parameter See Write Command
Read Command **AT+CSCLK?**	Response **+CSCLK: <n>** **OK**

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	Parameter See Write Command
Write Command **AT+CSCLK=<n>**	Response **OK** or **ERROR**
	Parameter **<n>** Disable or enable slow clock 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 **AT+CCID=?**	Response **OK**
Execution Command **AT+CCID**	Response **Ccid data** [ex. 898600810906F8048812] **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	2s
Reference	Note

5.2.9 AT+GSV Display Product Identification Information

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

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	SIMCOM_SIM7080 **Revision: 1351B01SIM7080** **OK**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.10 AT+SGPIO Control the GPIO

AT+SGPIO Control the GPIO	
Test Command **AT+SGPIO=?**	Response **+SGPIO: (**range of supported <**operation**>s**),(**list of supported <**pin**>s**),(**range of supported <**function**>s**),(**range of supported <**level**>s**)** **OK**
	Parameters See Write Command
Write Command **AT+SGPIO=<operation>,<GPIO>,<function>,<level>**	Response If <operation>=0 **OK** or **ERROR** If <operation>=1 **+SGPIO Value: <level>** **OK** or **ERROR**
	Parameters **<operation>** 0 Set the GPIO function including the GPIO output. 1 Read the GPIO level. Please note that only when the gpio is set as input, user can use parameter 1 to read the GPIO level, otherwise the module will return "ERROR". **<GPIO>** The GPIO you want to be set. (It has relations with the hardware, please refer to the hardware manual) **<function>** Only when <operation> is set to 0, this option takes effect. 0 Set the GPIO to input. 1 Set the GPIO to output

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	<level> 0 GPIO low level 1 GPIO high level
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Part of the projects supported by this AT command, please refer to chapter 20 for details.

5.2.11 AT+SLEDS Set the Timer Period of Net Light

AT+SLEDS Set the Timer Period of Net Light	
Test Command **AT+SLEDS=?**	Response **+SLEDS: (**range of supported <**mode**>s**),(0,40-65535),(0,40-65535)** **OK**
	Parameters See Write Command
Read Command **AT+SLEDS?**	Response **+SLEDS: <mode>,<timer_on>,<timer_off>** **OK**
	Parameters See Write Command
Write Command **AT+SLEDS=<mode>,<timer_on>,<timer_off>**	Response **OK** or **ERROR**

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	Parameters **<mode>** 1 Set the timer period of net light while SIM7080 series does not register to the network 2 Set the timer period net light while SIM7080 series has already registered to the network 3 Set the timer period net light while SIM7080 series is in the state of PPP communication <**timer_on**> Timer period of "LED ON" in decimal format which range is 0 or 40-65535(ms) <**timer_off**> Timer period of "LED OFF" in decimal format which range is 0 or 40-65535(ms)
Parameter Saving Mode	-
Max Response Time	-
Reference	Note The default value is : **<mode>,<timer_on>,<timer_off>** 1,64,800 2,64,3000 3,64,300

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

AT+CNETLIGHT Close the Net Light or Open It to Shining	
Test Command **AT+CNETLIGHT=?**	Response **+CNETLIGHT:** (list of supported <**mode**>s) **OK**
	Parameters See Write Command
Read Command **AT+CNETLIGHT?**	Response **+CNETLIGHT: <mode>** **OK**
	Parameters See Write Command

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Write Command **AT+CNETLIGHT=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 Close the net light 1 Open the net light to shining
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

5.2.13 AT+CSGS Netlight Indication of GPRS Status

AT+CSGS Netlight Indication of GPRS Status	
Test Command **AT+CSGS=?**	Response **+CSGS: (**range of supported <**mode**>s**)** **OK**
	Parameters See Write Command
Read Command **AT+CSGS?**	Response **+CSGS: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CSGS=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 Disable 1 Enable, the netlight will be forced to enter into 64ms on/300ms off blinking state in GPRS data transmission service. Otherwise, the netlight state is not restricted. 2 Enable, the netlight will blink according to AT+SLEDS in GPRS data transmission service.

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Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.14 AT+CGPIO Control the GPIO by PIN Index

AT+CGPIO Control the GPIO by PIN Index	
Test Command **AT+CGPIO=?**	Response **+CGPIO: (**range of supported <**operation**>s**),(**list of supported <**pin**>s**),(**range of supported <**function**>s**),(**range of supported <**level**>s**)** **OK**
	Parameters See Write Command
Write Command **AT+CGPIO=<operation>,<pin>,<function>,<level>**	Response **OK** or **ERROR**
	Parameters **<operation>** 0 Set the GPIO function including the GPIO output . 1 Read the GPIO level. Please note that only when the gpio is set as input, user can use parameter 1 to read the GPIO level, otherwise the module will return "ERROR". **<pin>** The PIN index you want to be set. (It has relations with the hardware, please refer to the hardware manual) **<function>** Only when <operation> is set to 0, this option takes effect. 0 Set the GPIO to input. 1 Set the GPIO to output **<level>** 0 Set the GPIO low level 1 Set the GPIO high level
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● Part of the projects supported by this AT command, please refer to chapter 20 for details.

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5.2.15 AT+CBATCHK Set VBAT Checking Feature ON/OFF

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

5.2.16 AT+CNMP Preferred Mode Selection

AT+CNMP Preferred Mode Selection	
Test Command **AT+CNMP=?**	Response **+CNMP: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+CNMP?**	Response **+CNMP: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CNMP=<mode>**	Response **OK** If failed:

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	+CME ERROR: <err>
	Parameters **<mode>** 2 Automatic 13 GSM only 38 LTE only 51 GSM and LTE only
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note Default value of parameter <mode> is different among SIM7080 series project.

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

AT+CMNB Preferred Selection between CAT-M and NB-IoT	
Test Command **AT+CMNB=?**	Response **+CMNB: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+CMNB?**	Response **+CMNB: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CMNB=<mode>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 1 CAT-M 2 NB-Iot 3 CAT-M and NB-IoT
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note Default value of parameter <**mode**> is different among SIM7080 series project.

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5.2.18 AT+CPSMS Power Saving Mode Setting

AT+CPSMS Power Saving Mode Setting	
Test Command **AT+CPSMS=?**	Response **+CPSMS: (**list of supported <**mode**>s),(list of supported <**Requested_Periodic-RAU**>s),(list of supported <**Requested_GPRS-READY-timer**>s),(list of supported <**Requested_Periodic-TAU**>s),(list of supported <**Requested_Active-Time**>s**)** **OK**
Read Command **AT+CPSMS?**	Response **+CPSMS: <mode>,[<Requested_Periodic-RAU>],[<Requested_GPRS-READY-timer>],[<Requested_Periodic-TAU>],[<Requested_Active-Time>]** **OK**
	Parameters See Write Command
Write Command **AT+CPSMS=[<mode>[,<Requested_Periodic-RAU>[,<Requested_GPRS-READY-timer>[,<Requested_Periodic-TAU>[,<Requested_Active-Time>]]]]]**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Disable the use of PSM 1 Enable the use of PSM **<Requested_Periodic-RAU>** Not supported **<Requested_GPRS-READY-timer>** Not supported **<Requested_Periodic-TAU>** String type; one byte in an 8 bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN. The requested extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours). For the coding and the value range, see the GPRS Timer 3 IE in 3GPP TS 24.008 [8] Table 10.5.163a/3GPP TS 24.008. See also 3GPP TS 23.682 [149] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific. **<Requested_Active-Time>** String type; one byte in an 8 bit format. Requested Active Time value (T3324) to be allocated to the UE. The requested Active Time value is coded as one byte (octet 3) of the GPRS Timer 2

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	information element coded as bit format (e.g. "00100100" equals 4 minutes). For the coding and the value range, see the GPRS Timer 2 IE in 3GPP TS 24.008 [8] Table 10.5.163/3GPP TS 24.008. See also 3GPP TS 23.682 [149], 3GPP TS 23.060 [47] and 3GPP TS 23.401 [82]. The default value, if available, is manufacturer specific.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

5.2.19 AT+CPSI Inquiring UE System Information

AT+CPSI Inquiring UE System Information	
Test Command **AT+CPSI=?**	Response **OK**
Read Command **AT+CPSI?**	If camping on a gsm cell: **+CPSI**: **<System Mode>**,**<Operation Mode>**,**<MCC>-<MNC>**,**<LAC>**,**<Cell ID>**,**<Absolute RF Ch Num>**,**<RxLev>**,**<Track LO Adjust>**,**<C1-C2>** **OK** If camping on a CAT-M or NB-IOT cell: **+CPSI**: **<System Mode>**,**<Operation Mode>**,**<MCC>-<MNC>**,**<TAC>**,**<SCellID>**,**<PCellID>**,**<Frequency Band>**,**<earfcn>**,**<dlbw>**,**<ulbw>**,**<RSRQ>**,**<RSRP>**,**<RSSI>**,**<RSSNR>** **OK** If no service: **+CPSI**: **NO SERVICE**,**Online** **OK** If failed: **+CME ERROR: <err>**
	Parameters **<System Mode>** System mode. "NO SERVICE" "GSM" "LTE CAT-M1" "LTE NB-IOT" **<Operation Mode>** UE operation mode. "Online"

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	"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 s earching 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 servi ng cell The value of SINR can be calculated according to <RSSNR>, the formula is as below: SINR=2 * <RSSNR> - 20 The range of SINR is from -20 to 30
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.20 AT+CGNAPN Get Network APN in CAT-M or NB-IOT

AT+CGNAPN Get Network APN in CAT-M or NB-IOT	
Test Command **AT+CGNAPN=?**	Response **+CGNAPN: (**list of supported **<valid>**s**),<length>**

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

5.2.21 AT+CSDP Service Domain Preference

AT+CSDP Service Domain Preference	
Test Command **AT+CSDP=?**	Response **+CSDP: (**list of supported **<domain>**s**)** **OK**
Read Command **AT+CSDP?**	Response **+CSDP: <domain>** **OK**
	Parameters See Write Command
Write Command **AT+CSDP=<domain>**	Response **OK** If failed:

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	+CME ERROR: <err>
	Parameters **<domain>** 0 CS(Circuit Switched Domain) ONLY 1 PS(Packet Switched Domain) ONLY 2 CS(Circuit Switched Domain) + PS(Packet Switched Domain)
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note

5.2.22 AT+MCELLLOCK Lock the special CAT-M cell

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

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5.2.23 AT+NCELLLOCK Lock the special NB-IOT cell

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

5.2.24 AT+NBSC Configure NB-IOT Scrambling Feature

AT+NBSC Configure NB-IOT Scrambling Feature	
Test Command **AT+NBSC=?**	Response **+NBSC: (**list of supported **<mode>**s**)** **OK**
Read Command **AT+NBSC?**	Response **+NBSC: <mode>**

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

5.2.25 AT+CRRCSTATE Query RRC State

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

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

5.2.26 AT+CBANDCFG Configure CAT-M or NB-IOT Band

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

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5.2.27 AT+CEDUMP Set Whether the Module Reset When the Module is Crashed

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

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

AT+CNBS Configure Band Scan Optimization for NB-IOT	
Test Command **AT+CNBS=?**	Response **+CNBS:** (range of supported **<n>**s) **OK**
Read Command **AT+CNBS?**	Response **+CNBS: <n>** **OK**
	Parameters See Write Command
Write Command **AT+CNBS=<n>**	Response **OK** If failed:

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	+CME ERROR: <err>
	Parameters **<n>** 1 UE tries SNR level 0 band scan 2 UE tries SNR level 0 and level 1 band scan 3 UE tries SNR level 0, level 1, and level 2 band scan 4 Reserved 5 UE tries SNR level 2 band scan only 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.
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note ● The command controls the band scan for different SNR levels. This optimization is applicable only for NB-IOT and it reduces the band scan time and power consumption.

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

AT+CNDS Configure Service Domain Preference For NB-IOT	
Test Command **AT+CNDS=?**	Response **+CNDS:** (list of supported <**domain**>s) **OK**
	Parameters See Write Command
Read Command **AT+CNDS?**	Response **+CNDS: <domain>** **OK**
	Parameters See Write Command
Write Command **AT+CNDS=<do**	Response **OK**

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main>	If failed: **+CME ERROR: <err>**
	Parameters **<domain>** 1 PS(Packet Switched Domain) ONLY 2 CS(Circuit Switched Domain) + PS(Packet Switched Domain)
Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note ● The command of AT+CSDP is used to config service domain preference for GSM and CAT-M.If you want to config service domain preference for NB-IOT,you can use AT+CNDS.

5.2.30 AT+CENG Switch On or Off Engineering Mode

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

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	]OK If camping on a CAT-M or NB-IOT cell: **+CENG: <mode>,<Ncell>,<cell num>,<System Mode>** **[+CENG:** **<cell>,"<earfcn>,<pci>,<rsrp>,<rssi>,<rsrq>,<sinr>,<tac>,<cellid>,<mcc>,<mnc>,<tx power>"<CR><LF>+CENG:** **<cell>,"<earfcn>,<pci>,<rsrp>,<rssi>,<rsrq>,<sinr>"…** **]OK**
	Parameters See Write Command
Write Command **AT+CENG=<mode>[,<Ncell>]**	Switch on or off engineering mode. **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Switch off engineering mode 1 Switch on engineering mode **<Ncell>** 1 Display neighbor cell ID **<cell num>** The number of cell,it includes serving cell and neighbor cells. **<System Mode>** System mode. "NO SERVICE" "GSM" "LTE CAT-M1" "LTE NB-IOT" **<cell>** 0 The serving cell 1-6 The index of the neighboring cell **<bcch>** ARFCN(Absolute radio frequency channel number) of BCCH carrier, in decimal format **<rxl>** Receive level, in decimal format **<mcc>** Mobile country code, in decimal format **<mnc>** Mobile network code, in decimal format **<bsic>** Base station identity code, in decimal format **<cellid>** Cell id, in hexadecimal format **<lac>** Location area code, in hexadecimal format **<earfcn>** E-UTRA absolute radio frequency channel number for searching CAT-M or NB-IOT cells **<pci>** Physical Cell ID **<rsrp>** Current reference signal received power.Available for CAT-M or NB-IOT.

