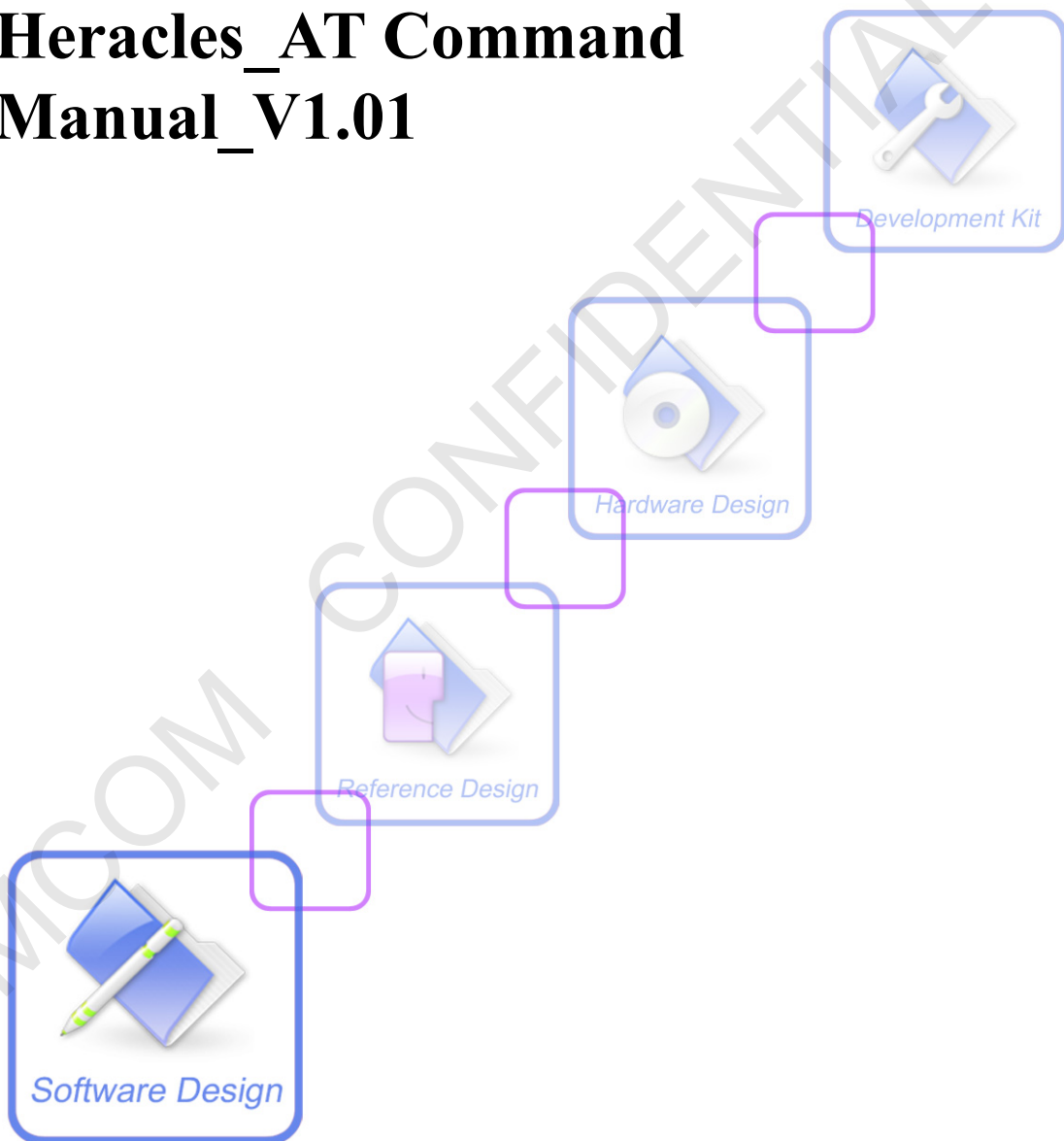




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Version History

Version	Date	Chapter	What is new
V1.00	2017-05-02		New version
V1.01	2017-07-20	6.2.72 AT+SSIM	Add AT command
		6.2.73 AT+CCTURI	Add AT command

SIMCOM CONFIDENTIAL FILE

1 Introduction

1.1 Scope of the document

This document presents the AT Command Set for SIMCom Heracles.

1.2 Related documents

You can visit the SIMCom Website using the following link:

<http://www.simcomm2m.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 Heracles 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: A HEX string such as "00 49 49 49 49 FF FF FF FF" will be sent out through serial port at the baud rate of 115200 immediately after Heracles is powered on. The string shall be ignored since it is used for synchronization with PC tool. Only enter AT Command through serial port after Heracles is powered on and Unsolicited Result Code "RDY" is received from serial port. If auto-bauding is enabled, the Unsolicited Result

Codes "RDY" and so on are not indicated when you start up the ME, and the "AT" prefix, or "at" prefix must be set at the beginning of each command line.

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

1.4.1 Basic syntax

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

1.4.2 S Parameter syntax

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

1.4.3 Extended Syntax

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

Table 1: Types of AT commands and responses

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

1.4.4 Combining AT commands on the same Command line

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

The Command line buffer can accept a maximum of 556 characters (counted from the first command without "AT" or "at" prefix). If the characters entered exceeded this number then none of the Command will executed and TA will return **"ERROR"**.

1.4.5 Entering successive AT commands on separate lines

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

1.5 Supported character sets

The Heracles AT Command interface defaults to the **IRA** character set. The Heracles supports the following character sets:

GSM format

UCS2

HEX

IRA

PCCP

PCDN

8859-1

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. Heracles 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 Heracles 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

This setting is stored volatile, for use after restart, **AT+IFC=1, 1** should be stored to the user profile with **AT&W**.

NOTE:

The AT commands listed in the table of **AT&W** chapter should be stored to user profile with **AT&W** for use after restart. Most other AT commands in V.25, 3GPP TS 27.005, 3GPP TS 27.007, GPRS will store parameters automatically and can be used after module restart.

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

NOTE:

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

1.6.2 Hardware flow control (RTS/CTS flow control)

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

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

1.7 Definitions**1.7.1 Parameter Saving Mode**

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

- **NO_SAVE**: The parameter of the current AT command will be lost if module is rebooted or current AT command doesn't have parameter.
- **AUTO_SAVE**: The parameter of the current AT command will be kept in NVRAM automatically, and it won't be lost if module is rebooted.
- **AT&W_SAVE**: The parameter of the current AT command will be kept in NVRAM by sending the command of "AT&W".

1.7.2 Max Response Time

Max response time is estimated maximum time to get response, the unit is seconds.

"-" means this AT command doesn't care the response time.

2 AT Commands According to V.25TER

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

2.1 Overview of AT Commands According to V.25TER

Command	Description
A/	Re-issues the last command given
ATA	Answer an incoming call
ATD	Mobile originated call to dial a number
ATD<<N>	Originate call to phone number in current memory
ATD<<STR>	Originate call to phone number in memory which corresponds to field <str>
ATDL	Redial last telephone number used
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
ATP	Select pulse dialling
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
ATT	Select tone dialing
ATV	TA response format
ATX	Set connect result code format and monitor call progress
ATZ	Reset default configuration
AT&C	Set DCD function mode

AT&D	Set DTR function mode
AT&F	Factory defined configuration
AT&V	Display current configuration
AT&W	Store active profile
AT+GCAP	Request complete TA capabilities list
AT+GMI	Request manufacturer identification
AT+GMM	Request TA model identification
AT+GMR	Request TA revision identification of software release
AT+GOI	Request global object identification
AT+GSN	Request TA serial number identification (IMEI)
AT+HFC	Set TE-TA local data flow control
AT+IPR	Set TE-TA fixed local rate
AT+HVOIC	Disconnect voice call only

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 ATA Answer an Incoming Call

ATA Answer an Incoming Call	
Execution Command ATA	<p>Response TA sends off-hook to the remote station.</p> <p>Note1: Any additional commands on the same Command line are ignored. Note2: This command may be aborted generally by receiving a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.</p> <p>Response in case of data call, if successfully connected CONNECT<text> TA switches to data mode. Note: <text> output only if ATX<value> parameter setting with the <value>>0</p> <p>When TA returns to Command mode after call release OK</p> <p>Response in case of voice call, if successfully connected</p>

	<p>OK</p> <p>Response if no connection</p> <p>NO CARRIER</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	20s(voice call) Timeout set with AT57 (data call)
Reference V.25ter	Note See also ATX

2.2.3 ATD Mobile Originated Call to Dial A Number

ATD Mobile Originated Call to Dial A Number	
<p>Execution Command</p> <p>ATD<n>[<mgsml>];]</p>	<p>Response</p> <p>This command can be used to set up outgoing voice, data or fax calls. It also serves to control supplementary services.</p> <p>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.</p> <p>If error is related to ME functionality</p> <p>+CME ERROR: <err></p> <p>If no dial tone and (parameter setting ATX2 or ATX4)</p> <p>NO DIALTONE</p> <p>If busy and (parameter setting ATX3 or ATX4)</p> <p>BUSY</p> <p>If a connection cannot be established</p> <p>NO CARRIER</p> <p>If the remote station does not answer</p> <p>NO ANSWER</p> <p>If connection successful and non-voice call.</p> <p>CONNECT<text> TA switches to data mode.</p> <p>Note: <text> output only if ATX<value> parameter setting with the <value> >0</p> <p>When TA returns to command mode after call release</p> <p>OK</p>

	<p>If connection successful and voice call OK</p> <p>Parameters</p> <p><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, @</p> <p>Emergency call:</p> <p><n> Standardized emergency number 112 (no SIM needed)</p> <p><mgsms> String of GSM modifiers:</p> <p>I Activates CLIR (Disables presentation of own number to called party)</p> <p>i Deactivates CLIR (Enable presentation of own number to called party)</p> <p>G Activates Closed User Group invocation for this call only</p> <p>g Deactivates Closed User Group invocation for this call only</p> <p><;> Only required to set up voice call , return to Command state</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	20s(voice call) Timeout set with AT57 (data call)
Reference V.25ter	<p>Note</p> <p>Parameter "I" and "i" only if no *# code is within the dial string <n> is default for last number that can be dialed by ATDL *# codes sent with ATD are treated as voice calls. Therefore, the Command must be terminated with a semicolon ";" See ATX Command for setting result code and call monitoring parameters.</p> <p>Responses returned after dialing with ATD</p> <p>For voice call two different responses mode can be determined. TA returns "OK" immediately either after dialing was completed or after the call is established. The setting is controlled by AT+COLP. Factory default is AT+COLP=0, this cause the TA returns "OK" immediately after dialing was completed, otherwise TA will returns "OK", "BUSY", "NO DIAL TONE", "NO CARRIER".</p> <p>Using ATD during an active voice call:</p> <p>When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold.</p>

The current states of all calls can be easily checked at any time by using the **AT+CLCC** Command.

2.2.4 ATD<n> Originate Call to Phone Number in Current Memory

ATD<n> Originate Call to Phone Number in Current Memory	
Execution Command ATD<n>[<clir>][<cug>];	<p>Response</p> <p>This command can be used to dial a phone number from current phonebook memory.</p> <p>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.</p> <p>If error is related to ME functionality +CME ERROR: <err></p> <p>If no dial tone and (parameter setting ATX2 or ATX4) NO DIALTONE</p> <p>If busy and (parameter setting ATX3 or ATX4) BUSY</p> <p>If a connection cannot be established NO CARRIER</p> <p>If the remote station does not answer NO ANSWER</p> <p>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</p> <p>When TA returns to command mode after call release OK</p> <p>If successfully connected and voice call OK</p> <p>Parameters</p> <p><n> Integer type memory location should be in the range of locations available in the memory used</p> <p><mgsn> String of GSM modifiers:</p> <p><clir></p>

	<p>I Override the CLIR supplementary service subscription default value for this call Invocation (restrict CLI presentation)</p> <p>i Override the CLIR supplementary service subscription default value for this call Suppression (allow CLI presentation)</p> <p><cug></p> <p>G Control the CUG supplementary service information for this call CUG Not supported</p> <p>g Control the CUG supplementary service information for this call CUG Not supported</p> <p><;> Only required to set up voice call , return to command state</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	<p>Note</p> <p>Parameter "I" and "i" only if no *# code is within the dial string</p> <p>*# codes sent with ATD are treated as voice calls. Therefore, the command must be terminated with a semicolon ";"</p> <p>See ATX Command for setting result code and call monitoring parameters.</p>

2.2.5 ATD<str> Originate Call to Phone Number in Memory Which Corresponds to Field <str>

ATD<str> Originate Call to Phone Number in Memory Which Corresponds to Field <str>	
<p>Execution Command</p> <p>ATD<str>[<clir>][<cug>];</p>	<p>Response</p> <p>This command make the TA attempts to set up an outgoing call to stored number.</p> <p>All available memories are searched for the entry <str>.</p> <p>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.</p> <p>If error is related to ME functionality +CME ERROR: <err></p> <p>If no dial tone and (parameter setting ATX2 or ATX4) NO DIALTONE</p> <p>If busy and (parameter setting ATX3 or ATX4)</p>

	<p>BUSY</p> <p>If a connection cannot be established</p> <p>NO CARRIER</p> <p>If the remote station does not answer</p> <p>NO ANSWER</p> <p>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</p> <p>When TA returns to command mode after call release</p> <p>OK</p> <p>If successfully connected and voice call</p> <p>OK</p>
	<p>Parameters</p> <p><str> String type (string should be included in quotation marks) value ("x"), which should equal to an alphanumeric field in at least one phone book entry in the searched memories. <str> formatted as current TE character set specified by +CSCS.</p> <p><mgsms> String of GSM modifiers:</p> <ul style="list-style-type: none"> I Activates 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 <p><;> Only required to set up voice call, return to Command state</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	<p>Note</p> <p>Parameter "I" and "i" only if no "*#" code is within the dial string</p> <p>*# codes sent with ATD are treated as voice calls. Therefore, the Command must be terminated with a semicolon ;"</p> <p>See ATX Command for setting result code and call monitoring parameters.</p>

2.2.6 ATDL Redial Last Telephone Number Used

ATDL Redial Last Telephone Number Used

<p>Execution Command ATDL</p>	<p>Response</p> <p>This command redials the last voice and data call number used.</p> <p>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.</p> <p>If error is related to ME functionality +CME ERROR: <err></p> <p>If no dial tone and (parameter setting ATX2 or ATX4) NO DIALTONE</p> <p>If busy and (parameter setting ATX3 or ATX4) BUSY</p> <p>If a connection cannot be established NO CARRIER</p> <p>If the remote station does not answer NO ANSWER</p> <p>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</p> <p>When TA returns to Command mode after call release OK</p> <p>If successfully connected and voice call OK</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference V.25ter</p>	<p>Note</p> <p>See ATX Command for setting result code and call monitoring parameters.</p> <p>Return the numbers and symbols which ATD supports if there is no last dialing context.</p>

2.2.7 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 <u>1</u> Echo mode on
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.8 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

2.2.9 ATI Display Product Identification Information

ATI Display Product Identification Information	
Execution Command ATI	Response TA issues product information text Example: R14.18 OK
Parameter Saving Mode	NO_SAVE
Max Response Time	-

Time	
Reference V.25ter	Note

2.2.10 ATL Set Monitor speaker loudness

ATL Set Monitor speaker loudness	
Execution Command ATL<value>	Response OK Parameters <value> 0..9 Volume
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.11 ATM Set Monitor Speaker Mode

ATM Set Monitor Speaker Mode	
Execution Command ATM<value>	Response OK Parameters <value> 0..9 Mode
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

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

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

	No characters entered for T1 timer (1 second) Switch to Command mode, otherwise go to step 1.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note To return from Command mode back to data mode: Enter ATO .

2.2.13 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 Saving Mode	Parameter <n> 0 Switch from command mode to data mode.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.14 ATP Select Pulse Dialling

ATP Select Pulse Dialling	
Execution Command ATP	Response OK
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

V.25ter	No effect in GSM
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2.2.15 ATQ Set Result Code Presentation Mode

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

2.2.16 ATSO Set Number of Rings before Automatically Answering the Call

ATSO Set Number of Rings before Automatically Answering the Call	
Read Command ATSO?	<p>Response</p> <p><n></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command ATSO=<n>	<p>Response</p> <p>This parameter setting determines the number of rings before auto-answer.</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><n> <u>0</u> Automatic answering is disable. 1-255 Number of rings the modem will wait for before answering the phone if a ring is detected.</p>
Parameter Saving Mode	AT&W_SAVE
Max Response	-

Time	
Reference V.25ter	<p>Note</p> <p>If <n> is set too high, the calling party may hang up before the call can be answered automatically.</p> <p>If using cmux port, ATH and AT+CHUP can hang up the call (automatically answering) only in the CMUX channel 0.</p> <p>If using dual-physical serial port, ATH and AT+CHUP can hang up the call (automatically answering) only in UART1.</p>

2.2.17 AT3 Set Command Line Termination Character

AT3 Set Command Line Termination Character	
Read Command AT3?	<p>Response</p> <p><n></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT3=<n>	<p>Response</p> <p>This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output.</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><n> <u>13</u> Command line termination character</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	<p>Note</p> <p>Default 13 = CR. It only supports default value.</p>

2.2.18 AT4 Set Response Formatting Character

AT4 Set Response Formatting Character	
Read Command AT4?	<p>Response</p> <p><n></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command	Response

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

2.2.19 ATS5 Set Command Line Editing Character

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

2.2.20 ATS6 Pause Before Blind Dialling

ATS6 Pause Before Blind Dialling	
---	--

Read Command ATS6?	Response <n> OK
Write Command ATS6=<n>	Response OK ERROR Parameters <n> 0- <u>2</u> -999 Time
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

2.2.21 ATS7 Set Number of Seconds to Wait for Connection Completion

ATS7 Set Number of Seconds to Wait for Connection Completion	
Read Command ATS7?	Response <n> OK Parameters See Write Command
Write Command ATS7=<n>	Response This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call. OK ERROR Parameters <n> 1- <u>60</u> -255 Number of seconds to wait for connection completion
Parameter Saving Mode	AT&W_SAVE
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.

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

AT58 Set Number of Seconds to Wait for Comma Dial Modifier Encountered in Dial String of D Command	
Read Command AT58?	Response <n> OK Parameters See Write Command
Write Command AT58=<n>	Response OK ERROR Parameters <n> 0-255 The value of this register determines how long the modem should pause when it sees a comma in the dialing string.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note No effect in GSM

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

AT510 Set Disconnect Delay after Indicating the Absence of Data Carrier	
Read Command AT510?	Response <n> OK Parameters See Write Command
Write Command AT510=<n>	Response This parameter setting determines the amount of time that the TA will remain connected in absence of data carrier. If the data carrier is once more detected before disconnecting, the TA remains connected. OK ERROR Parameters <n> 1-254 Number of tenths seconds of delay
Parameter Saving Mode	AT&W_SAVE

Mode	
Max Response Time	-
Reference V.25ter	Note

2.2.24 ATT Select Tone Dialing

ATT Select Tone Dialing	
Execution Command ATT	Response OK
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.25 ATV TA Response Format

ATV TA Response Format	
Execution Command ATV<value>	<p>Response</p> <p>This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.</p> <p>When <value>=0</p> <p>0</p> <p>When <value>=1</p> <p>OK</p> <p>Parameters</p> <p><value> 0 Information response: <text><CR><LF> Short result code format: <numeric code><CR></p> <p> 1 Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF></p> <p>The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.</p>
Parameter Saving Mode	AT&W_SAVE
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

2.2.26 ATX Set CONNECT Result Code Format and Monitor Call Progress

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

Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.27 ATZ Reset Default Configuration

ATZ Reset Default Configuration	
Execution Command ATZ[<value>]	<p>Response</p> <p>TA sets all current parameters to the user defined profile.</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><value> 0 Restore profile 0</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

Parameter impacted by Z command: refer to AT&W

NOTE:

Parameters related to uart operation, like csclk, ipr, ifc, will not be reset to default configuration.