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	<rssi> Current Received signal strength indicator **<rsrq>** Current reference signal receive quality as measured by L1. **<sinr>** Signal to Interference plus Noise Ratio,The range is from -20 to 30. **<tac>** Tracing Area Code, in decimal format **<tx power>** Tx power value in 1/10 dBm. <tx power> is only meaningful when the device is in traffic. When there is no traffic, the value is invalid.The value of <tx power> is 255.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.31 AT+CTLIIC Control the Switch of IIC

AT+CTLIIC Control the Switch of IIC	
Test Command **AT+CTLIIC=?**	Response **+CTLIIC: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CTLIIC?**	Response **+CTLIIC: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CTLIIC=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 switch off the IIC 1 switch on the IIC
Parameter Saving Mode	NO_SAVE

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Max Response Time	-
Reference	Note

5.2.32 AT+CWIIC Write Values to Register of IIC Device

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

5.2.33 AT+CRIIC Read Values from Register of IIC Device

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

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Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.34 AT+CMCFG Manage Mobile Operator Configuration

AT+CMCFG Manage Mobile Operator Configuration	
Test Command **AT+CMCFG=?**	Response TA returns the list of supported modes. **+CMCFG: (**list of supported **<mode>**s**),<length>** **OK**
	Parameters See Write Command
Read Command **AT+CMCFG?**	Response **+CMCFG: <mode>,<config_num>** **[+CMCFG: <index>,<config_name>,<config_version>,<state>…]** **OK**
	Parameters See Write Command
Write Command **AT+CMCFG=<mode>[,<config_name>]**	when <**mode**>=0,1,2 or 3 and command successful: **OK** when <**mode**>=4 and command successful: **+CMCFG: 4**,<**flag**>,<**config_name**> **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Manually select mobile operator configuration 1 Automatically select mobile operator configuration according to ICCID information in SIM card 2 Activate specified mobile operator configuration,<config_name> must be provided. 3 Deactivation specified mobile operator configuration,<config_name> must be provided. 4 Query <config_name> of activating mobile operator

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	configuration **<length>** Interger type,the maximum length of **<config_name>** **<config_num>** Integer type,the number of mobile network configuration **<index>** Integer type,the index of mobile network configuration **<config_name>** String type,the name of mobile network configuration. "Default" Default network configuration "ATT" ATT network configuration, not support VOLTE "Verizon" Verizon network configuration,not support VOLTE **<config _version>** Hex type,the version of mobile network configuration **<state>** Integer type,the state of mobile network configuration 0 Inactive 1 Active **<flag>** Integer type,it indicates whether module has activated a network configuration. If network configuration has been activated, The third parameter <config_name> is the name of activating network configuration. 0 Network configuration has been activated 1 Not any network configuration is activated
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● After setting AT+CMCFG=1,module can select mobile operator configuration according to ICCID information in SIM card automatically,If network configuration has changed,module will reboot and make configuration effective ● If module needs to select mobile operator configuration manually, you should do as the following steps. 1) Setting manual mode AT+CMCFG=0 2) Activate specified configuration AT+CMCFG=2,<config_name> 3) Reboot the module AT+CFUN=1,1

5.2.35 AT+CSIMLOCK SIM Lock

AT+CSIMLOCK SIM Lock	
Test Command **AT+CSIMLOCK=?**	Response TA returns the list of supported modes. **+CSIMLOCK:** (list of supported **<facility>**s),(list of supported **<mode>**s>,**<pwlength>,<pclength>** **OK**

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	Parameters See Write Command
Read Command **AT+CSIMLOCK?**	Response **OK**
	Parameters See Write Command
Write Command **AT+CSIMLOCK=<facility>,<mode>[,<password>[,<pers_code_list>]]**	If <**mode**>≠2 and Command is successful **OK** If <**mode**>=2 and Command is successful **+CSIMLOCK: <status>,<pers_code_list>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<facility>** String type,Phone security locks set by factory or customer. which can be: "PN" Network Personalisation **<mode>** 0 unlock 1 lock 2 query status **<pwlength>** Integer type,maximum length of <password>,the maxinum length is 16. **<pclength>** Integer type,maximum length of <pers_code_list>,the maxinum length is 160. **<password>** String type,password is used to lock or unlock a <facility>. **<pers_code_list>** String type,code list for device personalization.The contents depend on the selected <facility>. If <facility> is "PN": <pers_code_list> is in the format: "MCC1-MNC1[;MCC2-MNC2[…]]" It contains a list of pairs of MCC and MNC.MCC and MNC is separated by a '-',every pair of MCC and MNC is separated by semicolon. For example: "460-00;460-01" **<status>** Integer type,the status of lock 0 lock is inactive 1 lock is active
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

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	● Lock device Customer can send AT command to lock the deivce that can only use some specific SIM card. AT+CSIMLOCK="PN",1,"0123456789ABCDEF","460-00;460-01" ● Unlock device If the device is locking, Customer can send AT command to unlock the device. AT+CSIMLOCK="PN",0,"0123456789ABCDEF" ● Query device status customer may send AT command as follow to query status of the device AT+CSIMLOCK="PN",2

5.2.36 AT+CRATSRCH Configure Parameter for Better RAT Search

AT+CRATSRCH	**Configure Parameter for Better RAT Search**
Test Command **AT+CRATSRCH=?**	Response TA returns the list of supported modes. **+CRATSRCH:** (list of supported **<rat_timer>**s),(list of supported **<srch_align>**) **OK**
	Parameters See Write Command
Read Command **AT+CRATSRCH?**	Response **+CRATSRCH: <rat_timer>,<srch_align>** **OK**
	Parameters See Write Command
Write Command **AT+CRATSRCH=<rat_timer>,<srch_align>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**

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	Parameters **<rat_timer>** Integer type,<rat_timer> is timeout for better RAT(radio access technology) search.The default value is 60, expressed in minutes. For SIM7080 series modules,the priority of RAT is as follows: CAT-M > NB-IOT > GSM If UE has registered successfully GSM network,it will try to search CAT-M and NB-IOT network after the timer expiring. **<srch_align>** Integer type,<srch_align> specifies an interval before eDRX page when a scan should begin.The default value is 20,expressed in minutes.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

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

AT+CASRIP Show Remote IP Address and Port When Received Data	
Read Command **AT+CASRIP?**	Response **+CASRIP**: **<mode>** **OK**
	Parameters See Write Command
Write Command **AT+CASRIP=<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** A numeric parameter which shows remote IP address and port. 0 Do not show the prompt 1 Show the prompt, the format is as follows: xxx.xxx.xxx.xxx,<port> (IPV4) or xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx,<port> (IPV6)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

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5.2.38 AT+CPSMRDP Read PSM Dynamic Parameters

AT+CPSMRDP	**Read PSM Dynamic Parameters**
Test Command **AT+CPSMRDP=?**	Response **+CPSMRDP:** (list of supported **<mode>**s) **OK**
Execution Command **AT+CPSMRDP**	Response **+CPSMRDP:** **<mode>,<Requested_active_Time>,<Requested_Periodic_TAU>,<Network_Active_Time>,<Network_T3412_EXT_value>,<Network_T3412_value>** **OK**
	Parameters <**mode**> Integer type.Disable or enable the use of PSM in the UE. 0 Disable the use of PSM 1 Enable the use of PSM <**Requested_active_Time**> Integer type.Requested active time value(T3324) to be configed by UE in E-UTRAN network.Unit: second. <**Requested_Periodic_TAU**> Integer type.Requested extended periodic TAU value (T3412_EXT) to be configed by UE in E-UTRAN network.Unit: second. <**Network_Active_Time**> Integer type.Network assign active timer value(T3324) in E-UTRAN network.If <network_Active_Time> is 0,it show s that network does not support PSM feature.Unit:second. <**Network_T3412_EXT_value**> Integer type.Network assign extended periodic TAU value(T3412_EXT) in E-UTRAN network.Unit:second. <**Network_T3412_value**> Integer type.Network assign periodic TAU value(T3412) in E-UTRAN network.Unit:second.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● If <Network_T3412_EXT_value> is greater than 0,UE will start TAU procedure according to <Network_T3412_EXT_value>.

5.2.39 AT+CPSMCFG Configure PSM version and Minimum Threshold Value

AT+CPSMCFG	**Configure PSM version and Minimum Threshold Value**
Test Command	Response

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AT+CPSMCFG=?	TA returns the list of supported modes. **+CPSMCFG:** (list of supported **<threshold>**s),(list of supported **<psm_version>**s) **OK**
	Parameters See Write Command
Read Command **AT+CPSMCFG?**	Response **+CPSMCFG: <threshold>,<psm_version>** **OK**
	Parameters See Write Command
Write Command **AT+CPSMCFG=<threshold>[,<psm_version>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<threshold>** Integer type.Minimum threshold value(in second) to enter PSM.The range from 60 to 86400.The default value is 60 seconds. **<psm_version>** Integer type.Bitmask to indicate PSM modes(1-Enable/0-Disable).Each bit is configured independentyly.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

5.2.40 AT+CPSMCFGEXT Configure Modem Optimization of PSM

AT+CPSMCFGEXT Configure Modem Optimization of PSM	
Test Command **AT+CPSMCFGEXT=?**	Response TA returns the list of supported modes. **+CPSMCFGEXT:** (list of supported **<psm_opt_mask>**s),(list of supported **<max_oos_full_scans>**s),(list of supported **<psm_duration_due_to_oos>**s),(list of supported **<psm_randomization_window>**s),(list of supported

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	<max_oos_time>s),(list of supported **<early_wake_up_time>**s) **OK**
	Parameters See Write Command
Read Command **AT+CPSMCFGEXT?**	Response **+CPSMCFGEXT: <psm_opt_mask>,<max_oos_full_scans>,<psm_duration_due_to_oos>,<psm_randomization_window>,<max_oos_time>,<early_wake_up_time>** **OK**
	Parameters See Write Command
Write Command **AT+CPSMCFGEXT=<psm_opt_mask>[,<max_oos_full_scans>[,<psm_duration_due_to_oos>[,<psm_randomization_window>[,<max_oos_time>[,<early_wake_up_time>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<psm_opt_mask>** Integer type.The range is from 0 to 15.The default value is 10. 1st bit of <psm_opt_mask> is used to enable/disable PSM ENTER request without sending PSM_READY_REQ to NAS.This is a quick PSM operation. 2nd bit of <psm_opt_mask> is used to enable/disable Out of Service(OoS) status indication from Modem to AP. 3rd bit of <psm_opt_mask> is used to enable/disable limited service status indication from Modem to AP. 4th bit of <psm_opt_mask> 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. **<max_oos_full_scans>** 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. **<psm_duration_due_to_oos>** 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. **<psm_randomization_window>** 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.

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	<max_oos_time> 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. <**early_wakeup_time**> 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.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.41 AT+CPSMSTATUS Enable Deep Sleep Wakeup Indication

AT+CPSMSTATUS Enable Deep Sleep Wakeup Indication	
Test Command **AT+CPSMSTATUS=?**	Response **+CPSMSTATUS:** (list of supported **<enable>**s) **OK**
	Parameters See Write Command
Read Command **AT+CPSMSTATUS?**	Response **+CPSMSTATUS: <enable>** **OK**
	Parameters See Write Command
Write Command **AT+CPSMSTATUS=<enable>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<enable>** 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

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5.2.42 AT+CEDRXS Entended-DRX Setting

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

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5.2.43 AT+CEDRX Configure eDRX parameters

AT+CEDRX Configure eDRX parameters	
Test Command **AT+CEDRX=?**	Response **+CEDRX: (**range of supported **<mode>**s**),(**range of supported **<enabled>**s**),(**range of supported **<ptw>**s**),(**range of supported **<cycle_length>**s**)** **OK**
Read Command **AT+CEDRX?**	Response **+CEDRX: <mode>,<enabled>,<ptw>,<cycle_length>** **…** **OK**
	Parameters See Write Command
Write Command **AT+CEDRX=<mode>,<enabled>,<ptw>,<cycle_length>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** Network type 2 NB-IoT 3 CAT-M **<enabled>** Enable eDRX 0 Disable 1 Enable **<ptw>** Page time window 0-15 **<cycle_length>** 0-15
Reference	Note ● The value 0-15 of PTW(CAT-M) separately means 1280,2560,3840, 5120,6400,7680,8960,10240,11520,12800,14080,15360,16640,17920, 19200,20480.(ms) ● The value 0-15 of PTW(NB-IOT) separately means 2560,5120,7680, 10240,12800,15360,17920,20480.23040,25600,28160,30720,33280, 35840.38400,40960.(ms) ● The value 0-15 of cycle_length separately means 5.12,10.24,20.48, 40.96,61.44,81.92,102.40,122.88,143.36,163.84,327.68,655.36,1310.72,2621.44,5242.88,10485.76.(seconds) ● There has no effect if <mode> is 0 or 1. ● The eDRX parameters can take effect after module restarting

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5.2.44 AT+CEDRXRDP eDRX Read Dynamic Parameters

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

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Reference	Note

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

AT+CRAI Configure Release Assistance Indication in NB-IOT network	
Test Command **AT+CRAI=?**	Response **+CRAI: (**list of supported **<rai>**s),(list of supported **<valid_time>**s) **OK**
	Parameters See Write Command
Read Command **AT+CRAI?**	Response **+CRAI: <rai>**,**<valid_time>** **OK**
	Parameters See Write Command
Write Command **AT+CRAI=<rai>[,<valid_time>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<rai>** Integer type.Indicates the value of the release assistance indication,refer 3GPP TS 24.301[83]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. **<valid_time>** Integer type.<valid_time> 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 ● Before UE sends the last packet of data, AT+CRAI should be executed firstly.

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5.2.46 AT+CREBOOT Reboot Module

AT+CREBOOT Reboot Module	
Test Command **AT+CREBOOT=?**	Response **OK**
	Parameters See Write Command
Execution Command **AT+CREBOOT**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.47 AT+SPKMUTESW Set Handsfree On/off

AT+SPKMUTESW Set Handsfree On/off	
Test Command **AT+SPKMUTESW=?**	Response **+SPKMUTESW: (**list of supported <**mode**>s**)** **OK**
Write Command **AT+SPKMUTESW=<mode>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<mode>** 0 Close the function of Handsfree 1 Open the function of Handsfree
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

5.2.48 AT+ANTENALLCFG Configure Antenna Tuner

AT+ANTENALLCFG Configure Antenna Tuner

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Test Command **AT+ANTENALLCFG=?**	Response **+ANTENALLCFG: (**range of supported <**val1_band**>s**),(**range of supported <**val2_band**>s**),(**range of supported <**val3_band**>s**)** **OK**
	Parameters See Write Command
Read Command **AT+ANTENALLCFG?**	Response **+ANTENALLCFG: <val1_band>,<val2_band>,<val3_band>** **OK**
	Parameters See Write Command
Write Command **AT+ANTENALLCFG=<val1_band>,<val2_band>,<val3_band>[,<val0_band >]**	Response If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<val1_band>** bands need to set value 1 0x0-0x7ffff **<val2_band>** bands need to set value 2 0x0-0x7ffff **<val3_band>** bands need to set value 3 0x0-0x7ffff **<val0_band>** bands need to set value 0,It is possible without this parameter 0x0-0x7ffff Every bit represent one band, total 19 bands. Below table is SIM7080G PIN value

RFMIPI_CLK (high bit)	RFMIPI_DATA (low bit)	
0(low level)	1(high level)	1(<val1_band>)
1	0	2(<val2_band>)
1	1	3(<val3_band>)
0	0	0(<val0_band>)

Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note ● The band to be set is return value of "AT+CBANDCFG=?". +CBANDCFG: (CAT-M,NB-IOT),(1,2,3,4,5,8,12,13,14,18,19,20,25,2

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	6,27,28,66,71,85)

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6 AT Commands for GPRS Support

6.1 Overview of AT Commands for GPRS Support

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

6.2 Detailed Descriptions of AT Commands for GPRS Support

6.2.1 AT+CGATT Attach or Detach from GPRS Service

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

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

6.2.2 AT+CGDCONT Define PDP Context

AT+CGDCONT	**Define PDP Context**
Test Command **AT+CGDCONT=?**	Response **+CGDCONT:** (range of supported <**cid**>s),<**PDP_type**>,,,(list of supported <**d_comp**>s),(list of supported <**h_comp**>s),(list of <**ipv4_ctrl**>s) **OK**
	Parameters See Write Command
Read Command **AT+CGDCONT?**	Response **+CGDCONT: [<cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>,<ipv4_ctrl>,<emergency_flag>[<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>,<ipv4_ctrl>[...]]]** **OK**
	Parameters See Write Command
Write Command **AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>][,<ipv4_ctrl>[,<emergency_flag>]]]]]]**	Response **OK** or **ERROR**
	Parameters **<cid>** (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command. 1…15 **<PDP_type>** (Packet Data Protocol type) A string parameter which

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	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 Non-IP Transfer of Non-IP data to external packet data Network (see 3GPP Technical Specifications 24.301). **<APN>** (Access Point Name) A string parameter (string should be included in quotation marks) which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.The default value is NULL. **<PDP_addr>** A string parameter that identifies the MT in the address space applicable to the PDP. Format: "<n>.<n>.<n>.<n>" where <n>=0..255 If the value is null or equals 0.0.0.0 a dynamic address will be requested. The allocated address may be read using the +CGPADDR command. **<d_comp>** A numeric parameter that controls PDP data compression 0 Off (default if value is omitted) 1 On 2 V.42bis **<h_comp>** A numeric parameter that controls PDP head compression 0 Off (default if value is omitted) 1 On 2 RFC1144 3 RFC2507 4 RFC3095 **<ipv4_ctrl>** Parameter that controls how the MT/TA requests to get the IPv4 address information: 0 Address Allocation through NAS Signaling 1 On
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

6.2.3 AT+CGACT PDP Context Activate or Deactivate

AT+CGACT PDP Context Activate or Deactivate	
Test Command **AT+CGACT=?**	Response **+CGACT: (**list of supported **<state>**s**)**

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	OK
	Parameters See Write Command
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>+CGACT: <cid>,<state>…]** **OK**
	Parameters See Write Command
Write Command **AT+CGACT=<state>[,<cid>[,<cid>[,…]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<state>** Indicates the state of PDP context activation 0 Deactivated 1 Activated Other values are reserved and will result in an ERROR response to the Write Command. **<cid>** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command). If the <cid> is omitted, it only affects the first cid. 1…15
Parameter Saving Mode	NO_SAVE
Max Response Time	150 seconds
Reference	Note ● This command is used to test PDPs with network simulators. Successful activation of PDP on real network is not guaranteed.

6.2.4 AT+CGPADDR Show PDP Address

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

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AT+CGPADDR=<cid>[,<cid>[,…]]	**+CGPADDR: <cid>,<PDP_addr>[<CR><LF>+CGPADDR: <cid>,<PDP_addr>[…]]** **OK** If SIM card supports IPV4V6 type and the PDP_type of the command "AT+CGDCONT" defined is ipv4v6 : **[+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>]** **+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]]]** **OK** or **ERROR**
	Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command) 1…15 **<PDP_addr>** String type, IP address Format: <n>.<n>.<n>.<n> where <n>=0..255 **<PDP_addr_IPV4>** A string parameter that identifies the MT in the address space applicable to the PDP. **<PDP_addr_IPV6>** A string parameter that identifies the MT in the address space applicable to the PDP when the sim_card supports ipv6. The pdp type must be set to "ipv6" or "ipv4v6" by the AT+CGDCONT command.
Execution Command **AT+CGPADDR**	Response **[+CGPADDR: <cid>,<PDP_addr>] +CGPADDR: <cid>,<PDP_addr>[...]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>** If SIM card supports IPV4V6 type and the PDP_type of the command "AT+CGDCONT" defined is ipv4v6 : **[+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6>]** **+CGPADDR: <cid>,<PDP_addr_IPV4>,<PDP_addr_IPV6> [...]]]** **OK**
	Parameters See Write Command
Parameter Saving	NO_SAVE

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

6.2.5 AT+CGREG Network Registration Status

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

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	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 <**rac**> String type;One byte routing area code in hexadecimal format **<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

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

6.2.7 AT+CEREG EPS Network Registration Status

AT+CEREG EPS Network Registration Status	
Test Command **AT+CEREG=?**	Response **+CEREG: (**list of supported **<n>**s**)** **OK**
	Parameters

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	See Write Command
Read Command **AT+CEREG?**	Response when <**n**>=0, 1, 2 and command successful: **+CEREG: <n>,<stat>[,[<tac>],[<rac>],[<ci>],[<AcT>]]** **OK** when <**n**>=4 and command successful: **+CEREG: <n>,<stat>[,[<tac>],[<rac>],[<ci>],[<AcT>][,,[,[<Active-Time>],[<Periodic-TAU>]]]]** **OK** If error is related to wrong AT syntax or operation not allowed: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+CEREG[=<n>]**	Response **OK** or **ERROR**
	Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CEREG: <stat>** 2 Enable network registration and location information unsolicited result code **+CEREG: <stat>[,[<tac>],[<rac>],[<ci>],[<AcT>]]** 4 For a UE that wants to apply PSM, enable network registration and location information unsolicited result code **+CEREG: <stat>[,[<tac>],[<rac>],[<ci>],[<AcT>][,,[,[<Active-Time>],[<Periodic-RAU>]]]]** **<stat>** 0 Not registered, MT is not currently searching an operator to register to.The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user. 1 Registered, home network. 2 Not registered, but MT is currently trying to attach or searching an operator to register to. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. 3 Registration denied, The GPRS service is disabled, the UE is not allowed to attach for GPRS if it is requested by the user. 4 Unknown

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	5 Registered, roaming **<tac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** String type (string should be included in quotation marks); two bytes cell ID in hexadecimal format **<AcT>** 0 User-specified GSM access technology 7 User-specified LTE M1 A GB access technology 9 User-specified LTE NB S1 access technology **<Active-Time>** String type; one byte in an 8 bit format. Requested Active Time value (T3324) to be allocated to the UE. The requested Active Time value is coded as one byte (octet 3) of the GPRS Timer 2 information element coded as bit format (e.g. "00100100" equals 4 minutes). **<Periodic-RAU>** String type; one byte in an 8 bit format. Requested extended periodic TAU value (T3412) to be allocated to the UE in E-UTRAN. The requested extended periodic TAU value is coded as one byte (octet 3) of the GPRS Timer 3 information element coded as bit format (e.g. "01000111" equals 70 hours).
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

6.2.8 AT+CGAUTH Set Type of Authentication for PDP-IP Connections

AT+CGAUTH Set Type of Authentication for PDP-IP Connections	
Test Command **AT+CGAUTH=?**	Response **+CGAUTH:** (range of supported <**cid**>s),(list of supported <**auth_type**>s) **OK**
	Parameters See Write Command
Read Command **AT+CGAUTH?**	Response **+CGAUTH: <cid>,<auth_type>[,<user>][<CR><LF>+CGAUTH: <cid>,<auth_type>[,<user>]<CR><LF>[...]]** **OK**
	Parameters See Write Command
Write Command **AT+CGAUTH=<**	Response **OK**

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cid>[,<auth_type>[,<passwd>[,<user>]]]	or **ERROR**
	Parameters **<cid>** (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command. 1…15 **<auth_type>** Indicate the type of authentication to be used for the specified context. If CHAP is selected another parameter <passwd> needs to be specified. If PAP is selected two additional parameters <passwd> and <user> need to specified. 0 none 1 PAP 2 CHAP 3 PAP or CHAP **<passwd>** Parameter specifies the password used for authentication. **<user>** Parameter specifies the user name used for authentication.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

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7 AT Commands for IP Application

7.1 Overview

Command	Description
AT+CNACT	APP Network Active
AT+CNCFG	PDP Configure

7.2 Detailed Descriptions of Commands

7.2.1 AT+CNACT APP Network Active

AT+CNACT APP Network Active	
Test Command **AT+CNACT=?**	Response **+CNACT:** (list of supported <**pdpidx**>s)**,**(list of supported <**statusx**>s) **OK**
	Parameters See Write Command
Read Command **AT+CNACT?**	Response **+CNACT: <pdpidx>,<statusx>,<addressx>** **OK**
	Parameters See Write Command
Write Command **AT+CNACT=<pdpidx>,<action>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<pdpidx>** (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=0) is returned by the test form of the command. 0…3 **<action>** 0 Deactive 1 Active 2 Auto Active

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	<statusx> 0 Deactived 1 Actived <**addressx**> IP address.Format is **.**.**.**
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note "+APP PDP: <pdpidx>,ACTIVE" will be reported if the app network actived,and "+APP PDP: <pdpidx>,DEACTIVE" will be reported if the app network deactived. Auto Active means the will active automatically if the activation failed.

7.2.2 AT+CNCFG PDP Configure

AT+CNCFG PDP Configure	
Test Command **AT+CNCFG=?**	Response **+CNCFG:** (list of supported <**pdpidx**>s)**,**(list of supported <**ip_type**>s)**,<len_APN>,<len_username>,<len_password>,**(list of supported <**authentication**>s) **OK**
	Parameters See Write Command
Read Command **AT+CNCFG?**	Response **+CNCFG:** **<pdpidx>,<ip_type>,<APN>,<username>,<password>,<authentication>** **OK**
	Parameters See Write Command
Write Command **AT+CNCFG=<pdpidx>,<ip_type>,[<APN>,[<username>,<password>,[<authentication>]]]**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<pdpidx>** (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=0) is returned by the test form of the command. 0…3

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	<action> 0 Deactive 1 Active 2 Auto Active **<ip_type>** Packet Data Protocol type) A Interger 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. **<usename>** Username for authentication. **<password>** Password for authentication. **<authentication>** 0 NONE 1 PAP 2 CHAP 3 PAP or CHAP <**len_APN**> Interger type.Maxinum length of parameter **<APN>**. <**len_name**> Interger type.Maxinum length of parameter **<usename>**. **<len_password>** Interger type.Maxinum length of parameter **<password>**.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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8 AT Commands for GNSS Application

SIM7080 series modules provide GNSS AT command is as follows:

8.1 Overview

Command	Description
AT+CGNSPWR	GNSS Power Control
AT+CGNSINF	GNSS Navigation Information Parsed From NMEA Sentences
AT+CGNSCOLD	GNSS Cold Start
AT+CGNSWARM	GNSS Warm Start
AT+CGNSHOT	GNSS Hot Start
AT+CGNSMOD	GNSS Work Mode Set
AT+CGNSXTRA	GNSS XTRA Function Open
AT+CGNSCPY	GNSS XTRA File Copy
AT+SGNSCFG	GNSS NMEA Out Configure
AT+SGNSCMD	GNSS NMEA Data Output to AT Port

8.2 Detailed Descriptions of Commands

8.2.1 AT+CGNSPWR GNSS Power Control

AT+CGNSPWR	GNSS Power Control
Test Command **AT+CGNSPWR=?**	Response **+CGNSPWR: (**list of supported **<mode>**s**)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSPWR?**	Response TA returns the current status of GNSS Power supply **+CGNSPWR: <mode>** **OK**
	Parameters See Write Command
Write Command **AT+CGNSPWR=<mode>**	Response **OK** or

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	ERROR
	Parameters **<mode>** 0 Turn off GNSS power supply 1 Turn on GNSS power supply
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note NMEA data will not out put to usb's NMEA port when set AT+CGNSPWR=1.

8.2.2 AT+CGNSINF GNSS Navigation Information Parsed From NMEA Sentences

AT+CGNSINF GNSS Navigation Information Parsed From NMEA Sentences	
Test Command **AT+CGNSINF=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+CGNSINF**	Response **+CGNSINF: <GNSS run status>,<Fix status>,<UTC date & Time>,<Latitude>,<Longitude>,<MSL Altitude>,<Speed Over Ground>,<Course Over Ground>,<Fix Mode>,<Reserved1>,<HDOP>,<PDOP>,<VDOP>,<Reserved2>,<GNSS Satellites in View>,<Reserved3>,<HPA>,<VPA>** **OK**
	Parameters **<GNSS run status>** 0 GNSS off 1 GNSS on **<Fix status>** 0 Not fixed position 1 Fixed position See below table 8-1.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

Table 8-1: AT+CGNSINF return Parameters

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Index	Parameter	Unit	Range	Length
1	GNSS run status	--	0-1	1
2	Fix status	--	0-1	1
3	UTC date & Time	yyyyMMddhhmmss.sss	yyyy: [1980,2039] MM : [1,12] dd: [1,31] hh: [0,23] mm: [0,59] ss.sss:[0.000,60.999]	18
4	Latitude	±dd.dddddd	[-90.000000,90.000000]	10
5	Longitude	±ddd.dddddd	[-180.000000,180.000000]	11
6	MSL Altitude	meters		8
7	Speed Over Ground	Km/hour	[0,999.99]	6
8	Course Over Ground	degrees	[0,360.00]	6
9	Fix Mode	--	0,1,2[1]	1
10	Reserved1			0
11	HDOP	--	[0,99.9]	4
12	PDOP	--	[0,99.9]	4
13	VDOP	--	[0,99.9]	4
14	Reserved2			0
15	GPS Satellites in View	--	[0,99]	2
16	GNSS Satellites Used	--	[0,99]	2
17	GLONASS Satellites in View	--	[0,99]	2
18	Reserved3			0
19	C/N0 max	dBHz	[0,55]	2
20	HPA[2]	meters	[0,9999.9]	6
21	VPA[2]	meters	[0,9999.9]	6
				Total：(94) chars

8.2.3 AT+CGNSCOLD GNSS Cold Start

AT+CGNSCOLD GNSS Cold Start	
Test Command **AT+CGNSCOLD=?**	Response **OK**

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Execution Command **AT+CGNSCOLD**	Response If AT+CGNSXTRA=0 **OK** Else if AT+CGNSXTRA=1 **OK** **+CGNSXTRA: <mod>**
	Parameters **<mod>** 0 Aid XTRA file success 1 XTRA file is not exist 2 XTRA file is not effective
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.4 AT+CGNSWARM GNSS Warm Start

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

8.2.5 AT+CGNSHOT GNSS Hot Start

AT+CGNSHOT GNSS Hot Start	
Test Command **AT+CGNSHOT=?**	Response **OK**
Execution Command **AT+CGNSHOT**	Response **OK**

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Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.6 AT+CGNSMOD GNSS Work Mode Set

AT+CGNSMOD	**GNSS Work Mode Set**
Test Command **AT+CGNSMOD=?**	Response **+CGNSMOD: (**list of supported **<gps mode>),(**list of supported **<glo mode>s),(**list of supported **<bd mode>s),(**list of supported **<gal mode>s),(**list of supported **<qzss mode>s)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSMOD?**	Response **+CGNSMOD: <gps mode>,<glo mode>,<bd mode>,<gal mode>,<qzss mode>** **OK**
	Parameters See Write Command
Write Command **AT+CGNSMOD=<gps mode>,<glo mode>,<bd mode>,<gal mode>,<qzss mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<gps mode>** GPS work mode 1 Start GPS NMEA out **<glo mode>** GLONASS work mode 0 Stop GLONASS NMEA out 1 Start GLONASS NMEA out **<bd mode>** BEIDOU work mode 0 Stop BEIDOU NMEA out 1 Start BEIDOU NMEA out **<gal mode>** GALILEAN work mode 0 Stop GALILEAN NMEA out 1 Start GALILEAN NMEA out **<qzss mode>** QZSS work mode 0 Stop QZSS NMEA out 1 Start QZSS NMEA out

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Parameter Saving Mode	AUTO_SAVE_REBOOT
Max Response Time	-
Reference	Note For <glo mode>,<bd mode>,<gal mode> and <qzss mode>,Only one of the four parameters can be set to 1.