2.2.28 AT&C Set DCD Function Mode

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

Reference V.25ter	Note
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2.2.29 AT&D Set DTR Function Mode

AT&D Set DTR Function Mode	
Execution Command AT&D[<value>]	Response This parameter determines how the TA responds when circuit 108/2 (DTR) is changed from the ON to the OFF condition during data mode. OK 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	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.30 AT&F Factory Defined Configuration

AT&F Factory Defined Configuration	
Execution Command AT&F[<value>]	Response TA sets all current parameters to the manufacturer defined profile. OK
	Parameters <value> 0 Set all TA parameters to manufacturer defaults.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

Parameter impacted by &F command: refer to AT&W

NOTE:

Parameters related to uart operation, like csclk, ipr, ifc, will not be reset to default configuration.

2.2.31 AT&V Display Current Configuration

AT&V Display Current Configuration	
Execution Command AT&V[<n>]	Response TA returns the current parameter setting. <current configurations text> OK ERROR
	Parameters <n> 0 Responses in numeric format
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note

2.2.32 AT&W Store Active Profile

AT&W Store Active Profile	
Execution Command AT&W[<n>]	Response TA stores the current parameter setting in the user defined profile. OK ERROR
	Parameters <n> 0 Store the current configuration in profile 0
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference V.25ter	Note The user defined profile is stored in non volatile memory.

Parameter stored by &W

Command	Parameter name	Displayedby &V
ATS0	<num>	Y
ATS3	<char>	Y
ATS4	<char>	Y
ATS5	<char>	Y
ATS6	<short>	Y
ATS7	<time>	Y

ATS8	<time>	Y
ATS10	<time>	Y
AT+CRLP	<iws>,<mws>,<T1>,<N2>	Y
ATV	<format>	Y
ATE	<echo>	Y
ATQ	<result>	Y
ATX	<result>	Y
AT&C	<behavior>	Y
AT&D	<behavior>	Y
AT+CLTS	<timestamp>	Y
AT+CREG	<n>	Y
AT+CGREG	<n>	Y
AT+CMEE	<n>	Y
AT+CSCCLK	<n>	Y
AT+CIURC	<mode>	Y
AT+CFGRI	<mode>	Y
AT+CANT	<mode>,<UrcEnable>,<timer>	Y
AT+STKPCIS	<switch>	Y
AT+CMGF	<mode>	Y
AT+CNMI	<mode>,<mt>,<bm>,<ds>,<bfr>	Y
AT+CSCS	<chest>	Y
AT+VTD	<n>	Y
AT+CALS	<n>	Y
AT+CHF	<ind>	Y
AT+CAAS	<mode>	Y
AT+CBUZZERRING	<mode>	Y
AT+DDET	<n>	Y
AT+MORING	<mode>	Y
AT+SVR	<voice_rate_coding>	Y
AT+CCPD	<mode>	Y
AT+CSGS	<mode>	Y
AT+CNETLIGHT	<mode>	Y
AT+SLEDS	<mode>,<timer_on>,<timer_off>	Y
AT+EXUNSOL	<exunsol>	Y
AT+IPR	<n>	Y
AT+IFC	<TA_by_TE>,<TE_by_TA>	Y
AT+SIMTIMER	<time>	Y
AT+CSNS	<mode>	Y

AT+FSHEX	<n>	Y
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2.2.33 AT+GCAP Request Complete TA Capabilities List

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

2.2.34 AT+GMI Request Manufacturer Identification

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

2.2.35 AT+GMM Request TA Model Identification

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

2.2.36 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

2.2.37 AT+GOI Request Global Object Identification

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

2.2.38 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.

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

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

2.2.40 AT+IPR Set TE-TA Fixed Local Rate

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

	fixed-only <rate>s) OK Parameters See Write Command
Read Command AT+IPR?	Response +IPR: <rate> OK Parameters See Write Command
Write Command AT+IPR=<rate>	Response This parameter setting determines the data rate of the TA on the serial interface. The rate of Command takes effect following the issuance of any result code associated with the current Command line. OK Parameters <rate> Baud rate per second <u>0</u> (Auto-bauding) 1200 2400 4800 9600 19200 38400 57600 115200 230400 460800
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference V.25ter	Note Factory setting is "AT+IPR=0"(auto-bauding).

2.2.40.1 Auto-bauding

Synchronization between DTE and DCE ensure that DTE and DCE are correctly synchronized and the baud rate used by the DTE is detected by the DCE (= ME). To allow the baud rate to be synchronized, simply issue an "AT" string. This is necessary when you start up the module while auto-bauding is enabled. It is recommended to wait 3 to 5 seconds before sending the first AT character. Otherwise undefined characters might be returned.

If you want to use auto-bauding and auto-answer at the same time, you can easily enable the DTE-DCE synchronization, when you activate auto-bauding first and then configure the auto-answer mode.

Restrictions on auto-bauding operation

The serial interface has to be operated at 8 data bits, no parity and 1 stop bit (factory setting).

Only the strings "AT" or "at" can be detected when auto-bauding is enabled.

AT+IPR=0 setting to auto-bauding will take effect after module resets.

Unsolicited Result Codes that may be issued before the ME detects the new baud rate (by receiving the first AT Command string) will be sent at the previously detected baud rate. The Unsolicited Result Codes "RDY" and so on are not indicated when you start up the ME while auto-bauding is enabled.

It is not recommended to switch to auto-bauding from a baud rate that cannot be detected by the auto-bauding mechanism (e.g. 300 baud). Responses to +IPR=0 and any commands on the same line might be corrupted.

Auto-bauding and baud rate after restart

The most recently detected baud rate can not be stored when module is powered down.

2.2.41 AT+HVOIC Disconnect Voice Call Only

AT+HVOIC Disconnect Voice Call Only	
Execution Command AT+HVOIC	Response Disconnect existing voice call by local TE from Command line and terminate call with existing PPP or CSD connection on. OK
Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference V.25ter	Note

3 AT Commands According to 3GPP TS 27.007

3.1 Overview of AT Command According to 3GPP TS 27.007

Command	Description
AT+CCFC	Call forwarding number and conditions control
AT+CCWA	Call waiting control
AT+CEER	Extended error report
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+CSTA	Select type of address
AT+CHLD	Call hold and multiparty
AT+CIMI	Request international mobile subscriber identity
AT+CLCC	List current calls of ME
AT+CLCK	Facility lock
AT+CLIP	Calling line identification presentation
AT+CLIR	Calling line identification restriction
AT+CMEE	Report mobile equipment error
AT+COLP	Connected line identification presentation
AT+COPS	Operator selection
AT+CPAS	Phone activity status
AT+CPBF	Find phonebook entries
AT+CPBR	Read current phonebook entries
AT+CPBS	Select phonebook memory storage
AT+CPBW	Write phonebook entry
AT+CPIN	Enter PIN
AT+CPWD	Change password
AT+CR	Service reporting control
AT+CRC	Set cellular result codes for incoming call indication
AT+CREG	Network registration
AT+CRLP	Select radio link protocol parameters
AT+CRSM	Restricted SIM access
AT+CSQ	Signal quality report
AT+VTD	Tone duration

AT+VTS	DTMF and tone generation
AT+CMUX	Multiplexer control
AT+CNUM	Subscriber number
AT+CPOL	Preferred operator list
AT+COPN	Read operator names
AT+CFUN	Set phone functionality
AT+CCLK	Clock
AT+CSIM	Generic SIM access
AT+CALM	Alert sound mode
AT+CALS	Alert sound select
AT+CRSL	Ringer sound level
AT+CLVL	Loud speaker volume level
AT+CMUT	Mute control
AT+CBC	Battery charge
AT+CUSD	Unstructured supplementary service data
AT+CSSN	Supplementary services notification

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

3.2.1 AT+CCFC Call Forwarding Number and Conditions Control

AT+CCFC Call Forwarding Number and Conditions Control	
Test Command AT+CCFC=?	Response +CCFC: (list of supported <reason>s) OK
	Parameters See Write Command
Write Command AT+CCFC=<reason>,<mode>[,<number>[,<type>],<class>[,<subaddr>[,<satype>[,<time>]]]]]	Response TA controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported. Only <reads> and <mode> should be entered with mode (0-2,4) If <mode>≠2 and Command successful OK If <mode>=2 and Command successful (only in connection with <reason> 0-3) For registered call forwarding numbers: when <mode>=2 and command successful: +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC:

	<p><status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]]] ...] OK If no call forwarding numbers are registered (and therefore all classes are inactive): +CCFC: <status>,<class></p> <p>OK where <status>=0 and <class>=7 If error is related to ME functionality: +CME ERROR: <err></p>
	<p>Parameters</p> <p><reason> 0 Unconditional 1 Mobile busy 2 No reply 3 Not reachable 4 All call forwarding 5 All conditional call forwarding</p> <p><mode> 0 Disable 1 Enable 2 Query status 3 Registration 4 Erasure</p> <p><number> String type (Phone number of forwarding address in format specified by <type>)</p> <p><type> Type of address</p> <p><subaddr> String type (subaddress of format specified by <satype>)</p> <p><satype> Type of sub-address in integer</p> <p><class> 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</p> <p><time> 1..30 When "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value is 20.Supported only if it is multiples of 5.</p> <p><status></p> <p> 0 Not active 1 Active</p>
Parameter Saving Mode	NO_SAVE
Max Response	15s

Time	
Reference 3GPP TS 27.007	Note

3.2.2 AT+CCWA Call Waiting Control

AT+CCWA Call Waiting Control	
Test Command AT+CCWA=?	<p>Response</p> <p>+CCWA: (list of supported <n>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CCWA?	<p>Response</p> <p>+CCWA: <n></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CCWA=<n>[,<mode>[,<class>]]	<p>Response</p> <p>TA controls the Call Waiting supplementary service. Activation, deactivation and status query are supported.</p> <p>If <mode>≠2 and Command successful</p> <p>OK</p> <p>If <mode>=2 and Command successful</p> <p>+CCWA: <status>,<class1>[<CR><LF>+CCWA:<status>,<class2>[...]]</p> <p>OK</p> <p>ERROR</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Note: <status>=0 should be returned only if service is not active for any <class> i.e. +CCWA: 0, 7 will be returned in this case.</p> <p>When mode=2, all active call waiting classes will be reported. In this mode the Command is aborted by pressing any key.</p> <p>Parameters</p> <p><n> 0 Disable presentation of an unsolicited result code 1 Enable presentation of an unsolicited result code</p> <p><mode> When <mode> parameter not given, network is not interrogated</p> <p> 0 Disable 1 Enable</p>

	<p>2 Query status</p> <p><class> Is a sum of integers each representing a class of information</p> <p>1 Voice (telephony)</p> <p>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)</p> <p>4 Fax (facsimile services)</p> <p><u>7</u> Default(1+2+4)</p> <p><status></p> <p>0 Not active</p> <p>1 Active</p>
	<p>Unsolicited result code</p> <p>RING</p> <p>+CCWA: <number>,<type>,<class>[,<alpha>]</p>
	<p>Parameters</p> <p><number> String type (string should be included in quotation marks) phone number of calling address in format specified by <type></p> <p><type> Type of address octet in integer format;</p> <p>129 Unknown type</p> <p>161 National number type</p> <p>145 International number type</p> <p>177 Network specific number</p> <p><alpha> Optional string type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference	Note
3GPP TS 27.007	

3.2.3 AT+CEER Extended Error Report

AT+CEER Extended Error Report	
Test Command AT+CEER=?	<p>Response</p> <p>+CEER: (list of supported <n>s)</p> <p>OK</p>
	<p>Parameters</p> <p>See Write Command</p>
Read Command AT+CEER?	<p>Response</p> <p>+CEER: <n></p>

	<p>OK</p> <p>Parameters See Write Command</p>																																				
Write Command AT+CEER=<n>	<p>Response OK</p> <p>Parameter</p> <p><n> <u>0</u> The reason for last call release as text code 1 The reason for last call release as number code</p>																																				
Execution Command AT+CEER	<p>Response TA returns an extended report of the reason for the last call release. +CEER: <report></p> <p>OK</p> <p>Parameters <report> If AT+CEER=0, return <s> <s> a string that represents the Cause If AT+CEER=1, return Cause:<c> <c> number representing the Cause</p> <p>Parameters</p> <table border="0"> <thead> <tr> <th><c>(number)</th> <th><s>(string)</th> </tr> </thead> <tbody> <tr><td>0</td><td>(No cause)</td></tr> <tr><td>1</td><td>(unassigned (unallocated) number)</td></tr> <tr><td>3</td><td>(no route to destination)</td></tr> <tr><td>6</td><td>(channel unacceptable)</td></tr> <tr><td>8</td><td>(operator determined barring)</td></tr> <tr><td>16</td><td>(normal call clearing)</td></tr> <tr><td>17</td><td>(user busy)</td></tr> <tr><td>18</td><td>(no user responding)</td></tr> <tr><td>19</td><td>(user alerting, no answer)</td></tr> <tr><td>21</td><td>(call rejected)</td></tr> <tr><td>22</td><td>(number changed)</td></tr> <tr><td>26</td><td>(non-selected user clearing)</td></tr> <tr><td>27</td><td>(destination out of order)</td></tr> <tr><td>28</td><td>(invalid number format (incomplete number))</td></tr> <tr><td>29</td><td>(facility rejected)</td></tr> <tr><td>30</td><td>(response to STATUS ENQUIRY)</td></tr> <tr><td>31</td><td>(normal, unspecified)</td></tr> </tbody> </table>	<c>(number)	<s>(string)	0	(No cause)	1	(unassigned (unallocated) number)	3	(no route to destination)	6	(channel unacceptable)	8	(operator determined barring)	16	(normal call clearing)	17	(user busy)	18	(no user responding)	19	(user alerting, no answer)	21	(call rejected)	22	(number changed)	26	(non-selected user clearing)	27	(destination out of order)	28	(invalid number format (incomplete number))	29	(facility rejected)	30	(response to STATUS ENQUIRY)	31	(normal, unspecified)
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	34	(emergency call not possible)
	38	(network out of order)
	41	(temporary failure)
	42	(switching equipment congestion)
	43	(access information discarded)
	44	(requested circuit/channel not available)
	47	(resource unavailable, unspecified)
	49	(quality of service unavailable)
	50	(Requested facility not subscribed)
	55	(Incoming calls barred within the CUG)
	57	(bearer capability not authorized)
	58	(bearer capability not presently available)
	63	(service or option not available, unspecified)
	68	(ACM equal to or greater than ACMmax)
	65	(bearer service not implemented)
	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 IE error)
	101	(message not compatible with protocol state)
	102	(recovery on timer expiry)
	111	(protocol error, unspecified)
	127	(interworking, unspecified)
Parameter Saving Mode	NO_SAVE	

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

3.2.4 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

3.2.5 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	Note

[13]

3.2.6 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

3.2.7 AT+CGSN Request Product Serial Number Identification (Identical with +GSN)

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

3.2.8 AT+CSCS Select TE Character Set

AT+CSCS Select TE Character Set	
Test Command AT+CSCS=?	<p>Response</p> <p>+CSCS: (list of supported <chset>s)</p> <p>OK</p> <p>Parameters</p> <p><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) "HEX" Character strings consist only of hexadecimal characters from 00 to FF; "PCCP" PC character set Code "PCDN" PC Danish/Norwegian character set "8859-1" ISO 8859 Latin 1 character set</p>
Read Command AT+CSCS?	<p>Response</p> <p>+CSCS: <chset></p> <p>OK</p> <p>Parameters</p> <p>See Test Command</p>
Write Command AT+CSCS=<chset>	<p>Response</p> <p>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.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p>See Test Command</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.9 AT+CSTA Select Type of Address

AT+CSTA Select Type of Address	
Test Command AT+CSTA=?	<p>Response +CSTA: (list of supported <type>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CSTA?	<p>Response +CSTA: <type></p> <p>OK</p> <p>Parameter <type> Current address type setting.</p>
Write Command AT+CSTA=<type> >	<p>Response OK</p> <p>If <type> is not in the parameter range: ERROR</p> <p>Parameters <type> Type of address octet in integer format; <u>129</u> Unknown type 161 National number type 145 International number type 177 Network specific number</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note The ATD Command overrides this setting when a number is dialed.

3.2.10 AT+CHLD Call Hold and Multiparty

AT+CHLD Call Hold and Multiparty	
Test Command AT+CHLD=?	<p>Response +CHLD: (list of supported <n>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command	Response

AT+CHLD=<n>	<p>TA controls the supplementary services Call Hold, Multiparty and Explicit Call Transfer. Calls can be put on hold, recovered, released, added to conversation, and transferred.</p> <p>Note These supplementary services are only applicable to tele service 11 (Speech: Telephony).</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><n> 0 Releases all held calls or sets User Determined User Busy (UDUB) for a waiting call</p> <p> 1 Releases all active calls (if any exist) and accepts the other (held or waiting) call.</p> <p> 1x Releases a specific call x</p> <p> 2 Place all active calls on hold (if any) and accept the other (held or waiting) call.</p> <p> 2x Places all active calls on hold except call X with which communication shall be supported.</p> <p> 3 Adds a held call to the conversation.</p> <p> 4 Connects the two calls and disconnects the subscriber from both calls(ECT)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference	Note

3.2.11 AT+CIMI Request International Mobile Subscriber Identity

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

	double quotes)
Parameter Saving Mode	NO_SAVE
Max Response Time	20s
Reference 3GPP TS 27.007 [13]	Note

3.2.12 AT+CLCC List Current Calls of ME

AT+CLCC List Current Calls of ME	
Test Command AT+CLCC=?	<p>Response +CLCC: (0,1)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CLCC?	<p>Response +CLCC: <n></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CLCC=<n>	<p>Response OK</p> <p>Parameters <n> <u>0</u> 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.</p>
Execution Command AT+CLCC	<p>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.</p> <p>[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>,<alphaID>] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>,<alphaID>][...]]</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p>

	<p>Parameters</p> <p><idx> 1..7 Call identification number This number can be used in +CHLD command operations</p> <p><dir> 0 Mobile originated (MO) call 1 Mobile terminated (MT) call</p> <p><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</p> <p><mode> Bearer/tele service: 0 Voice 1 Data 2 Fax</p> <p><mpty> 0 Call is not one of multiparty (conference) call parties 1 Call is one of multiparty (conference) call parties</p> <p><number> String type (string should be included in quotation marks) phone number in format specified by <type>.</p> <p><type> Type of address</p> <p><alphaId> String type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book.</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13][14]	Note

3.2.13 AT+CLCK Facility Lock

AT+CLCK Facility Lock	
Test Command AT+CLCK=?	<p>Response</p> <p>+CLCK: (list of supported <fac>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CLCK=<fac>	<p>Response</p> <p>This Command is used to lock, unlock or interrogate a ME or a network</p>

,<mode>[,<passwd>[,<class>]]

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>

"AO" BAOC (Barr All Outgoing Calls)

"OI" BOIC (Barr Outgoing International Calls)

"OX" BOIC-exHC (Barr Outgoing International Calls

except to Home Country)

"AI" BAIC (Barr All Incoming Calls)

"IR" BIC-Roam (Barr Incoming Calls when Roaming

outside the home country)

"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>)

"SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued)

Correspond to PIN1 code.