8.2.7 AT+CGNSXTRA GNSS XTRA Function Open

AT+CGNSXTRA GNSS XTRA Function Open	
Test Command **AT+CGNSXTRA=?**	Response **+CGNSXTRA: (0-1)** **OK**
	Parameters See Write Command
Read Command **AT+CGNSXTRA?**	Response TA returns the current status of configure **+CGNSXTRA: <enable>** **OK**
	Parameters See Write Command
Write Command **AT+CGNSXTRA=<enable>**	Response **OK** or **ERROR**
	Parameters **<enable>** 0 Disable XTRA function 1 Enable XTRA function
Execution Command **AT+CGNSXTRA**	Response This command is used to query validate time of XTRA file. The XTRA file exists if the download and copy are successful. If XTRA file is not exist **ERROR** Else if XTRA file is exist **+CGNSXTRA: <validDiffHours>,<validDurationHours>,<Inject gpsOneXTR GPS time>** **OK**

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	Parameters **<validDiffHours>** Local time and download time difference,if validDiffHours value is -1,the time is invalid. **<validDurationHours>** Validate time of XTRA file,Unit is Hour. **<Inject gpsOneXTR GPS time>** Download time of XTRA file.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.8 AT+CGNSCPY GNSS XTRA File Copy

AT+CGNSCPY GNSS XTRA File Copy	
Test Command **AT+CGNSCPY=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+CGNSCPY**	Response **+CGNSCPY: <ret>** **OK**
	Parameters **<ret>** 1 File not exist 0 Copy success
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

8.2.9 AT+SGNSCFG GNSS NMEA Out Configure

AT+SGNSCFG GNSS NMEA Out Configure	
Test Command **AT+SGNSCFG=?**	Response **+SGNSCFG: "NMEAOUTPORT",(**range of supported **<port>**s**),(**list of supported **<baudrate>**s**)** **+SGNSCFG: "NMEATYPE",(**range of supported **<nmeatype>**s**)** **+SGNSCFG: "OUTURC",(**range of supported **<mode>**s**)** **+SGNSCFG: "ADSS",(**range of supported **<mode>**s**)** **+SGNSCFG: "MODE",(**range of supported **<mode>**s**)**

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	OK
	Parameters See Write Command
Read Command **AT+SGNSCFG?**	Response TA returns the current status of configure **+SGNSCFG: "NMEAOUTPORT",<port>[,<baudrate>]** **+SGNSCFG: "NMEATYPE",<nmeatype>** **+SGNSCFG: "OUTURC",<mode>** **+SGNSCFG: "ADSS",<mode>** **+SGNSCFG: "MODE",<mode>** **OK**
	Parameters See Write Command
Write Command **AT+SGNSCFG= "NMEAOUTPORT",<port>,[<baudrate>]**	Response **OK** or **ERROR**
	Parameters **<port>** 0 Turn off GNSS NMEA data output. 1 Turn on GNSS NMEA data out put to USB's NMEA port. 2 Turn on GNSS NMEA data out put to UART3 port. <**baudrate**> Baud rate when NMEA output from UART3. 9600 19200 38400 57600 115200
Write Command **AT+SGNSCFG= "NMEATYPE", <nmeatype>**	Response **OK** or **ERROR**
	Parameters <**nmeatype**> Range is 0-255. Each bit enables an NMEA sentence output as follows: Bit 0 GPGSV (GPS satellites in view) Bit 1 GLGSV (GLONASS satellites in view GLONASS fixes only) Bit 2 GAGSV (GALILEO satellites in view) Bit 3 PQGSV (BEIDOU/QZSS satellites in view) Bit 4 GNGSA/GPGSA (1. GPS/2. Glonass/3. GALILE DOP and Active Satellites.)

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	Bit 5 GNVTG/GPVTG (track made good and ground speed) Bit 6 GNRMC/GPRMC (recommended minimum specific GPS/TRANSIT data) Bit 7 GNGGA/GPGGA (global positioning system fix data)
Write Command **AT+SGNSCFG="OUTURC",<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 Turn off navigation data URC report. 1 Turn on navigation data URC report.
Write Command **AT+SGNSCFG="ADSS",<mode>**	Response **OK** or **ERROR**
	Parameters **<mode>** 0 Do not delete any data. Perform hot start if the conditions are permitted after starting GNSS. 1 Delete some related data. Perform warm start if the conditions are permitted after starting GNSS. 2 Delete all assistance data except almanac data. Enforce cold start after starting GNSS. 3 Delete all assistance data except almanac and sv health data. Enforce xtra cold start after starting GNSS. 4 Delete all assistance data. Enforce reset start after starting GNSS
Write Command **AT+SGNSCFG="MODE",<mode>**	Response **OK** If ok you need reboot module. or **ERROR**
	Parameters **<mode>** 0 start GPS and GLONASS constellation 1 start GPS and GALILEO constellation 2 start GPS and BEIDOU constellation 3 start GPS and QZSS constellation
Parameter Saving Mode	NO_SAVE
Max Response Time	-

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Reference	Note
	This command only supported in UART port.

8.2.10 AT+SGNSCMD GNSS NMEA Data Output to AT Port

AT+SGNSCMD	**GNSS NMEA Data Output to AT Port**
Test Command **AT+SGNSCMD=?**	Response **+SGNSCMD: 0** **+SGNSCMD: 1,(**range of supported **<powerlevel>**s**)** **+SGNSCMD: 2,(**range of supported **<minInterval>s),(**range of supported **<minDistance>s),(**range of supported **<accuracy>**s**)** **OK**
	Parameters See Write Command
Write Command If <mode>=0 **AT+SGNSCMD=<mode>** If <mode>=1 **AT+SGNSCMD=<mode>,<powerlevel>** If <mode>=2 **AT+SGNSCMD=<mode>,<minInterval>,<minDistance>,<accuracy>**	Response **OK** **+SGNSCMD: <mode>,<time>,<Latitude>,<longitude>,<accuracy>,<altitude>,<altitudeMeanSeaLevel>,<speed>,<bearing>,<timestamp>,<flags>** **or** **+SGNSERR: <error code>** or **ERROR**
	Parameters **<mode>** 0 Turn off GNSS 1 Turn on GNSS and get location information once 2 Turn on GNSS and get multiple location information <**powerlevel**> 0 Use all technologies available to calculate location. 1 Use all low power technologies to calculate location. 2 Use only low and medium power technologies to calculate location **<minInterval>** minInterval is the minimum time interval in milliseconds that must elapse between position reports. default value is 1000. **<minDistance>** Minimum distance in meters that must be traversed between position reports. Setting this interval to 0 will be a pure time-based tracking/batching. **<accuracy>** 0 Accuracy is not specified, use default 1 Low Accuracy for location is acceptable 2 Medium Accuracy for location is acceptable

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	3 Only High Accuracy for location is acceptable **<error code>** 0 Success 1 General failure 2 Callback is missing 3 Invalid parameter 4 ID already exists 5 ID is unknown 6 Already started 7 Not initialized 8 Maximum number of geofences reached 9 Not supported 10 Timeout when asking single shot 11 GNSS engine could not get loaded 12 Location module license is disabled 13 Best available position is invalid Parameters of URC see below table 8-1.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

Table 8-2: AT+SGNSCMD return Parameters

Index	Parameter	Unit	Range	Length
1	GNSS mode	--	0-2	1
2	UTC date & Time	hh:mm:ss	hh: [0,23] mm: [0,59] ss.sss:[0,60]	8
3	Latitude	±dd.ddddd	[-90.00000,90.00000]	9
4	Longitude	±ddd.ddddd	[-180.00000,180.00000]	10
5	MSL Accuracy	meters		6
6	MSL Altitude	meters		6
7	MSL Altitude sea level	meters		6
8	Speed Over Ground	Km/hour	[0,999.99]	6
9	Course Over Ground	degrees	[0,360.00]	6
10	Time Stamp	--		13
11	Flag			3
			Total：(66) chars	

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9 AT Commands for File System

9.1 Overview

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

9.2 Detailed Descriptions of Commands

9.2.1 AT+CFSINIT Get Flash Data Buffer

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

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

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

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

9.2.3 AT+CFSRFILE Read File from Flash

AT+CFSRFILE Read File from Flash	
Test Command **AT+CFSRFILE=?**	Response **+CFSRFILE:** (list of supported <**index**>s)**,**<**len_filename**>**,**(list of supported <**mode**>s)**,**(range of supported <**file size**>s)**,**(range of supported <**position**>s)

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

9.2.4 AT+CFSDFILE Delete the File from the Flash

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

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

9.2.5 AT+CFSGFIS Get File Size

AT+CFSGFIS Get File Size	
Test Command **AT+CFSGFIS=?**	Response **+CFSGFIS:** (list of supported <**index**>s)**,<len_filename>** **OK**
	Parameters See Write Command
Write Command **AT+CFSGFIS=<index>,<file name>**	Response **ERROR** or **+CME ERROR: <err>** or

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

9.2.6 AT+CFSREN Rename a File

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

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

9.2.7 AT+CFSGFRS Get the Size of File System

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

9.2.8 AT+CFSTERM Free the Flash Buffer Allocated by CFSINIT

AT+CFSTERM Free the Flash Buffer Allocated by CFSINIT	
Execution Command **AT+CFSTERM**	Response **OK** or **ERROR**

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	or **+CME ERROR: <err>**
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

9.2.9 AT+CBAINIT Initialize the AP Backup File System

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

9.2.10 AT+CBALIST Set the files Which Want to Backup

AT+CBALIST Set the Files Which Want to Backup	
Read Command **AT+CBALIST?**	Response **+CBALIST: <index>,<filename>** **OK**
	Parameters See Write Command
Write Command **AT+CBALIST=<index>,<filename>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<index>** 0-9 The file index. 10 Disable log

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	11 Enable log **<file name>** File name length should less than or equal to 80 characters.
Parameter Saving Mode	NO_SAVE
Max Response Time	
Reference	Note

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

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

9.2.12 AT+CBART Restore the File into AP File System

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

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10 AT Commands for SIM Application Toolkit

10.1 Overview

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

10.2 Detailed Descriptions of Commands

10.2.1 AT+STIN SAT Indication

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

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10.2.2 AT+STGI Get SAT Information

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

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	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.

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10.2.3 AT+STGR SAT Respond

AT+STGR SAT respond	
Test Command **AT+STGR=?**	Response **OK**
	Parameters See Write Command
Write Command **AT+STGR=<cmd_id>[,<data>]**	Response **OK** or **ERROR**
	Parameters **<cmd_id>** Identifier of proactive command. 21 Display text 22 Get inkey 23 Get input 24 Select item 25 Set up menu 83 Session end by user 84 Go backward **<data>** If **<cmd_id>**=21**:** Display text If **<cmd_id>**=22**:** Input a character If **<cmd_id>**=23**:** Input a string. If **<rsp_format>** is YES or NO, input of a character in case of ANSI character set requests one byte, e.g. "Y". If **<rsp_format>** is numerical only, input the characters in decimal number, e.g. "123". If **<rsp_format>** is UCS2, requests a 4 byte string, e.g. "0031". **<rsp_format>** refer to the response by AT+STGI=23. If **<cmd_id>**=24**:** Input the identifier of the item selected by user. If **<cmd_id>**=25**:** Input the identifier of the item selected by user. If **<cmd_id>**=83**:** **<data>**Ignore Note: It could return main menu during proactive command id is not 22 or 23. If **<cmd_id>**=84**:** **<data>** Ignore

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Parameter Saving Mode	-
Max Response Time	-
Reference	Note

10.2.4 AT+STK STK Switch

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

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11 AT Commands for SSL function

11.1 Overview

Command	Description
AT+CSSLCFG	Configure SSL parameters of a context identifier

11.2 Detailed Descriptions of Commands

11.2.1 AT+CSSLCFG Configure SSL Parameters of a Context Identifier

AT+CSSLCFG Configure SSL Parameters of a Context Identifier	
Test Command **AT+CSSLCFG=?**	Response **+CSSLCFG: "SSLVERSION",**(range of supported <**ctxindex**>s),(list of supported <**sslversion**>s) **+CSSLCFG: "CIPHERSUITE",**(range of supported <**ctxindex**>s),(list of supported <**cipher_index**>s),(list of supported <**ciphersuite**>s) **+CSSLCFG: "IGNORERTCTIME",**(range of supported <**ctxindex**>s),(list of supported <**ignorertctime**>s) **+CSSLCFG: "PROTOCOL",**(range of supported <**ctxindex**>s),(list of supported <**protocol**>s) **+CSSLCFG: "SNI",**(range of supported <**ctxindex**>s)**,<len_servername>** **+CSSLCFG: "CTXINDEX",**(range of supported <**ctxindex**>s) **+CSSLCFG: "CONVERT",**(list of supported <**ssltype**>s)**,<len_cname>,<len_keyname>,<len_passkey>** **OK**
	Parameters See Write Command
Read Command **AT+CSSLCFG?**	Response **OK**
	Parameters See Write Command
Write Command **AT+CSSLCFG="SSLVERSION",<ctxindex>,<sslversion>**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** 0-5 **<sslversion>** 0 QAPI_NET_SSL_PROTOCOL_UNKNOWN

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	1 QAPI_NET_SSL_PROTOCOL_TLS_1_0 2 QAPI_NET_SSL_PROTOCOL_TLS_1_1 3 QAPI_NET_SSL_PROTOCOL_TLS_1_2 4 QAPI_NET_SSL_PROTOCOL_DTLS_1_0 5 QAPI_NET_SSL_PROTOCOL_DTLS_1_2
AT+CSSLCFG="CIPHERSUITE",<ctxindex>,<cipher_index>,<ciphersuite>	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** 0-5 **<cipher_index>** 0-7 **<ciphersuite>** 0x008A QAPI_NET_TLS_PSK_WITH_RC4_128_SHA 0x008B QAPI_NET_TLS_PSK_WITH_3DES_EDE_CBC_SHA 0x008C QAPI_NET_TLS_PSK_WITH_AES_128_CBC_SHA 0x008D QAPI_NET_TLS_PSK_WITH_AES_256_CBC_SHA 0x00A8 QAPI_NET_TLS_PSK_WITH_AES_128_GCM_SHA256 0x00A9 QAPI_NET_TLS_PSK_WITH_AES_256_GCM_SHA384 0x00AE QAPI_NET_TLS_PSK_WITH_AES_128_CBC_SHA256 0x00AF QAPI_NET_TLS_PSK_WITH_AES_256_CBC_SHA384 0x002F QAPI_NET_TLS_RSA_WITH_AES_128_CBC_SHA 0x0033 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CBC_SHA 0x0035 QAPI_NET_TLS_RSA_WITH_AES_256_CBC_SHA 0x0039 QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CBC_SHA 0x003C QAPI_NET_TLS_RSA_WITH_AES_128_CBC_SHA256 0x003D QAPI_NET_TLS_RSA_WITH_AES_256_CBC_SHA256 0x0067 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CBC_SHA256 0x006B QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CBC_SHA256 0x009C QAPI_NET_TLS_RSA_WITH_AES_128_GCM_SHA256 0x009D QAPI_NET_TLS_RSA_WITH_AES_256_GCM_SHA384 0x009E QAPI_NET_TLS_DHE_RSA_WITH_AES_128_GCM_SHA256 0x009F QAPI_NET_TLS_DHE_RSA_WITH_AES_256_GCM_SHA384 0xC004 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_128_CBC_SHA 0xC005 QAPI_NET_TLS_ECDH_ECDSA_WITH_AES_256_CBC_SHA 0xC009 QAPI_NET_TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA

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	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

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	0xC0A0 QAPI_NET_TLS_RSA_WITH_AES_128_CCM_8 0xC0A1 QAPI_NET_TLS_RSA_WITH_AES_256_CCM_8 0xC0A2 QAPI_NET_TLS_DHE_RSA_WITH_AES_128_CCM_8 0xC0A3 QAPI_NET_TLS_DHE_RSA_WITH_AES_256_CCM_8 0xCC13 QAPI_NET_TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256 0xCC14 QAPI_NET_TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256 0xCC15 QAPI_NET_TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256
AT+CSSLCFG="IGNORERTCTIME",<ctxindex>,<ignorertctime>	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** 0-5 **<ignorertctime>** 0 Do not ignore the RTC time 1 Ignore the RTC time
AT+CSSLCFG="PROTOCOL",<ctxindex>,<protocol>	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** 0-5 **<protocol>** 1 QAPI_NET_SSL_TLS_E 2 QAPI_NET_SSL_DTLS_E
AT+CSSLCFG="CTXINDEX",<ctxindex>	Response **+CSSLCFG: <ctxindex>,<sslversion>,<ciphersuite>,<ignorertctime>,<protocol>,<sni>** **OK** If failed: **+CME ERROR: <err>**
	Parameters See other commands
AT+CSSLCFG="CONVERT",<sslt	Response **OK**

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ype>,<cname>[,<keyname>[,<passkey>]]	If failed: **+CME ERROR: <err>**
	Parameters **<ssltype>** 1 QAPI_NET_SSL_CERTIFICATE_E 2 QAPI_NET_SSL_CA_LIST_E 3 QAPI_NET_SSL_PSK_TABLE_E <**cname**> String type (string should be included in quotation marks): name of cert file <**keyname**> String type (string should be included in quotation marks):name of key file <**passkey**> String type (string should be included in quotation marks):value of passkey <**len_cname**> Interger type.Maxinum length of parameter <cname>. <**len_keyname**> Interger type.Maxinum length of parameter <keyname>. <**len_passkey**> Interger type.Maxinum length of parameter <passkey>.
AT+CSSLCFG="SNI",<ctxindex>,<servername>	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ctxindex>** 0-5 **<servername>** String type.Server Name Indication.SNI addresses this issue by having the client send the name of the virtual domain as part of the TLS negotiation. <**len_servername**> Interger type.Maxinum length of parameter <servername>.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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12 AT Commands for TCP/UDP Application Supported SSL

12.1 Overview

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

12.2 Detailed Descriptions of Commands

12.2.1 AT+CACID(option) Set TCP/UDP Identifier

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

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	Parameters **<cid>** TCP/UDP identifier. Range is 0-12.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

12.2.2 AT+CASSLCFG Set SSL Certificate and Timeout Parameters

AT+CASSLCFG Set SSL Certificate and Timeout Parameters	
Test Command **AT+CASSLCFG=?**	Response **+CACFG: (**range of supported **<cid>**s**),"SSL",(**list of supported **<sslFlag>**s**)** **+CASSLCFG: (**range of supported **<cid>s),"CRINDEX",(**list of supported <**ctxindex**>s**)** **+CASSLCFG: (**range of supported **<cid>**s**),"CACERT",<len_caname>** **+CASSLCFG: (**range of supported **<cid>**s**),"CERT",<len_certname>** **+CASSLCFG: (**range of supported **<cid>**s**),"PSKTABLE",<len_pskname>** **OK**
	Parameters See Write Command
Read Command **AT+CASSLCFG?**	Response **+CASSLCFG:** **<cid> ,<ssl>,<crindex>,<caname>,<certname>,<pskname>** **OK**
	Parameter See Write Command
Write Command **AT+CASSLCFG=<cid>,"CACERT",<caname>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** TCP/UDP identifier, see AT+CACID **<caname>** Alphanumeric ASCII text string up to 64 characters. Root certificate name that has been configured by AT+CSSLCFG. <**len_caname**> Interger type.Maxinum length of parameter <caname>.

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	Note: If the root certificate is empty, module will trust all certificates as default.
AT+CASSLCFG=<cid>,"CERT",<certname>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<certname>** Alphanumeric ASCII text string up to 64 characters. Client certificate name that has been configured by AT+CSSLCFG. <**len_certname**> Interger type.Maxinum length of parameter **<certname>**.
AT+CASSLCFG=<cid>,"PSKTABLE",<pskname>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<pskname>** Alphanumeric ASCII text string up to 64 characters. PSK table name that has been configured by AT+CSSLCFG. <**len_pakname**> Interger type.Maxinum length of parameter <pskname>.
AT+CASSLCFG=<cid>,"SSL",<sslFlag>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<sslFlag>** Interger 0 Not support SSL 1 Support SSL
AT+CASSLCFG=<cid>,"CRINDEX",<crindex>	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID **<ctxindex>** The identifier of SSL configurations, see AT+CSSLCFG.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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12.2.3 AT+CAOPEN Open a TCP/UDP Connection

AT+CAOPEN Open a TCP/UDP Connection	
Test Command **AT+CAOPEN=?**	Response **+CAOPEN: (**range of supported **<cid>s),(**range of supported <**pdp_index**>s**),(**list of supported <**conn_type**>s**),<len_server>,(**range of supported <**port**>s**)** **OK**
	Parameters See Write Command
Read Command **AT+CAOPEN?**	Response **+CAOPEN: <cid>,**<**pdp_index**>,<**conn_type**><**server**>,<**port**>** **OK**
	Parameter See Write Command
Write Command **AT+CAOPEN=<cid>,<pdp_index>,<conn_type>,<server>,<port>**	Response **+CAOPEN: <cid>,<result>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** see AT+CACID <**pdp_index**> Index of PDP connection <**conn_type**> Transfer type 0 TCP 1 UDP **<server>** Alphanumeric ASCII text string up to 64 characters. Server IP address or host name. **<len_server>** Interger type.Maxinum length of parameter <server>. **<port>** Interger. Server port. **<result>** 0 Success 1 Socket error 2 No memory 3 Connection limit 4 Parameter invalid 6 Invalid IP address

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	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
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note After open a connection successfully, if module receives data, it will report **"+CADATAIND: <cid>"** to remind user to read data.

12.2.4 AT+CASERVER Open a TCP/UDP Server

AT+CASERVER	**Open a TCP/UDP Server**
Test Command **AT+CASERVER=?**	Response **+CASERVER: (**range of supported **<cid>**s**),(**range of supported <**pdp_index**>s**),(**list of supported <**conn_type**>s**),(**range of supported <**port**>s**)** **OK**
	Parameters See Write Command
Read Command **AT+CASERVER?**	Response **+CASERVER: <cid>,<pdp_index>,<conn_type>,<port>** **OK**
	Parameter See Write Command
Write Command **AT+CASERVER=<cid>,<pdp_index>,<conn_type>,<port>**	Response **+CASERVER: <cid>,<result>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**

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	Parameters **<cid>** TCP/UDP identifier <**pdp_index**> Index of PDP connection <**conn_type**> Transfer type "TCP" "TCP6" "UDP" "UDP6" **<port>** Interger. 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
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note After a client access, it will report that. **+CANEW: <server_cid>,<client_cid>,<client_ip>,<client_port>**

12.2.5 AT+CASEND Send Data via an Established Connection

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

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	Parameters See Write Command
Write Command **AT+CASEND=<cid>**	Response **+CASEND: <leftsize>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters <**leftsize**> Query free size for send buffer
Write Command **AT+CASEND=<cid>,<datalen>[,<inputtime>]**	Response **+CASEND: <cid>,<datalen>** >…….. //Input data **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** TCP/UDP identifier **<datalen>** Requested number of data bytes to be transmitted **<inputtime>** Millisecond, should input data during this period or you can't input data when timeout.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Set the input time that input data during this period or you can't input data when timeout. The default inputtime is 5000ms.

12.2.6 AT+CARECV Receive Data via an Established Connection

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

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Write Command **AT+CARECV=<cid>,<readlen>**	Response **+CARECV: <recvlen>,…….** //output data **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** TCP/UDP identifier **<readlen>** Requested number of data bytes to be read **<recvlen>** Data bytes that has been actually received
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

12.2.7 AT+CAACK Query Send Data Informations

AT+CAACK Query Send Data Informations	
Test Command **AT+CAACK=?**	Response **+CAACK: (**range of supported **<cid>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+CAACK=<cid>**	Response **+CAACK: <totalsize>,<unacksize>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<cid>** TCP/UDP identifier **<totalsize>** Total size of sent data. **<unacksize>** The size of unack data
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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12.2.8 AT+CASTATE Query TCP/UDP Connection State

AT+CASTATE Query TCP/UDP Connection State	
READ Command **AT+CASTATE?**	Response **[+CASTATE: <cid>,<state>** **]** **OK**
	Parameters **<cid>** TCP/UDP identifier **<state>** 0 Closed by remote server or internal error 1 Connected to remote server 2 Listening (server mode)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

12.2.9 AT+CACLOSE Close a TCP/UDP Connection

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

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12.2.10 AT+CACFG Configure Transparent Transmission Parameters

AT+CACFG Configure Transparent Transmission Parameters	
Test Command **AT+CACFG=?**	Response **+CACFG: "TRANSWAITTM",(**range of supported **<wait_timeout>**s**)** **+CACFG: "TRANSPKTSIZE",(**range of supported **<size>**s**)** **+CACFG: "TIMEOUT",(**range of supported **<cid>**s**),(**range of supported <**timeout**>s**)** **+CACFG: "LOCALPORT",(**range of supported **<cid>**s**),(**range of supported <**localport**>s**)** **+CACFG: "REMOTEADDR",(**range of supported **<cid>**s**),(**range of supported <ip address>s**),(**range of supported <**port**>s**)** **OK**
	Parameters See Write Command
Read Command **AT+CACFG?**	Response **+CACFG:** **TRANSWAITTM: <wait_timeout>** **TRANSPKTSIZE: <size>** **TIMEOUT: <cidx>,<timeoutx>...** **LOCALPORT: <cidx>,<localportx>...** **REMOTEADDR,<cidx>,<ipadressx>,<portx>...** **OK**
	Parameters See Write Command
Write Command **AT+CACFG=<ParamTag>,[<cid>,]<ParamValuex>...**	Response **OK** or **ERROR**
	Parameters **<cid>** TCP/UDP identifier, see AT+CACID.
	<ParamTag> **<ParamValue>** **"TRANSWAITTM"** <**wait_timeout**>Waiting to send time(100ms). default is 2 **"TRANSPKTSIZE"** <**size**>Waiting for the size of the sending packet(byte).default is 1460. **"TIMEOUT"** <**timeout**>Timeout of send data.Unit is ms.default is 100 ms. **"LOCALPORT"** <**localport**> 0-65535 **"REMOTEADDR"** <**ipaddress**> **sendto ip address (for udp**

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	server) ,<localport> 0-65535
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

12.2.11 AT+CASWITCH Switch to Transparent Transport Mode

AT+CASWITCH	**Switch to Transparent Transport Mode**
Test Command **AT+CASWITCH=?**	Response **+CASWITCH: (**range of supported <**cid**>s**),(**list of supported <transmode>s**)** **OK**
	Parameters See Write Command
Read Command **AT+CASWITCH?**	Response **+CASWITCH: <cid>,<transmode>** **OK** or If no <cid> has been set by AT+CACID: **OK**
	Parameters See Write Command
Write Command **AT+CASWITCH=<cid>,<transmode>**	Response **OK** or **OK** **CONNECT** **… …** or **ERROR**
	Parameters **<cid>** see AT+CACID **<transmode>** 0 Non transparent transmission mode 1 Transparent transmission mode
Parameter Saving	NO_SAVE

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Mode	
Max Response Time	-
Reference	Note

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13 AT Commands for HTTP(S)

13.1 Overview

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

13.2 Detailed Descriptions of Commands

13.2.1 AT+SHCONF Set HTTP(S) Parameter

AT+SHCONF Set HTTP(S) Parameter	
Test command **AT+SHCONF=?**	Response **+SHCONF: "URL",<len_URL>** **+SHCONF: "TIMEOUT",(**range of supported **<timeout>**s**)** **+SHCONF: "BODYLEN",(**range of supported **<bodylen>**s**)** **+SHCONF: "HEADERLEN",(**range of supported **<headerlen>**s**)** **+SHCONF: "POLLCNT",(**range of supported **<pollcnt>**s**)** **+SHCONF: "POLLINTMS",(**range of supported **<pollintms>**s**)** **+SHCONF: "IPVER",(**list of supported **<ipver>**s**)** **OK**
	Parameters See Write Command

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Read command **AT+SHCONF?**	Response **+SHCONF:** **URL: <url>** **TIMEOUT: <timeout>** **BODYLEN: <bodylen>** **HEADERLEN: <headerlen>** **POLLCNT: <pollcnt>** **POLLINTMS: <pollintms>** **IPVER: <ipver>** **OK**
	Parameters See Write Command
Write command **AT+SHCONF=<HTTPParamTag>,<HTTPParamValue>**	Response **OK** or **ERROR**
	Parameters <**len_URL**> Interger type.Maxinum length of parameter <URL>
	<HTTPParaTag> **<HTTPParamValue>** **"URL"** <**url**> Server URL address(max is 64 bytes) "server domain[: tcpPort]" **"TIMEOUT"** <**timeout**>Hold once request time.Unit is second.Default 60s. range: 30-1800 **"BODYLEN"** <**bodylen**> Set body max length(max is 1024 bytes) **"HEADERLEN"** <**headerlen**>Set head max length(max is 350 bytes) **"POLLCNT"** <**pollcnt**>Try connect times (max is 15 times) **"POLLINTMS"** <**pollintms**>Timeout for each attempt to connect (Max is 500ms) **"IPVER"** <**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"

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13.2.2 AT+SHSSL Select SSL Configure

AT+SHSSL Select SSL Configure	
Test command **AT+SHSSL=?**	Response **+SHSSL: (**list of supported <**index**>s**),<len_calist>,<len_certname>** **OK**
	Parameters See Write Command
Read command **AT+SHSSL?**	Response **+SHSSL: <index>,<ca list>,<cert name>** **OK**
Write command **AT+SHSSL=<index>,<calist>[,<certname>]**	Response **OK** or **ERROR**
	Parameters <**index**> CSSLCFG set Configure index <ctxindex> <**ca list**> Ca Certificate name <**cert name**> Cert Certificate name <**len_calist**> Interger type.Maxinum length of parameter <ca list>. <**len_certname**> Interger type.Maxinum length of parameter <cert name>.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	-

13.2.3 AT+SHCONN HTTP(S) Connection

AT+SHCONN HTTP(S) Connection	
Executive command **AT+SHCONN**	Response **OK** or **ERROR**
Parameter Saving Mode	-
Max Response Time	-
Reference	-

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13.2.4 AT+SHBOD Set Body

AT+SHBOD Set Body	
Test command **AT+SHBOD=?**	Response **+SHBOD:** (range of supported <**bodylen**>s),(range of supported <**timeout**>s) **OK**
	Parameters See Write Command
Read command **AT+SHBOD?**	Response **+SHBOD: <body>,<len_body>** **OK**
	Parameters See Write Command
Write command **AT+SHBOD=<len_body>,<timeout>** **<CR>text is entered <ctrl-Z/ESC>** ESC quits without sending	Response **OK** or **ERROR**
	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

13.2.5 AT+SHAHEAD Add Head

AT+SHAHEAD Add Head	
Test command **AT+SHAHEAD=?**	Response **+SHAHEAD: <len_type>,<len_value>** **OK**

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	Parameters See Write Command
Read command **AT+SHAHEAD?**	Response **[+SHAHEAD: <type>,<value>** **]** **OK**
	Parameters See Write Command
Write command **AT+SHAHEAD=<type>,<value>**	Response **OK** or **ERROR**
	Parameters <**type**> Set type (max is <headerlen> bytes). For detail <type> information, please refer to document "rfc2616". <**value**> Set value (max is <headerlen> bytes) <**len_type**> Interger type.Maxinum length of parameter <type>. <**len_value**> Interger type.Maxinum length of parameter <value>. <**headerlen**> Max length set by "AT+SHCONF="HEADERLEN",<headerlen>" **Note:** The sum of <len_type> and <len_value> max length is 350.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection.