"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 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)

	<p>4 Fax (facsimile services)</p> <p><u>7</u> All classes</p> <p><status></p> <p>0 Not active</p> <p>1 Active</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference 3GPP TS 27.007 [14]	<p>Note</p> <ul style="list-style-type: none"> ● CME errors if SIM not inserted or PIN is not entered. ● Part of the projects supported by this AT command, please refer to chapter 21 for details.

3.2.14 AT+CLIP Calling Line Identification Presentation

AT+CLIP Calling Line Identification Presentation	
Test Command AT+CLIP=?	<p>Response</p> <p>+CLIP: (list of supported <n>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CLIP?	<p>Response</p> <p>+CLIP: <n>, <m></p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CLIP=<n>	<p>Response</p> <p>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.</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p><n> <u>0</u> Disable +CLIP notification.</p> <p> 1 Enable +CLIP notification.</p> <p><m> 0 CLIP not provisioned</p> <p> 1 CLIP provisioned</p> <p> 2 Unknown (e.g. no network, etc.)</p> <p>Unsolicited Result Code</p>

	<p>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.</p> <p>+CLIP: <number>,<type>[,<subaddr>,<satype>,<alphaId>,<CLI validity>]</p> <p>Parameters</p> <p><number> String type (string should be included in quotation marks) phone number of calling address in format specified by <type>.</p> <p><type> Type of address octet in integer format;</p> <p>129 Unknown type</p> <p>161 National number type</p> <p>145 International number type</p> <p>177 Network specific number</p> <p><subaddr> String type (subaddress of format specified by <satype>)</p> <p><satype> Integer type (type of subaddress)</p> <p><alphaId> String type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book.</p> <p><CLI validity></p> <p>0 CLI valid</p> <p>1 CLI has been withheld by the originator.</p> <p>2 CLI is not available due to interworking problems or limitations of originating network.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference	Note

3.2.15 AT+CLIR Calling Line Identification Restriction

AT+CLIR Calling Line Identification Restriction	
Test Command AT+CLIR=?	<p>Response</p> <p>+CLIR: (list of supported <n>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CLIR?	<p>Response</p> <p>+CLIR: <n>, <m></p> <p>OK</p>

	<p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>
<p>Write Command AT+CLIR=<n></p>	<p>Response</p> <p>TA restricts or enables the presentation of the CLI to the called party when originating a call.</p> <p>The Command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite Command.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><n> (parameter sets the adjustment for outgoing calls):</p> <ul style="list-style-type: none"> 0 Presentation indicator is used according to the subscription of the CLIR service. 1 CLIR invocation 2 CLIR suppression <p><m> (parameter shows the subscriber CLIR service status in the network):</p> <ul style="list-style-type: none"> 0 CLIR not provisioned 1 CLIR provisioned in permanent mode 2 Unknown (e.g. no network, etc.) 3 CLIR temporary mode presentation restricted 4 CLIR temporary mode presentation allowed
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference	Note

3.2.16 AT+CMEE Report Mobile Equipment Error

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

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	AT&W_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.17 AT+COLP Connected Line Identification Presentation

AT+COLP Connected Line Identification Presentation	
Test Command AT+COLP=?	Response +COLP: (list of supported <n>s) OK
	Parameters See Write Command
Read Command AT+COLP?	Response +COLP: <n>,<m> OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters

	See Write Command
Write Command AT+COLP=<n>	<p>Response</p> <p>TA enables or disables the presentation of the COL (Connected Line) at the TE for a mobile originated call. It has no effect on the execution of the supplementary service COLR in the network.</p> <p>Intermediate result code is returned from TA to TE before any +CR or V.25ter responses.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p><n> (parameter sets/shows the result code presentation status in the TA):</p> <ul style="list-style-type: none"> 0 Disable +COLP notification 1 Enable +COLP notification <p><m> (parameter shows the subscriber COLP service status in the network):</p> <ul style="list-style-type: none"> 0 COLP not provisioned 1 COLP provisioned 2 Unknown (e.g. no network, etc.) <hr/> <p>Intermediate result code</p> <p>When enabled (and called subscriber allows), an intermediate result code is returned before any +CR or V.25ter responses: +COLP: <number>,<type>[,<subaddr>,<satype> ,<alphaId>]</p> <hr/> <p>Parameters</p> <p><number> String type (string should be included in quotation marks) phone number of format specified by <type></p> <p><type> Type of address octet in integer format;</p> <ul style="list-style-type: none"> 129 Unknown type 161 National number type 145 International number type 177 Network specific number <p><subaddr> String type (string should be included in quotation marks) sub address of format specified by <satype></p> <p><satype> Type of sub address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.8)</p> <p><alphaId> String type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-

Reference	Note
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3.2.18 AT+COPS Operator Selection

AT+COPS Operator Selection	
Test Command AT+COPS=?	Response TA returns a list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM, and other networks. +COPS: (list of supported<stat>,long alphanumeric<oper>,short alphanumeric<oper>,numeric <oper>)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>] 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

	<p>3 Operator forbidden</p> <p><oper> Refer to [27.007] operator in format as per <format></p> <p><mode> 0 Automatic mode; <oper> field is ignored 1 Manual (<oper> field shall be present, and <Act> optionally) 2 manual deregister from network 3 set only <format> (for read Command +COPS?) - not shown in Read Command response 4 Manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered</p> <p><format> 0 Long format alphanumeric <oper> 1 Short format alphanumeric <oper> 2 Numeric <oper>; GSM Location Area Identification number</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	Test command: 45 seconds Write command: 120 seconds
Reference 3GPP TS 27.007 [14]	Note

3.2.19 AT+CPAS Phone Activity Status

AT+CPAS Phone Activity Status	
Test Command AT+CPAS=?	<p>Response</p> <p>+CPAS: (list of supported <pas>s)</p> <p>OK</p>
	<p>Parameters</p> <p>See Execution Command</p>
Execution Command AT+CPAS	<p>Response</p> <p>TA returns the activity status of ME.</p> <p>+CPAS: <pas></p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p>
	<p>Parameters</p> <p><pas> 0 Ready (MT allows commands from TA/TE) 2 Unknown (MT is not guaranteed to respond to instructions)</p>

	<p>3 Ringing (MT is ready for commands from TA/TE, but the ringer is active)</p> <p>4 Call in progress (MT is ready for commands from TA/TE, a call is in progress)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.20 AT+CPBF Find Phonebook Entries

AT+CPBF Find Phonebook Entries	
Test Command AT+CPBF=?	Response +CPBF: maximum length of field <nlength> , maximum length of field <tlength> OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters See Write Command
Write Command AT+CPBF=[<find text>]	Response TA returns phone book entries(from the current phone book memory storage selected with +CPBS) which contains alphanumeric string <findtext> . [+CPBF:<index1>,<number>,<type>,<text>] [[...]<CR><LF>+CBPF:<index2>,<number>,<type>,<text>] OK
	Parameters <findtext> String type(string should be included in quotation marks) field of maximum length <tlength> in current TE character set specified by +CSCS. <index1> Integer type values in the range of location numbers of phone book memory <index2> Integer type values in the range of location numbers of phone book memory <number> String type (string should be included in quotation marks) phone number of format <type> <type> Type of address octet in integer format ;

	<p>129 Unknown type</p> <p>145 International number type</p> <p><text> String type (string should be included in quotation marks) field of maximum length <tlength> in current TE character set specified by +CSCS.</p> <p><nlength> Integer type value indicating the maximum length of field</p> <p><number></p> <p><tlength> Integer type value indicating the maximum length of field</p> <p><text></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	<p>30 seconds (complete reading of a 250 records full phonebook)</p> <p>3 seconds(string present in a 250 records full phonebook)</p> <p>1 second(string not present)</p> <p>We use the China Mobile sim cards for testing, which produced by Axalto at 2010 for Shanghai. Use other sim cards may have different results.</p>
Reference 3GPP TS 27.007 [13]	Note

3.2.21 AT+CPBR Read Current Phonebook Entries

AT+CPBR Read Current Phonebook Entries	
Test Command AT+CPBR=?	<p>Response</p> <p>TA returns location range supported by the current storage as a compound value and the maximum lengths of <number> and <text> fields.</p> <p>+CPBR: (list of supported <index>s), <nlength>, <tlength></p> <p>OK</p> <p>Parameters</p> <p><index> Location number</p> <p><nlength> Max. length of phone number</p> <p><tlength> Max. length of text for number</p>
Write Command AT+CPBR=<index1>[,<index2>]	<p>Response</p> <p>TA returns phone book entries in location number range <index1>...<index2> from the current phone book memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned.</p> <p>+CPBR:<index1>,<number>,<type>,<text></p> <p>[...]<CR><LF>+CPBR: <index2>, <number>, <type>, <text>]</p> <p>OK</p> <p>Parameters</p>

	<p><index1> Read as of this location number</p> <p><index2> Read to this location number</p> <p><number> Phone number</p> <p><type> Type of number</p> <p><text> Text for phone number in current TE character set specified by +CSCS.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	<p>3 seconds (single reading)</p> <p>30 seconds (complete reading of a 250 records full phonebook.</p> <p>We use the China Mobile sim cards for testing, which produced by Axalto at 2010 for Shanghai. Use other sim cards may have different results.</p>
Reference 3GPP TS 27.007 [13]	Note

3.2.22 AT+CPBS Select Phonebook Memory Storage

AT+CPBS Select Phonebook Memory Storage	
Test Command AT+CPBS=?	<p>Response</p> <p>+CPBS: (list of supported <storage>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CPBS?	<p>Response</p> <p>+CPBS: <storage>,<used>,<total></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CPBS=<storage>	<p>Response</p> <p>TA selects current phone book memory storage, which is used by other phone book commands.</p> <p>OK</p> <p>Parameters</p> <p><storage></p> <p>"ON" SIM (or MT) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also). When storing information in the SIM/UICC, if a SIM card is present or if a UICC with an active GSM application is present, the information in EFMSISDN under DFTelecom is selected.</p>

	<p>"SM" SIM/UICC phonebook. If a SIM card is present or if a UICC with an active GSM application is present, the EFADN under DFTelecom is selected.</p> <p>"ME" ME phonebook</p> <p>"FD" SIM fix dialing-phone book. If a SIM card is present or if a UICC with an active GSM application is present, the information in EFFDN under DFTelecom is selected</p> <p><used> Integer type value indicating the total number of used locations in selected memory</p> <p><total> Integer type value indicating the total number of locations in selected memory</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	3 seconds
Reference 3GPP TS 27.007 [13]	Note

3.2.23 AT+CPBW Write Phonebook Entry

AT+CPBW Write Phonebook Entry	
Test Command AT+CPBW=?	<p>Response</p> <p>TA returns location range supported by the current storage, the maximum length of <number> field, supported number formats of the storage, and the maximum length of <text> field.</p> <p>+CPBW: (list of supported <index>s), <nlength>, (list of supported <type>s), <tlength></p> <p>OK</p>
	<p>Parameters</p> <p>See Write Command</p>
Write Command AT+CPBW=<index>,<number>,<text>,<type>,<tlength>]]	<p>Response</p> <p>TA writes phone book entry in location number <index> in the current phone book memory storage selected with +CPBS. Entry fields written are phone number <number> (in the format <type>) and text <text> associated with the number. If those fields are omitted, phone book entry is deleted. If <index> is left out, but <number> is given, entry is written to the first free location in the phone book.</p> <p>OK</p>
	<p>Parameters</p> <p><nlength> Max length of phone number</p>

	<p><length> Max length of text for number</p> <p><index> Location number</p> <p><number> Phone number</p> <p><type> Type of number;</p> <p>129 National number type</p> <p>145 International number type</p> <p><text> String type (string should be included in quotation marks): text for phone number in current TE character set specified by +CSCS.</p> <p>Note: The following characters in <text> must be entered via the escape sequence:</p> <table border="1"> <thead> <tr> <th>GSM char.</th> <th>Seq.</th> <th>Seq.(hex)</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>\</td> <td>\5C</td> <td>5C 35 43</td> <td>(backslash)</td> </tr> <tr> <td>"</td> <td>\22</td> <td>5C 32 32</td> <td>(string delimiter)</td> </tr> <tr> <td>BSP</td> <td>\08</td> <td>5C 30 38</td> <td>(backspace)</td> </tr> <tr> <td>NULL</td> <td>\00</td> <td>5C 30 30</td> <td>(GSM null)</td> </tr> </tbody> </table> <p>'0' (GSM null) may cause problems for application layer software when reading string lengths.</p>	GSM char.	Seq.	Seq.(hex)	Note	\	\5C	5C 35 43	(backslash)	"	\22	5C 32 32	(string delimiter)	BSP	\08	5C 30 38	(backspace)	NULL	\00	5C 30 30	(GSM null)
GSM char.	Seq.	Seq.(hex)	Note																		
\	\5C	5C 35 43	(backslash)																		
"	\22	5C 32 32	(string delimiter)																		
BSP	\08	5C 30 38	(backspace)																		
NULL	\00	5C 30 30	(GSM null)																		
Parameter Saving Mode	NO_SAVE																				
Max Response Time	3 seconds																				
Reference 3GPP TS 27.007 [13]	Note																				

3.2.24 AT+CPIN Enter PIN

AT+CPIN Enter PIN													
Test Command	Response												
AT+CPIN=?	OK												
Read Command	Response												
AT+CPIN?	<p>TA returns an alphanumeric string indicating whether some password is required or not.</p> <p>+CPIN: <code></p> <p>OK</p> <p>Parameters</p> <p><code></p> <table border="1"> <tbody> <tr> <td>READY</td> <td>MT is not pending for any password</td> </tr> <tr> <td>SIM PIN</td> <td>MT is waiting SIM PIN to be given</td> </tr> <tr> <td>SIM PUK</td> <td>MT is waiting for SIM PUK to be given</td> </tr> <tr> <td>PH_SIM PIN</td> <td>ME is waiting for phone to SIM card (antitheft)</td> </tr> <tr> <td>PH_SIM PUK</td> <td>ME is waiting for SIM PUK (antitheft)</td> </tr> <tr> <td>SIM PIN2</td> <td>PIN2, e.g. for editing the FDN book possible only</td> </tr> </tbody> </table>	READY	MT is not pending for any password	SIM PIN	MT is waiting SIM PIN to be given	SIM PUK	MT is waiting for SIM PUK to be given	PH_SIM PIN	ME is waiting for phone to SIM card (antitheft)	PH_SIM PUK	ME is waiting for SIM PUK (antitheft)	SIM PIN2	PIN2, e.g. for editing the FDN book possible only
READY	MT is not pending for any password												
SIM PIN	MT is waiting SIM PIN to be given												
SIM PUK	MT is waiting for SIM PUK to be given												
PH_SIM PIN	ME is waiting for phone to SIM card (antitheft)												
PH_SIM PUK	ME is waiting for SIM PUK (antitheft)												
SIM PIN2	PIN2, e.g. for editing the FDN book possible only												

	<p>if preceding Command was acknowledged with +CME ERROR:17</p> <p>SIM PUK2 Possible only if preceding Command was acknowledged with error +CME ERROR: 18.</p>
<p>Write Command AT+CPIN=<pin>[,<new pin>]</p>	<p>Response</p> <p>TA stores a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).</p> <p>If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <new pin>, is used to replace the old pin in the SIM.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><pin> String type; password</p> <p><new pin> String type; If the PIN required is SIM PUK or SIMPUK2: new password</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>5s</p>
<p>Reference 3GPP TS 27.007 [13]</p>	<p>Note</p>

3.2.25 AT+CPWD Change Password

<p>AT+CPWD Change Password</p>	
<p>Test Command AT+CPWD=?</p>	<p>Response</p> <p>TA returns a list of pairs which present the available facilities and the maximum length of their password.</p> <p>+CPWD: (list of supported <fac>s, list of supported <pwdlength>s)</p> <p>OK</p> <p>Parameters</p> <p><fac> See Write Command</p> <p><pwdlength> Integer max. length of password</p>
<p>Write Command AT+CPWD=<fac>,<oldpwd>,<new pwd></p>	<p>Response</p> <p>TA sets a new password for the facility lock function.</p> <p>OK</p> <p>Parameters</p> <p><fac></p> <p>"AO" BAOC (Barr All Outgoing Calls)</p> <p>"OI" BOIC (Barr Outgoing International Calls)</p>

	<p>"OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country)</p> <p>"AI" BAIC (Barr All Incoming Calls)</p> <p>"IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country)</p> <p>"AB" All Barring services</p> <p>"P2" SIM PIN2</p> <p>"SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code.</p> <p><oldpwd> String type (string should be included in quotation marks): password specified for the facility from the user interface or with command. If an old password has not yet been set, <oldpwd> is not to enter.</p> <p><newpwd> String type (string should be included in quotation marks): new password</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	15s
Reference 3GPP TS 27.007 [13]	Note

3.2.26 AT+CR Service Reporting Control

AT+CR Service Reporting Control	
Test Command AT+CR=?	<p>Response</p> <p>+CR: (list of supported <mode>s)</p> <p>OK</p>
	Parameters See Write Command
Read Command AT+CR?	<p>Response</p> <p>+CR: <mode></p> <p>OK</p>
	Parameters See Write Command
Write Command AT+CR=[<mode>]	<p>Response</p> <p>TA controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE at a call set up.</p> <p>OK</p>

	<p>Parameters</p> <p><mode> <u>0</u> Disable 1 Enable</p>
	<p>Intermediate result code</p> <p>If enabled, an intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. CONNECT) is transmitted.</p> <p>+CR:<serv></p>
	<p>Parameters</p> <p><serv> ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent GPRS For GPRS</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

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

AT+CRC Set Cellular Result Codes for Incoming Call Indication	
<p>Test Command</p> <p>AT+CRC=?</p>	<p>Response</p> <p>+CRC: (list of supported <mode>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Read Command</p> <p>AT+CRC?</p>	<p>Response</p> <p>+CRC: <mode></p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command</p> <p>AT+CRC=[<mode>]</p>	<p>Response</p> <p>TA controls whether or not the extended format of incoming call indication is used.</p> <p>OK</p>

	<p>Parameters</p> <p><mode> 0 Disable extended format 1 Enable extended format Omitted Use previous value</p>
	<p>Unsolicited Result Code</p> <p>When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.</p>
	<p>Parameters</p> <p><type> ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent FAX Facsimile VOICE Voice</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.28 AT+CREG Network Registration