13.2.6 AT+SHPARA Set HTTP(S) Para

AT+SHPARA Set HTTP(S) Para	
Test command **AT+SHPARA=?**	Response **+SHPARA: <len_key>,<len_value>** **OK**
	Parameters See Write Command
Read command **AT+SHPARA?**	Response **[+SHPARA: <key>,<value>** **]**

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	OK
	Parameters See Write Command
Write command **AT+SHPARA=<key>,<value>**	Response **OK** or **ERROR**
	Parameters <**key**> Set key (max is 64 bytes) <**value**> Set value (max is 64 bytes) <**len_key**> Interger type.Maxinum length of parameter <key>. <**len_value**> Interger type.Maxinum length of parameter <value>.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note: Must be executed after the connection

13.2.7 AT+SHCPARA Clear HTTP(S) Para

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

13.2.8 AT+SHSTATE Query HTTP(S) Connection Status

AT+SHSTATE Query HTTP(S) Connection Status

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Read command **AT+SHSTATE?**	Response **+SHSTATE: <status>** **OK**
	Parameters <**status**> 0 Expression HTTP(S) disconnect state 1 Expression HTTP(S) connect state
Parameter Saving Mode	-
Max Response Time	-
Reference	-

13.2.9 AT+SHCHEAD Clear Head

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

13.2.10 AT+SHREQ Set Request Type

AT+SHREQ Set Request Type	
Test command **AT+SHREQ=?**	Response **+SHREQ: <len_url>,(**list of supported <**type**>s) **OK**
	Parameters See Write Command
Read command **AT+SHREQ?**	Response **+SHREQ: <url>,<type>** **OK**

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	or(default) **+SHREQ: ,0** **OK**
	Parameters See Write Command
Write command **AT+SHREQ=<url>,<type>**	Response **OK** or **ERROR** Unsolicited Result Code **+SHREQ: <type string>,<StatusCode>,<DataLen>**
	Parameters <**url**> Request server domain (max is 512 bytes) <**len_url**> Interger type.Maxinum length of parameter <url>. **<type>** 1 GET 2 PUT 3 POST 4 PATCH 5 HEAD **<type string>** String of type are GET ,PUT,POST,PATCH,HEAD. **<StatusCode>** 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 205 Reset Content 206 Partial Content 300 Multiple Choices 301 Moved Permanently 302 Found 303 See Other 304 Not Modified 305 Use Proxy 307 Temporary Redirect 400 Bad Request 401 Unauthorized 402 Payment Required

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	403 Forbidden 404 Not Found 405 Method Not Allowed 406 Not Acceptable 407 Proxy Authentication Required 408 Request Time-out 409 Conflict 410 Gone 411 Length Required 412 Precondition Failed 413 Request Entity Too Large 414 Request-URI Too Large 415 Unsupported Media Type 416 Requested range not satisfiable 417 Expectation Failed 500 Internal Server Error 501 Not Implemented 502 Bad Gateway 503 Service Unavailable 504 Gateway Time-out 505 HTTP(S) Version not supported **<DataLen>** The length of data got
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Must be executed after the connection

13.2.11 AT+SHREAD Read Response Value

AT+SHREAD Read Response Value	
Test command **AT+SHREAD=?**	Response **+SHREAD: (**range of supported <**startaddress**>s**),(**range of supported <**datalen**>s**)** **OK**
Write command **AT+SHREAD=<startaddress>,<datalen>**	Response **OK** **+SHREAD: <data_len>** **<data>**

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	+SHREAD: <data_len> **<data>** **.....** or **ERROR** If<datalen> is bigger than the data size received, it's error If <datalen> is bigger than 2048, will got multi URC +SHREAD
	Parameters <**startaddress**> Start address of data.Max length is 306176 bytes. <**datalen**> Set read values length. Max length is 306176 bytes. <**data_len**> Return data length max is 2048 bytes once, if more than 2048 bytes, will return many timer until all data are read out <**data**> Response data
Parameter Saving Mode	-
Max Response Time	-
Reference	Note: Read data after request

13.2.12 AT+SHDISC Disconnect HTTP(S)

AT+SHDISC Disconnect HTTP(S)	
Executive Command **AT+SHDISC**	Response **OK** or **ERROR**
Parameter Saving Mode	-
Max Response Time	-
Reference	-

13.2.13 AT+HTTPTOFS Download File to AP File System

AT+HTTPTOFS Download File to AP File System	
Test Command **AT+HTTPTOFS=?**	Response **+HTTPTOFS: (1-255),(1-127)** **OK**

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Read Command **AT+HTTPTOFS?**	Response **+HTTPTOFS: <status>,<url>,<file_path>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Write Command **AT+HTTPTOFS=<url>,<file_path>[,<timeout>[,<retrycnt>]]**	Response **OK** **+HTTPTOFS: <StatusCode>,<DataLen>**
	Parameters **<status>** 0 Idle 1 Busy **<url>** The url **<file_path>** File path and name on AP side, For example: "/customer/test.bin","/custapp/ test.bin ","/fota/test.bin" <**timeout**> Timeout of HTTP request. Unit is second. Range is 10-1000, default value is 50. **<retrycnt>** Retry times of HTTP request. Range is 5-100, default value is 5. **<StatusCode>** HTTP Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616) 100 Continue 200 OK 206 Partial Content 400 Bad Request 404 Not Found 408 Request Time-out 500 Internal Server Error 600 Not HTTP PDU 601 Network Error 602 No memory 603 DNS Error 604 Stack Busy 620 SSL continue 65535 Other Errors **<DataLen>** The length of data download

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Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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

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

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14 AT Commands for PING

14.1 Overview

Command	Description
AT+SNPDPID	Select PDP Index for PING
AT+SNPING4	Sends an IPv4 PING
AT+SNPING6	Sends an IPv6 PING

14.2 Detailed Descriptions of Commands

14.2.1 AT+SNPDPID Select PDP Index for PING

AT+SNPDPID Select PDP Index for PING	
Test command **AT+SNPDPID=?**	Response **+SNPDPID: (**range of supported <**Index**>s**)** **OK**
	Parameters See Write Command
Read command **AT+SNPDPID?**	Response **+SNPDPID:** <**Index**> **OK**
	Parameters See Write Command
Write command **AT+SNPDPID=<Index>**	Response **OK** or **ERROR**
	Parameters **<Index>** The number of PDP index, range: 0~4 0-3 PDP index 4 Auto select defined PDP index(0-3)
Parameter Saving Mode	-
Max Response Time	-

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Reference	Note

14.2.2 AT+SNPING4 Sends an IPv4 PING

AT+SNPING4 Sends an IPv4 PING	
Test command **AT+SNPING4=?**	Response **+SNPING4: <len_URL>,(**range of supported <**count**>s**),(**range of supported <**size**>s**),(**range of supported <**timeout**>s**)** **OK**
	Parameters See Write Command
Write command **AT+SNPING4=<URL>,<count>,<size>,<timeout>**	Response **+SNPING4: <replyId>,<IP address>,<replyTime>** **OK** or **ERROR**
	Parameters **<URL>** String type :Address of the remote host **<len_URL>** Interger type.Maxinum length of parameter <URL>. **<count>** The number of Ping Echo Requset to send, range: 1~500 **<size>** Number of data bytes to send, range: 1~1400 <**timeout**> Ping request timeout value (in ms),range:1-60000 <**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 and PDP index must be selected.

14.2.3 AT+SNPING6 Sends an IPv6 PING

AT+SNPING6	**Sends an IPv6 PING**
Test command **AT+SNPING6=?**	Response **+SNPING6: <len_URL>,(**range of supported <**count**>s**),(**range of supported <**size**>s**),(**range of supported <**timeout**>s**)**

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	OK
	Parameters See Write Command
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 **<len_URL>** Interger type.Maxinum length of parameter <URL>. **<count>** The number of Ping Echo Requset to send, range: 1-500 **<size>** Number of data bytes to send, range: 1-1400 <**timeout**> Ping request timeout value (in ms),range:1-60000 <**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 and PDP index must be selected.

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15 AT Commands for FTP Application

SIM7080 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.

15.1 Overview

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

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15.2 Detailed Descriptions of Commands

15.2.1 AT+FTPPORT Set FTP Control Port

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

15.2.2 AT+FTPMODE Set Active or Passive FTP Mode

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

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

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

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

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	consequence binary data containing 8 bits characters will be corrupted during the transfer if the FTPTYPE is set to A.

15.2.4 AT+FTPPUTOPT Set FTP Put Type

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

15.2.5 AT+FTPCID Set FTP Bearer Profile Identifier

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

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

15.2.6 AT+FTPREST Set Resume Broken Download

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

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15.2.7 AT+FTPSERV Set FTP Server Address

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

15.2.8 AT+FTPUN Set FTP User Name

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

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

15.2.9 AT+FTPPW Set FTP Password

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

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15.2.10 AT+FTPGETNAME Set Download File Name

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

15.2.11 AT+FTPGETPATH Set Download File Path

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

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

15.2.12 AT+FTPPUTNAME Set Upload File Name

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

15.2.13 AT+FTPPUTPATH Set Upload File Path

AT+FTPPUTPATH Set Upload File Path	
Test Command **AT+FTPPUTPATH=?**	Response **OK**

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

15.2.14 AT+FTPGET Download File

AT+FTPGET Download File	
Test Command **AT+FTPGET=?**	Response **OK**
Write Command **AT+FTPGET=<mode>[,<reqlength>]**	Response If mode is 1 and it is a successful FTP get session: **OK** **+FTPGET: 1,1** If data transfer finished: **+FTPGET: 1,0** If mode is 1 and it is a failed FTP get session: **OK** **+FTPGET: 1,<error>** If mode is 2: **+FTPGET: 2,<cnflength>** **012345678…** **OK**

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	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.

15.2.15 AT+FTPPUT Set Upload File

AT+FTPPUT Set Upload File	
Test Command **AT+FTPPUT=?**	Response **OK**
Write Command **AT+FTPPUT=<mode>[,<reqlength>]**	Response If mode is 1 and it is a successful FTP get session: **OK**

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	+FTPPUT: 1,1,<maxlength> If mode is 1 and it is a failed FTP get session: **OK** **+FTPPUT: 1,<error>** If mode is 2 and <**reqlength**> is not 0 **+FTPPUT: 2,<cnflength>** **……** //Input data **OK** **+FTPPUT: 1,1,1360** If mode is 2 and <**reqlength**> is 0, it will respond OK, and FTP session will be closed **OK** If data transfer finished. **+FTPPUT: 1,0** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 1 For opening FTP put session 2 For writing FTP upload data. **<reqlength>** Requested number of data bytes(0-<maxlength>) to be transmitted **<cnflength>** Confirmed number of data bytes to be transmitted **<maxlength>** The max length of data can be sent at a time. It depends on the network status. **<error>** See "AT+FTPGET"
Parameter Saving Mode	NO_SAVE
Max Response 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.

15.2.16 AT+FTPDELE Delete Specified File in FTP Server

AT+FTPDELE Delete Specified File in FTP Server

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

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

AT+FTPSIZE Get the Size of Specified File in FTP Server	
Test Command **AT+FTPSIZE=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+FTPSIZE**	Response If successed: **OK** **+FTPSIZE: 1,0,<size>**

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

15.2.18 AT+FTPSTATE Get the FTP State

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

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15.2.19 AT+FTPEXTPUT Extend Upload File

AT+FTPEXTPUT Extend Upload File	
Test Command **AT+FTPEXTPUT=?**	Response **OK**
Write Command **AT+FTPEXTPUT=<mode>[,<pos>,<len>,<timeout>]**	Response If mode is 0 or 1 **OK** If mode is 2 **+FTPEXTPUT: <address>,<len>** **……** //Input data **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** FTPPUT method 0 use default FTPPUT method 1 use extend FTPPUT method 2 send data to RAM through serial port, then FTPPUT method will get the data from RAM. **<pos>** data offset address 0-320k **<len>** data length 0-320k **<timeout>** timeout value of serial port. 1000ms-1000000ms <**err**> See "AT+FTPGET"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note ● When extend FTPPUT mode is activated, input data then execute "AT+FTPPUT=1" to transmit, after session is complete, if successful, it returns "+FTPPUT: 1,0", otherwise it returns "+FTPPUT: 1,<error>", <error> see "AT+FTPGET".

15.2.20 AT+FTPMKD Make Directory on the Remote Machine

AT+FTPMKD Make Directory on the Remote Machine	
Test Command	Response

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

15.2.21 AT+FTPRMD Remove Directory on the Remote Machine

AT+FTPRMD Remove Directory on the Remote Machine	
Test Command **AT+FTPRMD=?**	Response **OK**
Execution Command **AT+FTPRMD**	Response If success: **OK** **+FTPRMD: 1,0** If failed: **OK** **+FTPRMD: 1,<error>** If error is related to ME functionality: **+CME ERROR: <err>**

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	Parameters **<error>** See "**AT+FTPGET**"
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note The removed folder is specified by the "AT+FTPGETPATH" command.

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

AT+FTPLIST List Contents of Directory on the Remote Machine	
Test Command **AT+FTPLIST=?**	Response **OK**
Write Command **AT+FTPLIST=<mode>[,<reqlength>]**	Response If mode is 1 and it is a successful FTP get session: **OK** **+FTPLIST: 1,1** If data transfer is finished: **+FTPLIST: 1,0** If mode is 1 and it is a failed FTP get session: **OK** **+FTPLIST: 1,<error>** If mode is 2: **+FTPLIST: 2,<cnflength>** **012345678…** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<mode>** 1 For opening FTP get file list session 2 For reading FTP file list <**reqlength**> Requested number of data bytes (1-1460) to be read <**cnflength**> Confirmed number of data bytes to be read, which may be less than <reqlength>. 0 indicates that no data can be read. <**error**> See "AT+FTPGET"

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Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	Note ● When "+FTPLIST: 1,1" is shown, "AT+FTPLIST=2,<reqlength>" can be used to read data. If the module still has unread data, "+FTPLIST: 1,1" will be shown again in a certain time. ● If using "AT+FTPGETPATH" to set a directory path, it will returned the files contents under this directory; if set a file path, it will return the information of the file specified.

15.2.23 AT+FTPEXTGET Extend Download File

AT+FTPEXTGET	**Extend Download File**
Test Command **AT+FTPEXTGET=?**	Response **OK**
	Parameters See Write Command
Read Command **AT+FTPEXTGET?**	Response **+FTPEXTGET: <mode>,<length>** **OK**
	Parameters See Write Command
Write Command 1) if mode is 0 or 1 **AT+FTPEXTGET=<mode>** 2)if mode is 3 **AT+FTPEXTGET=<mode>,<pos>,<len>**	Response If mode is 0: **OK** If mode is 1 and successfully download data: **OK** **+FTPEXTGET: 1,0** If mode is 1 and failed to download data: **OK** **+FTPEXTGET: 1,<error>** If mode is 3 and successfully download data: **+FTPEXTGET: 3,<length>** **0123456…** **OK** If <file name> is already exist in flash:

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

15.2.24 AT+FTPETPUT Upload File

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

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

15.2.25 AT+FTPETGET Download File

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

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	<**error**> See "AT+FTPEXTGET"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note ● Each <ETX> character present in the payload data of the FTP flow will be coded by the TCP/IP stack on the serial port as <DLE><ETX>. Each <DLE> character will be coded as <DLE><DLE>. The attached host must then decode the FTP flow to remove these escape characters.

15.2.26 AT+FTPQUIT Quit Current FTP Session

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

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

AT+FTPRENAME Rename the Specified File on the Remote Machine	
Test Command **AT+FTRENAME =?**	Response **OK**
	Parameters See Execution Command

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

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

AT+FTPMDTM Get the Last Modification Timestamp of Specified File on the Remote Machine	
Test Command **AT+FTPMDTM=?**	Response **OK**
	Parameters See Execution Command
Execution Command **AT+FTPMDTM**	Response If success: **OK** **+FTPMDTM: 1,0,<timestamp>** If failed: **OK** **+FTPMDTM: 1,<error>** If error is related to ME functionality:

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	+CME ERROR: <err>
	Parameter **<error>** See "AT+FTPGET" **<timestamp>** The last modification timestamp of the specified file.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note The file is specified by the "AT+FTPGETNAME" and "AT+FTPGETPATH" commands.

15.2.29 AT+FTPSSL Select FTP SSL Configure

AT+FTPSSL Select FTP SSL Configure	
Test Command **AT+FTPSSL=?**	Response **+FTPSSL:** (list of supported <**ssltype**>s)**,**(list of supported <**index**>s)**,<len_calist>,<len_certname>** **OK**
	Parameters See Write Command
Read Command **AT+FTPSSL?**	Response **+FTPSSL: <ssltype>,<index>,<ca list>,<cert name>** **OK**
	Parameters See Write Command
Write Command **AT+FTPSSL=<ssltype>,<index>,<ca list>,<cert name>**	Response **OK** or **ERROR**
	Parameters <**ssltype**> 0 FTP disable SSL function 1 FTP implicit mode 2 FTP explicit mode <**index**> SSL configure , range: 0-5 <**ca list**> CA_LIST file name, Max length is 50 bytes <**cert name**> CERT_NAME file name, Max length is 50 bytes

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	<**len_calist**> Interger type.Maxinum length of parameter <ca list>. <**len_certname**> Interger type.Maxinum length of parameter <cert name>.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+FTPSSL=2,0,"ftpca.crt","ftpclient.crt" OK

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16 AT Command for NTP function

16.1 Overview

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

16.2 Detailed Descriptions of Commands

16.2.1 AT+CNTPCID Set GPRS Bearer Profile's ID

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

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16.2.2 AT+CNTP Sychronize UTC Time

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

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	65 Service Response Timeout **<time>** UTC(Coordinated Universal Time) time
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● After successful synchronization time, you can use AT+CCLK to query local time.

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17 AT Commands for MQTT

17.1 Overview

Command	Description
AT+SMCONF	Set MQTT Parameter
AT+CSSLCFG	SSL Configure
AT+SMSSL	Select SSL Configure
AT+SMCONN	MQTT Connection
AT+SMPUB	Send Packet
AT+SMSUB	Subscribe Packet
AT+SMUNSUB	Unsubscribe Packet
AT+SMSTATE	Inquire MQTT Connection Status
AT+SMPUBHEX	Set SMPUB Data Format to Hex
AT+SMDISC	Disconnection MQTT
+SMSUB	MQTT Receive Subscribe Data

17.2 Detailed Descriptions of Commands

17.2.1 AT+SMCONF Set MQTT Parameter

AT+SMCONF Set MQTT Parameter	
Test Command **AT+SMCONF=?**	Response **+SMCONF: "CLIENTID",(**range of supported <**clientid**>s**)** **+SMCONF: "URL",<len_server>,(**range of supported <**tcpPort**>s**)** **+SMCONF: "KEEPTIME",(**range of supported <**keeptime**>s**)** **+SMCONF: "USERNAME",<len_username>** **+SMCONF: "PASSWORD",<len_password>** **+SMCONF: "CLEANSS",(**range of supported <**cleanss**>s**)** **+SMCONF: "QOS",(**list of supported <**qos**>s**)** **+SMCONF: "TOPIC",<len_topic>** **+SMCONF: "MESSAGE",<len_message>** **+SMCONF: "RETAIN",(**list of supported <**retain**>s**)** **OK**
	Parameters See Write Command

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Read Command **AT+SMCONF?**	Response **+SMCONF:** **CLIENTID: <clientid>** **URL: <url>** **KEEPTIME: <keeptime>** **USERNAME: <username>** **PASSWORD: <password>** **CLEANSS: <cleanss>** **QOS: <qos>** **TOPIC: <topic>** **MESSAGE: <message>** **RETAIN: <retain>** **OK**
	Parameters See Write Command
Write Command **AT+SMCONF=<MQTTParamTag>,<MQTTParamValue>**	Response **OK** or **ERROR**
	Parameters <**len_server**> Interger type.Maxinum length of parameter <server domain>. <**tcpPort**> 0-65535 <**len_username**> Interger type.Maxinum length of parameter <username>. <**len_password**> Interger type.Maxinum length of parameter <password>. <**len_topic**> Interger type.Maxinum length of parameter <topic>. <**len_message**> Interger type.Maxinum length of parameter <message>.

<MQTTParamTag>	**<MQTTParamValue>**
"CLIENTID"	<**clientid**> Client connection id. 0-128
"URL"	<**url**> (indispensable parameter) server URL address. Format is <server domain>,[<tcpPort>] <**server domain**> Host or IP <**tcpPort**> Port. 0-65535. Default is 1883.
"KEEPTIME"	<**keeptime**>Hold connect time. 60-180
"CLEANSS"	<**cleanss**> Session clean in. 0 1
"USERNAME"	<**username**> User name. default null

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	"PASSWORD"	<**password**> Password. default null
	"QOS"	<**qos**> Send packet QOS level. 0 1
	"TOPIC"	<**topic**> Publish topic name
	"MESSAGE"	<**message**> Publish message details
	"RETAIN"	<**retain**> Retain identification. 0 1
Parameter Saving Mode	-	
Max Response Time	-	
Reference	Note	
Example	AT+SMCONF="CLIENTID","id" OK AT+SMCONF="KEEPTIME",60 OK AT+SMCONF="URL","test.mosquitto.org","1883" OK AT+SMCONF="CLEANSS",1 OK AT+SMCONF="QOS",1 OK AT+SMCONF="TOPIC","will topic" OK AT+SMCONF="MESSAGE","will message" OK AT+SMCONF="RETAIN",1 OK	

17.2.2 AT+CSSLCFG SSL Configure

AT+CSSLCFG SSL Configure	
Write command **AT+CSSLCFG="CONVERT",<ssltype>,<cname>,[<keyname>[,<passkey>]]**	Response **OK** If failed: **+CME ERROR: <err>**
	Parameters **<ssltype>**

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	1 QAPI_NET_SSL_CERTIFICATE_E 2 QAPI_NET_SSL_CA_LIST_E 3 QAPI_NET_SSL_PSK_TABLE_E <**cname**> String type(string should be included in quotation marks): name of cert file <**keyname**> String type(string should be included in quotation marks):name of key file <**passkey**> String type (string should be included in quotation marks):value of passkey
Parameter Saving Mode	-
Max Response Time	-
Reference	-

17.2.3 AT+SMSSL Select SSL Configure

AT+SMSSL Select SSL Configure	
Test Command **AT+SMSSL=?**	Response **+SMSSL:** (list of supported <**index**>s)**,<len_calist>,<len_certname>** **OK**
	Parameters See Write Command
Read Command **AT+SMSSL?**	Response **+SMSSL: <index>,<ca list>,<cert name>** **OK**
	Parameters See Write Command
Write Command **AT+SMSSL=<index>,<ca list>,<cert name>**	Response **OK** or **ERROR**
	Parameters <**index**> SSL status, range: 0-6 <**ca list**> CA_LIST file name, Max length is 20 bytes <**cert name**> CERT_NAME file name, Max length is 20 bytes <**len_calist**> Interger type.Maxinum length of parameter <ca list>. <**len_certname**> Interger type.Maxinum length of parameter <cert name>.

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Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+SMSSL=1,calist,certname OK

17.2.4 AT+SMCONN MQTT Connection

AT+SMCONN MQTT Connection	
Execution Command **AT+SMCONN**	Response **OK** or **ERROR**
Example	AT+SMCONN OK

17.2.5 AT+SMPUB Send Packet

AT+SMPUB Send Packet	
Test Command **AT+SMPUB=?**	Response **+SMPUB: <len_topic>,(**range of supported **<content length>**s**),(**list of supported <**qos**>s**),(**list of supported <**retain**>s**)** **OK**
	Parameters See Write Command
Write Command **AT+SMPUB=<topic>,<content length>,<qos>,<retain>** <CR>**message is entered** Quit edit mode if message length equals to <content length>.	Response **OK** or **ERROR**
	Parameters <**topic**> Subscribe packet. <topic> set by AT+SMSUB. **<len_topic>** Max length of <topic> <**qos**> Send packet QOS level 0 At most once 1 At least once 2 Only once

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	<**content length**> Message length, range: 0-1024 <**retain**> Server hold message . 0 The server does not keep messages for this topic pushed by the client 1 The server keeps messages for this topic pushed by the client
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+SMPUB="001",10,1,1 >helloserve OK

17.2.6 AT+SMSUB Subscribe Packet

AT+SMSUB Subscribe Packet	
Test Command **AT+SMSUB=?**	Response **+SMSUB: <len_topic>,**(list of supported <**qos**>s) **OK**
	Parameters See Write Command
Write Command **AT+SMSUB=<topic>,<qos>**	Response **OK** or **ERROR**
	Parameters <**topic**> Subscribe packet <**len_topic**> Interger type.Maxinum length of parameter <topic>. <**qos**> Send packet QOS level 0 At most once 1 At least once 2 Only once
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

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Example	AT+SMSUB="001",1 OK

17.2.7 AT+SMUNSUB Unsubscribe Packet

AT+SMUNSUB Unsubscribe Packet	
Test Command **AT+SMUNSUB=?**	Response **+SMUNSUB: <len_topic>** **OK**
	Parameters See Write Command
Write Command **AT+SMUNSUB=<topic>**	Response **OK** or **ERROR**
	Parameters <**topic**> Subscribe subject <**len_topic**> Interger type.Maxinum length of parameter <topic>.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+SMUNSUB="001" OK

17.2.8 AT+SMSTATE Inquire MQTT Connection Status

AT+SMSTATE Inquire MQTT Connection Status	
Test Command **AT+SMSTATE=?**	Response **+SMSTATE: (**list of supported <**status**>s**)** **OK**
	Parameters See Read Command

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Read Command **AT+SMSTATE?**	Response **+SMSTATE: <status>** **OK**
	Parameters <**status**> 0 Expression MQTT disconnect state 1 Expression MQTT on-line state
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+SMSTATE? +SMSTATE: 1 OK

17.2.9 AT+SMPUBHEX Set SMPUB Data Format to Hex

AT+SMPUBHEX	**Set SMPUB Data Format to Hex**
Test Command **AT+SMPUBHEX=?**	Response **+SMPUBHEX: (**list of supported <**status**>s**)** **OK**
	Parameters See Write Command
Read Command **AT+SMPUBHEX?**	Response **+SMPUBHEX: <status>** **OK**
	Parameters See Write Command
Write Command **AT+SMPUBHEX=<status>**	Response **OK** or **ERROR**
	Parameters <**status**> SMPUB format status 0 SMPUB data format is normal

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	1 SMPUB data format is hex
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+SMPUBHEX=1 OK

17.2.10 AT+SMDISC Disconnect MQTT

AT+SMDISC Disconnect MQTT	
Execution Command **AT+SMDISC**	Response **OK** or **ERROR**
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+SMDISC OK

17.2.11 +SMSUB MQTT Receive Subscribe Data

+SMSUB MQTT Receive Subscribe Data	
	Unsolicited Result Code **+SMSUB: "topic","message"**
	Parameters <**topic**> Message topic <**message**> Received message
Parameter Saving Mode	-
Max Response Time	-

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Reference	Note

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18 AT Commands for CoAP

For detail CoAP function information, please refer to document "rfc7252" and "rfc7959".

18.1 Overview

Command	Description
AT+CCOAPPDPID	Select PDP Index for CoAP
AT+CCOAPINIT	Create CoAP object
AT+CCOAPURL	Configure CoAP URL
AT+CCOAPPARA	Assembling CoAP data Packet
AT+CCOAPACTION	Operate CoAP object
AT+CCOAPHEAD	Read head of CoAP packet
AT+CCOAPREAD	Read data of CoAP Packet
AT+CCOAPTERM	Delete CoAP object

18.2 Detailed Descriptions of Commands

18.2.1 AT+CCOAPPDPID Select PDP Index for CoAP

AT+CCOAPPDPID	Select PDP Index for CoAP
Test command **AT+CCOAPPDPID=?**	Response **+CCOAPPDPID: (**range of supported <**index**>s**)** **OK**
	Parameters See Write Command
Read command **AT+CCOAPPDPID?**	Response **+CCOAPPDPID: <index>** **OK**
	Parameters See Write Command
Write command **AT+CCOAPPDPID=<index>**	Response **OK** or **ERROR**

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	Parameters **<index>** The number of PDP index 0-3 PDP index, Manual set 4 Auto select PDP index(0-3). <pdpidx> set by AT+CNACT
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

18.2.2 AT+CCOAPINIT Create CoAP Object

AT+CCOAPINIT	**Create CoAP Object**
Test Command **AT+CCOAPINIT=?**	Response **OK**
Execution Command **AT+CCOAPINIT**	Response **OK** or **ERROR**
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+CCOAPINIT OK

18.2.3 AT+CCOAPURL Configure CoAP URL

AT+CCOAPURL	**Configure CoAP URL**
Test Command **AT+CCOAPURL=?**	Response **+CCOAPURL: <scheme>://<host>:<port>/<uri>** **OK**
	Parameters See Write Command
Write Command **AT+CCOAPURL=<scheme>://<host>[:<port>][/<uri**	Response **OK** or **ERROR**

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>]	**<scheme>** Current only CoAP **<host>** Server name or address of remote server **<port>** Server port of remote CoAP server **<uri>** Resource（Once effective）
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+CCOAPURL="coap://117.131.85.139:6011" OK

18.2.4 AT+CCOAPPARA Assembling CoAP Data Packet

AT+CCOAPPARA Assembling CoAP Data Packet	
Test Command **AT+CCOAPPARA=?**	Response **+CCOAPPARA: "CODE",<hex_value>** **+CCOAPPARA: "TYPE",(**list supported of <**type**>s**)** **+CCOAPPARA: "MID",<dec_value>** **+CCOAPPARA: "TOKEN",(**list supported of <**codex**>s**),<value>** **+CCOAPPARA: "CONTENT-FORMAT",<dec_value>** **+CCOAPPARA: "ACCEPT",<dec_value>** **+CCOAPPARA: "URI-PATH",(**list supported of <**codex**>s**),<value>** **+CCOAPPARA: "URI-QUERY",(**list supported of <**codex**>s**),<value>** **+CCOAPPARA: "ETAG",(**list supported of <**codex**>s**),<value>** **+CCOAPPARA: "OBSERVE",<dec_value>** **+CCOAPPARA: "MAX-AGE",<dec_value>** **+CCOAPPARA: "SIZE",<dec_value>** **+CCOAPPARA: "PAYLOAD",(**list supported of <**codex**>s**),<value>** **OK**
	Parameters See Write Command
Write Command **AT+CCOAPPARA=<name1>[,<code1>],<value1>[,<name2>[,<code2>],<value2>][,...]**	Response **OK** or **ERROR**
	Parameters **<namex>** Various part of CoAP Packet,please refer response of test command. **<codex>** Parameter encoding of input value 0 Ascii format

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	1 Hex format string **<valuex>** Value of <namex> <**hex_value**> Value of hex format <**type**> "CON" "NON" "ACK" "RST" **<dec_value>** Value of decimal format
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+CCOAPPARA="CODE",1,uri-path,0,"home/query",uri-query,0,"address=1",payload,0,"hello world" OK