AT+CREG Network Registration	
<p>Test Command</p> <p>AT+CREG=?</p>	<p>Response</p> <p>+CREG: (list of supported <n>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p>AT+CREG?</p>	<p>Response</p> <p>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.</p> <p>+CREG: <n>,<stat>[,<lac>,<ci>]</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p>
<p>Write Command</p> <p>AT+CREG=<n></p>	<p>Response</p> <p>TA controls the presentation of an unsolicited result code +CREG: <stat></p>

<p>]</p>	<p>when $\langle n \rangle = 1$ and there is a change in the ME network registration status.</p> <p>OK</p> <p>Parameters</p> <p>$\langle n \rangle$ 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code</p> <p>+CREG: $\langle stat \rangle$</p> <p> 2 Enable network registration unsolicited result code with location information +CREG: $\langle stat \rangle$ [, $\langle lac \rangle$, $\langle ci \rangle$]</p> <p>$\langle stat \rangle$ 0 Not registered, MT is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but MT is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming</p> <p>$\langle lac \rangle$ String type (string should be included in quotation marks); two byte location area code in hexadecimal format</p> <p>$\langle ci \rangle$ String type (string should be included in quotation marks); two byte cell ID in hexadecimal format</p> <p>Unsolicited Result Code</p> <p>If $\langle n \rangle = 1$ and there is a change in the MT network registration status +CREG: $\langle stat \rangle$</p> <p>If $\langle n \rangle = 2$ and there is a change in the MT network registration status or a change of the network cell: +CREG: $\langle stat \rangle$ [, $\langle lac \rangle$, $\langle ci \rangle$]</p> <p>Parameters See Write Command</p>
<p>Parameter Saving Mode</p>	<p>AT&W_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference 3GPP TS 27.007 [13]</p>	<p>Note</p>

3.2.29 AT+CRLP Select Radio Link Protocol Parameters

AT+CRLP Select Radio Link Protocol Parameters	
<p>Test Command AT+CRLP=?</p>	<p>Response</p> <p>TA returns values supported. RLP versions 0 and 1 share the same parameter set.</p> <p>+CRLP: (list of supported $\langle iws \rangle$s), (list of supported $\langle mws \rangle$s), (list of supported $\langle T1 \rangle$s), (list of supported $\langle N2 \rangle$s), (list of supported $\langle T4 \rangle$s)</p>

	<p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CRLP?	<p>Response</p> <p>TA returns current settings for RLP version. RLP versions 0 and 1 share the same parameter set.</p> <p>+CRLP: <iws>,<mws>,<T1>,<N2>,<T4></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CRLP=<iws> >,<mws>,<T1>[,<N2>,<T4>]]]	<p>Response</p> <p>TA sets radio link protocol (RLP) parameters used when non-transparent data calls are setup.</p> <p>OK</p> <p>Parameters</p> <p><iws> 0-61 Interworking window size (IWF to MS)</p> <p><mws> 0-61 Mobile window size (MS to IWF)</p> <p><T1> 44-255 Acknowledgment timer T1 in 10 ms units</p> <p><N2> 1-255 Retransmission attempts N2</p> <p><T4> 7 Re-sequencing period in integer format, in units of 10 ms.</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Simcom redefine param's value range

3.2.30 AT+CRSM Restricted SIM Access

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

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

3.2.31 AT+CSQ Signal Quality Report

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

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

3.2.32 AT+VTD Tone Duration

AT+VTD Tone Duration	
<p>Test Command</p> <p>AT+VTD=?</p>	<p>Response</p> <p>+VTD: (list of supported <n>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p>AT+VTD?</p>	<p>Response</p> <p>+VTD: <n></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p>AT+VTD=<n></p>	<p>Response</p> <p>This command refers to an integer <n> that defines the length of tones emitted as a result of the +VTS command. This does not affect the D command.</p> <p>OK</p> <p>Parameters</p>

	<n> 1-255 Duration of the tone in 1/10 seconds
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.007 [13]	

3.2.33 AT+VTS DTMF and Tone Generation

AT+VTS DTMF and Tone Generation	
Test Command AT+VTS=?	<p>Response</p> <p>+VTS: (list of supported <dtmf>s),(list of supported <duration>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command Generate tone Duration is set by +VTD AT+VTS=<dtmf-string>	<p>Response</p> <p>This command allows the transmission of DTMF tones and arbitrary tones in voice mode. These tones may be used (for example) when announcing the start of a recording period.</p> <p>Note: D is used only for dialing.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Note: The Command is writing only.</p> <p>Parameters</p> <p><dtmf-string> Which has a max length of 20 characters, must be entered between double quotes ("") and consists of combinations of the following separated by commas. But a single character does not require quotes.</p> <ol style="list-style-type: none"> 1) <dtmf> A single ASCII characters in the set 0-9, #, *, A-D. This is interpreted as a sequence of DTMF tones whose duration is set by the +VTD Command. 2) {<dtmf>, <duration>} This is interpreted as a DTMF tone whose duration is determined by <duration>. <p><duration> Duration of the tone in 1/10 seconds range :1-255</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	Number of DTMF characters*duration.
Reference	Note

3GPP TS 27.007
[13]

3.2.34 AT+CMUX Multiplexer Control

AT+CMUX Multiplexer Control	
Test Command AT+CMUX=?	<p>Response</p> <p>+CMUX: (0),(0),(1-6),(16-1510),(1-255),(0-100),(2-255),(1-255),(1-7)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CMUX?	<p>Response:</p> <p>+CMUX:[<mode>],[<subset>],[<port_speed>],[<N1>],[<T1>],[<N2>],[<T2>],[<T3>],[<k>]]</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><mode> Multiplexer transparency mechanism 0 Basic option</p> <p><subset> The way in which the multiplexer control channel is set up 0 UIH frames used only</p> <p><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 7 460800 bits/t Proprietary values, available if MUX NEW PORT SPEED FTR is activated</p> <p><N1> Maximum frame size 1-255 Default: 127</p> <p><T1> Acknowledgement timer in units of ten milliseconds 1-255 Default: 10 (100 ms)</p> <p><N2> Maximum number of re-transmissions 0-100 Default: 3</p> <p><T2> Max Response Timer for the multiplexer control channel in units of ten milliseconds 2-255 Default: 30</p> <p><T3> Wake up Max Response Timers in seconds 1-255 Default: 10</p>

	<p><k> Window size, for Advanced operation with Error Recovery options</p> <p>1-7 Default:2</p>																		
Write Command AT+CMUX=<mode>	<p>Response</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><mode> Multiplexer transparency mechanism</p> <p>0 Basic option</p>																		
Parameter Saving Mode	NO_SAVE																		
Max Response Time	-																		
Reference 3GPP TS 27.007 [13]	<p>Note</p> <p>The multiplexing transmission rate is according to the current serial baud rate. It is recommended to enable multiplexing protocol under 115200 bit/s baud rate</p> <p>Multiplexer control channels are listed as follows:</p> <table border="1"> <thead> <tr> <th>Channel Number</th> <th>Type</th> <th>DLCI</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>Multiplexer Control</td> <td>0</td> </tr> <tr> <td>1</td> <td>3GPP TS 27.007 and 005</td> <td>1</td> </tr> <tr> <td>2</td> <td>3GPP TS 27.007 and 005</td> <td>2</td> </tr> <tr> <td>3</td> <td>3GPP TS 27.007 and 005</td> <td>3</td> </tr> <tr> <td>4</td> <td>3GPP TS 27.007 and 005</td> <td>4</td> </tr> </tbody> </table>	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
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																	

3.2.35 AT+CNUM Subscriber Number

AT+CNUM Subscriber Number	
Test Command AT+CNUM=?	Response OK
Execution Command AT+CNUM	<p>Response</p> <p>+CNUM: [<alpha1>,<number1>,<type1>[,<speed>,<service>] [<CR><LF>+CNUM:[<alpha2>,<number2>,<type2>[,<speed>,<service>] [...]</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><alphax> Optional alphanumeric string associated with <numberx>; used character set should be the one selected with Command Select TE Character Set +CSCS</p>

	<p><numberx> String type (string should be included in quotation marks) phone number of format specified by <typex></p> <p><typex> Type of address octet in integer format (refer GSM04.08[8] subclause 10.5.4.7)</p> <p><speed> As defined by the +CBST Command</p> <p><service> (service related to the phone number:)</p> <ul style="list-style-type: none"> 0 Asynchronous modem 1 Synchronous modem 2 PAD Access (asynchronous) 3 Packet Access (synchronous) 4 Voice 5 Fax
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.36 AT+CPOL Preferred Operator List

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

	<p><index> Integer type: order number of operator in SIM preferred operator list</p> <p><format> Indicates whether alphanumeric or numeric format used (see +COPS Command)</p> <p>0 Long format alphanumeric <oper></p> <p>1 Short format alphanumeric <oper></p> <p>2 Numeric <oper></p> <p><oper> String type(string should be included in quotation marks)</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.37 AT+COPN Read Operator Names

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

3.2.38 AT+CFUN Set Phone Functionality

AT+CFUN Set Phone Functionality	
Test Command AT+CFUN=?	Response +CFUN: (list of supported <fun>s),(list of supported <rst>s) OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters See Write Command
Read Command AT+CFUN?	Response +CFUN: <fun> OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters See Write Command
Write Command AT+CFUN=<fun> >[,<rst>]	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <fun> 0 Minimum functionality 1 Full functionality (Default) 4 Disable phone both transmit and receive RF circuits. <rst> 1 Reset the MT before setting it to <fun> power level.
Parameter Saving Mode	AUTO_SAVE
Max Response Time	10s
Reference 3GPP TS 27.007 [13]	Note Minimum functionality mode (AT+CFUN=0)and RF disabled functionality mode (AT+CFUN=4) cannot be switched to each other. 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.

3.2.39 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> e>	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <time> String type(string should be included in quotation marks) value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits),month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -47...+48). E.g. 6th of May 2010, 00:01:52 GMT+2 hours equals to "10/05/06,00:01:52+08".
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note Only time zone is auto saved.

3.2.40 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:

	<p>+CME ERROR: <err></p> <p>Parameters</p> <p><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).</p> <p><Command> String type (string should be included in quotation marks): hex format: GSM 11.11 SIM Command sent from the ME to the SIM.</p> <p><response> String type(string should be included in quotation marks): hex format: GSM 11.11 response from SIM to <Command>.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.41 AT+CALM Alert Sound Mode

AT+CALM Alert Sound Mode	
Test Command AT+CALM=?	<p>Response</p> <p>+CALM: (list of supported <mode>s)</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>
Read Command AT+CALM?	<p>Response</p> <p>+CALM: <mode></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>
Write Command AT+CALM=<mode>	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters <mode> <u>0</u> Normal mode</p>

	1 Silent mode (all sounds from ME are prevented)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note If CALM is set to silent mode before, when user sets CALM to normal mode during an incoming call, the module maintains silent this time. But next time the normal mode works.

3.2.42 AT+CALS Alert Sound Select

AT+CALS Alert Sound Select	
Test Command AT+CALS=?	Response +CALS: (list of supported <n>s),(list of supported <switch>s) OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters See Write Command
Read Command AT+CALS?	Response +CALS: <n>,<switch> OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters See Write Command
Write Command AT+CALS=<n>[,<switch>]	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <n> 0-19 Alert sound type. Default value is 1. <switch> 0 stop playing ring tone 1 start to play ring tone
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

3.2.43 AT+CRSL Ringer Sound Level

AT+CRSL Ringer Sound Level	
Test Command AT+CRSL=?	<p>Response +CRSL: (list of supported <level>s)</p> <p>OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameter See Write Command</p>
Read Command AT+CRSL?	<p>Response +CRSL: <level></p> <p>OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>
Write Command AT+CRSL=<level>	<p>Response OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters <level> integer type value (0-100) with manufacturer specific range</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.44 AT+CLVL Loud Speaker Volume Level

AT+CLVL Loud Speaker Volume Level	
Test Command AT+CLVL=?	<p>Response +CLVL: (list of supported <level>s)</p> <p>OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>

Read Command AT+CLVL?	Response +CLVL: <level> OK If error is related to ME functionality: +CME ERROR: <err>
	Parameter See Write Command
Write Command AT+CLVL=<level>	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <level> 0-100 Integer type value with manufacturer specific range (smallest value represents the lowest sound level).
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	Note

3.2.45 AT+CMUT Mute Control

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

	<p>If error is related to ME functionality: +CME ERROR: <err></p>
	<p>Parameters</p> <p><n> <u>0</u> Mute off 1 Mute on</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.007 [13]	<p>Note</p> <p>Only during a call this command can be set successfully.</p>

3.2.46 AT+CBC Battery Charge

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

[13]

3.2.47 AT+CUSD Unstructured Supplementary Service Data

AT+CUSD Unstructured Supplementary Service Data	
Test Command AT+CUSD=?	Response +CUSD: (list of supported <n>s) OK Parameters See Write Command
Read Command AT+CUSD?	Response +CUSD: <n> OK Parameters See Write Command
Write Command AT+CUSD=<n>[,<str>[,<dcs>]]	Response OK If error is related to ME functionality: +CME ERROR: <err> Parameters <n> A numeric parameter which indicates control of the unstructured supplementary service data 0 disable the result code presentation in the TE 1 enable the result code presentation in the TE 2 cancel session (not applicable to read Command response) <str> String type (string should be included in quotation marks) USSD-string <dcs> Cell Broadcast Data Coding Scheme in integer format (default 0)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference GSM 03.38 [25]	Note When ussd is not support or return error, TE will print +CUSD:4.

3.2.48 AT+CSSN Supplementary Services Notification

AT+CSSN Supplementary Services Notification	
Test Command AT+CSSN=?	Response +CSSN: (list of supported <n>s),(list of supported <m>s)

	<p>OK</p> <p>Parameters See Write Command</p>
<p>Read Command AT+CSSN?</p>	<p>Response +CSSN: <n>,<m></p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+CSSN=<n>[,<m>]</p>	<p>Response OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><n> A numeric parameter which indicates whether to show the +CSSI:<code1>[,<index>] result code presentation status after a mobile originated call setup</p> <ul style="list-style-type: none"> <u>0</u> disable 1 enable <p><m> A numeric parameter which indicates whether to show the +CSSU: <code2> result code presentation status during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received.</p> <ul style="list-style-type: none"> <u>0</u> disable 1 enable <p><code1></p> <ul style="list-style-type: none"> 0 Unconditional call forwarding is active 1 Some of the conditional call forwarding are active 2 Call has been forwarded 3 Call is waiting 4 This is a CUG call (also <index> present) 5 Outgoing calls are barred 6 Incoming calls are barred 7 CLIR suppression rejected <p><index> Closed user group index</p> <p><code2></p> <ul style="list-style-type: none"> 0 This is a forwarded call 1 This is a CUG call (also <index> present) (MT call setup) 2 Call has been put on hold (during a voice call) 3 Call has been retrieved (during a voice call) 4 Multiparty call entered (during a voice call) 5 Call on hold has been released (this is not a SS notification) (during a voice call) 6 Forward check SS message received (can be received

	<p>whenever)</p> <p>7 Call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)</p> <p>8 Call has been connected with the other remote party in explicit call transfer operation (also number and subaddress parameters may be present) (during a voice call or MT call setup)</p> <p>9 This is a deflected call (MT call setup)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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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. Heracles 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+CSCB	Select cell broadcast SMS messages
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>.

	<p>OK</p> <p>ERROR</p> <p>If error is related to ME functionality: +CMS ERROR: <err></p>
	<p>Parameters</p> <p><index> Integer type; value in the range of location numbers supported by the associated memory</p> <p><delflag></p> <ul style="list-style-type: none"> 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	Note 3GPP TS 27.005

4.2.2 AT+CMGF Select SMS Message Format

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

Write Command AT+CMGF=[<mode>]	Response TA sets parameter to denote which input and output format of messages to use. OK
	Parameter <mode> <u>0</u> PDU mode 1 Text mode
Parameter Saving Mode	AT&W_SAVE
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> <u>"REC UNREAD"</u> Received unread messages "REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages <mode> <u>0</u> Normal 1 Not change status of the specified SMS record 2) If PDU mode: <stat> <u>0</u> Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages <mode> <u>0</u> Normal 1 Not change status of the specified SMS record
	Response TA returns messages with status value <stat> from message storage <mem1> to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'.

1) If text mode (+CMGF=1) and Command successful:

for SMS-SUBMITs and/or SMS-DELIVERs:

```
+CMGL: <index>,<stat>,<oa/da>[,<alpha>][,<scs>]
[,<tooa/toda>,<length>]<CR><LF><data>
[<CR><LF>+CMGL: <index>,<stat>,<da/oa>
[,<alpha>][,<scs>][,<tooa/toda>,<length>]<CR><LF><data>[...]]
```

for SMS-STATUS-REPORTs:

```
+CMGL: <index>,<stat>,<fo>,<mr>[,<ra>][,<tora>,<scs>,<dt>,<st>
[<CR><LF>+CMGL: <index>,<stat>,<fo>,<mr>
[,<ra>][,<tora>,<scs>,<dt>,<st>[...]]
```

for SMS-COMMANDs:

```
+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>
+CMGL: <index>,<stat>,<fo>,<ct>[...]]
```

for CBM storage:

```
+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages>
<CR><LF><data>
<CR><LF>+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages>
<CR><LF><data>[...]]
```

OK

2) If PDU mode (+CMGF=0) and Command successful:

```
+CMGL:<index>,<stat>[,<alpha>],<length>
<CR><LF><pdu><CR><LF>
+CMGL: <index>,<stat>[,<alpha>],<length>
<CR><LF><pdu>[...]]
```

OK

3) If error is related to ME functionality:

```
+CMS ERROR: <err>
```

Parameters

<alpha> String type(string should be included in quotation marks) alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with Command Select TE Character Set +CSCS (see definition of this Command in 3GPP TS 27.007)

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

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

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

In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format:

- if **<dc>** indicates that GSM 03.38 default alphabet is used:
- if TE character set other than "HEX" (refer Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number
- if **<dc>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

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

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

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

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

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

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> <u>0</u> Normal 1 Not change status of the specified SMS record Response TA returns SMS message with location value <index> from message storage <mem1> to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'. 1) If text mode (+CMGF=1) and Command successful: for SMS-DELIVER: +CMGR: <stat>,<oa>[,<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> for SMS-SUBMIT: +CMGR: <stat>,<da>[,<alpha>][,<toda>,<fo>,<pid>,<dcs>[,<vp>]

,<sca>,<tosca>,<length>]<CR><LF><data>

for SMS-STATUS-REPORTs:

+CMGR: <stat>,<fo>,<mr>[,<ra>][,<tora>],<scts>,<dt>,<st>

for SMS-COMMANDs:

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

for CBM storage:

+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>

2) If PDU mode (+CMGF=0) and Command successful:

+CMGR: <stat>[,<alpha>],<length><CR><LF><pdu>

OK

3) If error is related to ME functionality:

+CMS ERROR: <err>

Parameters

<alpha> String type (string should be included in quotation marks)
alphanumeric representation of <da> or <oa> corresponding to the entry
found in MT phonebook; implementation of this feature is manufacturer
specific

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

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

- if <dcs> indicates that GSM 03.38 default alphabet is used and
<fo> indicates that GSM 03.40 TP-User-Data-Header-Indication
is not set:

- if TE character set other than "HEX" (refer Command Select
TE Character Set +CSCS in 3GPP TS 27.007): ME/TA converts
GSM alphabet into current TE character set according to rules
of Annex A

- if TE character set is "HEX": ME/TA converts each 7-bit
character of GSM alphabet into two IRA character long
hexadecimal number (e.g. character P (GSM 23) is presented as
17 (IRA 49 and 55))

- if <dcs> indicates that 8-bit or UCS2 data coding scheme is
used, or <fo> indicates that GSM 03.40

- TP-User-Data-Header-Indication is set: ME/TA converts each
8-bit octet into two IRA character long hexadecimal number
(e.g. octet with integer value 42 is presented to TE as two

characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format:

- if **<dc>** indicates that GSM 03.38 default alphabet is used:
- if TE character set other than "HEX" (refer Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number
- if **<dc>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

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

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

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

<mid> GSM 03.41 CBM Message Identifier in integer format

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

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

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

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

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

<stat>	0	"REC UNREAD"	Received unread messages
	1	"REC READ"	Received read messages
	2	"STO UNSENT"	Stored unsent messages

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

4.2.5 AT+CMGS Send SMS Message

AT+CMGS Send SMS Message	
Test Command	Response
AT+CMGS=?	OK
Write Command	Parameters
1) If text mode (+CMGF=1): +CMGS=<da>[, <toda>] <CR>text is entered <ctrl-Z/ESC> ESC quits without sending	<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)
2) If PDU mode (+CMGF=0): +CMGS=<length> <CR>PDU is given <ctrl-Z/ESC>	Response TA sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. 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 <ul style="list-style-type: none"> ● In text mode, the maximum length of an SMS depends on the used coding scheme: It is 1024 characters if the 7 bit GSM coding scheme is used. ● 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>[,<tooa/toda>][,<stat>] <CR> text is entered <ctrl-Z/ESC> <ESC> quits without sending	Response TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given. If writing is successful: +CMGW: <index> OK If error is related to ME functionality: +CMS ERROR: <err>
2) If PDU mode (+CMGF=0): AT+CMGW=<length>[,<stat>] <CR>PDU is	Parameters <oa> GSM 03.40 TP-Originating-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS

<p>given <ctrl-Z/ESC></p>	<p>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(ISDN format number) 161 National number type(ISDN 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></p>
<p>Execution Command AT+CMGW</p>	<p>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></p>

	<p>OK</p> <p>If error is related to ME functionality: +CMS ERROR: <err></p>
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>,<todo>]	<p>Response</p> <p>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.</p> <p>1) If text mode(+CMGF=1) and sending successful: +CMSS: <mr></p> <p>OK</p> <p>2) If PDU mode(+CMGF=0) and sending successful: +CMSS: <mr></p> <p>OK</p> <p>3) If error is related to ME functionality: +CMS ERROR: <err></p> <p>Parameters</p> <p><index> Integer type; value in the range of location numbers supported by the associated memory</p> <p><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 <todo></p> <p><todo> 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)</p> <p><mr> GSM 03.40 TP-Message-Reference in integer format</p>

Parameter Saving Mode	NO_SAVE
Max Response Time	60s
Reference 3GPP TS 27.005	Note

4.2.8 AT+CNMI New SMS Message Indications

AT+CNMI New SMS Message Indications	
Test Command AT+CNMI=?	<p>Response</p> <p>+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)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CNMI?	<p>Response</p> <p>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]	<p>Response</p> <p>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.</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><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.</p> <p> 1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.</p> <p> 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.</p> <p> 3 Forward unsolicited result codes directly to the TE.</p> <p>TA-TE link specific inband technique used to embed result codes and data</p>

when TA is in on-line data mode.

<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)

<bfr> 0 TA buffer of unsolicited result codes defined within this Command is flushed to the TE when **<mode>** 1...3 is entered (OK response shall be given before flushing the codes).

1 TA buffer of unsolicited result codes defined within this command is cleared when **<mode>** 1...3 is entered

Unsolicited result code

1. Indicates that new message has been received

If **<mt>=1**:

+CMTI: <mem3>,<index>

If **<mt>=2** (PDU mode enabled):

+CMT: [<alpha>],<length><CR><LF><pdu>

	<p>If <mt>=2 (text mode enabled): +CMT: <oa>, <scts>[, <tooa>, <fo>, <pid>, <dcs>, <sca>, <tosca>, <length>]<CR><LF><data></p> <p>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></p> <p>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></p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.005	

4.2.9 AT+CPMS Preferred SMS Message Storage

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

	<p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><mem1> Messages to be read and deleted from this memory storage "SM" SIM message storage "ME" Phone message storage "<u>SM_P</u>" SM message storage preferred "ME_P" ME message storage preferred "MT" SM or ME message storage (SM preferred)</p> <p><mem2> Messages will be written and sent to this memory storage "SM" SIM message storage "ME" Phone message storage "<u>SM_P</u>" SM message storage preferred "ME_P" ME message storage preferred "MT" SM or ME message storage (SM preferred)</p> <p><mem3> Received messages will be placed in this memory storage if routing to PC is not set ("+CNMI") "SM" SIM message storage "ME" Phone message storage "<u>SM_P</u>" SM message storage preferred "ME_P" ME message storage preferred "MT" SM or ME message storage (SM preferred)</p> <p><usedx> Integer type; Number of messages currently in <memx></p> <p><totalx> Integer type; Number of messages storable in <memx></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
	3GPP TS 27.005

4.2.10 AT+CRES Restore SMS Settings

AT+CRES Restore SMS Settings	
Test Command AT+CRES=?	<p>Response</p> <p>+CRES: (list of supported <profile>s)</p> <p>OK</p> <p>Parameter</p> <p>See Write Command</p>
Write Command AT+CRES=<profile>	<p>Response</p> <p>Execution command restores message service settings from non-volatile memory to active memory. A TA can contain several profiles of settings.</p>

	<p>Settings specified in commands Service Centre Address +CSCA and Set Message Parameters +CSMP are restored. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be restored.</p> <p>OK</p> <p>ERROR</p>
	<p>Parameter</p> <p><profile> <u>0</u> Restore SM service settings from profile 0 1 Restore SM service settings from profile 1 2 Restore SM service settings from profile 2 3 Restore SM service settings from profile 3</p>
Execution Command AT+CRES	<p>Response</p> <p>Same as AT+CRES=0.</p> <p>OK</p> <p>If error is related to ME functionality: +CMS ERROR <err></p>
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=?	<p>Response</p> <p>+CSAS: (list of supported <profile>s)</p> <p>OK</p>
	<p>Parameter</p> <p>See Write Command</p>
Write Command AT+CSAS=<profile>	<p>Response</p> <p>Execution command saves active message service settings to a non-volatile memory. Settings specified in commands Service Centre Address +CSCA and Set Message Parameters +CSMP are saved. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be saved.</p> <p>OK</p> <p>ERROR</p>
	<p>Parameter</p> <p><profile> <u>0</u> Save SM service setting in profile 0 1 Save SM service setting in profile 1</p>

	<p>2 Save SM service setting in profile 2</p> <p>3 Save SM service setting in profile 3</p>
<p>Execution Command</p> <p>AT+CSAS</p>	<p>Response</p> <p>Same as AT+CSAS=0</p> <p>OK</p> <p>If error is related to ME functionality: +CMS ERROR <err></p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>5s</p>
<p>Reference</p> <p>3GPP TS 27.005</p>	<p>Note</p>

4.2.12 AT+CSCA SMS Service Center Address

<p>AT+CSCA SMS Service Center Address</p>	
<p>Test Command</p> <p>AT+CSCA=?</p>	<p>Response</p> <p>OK</p>
<p>Read Command</p> <p>AT+CSCA?</p>	<p>Response</p> <p>+CSCA: <sca>,<tosca>[,<scaAlpha>]</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command</p> <p>AT+CSCA=<sca>[,<tosca>]</p>	<p>Response</p> <p>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.</p> <p>Note: The Command writes the parameters in NON-VOLATILE memory.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><sca> GSM 04.11 RP SC address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <tosca></p> <p><tosca> Service center address format GSM 04.11 RP SC address</p>

	Type-of-Address octet in integer format (default refer <today> <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	Note
3GPP TS 27.005	

4.2.13 AT+CSCB Select Cell Broadcast SMS Messages

AT+CSCB Select Cell Broadcast SMS Messages	
Test Command AT+CSCB=?	Response +CSCB: (list of supported <mode> s) OK
	Parameter See Write Command
Read Command AT+CSCB?	Response +CSCB: <mode> , <mids> , <dcss> OK
	Parameters See Write Command
Write Command AT+CSCB=<mode>[,<mids>[,<dcss>]]	Response TA selects which types of CBMs are to be received by the ME. Note: The Command writes the parameters in NON-VOLATILE memory. OK If error is related to ME functionality: +CMS ERROR: <err>
	Parameters <mode> <u>0</u> Message types specified in <mids> and <dcss> are accepted 1 Message types specified in <mids> and <dcss> are not accepted. <mids> String type (string should be included in quotation marks); all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string); e.g. "0,1,5,320,922". Total 15 different <mids> values can be supported. <mids> values cannot be written consecutively, such as "100-200"

	<p><dcss> String type(string should be included in quotation marks); all different possible combinations of CBM data coding schemes (refer <dcss>) (default is empty string); e.g. "0,5". Total 5 different <dcss> values can be supported. <dcss> values cannot be written consecutively, such as "0-5".</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	<p>Note</p> <p>AT+CSCB=0 will reset <mids> and <dcss> and select no <mids> and no <dcss>.</p> <p>AT+CSCB=1 means all <dcss> are accepted but this command has no effect on the list of the <mids> accepted. "0-255" means all <dcss> are accepted.</p> <p>AT+CSCB=0, <mids> will add the <mids> values in the <mids> current list handled by module.</p> <p>AT+CSCB=0, <dcss> will add the <dcss> values in the <dcss> current list handled by module.</p> <p>If AT+CSCB=0, <mids> is received while the list of <mids> is full, OK is returned and new value is not added.</p>

4.2.14 AT+CSDH Show SMS Text Mode Parameters

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

	SMS-DELIVERs and SMS-SUBMITs in text mode 1 Show the values in result codes
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference 3GPP TS 27.005	Note

4.2.15 AT+CSMP Set SMS Text Mode Parameters

AT+CSMP Set SMS Text Mode Parameters	
Test Command AT+CSMP=?	<p>Response</p> <p>+CSMP: (list of supported <fo>s),(list of supported <vp>s),(list of supported <pid>s),(list of supported <dcs>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CSMP?	<p>Response</p> <p>+CSMP: <fo>,<vp>,<pid>,<dcs></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CSMP=[<fo> >,<vp>,<pid>,<dcs>]]	<p>Response</p> <p>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).</p> <p>Note: The Command writes the parameter <fo> in NON-VOLATILE memory.</p> <p>OK</p> <p>Parameters</p> <p><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.</p> <p><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>)</p>

	<p><pid> GSM 03.40 TP-Protocol-Identifier in integer format (default 0).</p> <p><dc> GSM 03.38 SMS Data Coding Scheme in Integer format.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.005	

4.2.16 AT+CSMS Select Message Service

AT+CSMS Select Message Service	
Test Command AT+CSMS=?	<p>Response</p> <p>+CSMS: (list of supported <service>s)</p> <p>OK</p> <p>Parameter</p> <p>See Write Command</p>
Read Command AT+CSMS?	<p>Response</p> <p>+CSMS: <service>,<mt>,<mo>,<bm></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CSMS=<service>	<p>Response</p> <p>+CSMS: <mt>,<mo>,<bm></p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p><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))</p> <p> 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)</p> <p><mt> Mobile Terminated Messages:</p> <p> 0 Type not supported</p> <p> 1 Type supported</p> <p><mo> Mobile Originated Messages:</p>

	0 Type not supported 1 Type supported <bm> Broadcast Type Messages: 0 Type not supported 1 Type supported
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note
3GPP TS 27.005	

SIMCOM CONFIDENTIAL FILE

5 AT Commands for SIM Application Toolkit

5.1 Overview

Command	Description
AT+STKTRS	This command is used to send STK terminal response
AT+STKENVS	This command is used to send STK envelope command
AT+STKCALL	Trigger STK call
AT+STKSMS	Trigger STK SMS
AT+STKSS	Trigger STK SS
AT+STKUSSD	Trigger STK USSD
AT+STKDTMF	Trigger STK DTMF
+STKPCI	This unsolicited result code is used to indicate proactive command Indication.
AT+STKMENU	Show STK main menu
AT+STKPCIS	Switch STK URC string

5.2 Detailed Descriptions of Commands

5.2.1 AT+STKTRS STK Terminal Response

AT+STKTRS STK Terminal Response.	
Test Command AT+STKTRS=?	Response +STKTRS: <result_length>,<text_length> OK
Parameter See Write Command	
Read Command AT+STKTRS?	Response OK
Write Command AT+STKTRS=<result>[,<text>]	Response OK ERROR

	<p>Parameter</p> <p><result> HEX string type --specified in GSM11.14[12.12]</p> <ul style="list-style-type: none"> - '00' = Command performed successfully; - '10' = Proactive SIM session terminated by the user; - '11' = Backward move in the proactive SIM session requested by the user; ... - '2000' = ME currently unable to process command, No specific cause can be given; - '2001' = ME currently unable to process command, Screen is busy; ... <p><text> Hex String type</p> <p>If response to GET INPUT or GET INKEY --specified in GSM11.14[12.15]</p> <ul style="list-style-type: none"> -text string, the first 2 char is Data coding scheme <p>If response to SELECT ITEM --specified in GSM11.134[12.10]</p> <ul style="list-style-type: none"> -Identifier of item chosen
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note For more detail used, can refer "AT+STKTR" command

5.2.2 AT+STKENVS STK Envelope Command

AT+STKENVS STK Envelope Command	
Test Command AT+STKENVS=?	<p>Response</p> <p>+STKENVS: <command_length>,<data_length></p> <p>OK</p> <p>Parameter See Write Command</p>
Read Command AT+STKENVS?	<p>Response</p> <p>OK</p> <p>Parameter See Write Command</p>
Write Command AT+STKENVS=<command>[,<data	<p>Response</p> <p>OK</p> <p>ERROR</p>

>]	<p>Parameter</p> <p><command> HEX string type --specified in GSM11.14[13.1]</p> <ul style="list-style-type: none"> - 'D3' = Menu Selection; - 'D6' =Event download; <p><data> Hex string type</p> <p>If command is 'D3' --specified in GSM11.14[8.2]</p> <ul style="list-style-type: none"> -Item identifier of main menu <p>If command is 'D6' --specified in GSM11.14[11]</p> <ul style="list-style-type: none"> -event list <ul style="list-style-type: none"> - '04' = User activity - '05' = Idle screen available - '07' = Language selection
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note For more detail used, can refer "AT+STKENV" command

5.2.3 AT+STKCALL STK call setup

AT+STKCALL STK call setup	
Test Command AT+STKCALL=?	<p>Response</p> <p>OK</p> <p>Parameter</p> <p>See Write Command</p>
Write Command AT+STKCALL=<command>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameter</p> <p><command> stk call command</p> <ul style="list-style-type: none"> 0 Trigger modem to send STK CALLSETUP 4 Trigger modem to send STK CALLSETUP but icon cannot be displayed 16 Proactive session terminated by user 18 No response from user 32 ME currently unable to process this command 34 User reject setup call 50 Command data not understood by ME <p>Note: Above are the possible terminal response value needed to be responded by application. It's modem's responsibility to response for other terminal response value.</p>
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note According to spec 11.14, 0x12 ("No response from user") is not a possible terminal response value for STK CALLSETUP. So we will translate 0x12("No response from user") to 0x20 ("ME currently unable to process this command").

5.2.4 AT+STKSMS STK SMS delivery

AT+STKSMS STK SMS delivery	
Test Command AT+STKSMS=?	Response OK
	Parameter See Write Command
Write Command AT+STKSMS=<command>	Response OK ERROR Parameter <command> stk sms command 0 Trigger modem to send STK SMS 4 Trigger modem to send STK SMS but icon cannot be displayed
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Above are the possible terminal response value needed to be responded by application. It's modem's responsibility to response for other terminal response value

5.2.5 AT+STKSS STK SS setup

AT+STKSS STK SS setup	
Test Command AT+STKSS=?	Response OK
	Parameter See Write Command
Write Command AT+STKSS=<command>	Response OK ERROR Parameter <command> STK SS command 0 Trigger modem to send STK SS 4 Trigger modem to send STK SS but icon cannot be displayed

	50 Command data not understood by ME
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Above are the possible terminal response value needed to be responded by application. It's modem's responsibility to response for other terminal response value.

5.2.6 AT+STKUSSD STK USSD setup

AT+STKUSSD STK USSD setup	
Test Command AT+STKUSSD=?	Response OK
	Parameters See Write Command
Write Command AT+STKUSSD=<command>	Response OK ERROR
	Parameters <command> STK SS command 0 Trigger modem to send STK USSD 4 Trigger modem to send STK USSD but icon cannot be displayed 50 Command data not understood by ME
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Above are the possible terminal response value needed to be responded by application. It's modem's responsibility to response for other terminal response value.

5.2.7 AT+STKDTMF STK sending DTMF

AT+STKDTMF STK sending DTMF	
Test Command AT+STKDTMF=?	Response OK
	Parameters See Write Command
Write Command AT+STKDTMF=<command>	Response OK ERROR
	Parameters <command> STK DTMF command

	0	Trigger modem to send STK DTMF
	4	Trigger modem to send STK DTMF but icon cannot be displayed
	32	ME currently unable to process command
Parameter Saving Mode	NO_SAVE	
Max Response Time	-	
Reference	<p>Note</p> <p>Above are the possible terminal response value needed to be responded by application. It's modem's responsibility to response for other terminal response value.</p>	

5.2.8 +STKPCI STK Proactive Command Indication

+STKPCI STK Proactive Command Indication	
	<p>+STKPCI: <pci_type>[,<proactive_command>,...]</p> <p>Parameter</p> <p><pci_type></p> <p>0 The SAT command is handled by TE.</p> <p>1 The SAT command is handled by ME.</p> <p>2 No other command (end of session)</p> <p><proactive command></p> <p>DISPLAY TEXT,<Command Qualifier>,<text string></p> <p>GET INKEY, <Command Qualifier>,<text string></p> <p>GET INPUT, <Command Qualifier>,<text string>,<Min length>,<Max length></p> <p>PLAY TONE,<alpha id>,<tone>,<Time unit>,<Time interval></p> <p>SET UP MENU,<the number of item>,<alpha id></p> <p>SELECT ITEM, <the number of item>,<alpha id></p> <p>ITEM,<index>,<id>,<item string></p> <p>SEND SHORT MESSAGE,<alpha id>,<addr>,<sms tpdu></p> <p>SEND SS,<alpha id>,<ss string></p> <p>SEND USSD,<alpha id>,<ussd string></p> <p>SETUP CALL,<alpha id>,<addr></p> <p>SET UP IDLE MODE TEXT,<text string></p> <p>SEND DTMF,<alpha id>,<dtmf string>.</p> <p>If <alpha id>= 0, the alpha id is null</p> <p>If <addr>= 0, the addr is null</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

5.2.9 AT+STKMENU STK Main menu command

AT+STKMENU STK Main menu command	
Test Command AT+STKMENU=?	Response OK Parameters See Read Command
Read Command AT+STKMENU?	Response [+STKMENU: <index>,<id>,<text>] [+STKMENU: <index>,<id>,<text>] [+STKMENU: <index>,<id>,<text>] [...] OK Parameters <index> The menu's index, begin 1 <id> The item identifier <text> The content of item, code by EFADN
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note When stkpci is off, read command response will null.