18.2.5 AT+CCOAPACTION Operate CoAP Object

AT+CCOAPACTION Operate CoAP Object	
Test Command **AT+CCOAPACTION=?**	Response **+CCOAPACTION: (**list supported of **<type>**s**)** **OK**
	Parameters See Write Command
Write Command **AT+CCOAPACTION=<type>**	Response If <type>=4 **+CCOAPACTION: <type>,<num>,<mid>** **OK** If <type>=5 **OK** or **ERROR**
	Parameters **<type>** Operation type 4 Query current receiving queue information 5 Clear the receive queue **<num>** Number of packets of the current receiving queue CoAP **<mid>** Receive the mid of the first CoAP packet in the queue

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	Unsolicited Result Codes The receiving queue has enough space to store the unprocessed data packets of the protocol stack and will report it automatically. **+CCOAPRECV: <mid>,<packet size>,<payload size>** Parameters **<mid>** Message id of the received packet **<packet size>** The size of the received CoAP packet **<payload size>** Received CoAP packet payload size
Execution Command **AT+CCOAPACTION**	Response **+CCOAPACTION: 0,<mid>** **OK** or **ERROR** Parameters **<mid>** Message ID of the sent message Unsolicited Result Codes **+CCOAPACTION: <type>[,<mid>]** Parameters **<type>** 1 Indicates that the receive queue is full 2 Indicates that the mid CoAP response packet receives timeout 3 CoAP socket error **<mid>** Message ID Receive the mid of the first CoAP packet in the queue(If <type>=1) Mid of Timeout packet(If <type>=2)
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+CCOAPACTION +CCOAPACTION: 0,1 OK AT+CCOAPACTION=4 +CCOAPACTION: 4,1,2 OK

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18.2.6 AT+CCOAPHEAD Read Head of CoAP Packet

AT+CCOAPHEAD Read Head of CoAP Packet	
Test Command **AT+CCOAPHEAD=?**	Response **+CCOAPHEAD: (**range of supported **<mid>s),(**list of supported <**convert**>s**)** **OK**
	Parameters See Write Command
Write Command **AT+CCOAPHEAD=<mid>,<convert>**	Response If <convert>=1 **+CCOAPHEAD: <convert>,<ver>,<type>,<tkl>,<code>,<mid>,<token>,<content-format>,<max-age>,<etag>,<accept>,<if-match>,<if-none-match>,<uri-host>,<uri-port>,<uri-path>,<uri-query>,<location-path>,<location-query>,<proxy-uri>,<observe>,<block2>,<block1>,<size>** **OK** If <convert>=0 **+CCOAPHEAD: <convert>,<length>,<data>** **OK** or **ERROR**
	Parameters **<mid>** The message id of the CoAP packet will be read **<convert>** 0 Print data in raw mode 1 Print data after parsing **<length>** length of CoAP head **<data>** Data of CoAP head For detail CoAP parameters information, please refer to document "rfc7252" and "rfc7959".
Parameter Saving Mode	-
Max Response Time	-
Reference	Note
Example	AT+CCOAPHEAD=1,1 +CCOAPHEAD: 1,1,2,0,4.04,1,,,,,,0,,,,,,,

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	OK

18.2.7 AT+CCOAPREAD Read Data of CoAP Packet

AT+CCOAPREAD Read Data of CoAP Packet	
Test Command **AT+CCOAPREAD=?**	Response **+CCOAPREAD: (**range of supported **<mid>s)** **OK**
Write Command **AT+CCOAPREAD=<mid>**	Response **+CCOAPREAD: <length>,<data>** **OK** or **ERROR**
	Parameters **<mid>** The message id of the CoAP packet will be read **<length>** Length of packet **<data>** Data of packet
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

18.2.8 AT+CCOAPTERM Delete CoAP Object

AT+CCOAPTERM Delete CoAP Object	
Test Command **AT+CCOAPTERM=?**	Response **OK**
Execution Command **AT+CCOAPTERM**	Response **OK** or **ERROR**
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

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19 AT Commands for DNS

19.1 Overview

Command	Description
AT+CDNSPDPID	Select PDP Index for DNS
AT+CDNSCFG	Set DNS Server IP Adderess
AT+CDNSGIP	Resolve the Domain Name to IP Address

19.2 Detailed Descriptions of Commands

19.2.1 AT+CDNSPDPID Select PDP Index for DNS

AT+CDNSPDPID	Select PDP Index for DNS
Test command **AT+CDNSPDPID=?**	Response **+CDNSPDPID: (**range of supported <**Index**>s**)** **OK**
	Parameters See Write Command
Read command **AT+CDNSPDPID?**	Response **+CDNSPDPID:** <**Index**> **OK**
	Parameters See Write Command
Write command **AT+CDNSPDPID=<Index>**	Response **OK** or **ERROR**
	Parameters **<Index>** The number of PDP index, range: 0~4 0-3 PDP index 4 the default PDP index value
Parameter Saving Mode	-
Max Response Time	-

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Reference	Note

19.2.2 AT+CDNSCFG Set DNS Server IP Address

AT+CDNSCFG Set DNS Server IP Address	
Test command **AT+CDNSCFG=?**	Response **+CDNSCFG: ("Primary DNS"),("Secondary DNS")** **OK**
	Parameters See Write Command
Read command **AT+CDNSCFG?**	Response **Ipv4PrimaryDns: <ipv4pri_dns>** **Ipv4SecondaryDns: <ipv4sec_dns>** **Ipv6PrimaryDns: <ipv6pri_dns>** **Ipv6SecondaryDns: <ipv6pri_dns>** **OK**
Write command **AT+CDNSCFG=<Primary DNS>,<Secondary DNS>**	Response **+CDNSCFG: <Primary DNS>,<Secondary DNS>** **OK** or **ERROR**
	Parameters **<Primary DNS>** String type.Primary (IPv4 or IPv6)DNS Server Ip Address **<Secondary DNS>** String type.Secondary((IPv4 or IPv6)) DNS Server Ip Address <**ipv4pri_dns**> A string parameter which indicates the IPV4 address of the primary domain name server. Default value is 0.0.0.0. <**ipv4sec_dns**> A string parameter which indicates the IPV4 address of the secondary domain name server. Default value is 0.0.0.0. <**ipv6pri_dns**> A string parameter which indicates the IPV6 address of the primary domain name server. Default value is 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0. <**ipv6sec_dns**> A string parameter which indicates the IPV6 address of the secondary domain name server. Default value is 0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0. If only <ipv4pri_dns> and <ipv4sec_dns> are set manually, the ipv6pri_dns and the ipv6sec_dns are null. If only <ipv6pri_dns> and <ipv6sec_dns> are set manually, the

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	ipv4pri_dns and the ipv4sec_dns are null.
Parameter Saving Mode	-
Max Response Time	-
Reference	Note

19.2.3 AT+CDNSGIP Resolve the Domain Name

AT+CDNSGIP	**Resolve the Domain Name**
Test command **AT+CDNSGIP=?**	Response **+CDNSGIP: <len_url>,(**range of supported <**recount**>s**),(**range of supported <**timeout**>s**)** **OK**
	Parameters See Write Command
Write command **AT+CDNSGIP=<URL>,<recount>,<timeout>**	Response **OK** **+CDNSGIP: 1,<domain name>,<IP1>[,<IP2>]** or **+CDNSGIP: 0,<err>**
	Parameters **<len_url>** Max length of <URL> **<URL>** String type, the Domain Name **<domain name>** A string parameter which indicates the domain name **<IP1>** A string parameter which indicates the IP address corresponding to the domain name **<IP2>** When domain name to ipv4 and ipv6 both success, IP2 present the ipv6 address **<recount>** Retransmit count from 0 to 10 times **<timeout>** the Interval of Time for Retransmitting. Unit is ms,range is 0-60000. **<err>** Error code DNS_RESULT_OK =0 DNS_NOT_AUTH =1 DNS_INVALID_PARA =2 DNS_NETWORK_ERROR =3 DNS_NO_SERVER =4

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	DNS_TIMEOUT =5 DNS_NO_CONFIG =6, DNS_NO_MEMORY =7, DNS_ERROR_UNKNOWN =8
Parameter Saving Mode	-
Max Response Time	-
Reference	Note Before sending DNS Request the GPRS context must be activated and PDP index must be selected.

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20 AT Commands for LBS

20.1 Overview

Command	Description
AT+CLBS	Base station Location
AT+CLBSCFG	Base station Location configure

20.2 Detailed Descriptions of Commands

20.2.1 AT+CLBS Base station Location

AT+CLBS Base station Location	
Test Command **AT+CLBS=?**	Response **+CLBS:** (list of supported <**type**>s),(range of supported <**cid**>s),(range of supported <**longitude**>s),(range of supported <**latitude**>s),(list of supported <**lon_type**>s) **OK** Parameters See Write Command
Write Command **AT+CLBS=<type>,<cid>,[[<longitude>,<latitude>],[<lon_type>]]**	Response 1)<type>=1,get longitude and latitude **+CLBS: <locationcode>[,<longitude>,<latitude>,<acc>]** **OK** 2)<type>=4,get longitude latitude and date time **+CLBS:** **<locationcode>[,<longitude>,<latitude>,<acc>,<date>,<time>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<type>** 1 Use 3 cell's information 4 Get longitude latitude and date time **<cid>** Bearer profile identifier, refer to <pdpidx> of AT+CNACT **<locationcode>** 0 Success

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	If the operation failed, the location code is not 0, such as: 1 Location Failed 2 Time Out 3 NET Error 4 DNS Error 5 Service Overdue 6 Authenticate Failed 7 Other Error 80 Report LBS to server success 81 Report LBS to server parameter error 82 Report LBS to server failed <**longitude**> Current longitude in degrees. -180.000000-180.000000 <**latitude**> Current latitude in degrees -90.000000-90.000000 **<acc>**Positioning accuracy **<lon_type>** The type of longitude and latitude 0 WGS84 1 GCJ02 **<times>** Access service times **<date>** Service date **<time>** Service time
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● If customers feel that the positioning error is too large, <type>=9 can be used to report this information. The error can be improved by this information.

20.2.2 AT+CLBSCFG Base station Location configure

AT+CLBSCFG Base station Location configure	
Test Command **AT+CLBSCFG=?**	Response **+CLBSCFG:** (list of supported <**operate**>s)**,**(range of supported <**para**>s)**,<len_value>** **OK**
	Parameters See Write Command
Write Command **AT+CLBSCFG=<**	Response **+CLBSCFG: 0,<para>,<value>**

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operate>,<para>[,<value>]	**OK** or **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<operate>** 0 Read operator 1 Set operator **<para>** 1 Customer ID 2 Times have used positioning command 3 Server's address lbs-simcom.com:3001 lbs-simcom.com:3000 lbs-simcom.com:3002 (Default) <**value**> String type. The value of parameter If <operate> is 1 and <para> is 3, <value> can be set. <**len_value**> Max length of <value>
Parameter Saving Mode	-
Max Response Time	-
Reference	Note ● Server's address of"lbs-simcom.com:3002" is free. The other two servers are charged. ● If you want to use the charged address, the IMEI, customer information and software version must be provided to SIMCom.

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21 Supported Unsolicited Result Codes and Error Codes

21.1 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

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

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

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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

21.2 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

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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

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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

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313	SIM failure
314	SIM busy
315	SIM wrong
316	SIM PUK required
317	SIM PIN2 required
318	SIM PUK2 required
320	memory failure
321	invalid memory index
322	memory full
323	invalid input parameter
324	invalid input format
325	invalid input value
330	SMSC address unknown
331	no network
332	network timeout
340	no cnma ack
500	Unknown
512	SMS no error
513	Message length exceeds maximum length
514	Invalid request parameters
515	ME storage failure
516	Invalid bearer service
517	Invalid service mode
518	Invalid storage type
519	Invalid message format
520	Too many MO concatenated messages
521	SMSAL not ready
522	SMSAL no more service
523	Not support TP-Status-Report & TP-Command in storage
524	Reserved MTI
525	No free entity in RL layer
526	The port number is already registerred
527	There is no free entity for port number
528	More Message to Send state error
529	MO SMS is not allow
530	GPRS is suspended
531	ME storage full
532	Doing SIM refresh

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21.3 Summary of Unsolicited Result Codes

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

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zone>",<dst>		
+**CTZV**: "<time zone>"	Refresh network time zone by network.	
DST: <dst>	Refresh Network Daylight Saving Time by network.	
+**CPIN**: <code>	Indicates whether some password is required or not.	AT+CPIN
+**CPIN**: NOT READY	SIM Card is not ready.	
+**CPIN**: NOT INSERTED	SIM Card is not inserted.	
NORMAL POWER DOWN	SIM7080 is powered down by the PWRKEY pin or AT command "AT+CPOWD=1".	
UNDER-VOLTAGE POWER DOWN	Under-voltage automatic power down.	
UNDER-VOLTAGE WARNNING	under-voltage warning	
OVER-VOLTAGE POWER DOWN	Over-voltage automatic power down.	
OVER-VOLTAGE WARNNING	over-voltage warning	
RDY	Power on procedure is completed, and the module is ready to operate at fixed baud rate. (This URC does not appear when auto-bauding function is active).	AT+IPR=<rate> <rate> is not 0
+**CFUN**: <fun>	Phone functionality indication (This URC does not appear when auto-bauding function is active).	AT+IPR=<rate> <rate> is not 0
[<n>,]**CONNECT OK**	TCP/ UDP connection is successful	AT+CIPSTART
CONNECT	TCP/UDP connection in channel mode is successful	
[<n>,]**CONNECT FAIL**	TCP/UDP connection fails	AT+CIPSTART
[<n>,]**ALREADY CONNECT**	TCP/UDP connection exists	AT+CIPSTART
[<n>,]**SEND OK**	Data sending is successful	
[<n>,]**CLOSED**	TCP/UDP connection is closed	
RECV FROM: <IP ADDRESS>: <PORT>	shows remote IP address and port (only in single connection mode)	AT+CIPSRIP=1
+**IPD**,<data size>,<TCP/UDP>:<data>	display transfer protocol in IP header to received data or not (only in single connection mode)	AT+CIPHEAD AT+CIPSHOWTP
+**RECEIVE**,<n>,<length>	Received data from remote client (only in multiple connection mode)	
REMOTE IP: <IP ADDRESS>	Remote client connected in	
+**CDNSGIP**: 1,<domain name>,<IP>[,<IP2>]	DNS successful	AT+CDNSGIP

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

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22 ATC Differences among SIM7080 Series

22.1 AT+SGPIO

SIM7080G	SIM7070G,SIM7070E	SIM7090G
AT+SGPIO=? +SGPIO: (0-1),(1-4),(0-1),(0-1) OK	AT+SGPIO=? +SGPIO: (0-1),(1-6),(0-1),(0-1) OK	AT+SGPIO=? +SGPIO: (0-1),(1-3),(0-1),(0-1) OK
Difference: The GPIO to be set is different.		

22.2 AT+CGPIO

SIM7080G	SIM7070G,SIM7070E	SIM7090G
+CGPIO: (0-1),(5,7,9,10,11,12,14,41,42,48,49,50,51,57,58,59,60,61,62,64,65),(0-1),(0-1) OK	AT+CGPIO=? +CGPIO: (0-1),(4,5,11,12,13,14,19,20,21,22,23,37,38,48,49,50,52,66,67,68),(0-1),(0-1) OK	AT+CGPIO=? +CGPIO: +CGPIO: (0-1),(1,2,3,4,5,6,7,8,21,22,23,37,38,48,52,66,67,68),(0-1),(0-1) OK
Difference:		

22.3 AT+CVHU

SIM7080G and SIM7090G do not support this command.

22.4 AT+CLIP

SIM7080G and SIM7090G do not support this command.

22.5 AT+CLCC

SIM7080G and SIM7090G do not support this command.

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22.6 AT+ANTENALLCFG

Only SIM7080G supports this command.

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