5.2.10 AT+STKPCIS STK URC switch command

AT+STKPCIS STK URC switch command	
Test Command AT+STKPCIS=?	Response +STKPCIS: (0-1) OK Parameters See Write Command
Read Command AT+STKPCIS?	Response +STKPCIS: <switch> OK Parameters
Write Command AT+STKPCIS=<switch>	Response OK ERROR

	Parameters <switch> The switch of STK URC <u>0</u> The STK URC is off 1 The STK URC is ON
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

SIMCOM CONFIDENTIAL FILE

6 AT Commands Special for SIMCom

6.1 Overview

Command	Description
AT+SIDET	Change the side tone gain level
AT+CPOWD	Power off
AT+SPIC	Times remained to input SIM PIN/PUK
AT+CMIC	Change the microphone gain level
AT+CALA	Set alarm time
AT+CALD	Delete alarm
AT+CADC	Read ADC
AT+CSNS	Single numbering scheme
AT+CDSCB	Reset cell broadcast
AT+CFGRI	Indicate RI when using URC
AT+CLTS	Get local timestamp
AT+CLDTMF	Local DTMF tone generation
AT+CDRIND	CS voice/data call termination indication
AT+CSPN	Get service provider name from SIM
AT+CCVM	Get and set the voice mail number on the SIM
AT+CBAND	Get and set mobile operation band
AT+CHF	Configure hands free operation
AT+CHFA	Swap the audio channels
AT+CSCLK	Configure slow clock
AT+CENG	Switch on or off engineering mode
AT+SCLASS0	Store class 0 SMS to SIM when received class 0 SMS
AT+CCID	Show ICCID
AT+CMGDA	Delete all SMS
AT+STTONE	Play SIM toolkit tone
AT+SIMTONE	Generate specific tone
AT+CCPD	Enable or disable alpha string
AT+CGID	Get SIM card group identifier
AT+MORING	Show state of mobile originated call
AT+CMGHEX	Enable or disable sending non-ascii character SMS
AT+CCODE	Configure SMS code mode
AT+CIURC	Enable or disable initial URC presentation
AT+CPSPWD	Change PS super password

AT+EXUNSOL	Enable or disable proprietary unsolicited indications
AT+CGMSCLASS	Change GPRS multislot class
AT+CDEVICE	View current flash device type
AT+CCALR	Call ready query
AT+GSV	Display product identification information
AT+ECHO	Echo cancellation control
AT+CAAS	Control auto audio switch
AT+SVR	Configure voice coding type for voice calls
AT+GSMBUSY	Reject incoming call
AT+CEMNL	Set the list of emergency number
AT*CELLLOCK	Set the list of ARFCN which needs to be locked
AT+SLEDS	Set the timer period of net light
AT+CBUZZERRING	Use the buzzer sound as the incoming call ring
AT+CEXTERNTONE	Close or open the microphone
AT+CNETLIGHT	Close the net light or open it to shining
AT+CWHITELIST	Set the white list
AT+CSGS	Netlight indication of GPRS status
AT+CMICBIAS	Close or open the MICBIAS
AT+DTAM	Set record play mode in call
AT+SJDR	Set jamming detection function
AT+CPCMCFG	Set PCM parameter
AT+CPCMSYNC	Set PCM sync parameter
AT+CANT	Antenna detecting
AT+CAGCSET	Close or open AGC function
AT+SKPD	Keypad detecting function
AT+SIMTONEX	Custom tones
AT+CROAMING	Roaming state
AT+CNETSCAN	Performing a net survey to show all the cells' information
AT+CEGPRS	Switch on or off EDGE
AT+CGPIO	Control the GPIO by PIN index
AT+CMEDPLAY	Play audio file
AT+CMEDIAVOL	Control the volume when playing audio file
AT+SNDLEVEL	Set the sound level of special AT command
AT+SIMTIMER	Modify the poll interval time requested by SIM card
AT+SPE	Speech enhancement control
AT+CCONCINDEX	Report concatenated SMS index
AT+SRSPT	Control SMS retransmission
AT+CELLIST	Perform a net survey to show all the cells' information

AT+CLIST	Query AT
AT+CBATCHK	Set VBAT checking feature ON/OFF
AT+SSIM	Multi_SIMCard control
AT+CCTURI	RI PIN Control

6.2 Detailed Descriptions of Commands

6.2.1 AT+SIDET Change the Side Tone Gain Level

AT+SIDET Change the Side Tone Gain Level	
Test Command AT+SIDET=?	Response +SIDET: (list of supported <channel>s),(list of supported <gainlevel>s) OK Parameters See Write Command
Read Command AT+SIDET?	Response +SIDET: (<channel0>,<gainlevel0>),..., (<channeln>,<gainleveln>) OK Parameters See Write Command
Write Command AT+SIDET=<channel>,<gainlevel>	Response OK ERROR Parameters <channel> 0 Main audio channel 1 Aux audio channel 2 Main audio channel hand free mode 3 Aux audio channel hand free mode <gainlevel> Int: 0-16
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note ● <gainleveln> value of read command is related to <channel> specific.

6.2.2 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

6.2.3 AT+SPIC Times Remained to Input SIM PIN/PUK

AT+SPIC Times Remained to Input SIM PIN/PUK	
Execution Command AT+SPIC	Response Times remained to input SIM PIN +SPIC: <pin1>,<pin2>,<puk1>,<puk2> OK Parameters <pin1> Times remained to input chv1 <pin2> Times remained to input chv2 <puk1> Times remained to input puk1 <puk2> Times remained to input puk2
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.4 AT+CMIC Change the Microphone Gain Level

AT+CMIC Change the Microphone Gain Level	
Test Command AT+CMIC=?	Response +CMIC: (list of supported <channel>s),(list of supported <gainlevel>s) OK Parameters See Write Command
Read Command AT+CMIC?	Response +CMIC: (<channel0>,<gainlevel0>),...,<channeln>,<gainleveln>)

	OK
	Parameters See Write Command
Write Command AT+CMIC=<channel>,<gainlevel> >	Response OK ERROR
	Parameters <channel> 0 Main audio channel 1 Aux audio channel 2 Main audio channel hand free mode 3 Aux audio channel hand free mode <gainlevel> Int: 0 – 15 0 0dB 1 +1.5dB 2 +3.0 dB 3 +4.5 dB 4 +6.0 dB 5 +7.5 dB 6 +9.0 dB 7 +10.5 dB 8 +12.0 dB 9 +13.5 dB 10 +15.0 dB 11 +16.5 dB 12 +18.0 dB 13 +19.5 dB 14 +21.0 dB 15 +22.5 dB
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> ● <gainlevel> value is related to <channel> specific. ● The default gain level of main audio channel is 10 or 6.

6.2.5 AT+CALA Set Alarm Time

AT+CALA Set Alarm Time	
Test Command AT+CALA=?	Response +CALA: ("yy/mm/dd,hh:mm:ss","hh:mm:ss"),(1-5),(0-7) OK

	<p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>
<p>Read Command AT+CALA?</p>	<p>Response [+CALA: <time>,<n1>[,<recurr>] [<CR><LF> +CALA: <time>,<n2>[,<recurr>] ...]]</p> <p>OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>
<p>Write Command AT+CALA=<time>[,<n>[,<recurr>]]</p>	<p>Response OK If error is related to ME functionality: +CME ERROR: <err> Unsolicited Result Code Indicate expired alarm. ALARM RING +CALV: <n></p> <p>Parameters <time> A string parameter(string should be included in quotation marks) which indicates the time when alarm arrives. The format is "yy/MM/dd,hh:mm:ss" where characters indicate the last two digits of year, month, day, hour, minute, second. <n> Index of the alarm (range 1 to 5 for now). <recurr> "0", "1"---"7" String type value indicating day of week for the alarm in one of the following formats: " <1..7>[,<1..7>[...]]" – Set a recurrent alarm for one or more days in the week. The digits 1 to 7 correspond to the days in the week, Monday (1), ..., Sunday (7). Example: The string "1,2,3,4,5" may be used to set an alarm for all weekdays. "0" – Set a recurrent alarm for all days in the week.</p>
<p>Parameter Saving Mode</p>	<p>AUTO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p>Note If user sets recurr function, the string of <time> should not enter "yy/MM/dd", for example: set Monday to Friday alarm at the time of 16PM of alarm 2.</p>

AT+CALA="16:00:00",2,1,2,3,4,5

6.2.6 AT+CALD Delete Alarm

AT+CALD Delete Alarm	
Test Command AT+CALD=?	Response +CALD: (list of supported <n>s) OK
	Parameters See Write Command
Write Command AT+CALD=<n>	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <n> Integer type value indicating the index of the alarm; default vaule is manufacturer specific (range from 1 to 5 now).
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.7 AT+CADC Read ADC

AT+CADC Read ADC	
Test Command AT+CADC=?	Response +CADC: (list of supported <status>s),(list of supported <value>s) OK
	Parameters <status> 1 Success 0 Fail <value> Integer 0-2800
Read Command AT+CADC?	Response +CADC: <status>,<value> OK
	Parameters See Test Command
Parameter Saving Mode	NO_SAVE

Max Response Time	2s
Reference	Note

6.2.8 AT+CSNS Single Numbering Scheme

AT+CSNS Single Numbering Scheme	
Test Command AT+CSNS=?	Response +CSNS: (list of supported <mode>s) OK Parameters See Write Command
Read Command AT+CSNS?	Response +CSNS: <mode> OK Parameters See Write Command
Write Command AT+CSNS=<mode>	Response OK ERROR Parameters <mode> 0 Voice 2 Fax 4 Data
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

6.2.9 AT+CDSCB Reset Cell Broadcast

AT+CDSCB Reset Cell Broadcast	
Execution Command AT+CDSCB	Response OK
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note Please also refer to AT+CSCB .

6.2.10 AT+CFGRI Indicate RI When Using URC

AT+CFGRI Indicate RI When Using URC	
Test Command AT+CFGRI=?	Response +CFGRI: (0-2) OK
	Parameters See Write Command
Read Command AT+CFGRI?	Response +CFGRI: <status> OK
	Parameters See Write Command
Write Command AT+CFGRI=<status>	Response OK ERROR
	Parameters <status> 0 Off 1 On(TCPIP, FTP and URC control RI pin) 2 On(only TCPIP control RI pin)
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> RI pin can not controll by "AT+CFGRI" command when module has call service or receiving SMS.

6.2.11 AT+CLTS Get Local Timestamp

AT+CLTS Get Local Timestamp	
Test Command AT+CLTS=?	Response +CLTS: "yy/MM/dd,hh:mm:ss+/-zz" OK

<p>Read Command AT+CLTS?</p>	<p>Response +CLTS: <mode></p> <p>OK</p>
<p>Write Command AT+CLTS=<mode></p>	<p>Response OK ERROR</p> <p>Parameters <mode></p> <p style="padding-left: 40px;">0 Disable 1 Enable</p> <p>Unsolicited Result Code</p> <p>When "get local timestamp" function is enabled, the following URC may be reported if network sends the message to the MS to provide the MS with subscriber specific information.</p> <p>1. Refresh network name by network: *PSNWID: "<mcc>", "<mnc>", "<full network name>", <full network name CI>, "<short network name>", <short network name CI></p> <p>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></p> <p>3. Refresh network time zone by network: +CTZV: "<time zone>"</p> <p>4. Refresh Network Daylight Saving Time by network: DST: <dst></p> <p>Parameters</p> <p><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</p>

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

6.2.12 AT+CLDTMF Local DTMF Tone Generation

AT+CLDTMF Local DTMF Tone Generation	
Test Command AT+CLDTMF=?	<p>Response</p> <p>+CLDTMF: (1-100),(0-9,A,B,C,D,E,F,*,#),(10-500)</p> <p>OK</p>
Write Command AT+CLDTMF=<n>,<DTMF string>[<timeBase>]	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><n> A numeric parameter (1-100) which indicates the duration of all DTMF tones.</p> <p><DTMF -string> A string parameter (string should be included in</p>

	<p>quotation marks) which has a max length of 20 chars of form <DTMF>, separated by commas.</p> <p><DTMF> A single ASCII chars in the set 0-9, #, *, A-D. In addition, E and F is supported too. E represents single frequency 1400HZ sound, F represents single frequency 2300HZ sound.</p> <p><timeBase> timeBase to generate DTMF sound.the DTMF on time is <n>*<timeBase>, DTMF off time is timeBase,the default value is 100ms.</p>
Execution Command	Response
AT+CLDTMF	OK Abort any DTMF tone currently being generated and any DTMF tone sequence.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Local DTMF tone can be played in call, play mode is controlled by AT+DTAM .

6.2.13 AT+CDRIND CS Voice/Data Call Termination Indication

AT+CDRIND CS Voice/Data Call Termination Indication	
Test Command	Response
AT+CDRIND=?	+CDRIND: (list of supported <n>s) OK
	Parameter See Write Command
Read Command	Response
AT+CDRIND?	+CDRIND: <n> OK
	Parameter See Write Command
Write Command	Response
AT+CDRIND=<n>	OK ERROR
	Parameter <n> A numeric parameter to enable an unsolicited event code indicating whether a CS voice call, CS data has been terminated. 0 Disable 1 Enable
	Unsolicited result code

	Parameters See Write Command
Read Command AT+CCVM?	Response If voice mail number is not set: OK If voice mail number is set: +CCVM: <vm number>[,<alpha string>] OK
	Parameters See Write Command
Write Command AT+CCVM=<vm number>[,<alpha string>]	Response OK ERROR If error is related to ME functionality: +CME ERROR: <err>
	Parameters <vm number> String type,The voice mail number to write to the SIM <alpha string> String type,The alpha-string to write to the SIM
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

6.2.16 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>[,<ALL_BAND>] OK
	Parameter See Write Command
Write Command AT+CBAND=<o	Response OK

p_band>	<p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameter <op_band> A string parameter which indicate the operation band. And the following strings should be included in quotation marks.</p> <p>EGSM_MODE PGSM_MODE DCS_MODE GSM850_MODE PCS_MODE EGSM_DCS_MODE GSM850_PCS_MODE EGSM_PCS_MODE ALL_BAND</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● Radio settings are stored in non-volatile memory.

6.2.17 AT+CHF Configure Hands Free Operation

AT+CHF Configure Hands Free Operation	
<p>Test Command AT+CHF=?</p>	<p>Response +CHF: (list of supported <ind>s),(list of supported <state>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Read Command AT+CHF?</p>	<p>Response +CHF: <ind>,<state></p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+CHF=<ind> [,<state>]</p>	<p>Response OK ERROR</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Unsolicited Result Code</p>

	<p>+CHF: <state></p> <p>Parameters</p> <p><ind> 0 Unsolicited result code disabled 1 Unsolicited result code enabled (non-volatile)</p> <p><state> 0 Main audio channel 1 Aux audio channel 2 Main audio channel hand free mode 3 Aux audio channel hand free mode 4 PCM channel</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note This command is related to the actual module, <state> don't support power off save.

6.2.18 AT+CHFA Swap the Audio Channels

AT+CHFA Swap the Audio Channels	
Test Command AT+CHFA=?	<p>Response</p> <p>+CHFA: (0=NORMAL_AUDIO, 1=AUX_AUDIO, 2=HANDFREE_AUDIO, 3=AUX_HANDFREE_AUDIO, 4=PCM_AUDIO)</p> <p>OK</p>
Read Command AT+CHFA?	<p>Response</p> <p>+CHFA: <n></p> <p>OK</p> <p>Parameter See Write Command</p>
Write Command AT+CHFA=<n>	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameter</p> <p><n> 0 Main audio channel 1 Aux audio channel 2 Main audio channel hand free mode 3 Aux audio channel hand free mode 4 PCM channel</p>

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● This Command swaps the audio channels among different channels. ● Main audio channel hand free mode is the same with main audio channel; aux audio channel hand free mode is the same with aux audio channel. Channel 2, 3 is virtual channel.

6.2.19 AT+CSCLK Configure Slow Clock

AT+CSCLK Configure Slow Clock	
Test Command AT+CSCLK=?	Response +CSCLK: (list of supported <n>s) OK Parameter See Write Command
Read Command AT+CSCLK?	Response +CSCLK: <n> OK Parameter See Write Command
Write Command AT+CSCLK=<n>	Response OK ERROR Parameter <n> 0 Disable slow clock, module will not enter sleep mode. 1 Enable slow clock, it is controlled by DTR. When DTR is high, module can enter sleep mode. When DTR changes to low level, module can quit sleep mode. 2 Enable slow clock automatically. When there is no interrupt (on air and hardware such as GPIO interrupt or data in serial port), module can enter sleep mode. Otherwise, it will quit sleep mode.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● There are two caveats when you want to quit sleep mode in mode 2:

- 1, You should input some characters (at least one) to awake module
 - 2, An interval time of 100ms more is necessary between waking characters and following AT commands, otherwise the waking characters will not be discarded completely, and messy codes will be produced which may leads to UART baudrate re-adaptation.
- The +CSCLK value can not be reset by AT&F or ATZ command.

6.2.20 AT+CENG Switch on or off Engineering Mode

AT+CENG Switch on or off Engineering Mode

Test Command AT+CENG=?	<p>Response</p> <p>TA returns the list of supported modes.</p> <p>+CENG: (list of supported <mode>s),(list of supported <Ncell>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CENG?	<p>Response</p> <p>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.</p> <p>TA returns the current engineering mode. The network information including serving cell and neighboring cells are returned. <cell> carry with them corresponding network interaction.</p> <p>+CENG: <mode>,<Ncell></p> <p>[+CENG: <cell>,"<bcch>,<rxl>,<rxq>,<mcc>,<mnc>,<bsic>,<cellid>,<rla>,<txp>,<lac>,<TA>[<dbm>,<c1>,<c2>,<tch>,<ts>,<maio>,<hsn>,<rxq_s ub>,<rxq_full>,<ch_mod>]"<CR><LF>+CENG: <cell>,"<bcch>,<rxl>,<bsic>[,<cellid>,<mcc>,<mnc>,<lac>"...]</p> <p>OK</p> <p>if <mode>=3</p> <p>+CENG: <mode>,<Ncell></p> <p>[+CENG: <cell>,<mcc>,<mnc>,<lac>,<cellid>,<bsic>,<rxl><CR><LF>+CENG: <cell>,<mcc>,<mnc>,<lac>,<cellid>,<bsic>,<rxl>...]</p>

	<p>OK</p> <p>if <mode>=4 +CENG: <mode>,<Ncell></p> <p>[+CENG: <cell>,"<bcch>,<rxl>,<rxq>,<mcc>,<mnc>,<bsic>,<cellid>,<rla>,<txp>,<lac>,<TA>,<dbm>,<c1>,<c2>,<tch>,<ts>,<maio>,<hsn>,<rxq_sub>,<rxq_full>,<ch_mod>"<CR><LF>+CENG: <cell>,"<bcch>,<rxl>,<bsic>,<cellid>,<mcc>,<mnc>,<lac>,<c1>,<c2>" ...]</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+CENG=<mode>[,<Ncell>]</p>	<p>Response</p> <p>Switch on or off engineering mode. It will report +CENG: (network information) automatically if <mode>=2.</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><mode> 0 Switch off engineering mode 1 Switch on engineering mode 2 Switch on engineering mode, and activate the URC report of network information 3 Switch on engineering mode, with limited network information 4 Switch on engineering mode, with extern information</p> <p><Ncell> 0 Un-display neighbor cell ID 1 Display neighbor cell ID If <mode> = 3, ignore this parameter.</p> <p><cell> 0 The serving cell 1-6 The index of the neighboring cell</p> <p><arfcn> Absolute radio frequency channel number, in decimal format</p> <p><bcch> ARFCN(Absolute radio frequency channel number) of BCCH carrier, in decimal format</p> <p><rxl> Receive level, in decimal format</p> <p><rxq> Receive quality, in decimal format</p> <p><mcc> Mobile country code, in decimal format</p> <p><mnc> Mobile network code, in decimal format</p> <p><bsic> Base station identity code, in decimal format</p> <p><cellid> Cell id, in hexadecimal format</p> <p><lac> Location area code, in hexadecimal format</p>

	<p><rla> Receive level access minimum, in decimal format</p> <p><txp> Transmit power maximum CCCH, in decimal format</p> <p><TA> Timing Advance, in decimal format</p> <p><dbm> Receiving level in dBm</p> <p><c1> C1 value</p> <p><c2> C2 value</p> <p><tch> ARFCN of the TCH carrier, in decimal format</p> <p><ts> Timeslot number</p> <p><maio> MAIO value</p> <p><hsn> HSN value</p> <p><rxq_sub> Receiving quality (sub), range is 0 - 7</p> <p><rxq_full> Receiving quality (full), range is 0 - 7</p> <p><ch_mod> Speech channel type, in string format</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● Engineering mode can be switched on and taken effect after executing "AT+CFUN=1". ● Engineering mode only queries one SIM card information. ● <lac> and <cellid> are in hex, <ch_mod> is string, and others are in DEC. ● If network supports frequency hopping, then <tch> is invalid, value is 0. ● Under non-dedicated mode: <tch>,<ts>,<maio>,<hsn>,<rxq_sub>,<rxq_full>,<ch_mod> parameters are invalid, shown in "x". ● Under dedicated mode, <c1> and <c2> in service cell are invalid, either all neighbor cell parameters. ● Parameter <rssi> value of "AT+CSQ" is half of <rxl>. The sum of <dbm> and <rxl> is 113. That is to say, <rssi> = <rxl>/2 and <dbm>=113-<rxl>.

6.2.21 AT+SCLASS0 Store Class 0 SMS to SIM When Received Class 0 SMS

AT+SCLASS0 Store Class 0 SMS to SIM When Module Received Class 0 SMS	
Test Command	Response
AT+SCLASS0=?	+SCLASS0: (0, 1)
	OK
	Parameters
	See Write Command
Read Command	Response

AT+SCLASS0?	+SCLASS0: <mode> OK
	Parameters See Write Command
Write Command AT+SCLASS0=<mode>	Response OK ERROR
	Parameters <mode> 0 Disable to store Class 0 SMS to SIM when module receives Class 0 SMS 1 Enable to store Class 0 SMS to SIM when module receives Class 0 SMS
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.22 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

6.2.23 AT+CMGDA Delete All SMS

AT+CMGDA Delete All SMS	
Test Command AT+CMGDA=?	Response +CMGDA: (list of supported <type>s)

	<p>OK +CMS ERROR: <err></p> <hr/> <p>Parameter See Write Command</p>
<p>Write Command AT+CMGDA=<type></p>	<p>Response OK ERROR +CMS ERROR: <err></p> <hr/> <p>Parameter <type></p> <p>1) If text mode:</p> <p>"DEL READ" Delete all read messages "DEL UNREAD" Delete all unread messages "DEL SENT" Delete all sent SMS "DEL UNSENT" Delete all unsent SMS "DEL NBOX" Delete all received SMS "DEL ALL" Delete all SMS</p> <p>2) If PDU mode:</p> <p>1 Delete all read messages 2 Delete all unread messages 3 Delete all sent SMS 4 Delete all unsent SMS 5 Delete all received SMS 6 Delete all SMS</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	5s (delete 1 message) 25s (delete 50 messages) 25s (delete 150 messages)
Reference	Note

6.2.24 AT+STTONE Play SIM Toolkit Tone

AT+STTONE Play SIM Toolkit Tone	
Test Command AT+STTONE=?	<p>Response +STTONE: (list of supported <mode>s),(list of supported <tone>s),(list of supported <duration>s)</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p>

	See Write Command
Write Command AT+STTONE=<mode>,<tone>,<duration>	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Unsolicited Result Code</p> <p>The playing is stopped or completed. +STTONE: 0</p> <hr/> <p>Parameters</p> <p><mode> 0 Stop playing tone 1 Start playing tone</p> <p><tone> Numeric type</p> <p> 1 Dial Tone 2 Called Subscriber Busy 3 Congestion 4 Radio Path Acknowledge 5 Radio Path Not Available / Call Dropped 6 Error / Special information 7 Call Waiting Tone 8 Ringing Tone 16 General Beep 17 Positive Acknowledgement Tone 18 Negative Acknowledgement or Error Tone 19 Indian Dial Tone 20 American Dial Tone</p> <p><duration> Numeric type, in milliseconds. Max requested value = 255*60*1000 = 15300000ms (supported range = 10-15300000)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.25 AT+SIMTONE Generate Specifically Tone

AT+SIMTONE Generate Specifically Tone	
Test Command AT+SIMTONE=?	<p>Response</p> <p>+SIMTONE: (0,1),(20-20000),(200-25500),(0,100-25500),(10-500000)</p> <p>OK</p> <hr/> <p>Parameters</p> <p>See Write Command</p>

Write Command AT+SIMTONE= <mode>,<frequency>,<periodOn>,<periodOff>[,<duration>]	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Unsolicited Result Code The playing is stopped or completed. +SIMTONE: 0
	Parameters <mode> 0 Stop playing tone 1 Start playing tone <frequency> The frequency of tone to be generated <periodOn> The period of generating tone, must be multiple of 100 <periodOff> The period of stopping tone, must be multiple of 100 <duration> Duration of tones in milliseconds
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.26 AT+CCPD Enable or Disable Alpha String

AT+CCPD Enable or Disable Alpha String	
Test Command AT+CCPD=?	Response +CCPD: (0,1) OK
	Parameter See Write Command
Read Command AT+CCPD?	Response +CCPD: <mode> OK
	Parameter See Write Command
Write Command AT+CCPD=<mode>	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameter <mode> 0 Disable to present alpha string

	<u>1</u> Enable to present alpha string
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

6.2.27 AT+CGID Get SIM Card Group Identifier

AT+CGID Get SIM Card Group Identifier	
Execution Command AT+CGID	<p>Response</p> <p>+GID: <gid1>,<gid2></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <hr/> <p>Parameters</p> <p><gid1> Integer type of SIM card group identifier 1</p> <p><gid2> Integer type of SIM card group identifier 2</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>If the SIM supports GID files, the GID values will be returned. Otherwise 0xff is returned.</p>

6.2.28 AT+MORING Show State of Mobile Originated Call

AT+MORING Show State of Mobile Originated Call	
Test Command AT+MORING=?	<p>Response</p> <p>+MORING: (0,1)</p> <p>OK</p> <hr/> <p>Parameter</p> <p>See Write Command</p>
Read Command AT+MORING?	<p>Response</p> <p>+MORING: <mode></p> <p>OK</p> <hr/> <p>Parameter</p> <p>See Write Command</p>
Write Command	Response

AT+MORING=< mode >	<p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p>
	<p>Parameter</p> <p><mode> <u>0</u> Not show call state of mobile originated call 1 Show call state of mobile originated call. After the call number is dialed, the URC strings of MO RING will be sent if another call is alerted and the URC strings of MO CONNECTED will be sent if the call is established.</p>
	<p>Unsolicited Result Code</p> <p>MO RING The call is alerted.</p> <p>MO CONNECTED The call is established.</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

6.2.29 AT+CMGHEX Enable or Disable Sending Non-ASCII Character SMS

AT+CMGHEX Enable or Disable Sending Non-ASCII Character SMS	
Test Command AT+CMGHEX= ?	<p>Response</p> <p>+CMGHEX: (list of supported <mode>s)</p> <p>OK</p>
	<p>Parameter</p> <p>See Write Command</p>
Read Command AT+CMGHEX?	<p>Response</p> <p>+CMGHEX: <mode></p> <p>OK</p>
	<p>Parameter</p> <p>See Write Command</p>
Write Command AT+CMGHEX= <mode>	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p>
	<p>Parameter</p>

	<mode> <u>0</u> Send SMS in ordinary way 1 Enable to send SMS varying from 0x00 to 0x7f except 0x1a and 0x1b under text mode and GSM character set
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Only be available in TEXT mode and AT+CSCS="GSM".

6.2.30 AT+CCODE Configure SMS Code Mode

AT+CCODE Configure SMS Code Mode	
Test Command AT+CCODE=?	Response +CCODE: (0,1) OK
	Parameter See Write Command
Read Command AT+CCODE?	Response +CCODE:<mode> OK
	Parameter See Write Command
Write Command AT+CCODE=<mode>	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameter <mode> <u>0</u> Code mode compatible with NOKIA 1 Code mode compatible with SIEMENS
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.31 AT+CIURC Enable or Disable Initial URC Presentation

AT+CIURC Enable or Disable Initial URC Presentation	
Test Command AT+CIURC=?	Response +CIURC: (0,1)

	<p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CIURC?	<p>Response +CIURC:<mode></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CIURC=<mode>	<p>Response OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><mode> 0 Disable URC presentation. 1 Enable URC presentation</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>When module is powered on and initialization procedure is over. URC "Call Ready" will be presented if <mode> is 1.</p>

6.2.32 AT+CPSPWD Change PS Super Password

AT+CPSPWD Change PS Super Password	
Write Command AT+CPSPWD=<oldpwd>,<newpwd>	<p>Response OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><oldpwd> String type(string should be included in quotation marks). Old password and length should be 8.</p> <p><newpwd> String type(string should be included in quotation marks). New password and length should be 8.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● Default value of <oldpwd> is "12345678".

	<ul style="list-style-type: none"> ● If module is locked to a specific SIM card through AT+CLCK and password lost or SIM state is PH-SIM PUK, user can use the super password to unlock it. ● It is not supported temporarily.
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6.2.33 AT+EXUNSOL Enable or Disable Proprietary Unsolicited Indications

AT+EXUNSOL Enable or Disable Proprietary Unsolicited Indications	
Test Command AT+EXUNSOL=?	Response +EXUNSOL: (list of supported <exunsol>s) OK
	Parameters See Write Command
Write Command AT+EXUNSOL=<exunsol>,<mode>	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <exunsol> String type(string should be included in quotation marks). values are currently reserved by the present document "SQ" Signal Quality Report Displays signal strength and channel bit error rate (similar to AT+CSQ) in form +CSQN: <rsqi>,<ber> when values change. <mode> 0 Disable 1 Enable 2 Query
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

6.2.34 AT+CGMSCLASS Change GPRS Multislot Class

AT+CGMSCLASS Change GPRS Multislot Class	
Test Command AT+CGMSCLASS=?	Response MULTISLOT CLASS: (2,4,8,9,10,12) OK
	Parameter See Write Command

Read Command AT+CGMSCLASS?	Response MULTISLOT CLASS: <class>
	OK
	Parameter See Write Command
Write Command AT+CGMSCLASS=<class>	Response OK
	If error is related to ME functionality: +CME ERROR: <err>
	Parameter <class> GPRS multi-slot class
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

6.2.35 AT+CDEVICE View Current Flash Device Type

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

6.2.36 AT+CCALR Call Ready Query

AT+CCALR Call Ready Query	
Test Command AT+CCALR=?	Response +CCALR: (list of supported <mode>s)
	OK
	Parameter <mode> A numeric parameter which indicates whether the module is ready for phone call.

	<p>0 Module is not ready for phone call</p> <p>1 Module is ready for phone call</p>
Read Command AT+CCALR?	<p>Response</p> <p>ME returns the status of result code presentation and an integer <n> which shows whether the module is currently ready for phone call.</p> <p>+CCALR: <mode></p> <p>OK</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.37 AT+GSV Display Product Identification Information

AT+GSV Display Product Identification Information	
Execution Command AT+GSV	<p>Response</p> <p>TA returns product information text</p> <p>Example:</p> <p>SIMCOM_Ltd SIMCOM_Heracles Revision: 1418B01HeraclesM32</p> <p>OK</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.38 AT+ECHO Echo Cancellation Control

AT+ECHO Echo Cancellation Control	
Test Command AT+ECHO=?	<p>Response</p> <p>+ECHO: (0,1),(0-65535),(0-65535),(0-65535),(0-65535),(0,1)</p> <p>OK</p>
	Parameters

	See Write Command
Read Command AT+ECHO?	Response +ECHO: (<mic0>,<nlp0>, <aec0>,<nr0>, <ns0>),(<micn>,<nlpn>,<aecn>,<nrn>, <nsn>) OK
	Parameters See Write Command
Write Command AT+ECHO=<mic>,<nlp>,<aec>,<nr>,<ns>[,<state>]	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <mic> Audio channel 0 Main audio handset channel 1 Main audio handfree channel <nlp> Nonlinear processing remove residual echo and background noise <aec> Acoustic echo cancellation <nr> Noise reduction <ns> Noise suppression <state> Enable or disable to close echo algorithm 0 Echo algorithm be closed 1 Echo algorithm be activated
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note For this command, please refer to actual model. The default state the echo echo algorithm be activated, and the read command is not displayed.

6.2.39 AT+CAAS Control Auto Audio Switch

AT+CAAS Control Auto Audio Switch	
Test Command AT+CAAS=?	Response +CAAS: (0-2) OK
	Parameter See Write Command
Read Command	Response

AT+CAAS?	+CAAS: <mode> OK Parameter See Write Command
Write Command AT+CAAS=<mode>	Response This parameter setting determines whether or not the audio channel will be switched automatically to the corresponding channel in case of headset attaching or detaching. OK If error is related to ME functionality: +CME ERROR: <err> Parameter <mode> 0 Disable automatic audio channel switch function, the headset HOOK function is disabled; 1 Enable automatic audio channel switch function, the headset HOOK function is enabled; 2 Disable automatic audio channel switch function, the headset HOOK function is enabled.
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note For this command, please refer to actual model. The headset detection is still worked when <mode> is set to 0.

6.2.40 AT+SVR Configure Voice Coding Type for Voice Calls

AT+SVR Configure Voice Coding Type for Voice Calls	
Test Command AT+SVR=?	Response +SVR: (list of supported <voice_rate_coding>s) OK Parameter See Write Command
Read Command AT+SVR?	Response +SVR: <voice_rate_coding> OK

	Parameter See Write Command
Write Command AT+SVR=<voice_rate_coding>	Response OK If error is related to ME functionality: +CME ERROR: <error>
	Parameter <voice_rate_coding> A number parameter which indicate the voice coding type. 0 FR 1 EFR/FR 2 HR/FR 3 FR/HR 4 HR/EFR 5 EFR/HR 6 AMR-FR/EFR,AMR-HR 7 AMR-FR/EFR,AMR-HR/HR 8 AMR-HR/HR/AMR-FR/EFR 9 AMR-HR/AMR-FR/EFR 10 AMR-HR/AMR-FR/FR 11 AMR-HR/HR/AMR-FR 12 AMR-FR/AMR-HR 13 AMR-FR/FR/AMR-HR 14 AMR-FR/FR/AMR-HR/HR 15 AMR-FR/EFR/FR/AMR-HR/HR <u>16</u> AMR-HR/AMR-FR/EFR/FR/HR 17 AMR-FR/AMR-HR/EFR/FR/HR
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note The parameter of AT+SVR is stored in non-volatile memory.

6.2.41 AT+GSMBUSY Reject Incoming Call

AT+GSMBUSY Reject Incoming Call	
Test Command AT+GSMBUSY=?	Response +GSMBUSY: (0,1,2) OK
	Parameter See Write Command

Read Command AT+GSMBUSY?	Response +GSMBUSY: <mode> OK
	Parameter See Write Command
Write Command AT+GSMBUSY= <mode>	Response OK If error is related to ME functionality: +CME ERROR: <error>
	Parameter <mode> <u>0</u> Enable incoming call 1 Forbid all incoming calls 2 Forbid incoming voice calls but enable CSD calls
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note The parameter is not saved if the module power down.

6.2.42 AT+CEMNL Set the List of Emergency Number

AT+CEMNL Set the List of Emergency Number	
Test Command AT+CEMNL=?	Response +CEMNL: (0-1),(1-11),("0"- "999")... OK
	Parameter See Write Command
Read Command AT+CEMNL?	Response +CEMNL: <mode>[,<amount>,<emergency numbers>] OK
	Parameter See Write Command
Write Command AT+CEMNL=< mode>[,<amount	Response OK ERROR

>,<emergency numbers>]	<p>Parameter</p> <p><mode> 0 Disable 1 Enable</p> <p><amount> Amount of emergency number to be set. Up to 11 emergency numbers supported. Default value is 2.</p> <p><emergency numbers> Emergency numbers to be set by user which range is 0-999. Default numbers are 112 and 119.</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

6.2.43 AT*CELLLOCK Set the List of ARFCN Which Needs to Be Locked

AT*CELLLOCK Set the List of ARFCN Which Needs to Be Locked	
<p>Test Command</p> <p>AT*CELLLOCK=?</p>	<p>Response</p> <p>*CELLLOCK: (list of supported <mode>s)[,(list of supported <amount>s),(list of supported <locked arfcn list>s)[, (list of supported <locked arfcn list>s)[, (list of supported <locked arfcn list>s)]]]</p> <p>OK</p> <p>Parameter See Write Command</p>
<p>Read Command</p> <p>AT*CELLLOCK?</p>	<p>Response</p> <p>*CELLLOCK: <mode>[,<amount>,<locked arfcn list>[,<locked arfcn list>...]]</p> <p>OK</p> <p>Parameter See Write Command</p>
<p>Write Command</p> <p>AT*CELLLOCK=<mode>[,<amount>,<locked arfcn list>[,<locked arfcn list>...]]</p>	<p>Response</p> <p>OK ERROR</p> <p>Parameter</p> <p><mode> 0 Disable 1 Enable</p> <p><amount> Amount of arfcn to be set. Up to 3 arfcn supported.</p> <p><locked arfcn list></p>

	Arfcn needs to be locked by user. Scope: (0-124), (128-251), (512-885) or (975-1023).
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

6.2.44 AT+SLEDS Set the Timer Period of Net Light

AT+SLEDS Set the Timer Period of Net Light	
Test Command AT+SLEDS=?	Response +SLEDS: (1-3),(0,40-65535),(0,40-65535) OK Parameters See Write Command
Read Command AT+SLEDS?	Response +SLEDS: <mode>,<timer_on>,<timer_off> OK Parameters See Write Command
Write Command AT+SLEDS=<mode>,<timer_on>,<timer_off>	Response OK ERROR Parameters <mode> <ol style="list-style-type: none"> 1 Set the timer period of net light while Heracles does not register to the network 2 Set the timer period net light while Heracles has already registered to the network 3 Set the timer period net light while Heracles 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	AT&W_SAVE

Max Response Time	-
Reference	Note The default value is : <mode>,<timer_on>,<timer_off> 1,64,800 2,64,3000 3,64,300

6.2.45 AT+CBUZZERRING Use the Buzzer Sound as the Incoming Call Ring

AT+CBUZZERRING Use the Buzzer Sound as the Incoming Call Ring	
Read Command AT+CBUZZERRING?	Response +CBUZZERRING: <mode> OK
	Parameter See Write Command
Write Command AT+CBUZZERRING=<mode>	Response OK ERROR
	Parameter <mode> 0 Disable the function of using buzzer sound as the incoming call ring 1 Enable the function of using buzzer sound as the incoming call ring
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note This buzzer function is depending on the hardware.

6.2.46 AT+CEXTERNTONE Close or Open the Microphone

AT+CEXTERNTONE Close or Open the Microphone	
Test Command AT+CEXTERNTONE=?	Response +CEXTERNTONE: (0,1) OK
	Parameters See Write Command

Read Command AT+CEXTERN TONE?	Response +CEXTERN TONE: <mode> OK
	Parameters See Write Command
Write Command AT+CEXTERN TONE=<mode>	Response OK ERROR
	Parameters <mode> <u>0</u> Re-open the microphone <u>1</u> Close the microphone
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.47 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+CNETLIGH T=?	Response +CNETLIGHT: (0,1) OK
	Parameters See Write Command
Read Command AT+CNETLIGH T?	Response +CNETLIGHT: <mode> OK
	Parameters See Write Command
Write Command AT+CNETLIGH T=<mode>	Response OK ERROR
	Parameters <mode> <u>0</u> Close the net light <u>1</u> Open the net light to shining

Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

6.2.48 AT+CWHITELIST Set the White List

AT+CWHITELIST Set the White List	
Test Command AT+CWHITELIST=?	Response +CWHITELIST: (0-3) OK
	Parameter See Write Command
Read Command AT+CWHITELIST?	Response +CWHITELIST: <mode>[,<phone number1>,<phone number2>,...<phone number30>] OK
	Parameters See Write Command
Write Command AT+CWHITELIST=<mode>[,<index>,<phone number>]	Response OK ERROR
	Parameters <mode> <u>0</u> Disable 1 Enable only call white list 2 Enable only SMS white list 3 Enable call and SMS white list <index> The index of phone number, scope: 1-30 <phone number> Phone number to be set
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> ● Parameter mode value is 1, can save white list phone number ,Other mode value can not save white list phone number.

- White list phone numbers are suitable to call and SMS function.

6.2.49 AT+CSGS Netlight Indication of GPRS Status

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

6.2.50 AT+CMICBIAS Close or Open the MICBIAS

AT+CMICBIAS Close or Open the MICBIAS	
Test Command AT+CMICBIAS=?	Response +CMICBIAS: (0,1) OK
	Parameters See Write Command

Read Command AT+CMICBIAS ?	Response +CMICBIAS: <mode> OK
	Parameters See Write Command
Write Command AT+CMICBIAS =<mode>	Response OK ERROR
	Parameters <mode> 0 Turn off the micbias <u>1</u> Turn on the micbias
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note The setting take effect at the current channel only

6.2.51 AT+DTAM Set RECORD Play Mode in Call

AT+DTAM Set RECORD Play Mode in Call	
Test Command AT+DTAM=?	Response +DTAM: (0-2) OK
	Parameters See Write Command
Read Command AT+DTAM?	Response +DTAM: <mode> OK
	Parameters See Write Command
Write Command AT+DTAM=<mode>	Response OK ERROR
	Parameters <mode> record play mode 0 Local <u>1</u> Remote 2 Local and remote

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command takes effect only in call. Record not in call only play locally no matter what the mode is. Setting takes effect before record play.

6.2.52 AT+SJDR Set Jamming Detection Function

AT+SJDR Set Jamming Detection Function	
Test Command AT+SJDR=?	Response +SJDR: (0,1) OK Parameters See Write Command
Read Command AT+SJDR?	Response +SJDR: <status> or +SJDR: <status>,<mode>,<var>,<display>,<result> OK Parameters See Write Command
Write Command AT+SJDR=<status>,<mode>[,<var>[,<display>]]	Response OK ERROR If error is related to ME functionality: +CME ERROR: <err> Unsolicited result codes supported: +SJDR: NO JAMMING or +SJDR: JAMMING DETECTED or +SJDR: INTERFERENCE DETECTED Parameters <status> 0 Disable jamming detection 1 Enable jamming detection <mode>

	<p>0 Should inquire status by reading command</p> <p>1 Only report jamming status via URC from serial port</p> <p>2 Only report jamming status via the PIN</p> <p>3 Report jamming status via URC as well as the PIN</p> <p><var> The threshold to separate “+SJDR: JAMMING DETECTED” from “+SJDR: INTERFERENCE DETECTED” (while the signal strength variance is higher than <var>, there could be industrial interferences , and “+SJDR: INTERFERENCE DETECTED” is reported).</p> <p>1-255(default value:255)</p> <p><display></p> <p><u>0</u> Report jamming status via URC every 3000ms. (only when <mode> is set to “1” or “3”)</p> <p>1 Report jamming status via URC when jamming status changed.(only when <mode> is set to “1” or “3”)</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● When you query jamming detection status after enable jamming detection mode, you will get the URC of the format below: +SJDR:1,<mode>,<var>,<display>,<result> <result>=0, means no jamming. <result>=1, means jamming is detected. <result>=2, means industrial interference is detected. ● “+SJDR: INTERFERENCE DETECTED” indicates industrial interference which signifies unintentional radio link disturbances by strong industrial radio sources. ● Jamming detection PIN is designed to indicate jamming by outputting different level. When jamming is detected, the PIN will output a high level, otherwise, it will output a low level. ● Jamming detection only can be enabled after network has registered. Otherwise it will cause network cannot register.

6.2.53 AT+CPCMCFG Set PCM Parameter

AT+CPCMCFG Set PCM Parameter	
Test Command AT+CPCMCFG=?	Response +CPCMCFG: (0-1) OK

	Parameters See Write Command
Read Command AT+CPCMCFG ?	Response +CPCMCFG: <format> OK
	Parameters See Write Command
Write Command AT+CPCMCFG =<format>	Response OK ERROR
	Parameters <format> <u>0</u> MSB 1 LSB
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Part of the projects supported by this AT command, please refer to chapter 21 for details.

6.2.54 AT+CPCMSYNC Set PCM Sync Parameter

AT+CPCMSYNC Set PCM Sync Parameter	
Test Command AT+CPCMSYN C=?	Response +CPCMSYNC: (0-1),(1-8) OK
	Parameters See Write Command
Read Command AT+CPCMSYN C?	Response +CPCMSYNC: <sync>, <length> OK
	Parameters See Write Command
Write Command AT+CPCMSYN C=<sync>,<lengt	Response OK ERROR

h>	Parameters <sync> <u>0</u> PCM short sync 1 PCM long sync <length> <u>1-8</u> PCM sync length(1-8)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> ● The <length> is only supported 1 when PCM sync is short sync. ● Part of the projects supported by this AT command, please refer to chapter 21 for details.

6.2.55 AT+CANT Antenna Detecting

AT+CANT Antenna Detecting	
Test Command AT+CANT=?	Response +CANT: (list of supported <mode> s),(list of supported <UrcEnable> s),(list of supported <timer> s) OK +CME ERROR: <err>
	Parameters See Write Command
Read Command AT+CANT?	Response +CANT: <mode>, <UrcEnable>, <timer> OK +CME ERROR: <err>
	Parameters See Write Command
Write Command AT+CANT=<mode>,<UrcEnable>,<timer>	Response OK +CANT: <status>

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.57 AT+SKPD Keypad Detecting Function

AT+SKPD Keypad Detecting Function	
Test Command AT+SKPD=?	<p>Response +SKPD: (0-1)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+SKPD?	<p>Response +SKPD: <mode></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+SKPD=<mode>	<p>Response OK ERROR</p> <p>If key has pressed or released, The URC report is: +SKPD: <value>,<event></p> <p>Parameters <mode> <ul style="list-style-type: none"> 0 Disable Keypad detecting function 1 Enable Keypad detecting function <value> The value of pressed or released keypad <event> The status of keypad <ul style="list-style-type: none"> 0 Key released 1 Key pressed </p>
Parameter Saving Mode	-
Max Response Time	-
Reference	

6.2.58 AT+SIMTONE Custom Tones

AT+SIMTONE Custom Tones	
Test Command AT+SIMTONE=?	Response +SIMTONE: (0,1),(10-50000),(20-20000),(0-20000),(200-25500),(10-25500),(0-4)... OK
Write Command AT+SIMTONE=<mode>,<duration>,<freq1>,<freq2>,<periodOn>,<periodOff>,<nextIndex>[,<freq1>,<freq2>,<periodOn>,<periodOff>,<nextIndex>...]	Response OK If error is related to ME functionality: +CME ERROR: <err> Unsolicited Result Code The playing is stopped or completed. +SIMTONE: 0
	Parameters <mode> 0 Stop playing tone 1 Start playing tone <duration> Duration of tones in milliseconds <freq1> The first frequency of tone to be generated <freq2> The second frequency of tone to be generated <periodOn> The period of generating tone, must be multiple of 100 <periodOff> The period of stopping tone, must be multiple of 100 <nextIndex> The index of next tone to play
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> • A group of parameters <freq1>, <freq2>, <periodOn>, <periodOff>, <nextIndex> is used to define a tone. The index is defined from 0 to 4. AT+SIMTONE supports up to five tone and the tones will play cyclically according the order specified by <nextIndex>. For example, with "AT+SIMTONE=1,10000,800,0,500,10,2,2000,0,500,100,2600,0,500,10,1,1700,0,500,10,4,2200,0,600,100,0", the order is 800-> 2600->2000->1700->2200->800 and so on. • This command support play in call, but the <duration> is limited to 10s.

6.2.59 AT+CROAMING Roaming State

AT+CROAMING Roaming State

Execution Command AT+CROAMING	Response +CROAMING: <state> OK
	Parameters <state> 0 Home network 1 International network(different mcc) 2 Other network(different mnc but same operator)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

6.2.60 AT+CNETSCAN Perform a Net Survey to Show All the Cells' Information

AT+CNETSCAN Perform a Net Survey to Show All the Cells' Information	
Test Command AT+CNETSCAN=?	Response +CNETSCAN: (list of supported <format>s) OK
	Parameters See Write Command
Read Command AT+CNETSCAN?	Response +CNETSCAN: <format> OK
	Parameters See Write Command
Write Command AT+CNETSCAN=<format>	Response OK
	Parameters <format> 0 Hide lac and bsic information 1 Show lac and bsic information
Execution Command AT+CNETSCAN	Response If format's value is 0: Operator:"<Network_Operator_name>",MCC:<MCC>,MNC:<MNC>,Rxlev:<Rxlev>,Cellid:<CellID>,Arfcn:<Arfcn>[<CR><LF>Operator:"<Network_Operator_name2>",MCC:<MCC2>,MNC:<MNC2>,Rxlev:<Rxlev2>,Cellid:<CellID2>,Arfcn:<Arfcn2>[...]] If format's value is 1: Operator:"<Network_Operator_name>",MCC:<MCC>,MNC:<MNC>

	<p>,Rxlev:<Rxlev>,Cellid:<CellID>,Arfcn:<Arfcn>,Lac:<Lac>,Bsic:<Bsic> >[<CR><LF>Operator:"<Network_Operator_name2>",MCC:<MCC2> >,MNC:<MNC2>,Rxlev:<Rxlev2>,Cellid:<CellID2>,Arfcn:<Arfcn2>,Lac:<Lac2>,Bsic:<Bsic2>[...]]</p> <p>OK</p> <p>Parameters</p> <p><Network_Operator_name> Long format alphanumeric of network operator.</p> <p><MCC> Mobile country code.</p> <p><MNC> Mobile network code.</p> <p><Rxlev> Recieve level, in decimal format.</p> <p><CellID> Cell identifier, in hexadecimal format.</p> <p><Arfcn> Absolute radio frequency channel number, in decimal format.</p> <p><Lac> Location area code, in hexadecimal format.</p> <p><Bsic> Base station identity code, in hexadecimal format.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	45s
Reference	Note

6.2.61 AT+CEGPRS Switch on or off EDGE

AT+CEGPRS Switch on or off EDGE	
Test Command AT+CEGPRS=?	<p>Response</p> <p>+CEGPRS: (0,1) , (2,4,8,9,10,12)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CEGPRS?	<p>Response</p> <p>+CEGPRS: <switch>[,<class>]</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CEGPRS=<switch>[,<class>]	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p>

	<p><switch></p> <p>0 Switch off EDGE</p> <p>1 Switch on EDGE</p> <p><class> EGPRS multi-slot class</p> <p>Note: If <switch> value is equal to 1, <class> must be input. otherwise <class> is optional.</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note The module must restart if the EDGE is switched on or off.

6.2.62 AT+CGPIO Control the GPIO by PIN Index

AT+CGPIO Control the GPIO by PIN Index	
Test Command AT+CGPIO=?	<p>Response</p> <p>+CGPIO: (0-1),(list of supported <pin>s),(0-1),(0-1)</p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CGPIO=<operation>,<pin>,<function>,<level>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><operation></p> <p>0 Set the GPIO function including the GPIO output .</p> <p>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".</p> <p><pin> The PIN index you want to be set. (It has relations with the hardware, please refer to the hardware manual)</p> <p><function> Only when <operation> is set to 0, this option takes effect.</p> <p>0 Set the GPIO to input.</p> <p>1 Set the GPIO to output</p> <p><level></p> <p>0 Set the GPIO low level</p> <p>1 Set the GPIO high level</p>
Reference	Note

6.2.63 AT+CMEDPLAY Play Audio File

AT+CMEDPLAY Play Audio File	
Test Command AT+CMEDPLAY=?	<p>Response</p> <p>+CMEDPLAY: (0-3)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CMEDPLAY?	<p>Response</p> <p>+CMEDPLAY: <state></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CMEDPLAY=<mode>	<p>Response</p> <p>if<mode>=0,2,3, response: OK</p> <p>if<mode>=1, start playing AT+CMEDPLAY=1,<filepath>,<channel>,<volume></p> <p>OK</p> <p>If error is related to MS functionality, response: +CME ERROR: <err></p> <p>Parameters</p> <p><mode> command operation mode</p> <ul style="list-style-type: none"> 0 Stop playing 1 Start playing 2 Pause playing 3 Resume playing <p><filepath> Audio file path and name</p> <p><channel> Audio play channel</p> <ul style="list-style-type: none"> 0 Main channel 1 Aux channel <p><volume> Audio play volume,0-100</p> <p><state> Audio playing state</p> <ul style="list-style-type: none"> 0 Idle 1 Playing 2 Paused <p>Unsolicited result code</p> <p>+CMEDPLAY: 0 // play over</p>
Parameter Saving	NO_SAVE

Mode	
Max Response Time	
Reference	<p>Note</p> <ul style="list-style-type: none"> ● <mode> 2 and 3 are not supported when playing audio file during call. ● The audio file can not be played during incoming call or outgoing call. ● Only support WAV, PCM, AMR and MP3 format. ● Only support WAV format with 8K 16bit and AMR format during call.

6.2.64 AT+CMEDIAVOL Control the Volume when Playing Audio File

AT+CMEDIAVOL Control the Volume when Playing Audio File	
Test Command AT+CMEDIAVOL=?	Response +CMEDIAVOL: (0-100) OK
	Parameters See Write Command
Write Command AT+CMEDIAVOL=L<level>	Response OK ERROR
	Parameters <level> 0-100 Integer type value with manufacturer specific range (smallest value represents the lowest sound level).
Reference	Note The command takes effect only when playing audio file.

6.2.65 AT+SNDLEVEL Set the Sound Level of Special AT Command

AT+SNDLEVEL Set the Sound Level of Special AT Command	
Test Command AT+SNDLEVEL=?	Response +SNDLEVEL: (0-1),(0-100) OK
	Parameters See Write Command
Read Command AT+SNDLEVEL?	Response +SNDLEVEL: (0,<soundlevel0>),(1,<soundlevel1>) OK
	Parameters See Write Command
Write Command AT+SNDLEVEL=	Response OK

<mode>,<soundlevel>	<p>ERROR</p> <p>Parameters</p> <p><mode> 0 adjust the sound level of STTONE and SIMTONE 1 adjust the sound level of CLDTMF</p> <p><soundlevel> 0-100 Integer type value with manufacturer specific range (smallest value represents the lowest sound level). Default value of <soundlevel0> is 31 and <soundlevel1> is 16.</p>
Reference	Note

6.2.66 AT+SPE Speech Enhancement Control

AT+SPE Speech Enhancement Control	
<p>Test Command</p> <p>AT+SPE=?</p>	<p>Response</p> <p>+SPE: (0,1)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p>AT+SPE?</p>	<p>Response</p> <p>+SPE: <n></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p>AT+SPE=<n></p>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><n></p> <p> <u>0</u> Disable Speech Enhancement</p> <p> <u>1</u> Enable Speech Enhancement</p>
Reference	Note

6.2.67 AT+CCONCINDEX Report Concatenated SMS Index

AT+CCONCINDEX Report Concatenated SMS Index	
<p>Test Command</p> <p>AT+CCONCINDEX=?</p>	<p>Response</p> <p>OK</p>
<p>Execution Command</p>	<p>Response</p> <p>+CCONCINDEX: N,i,j,k,...</p>

AT+CCONCIND EX	<p>OK</p> <p>where N is the number of segments that form the whole concatenated SMS <i>i,j,k</i> are the SMS indexes of each SMS segment , N is 0 if no segments has been received.</p> <p>If no concatenated SMS is present on the SIM or ME, only OK result code will be returned.</p>
Parameter Saving Mode	NO_SAVE
Reference	Note

6.2.68 AT+SRSPT Control SMS Retransmission

AT+SRSPT Control SMS Retransmission	
Test Command AT+SRSPT=?	<p>Response +SRSPT: (0,1)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+SRSPT?	<p>Response +SRSPT: <n></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+SRSPT=<n>	<p>Response OK ERROR</p> <p>Parameters <n></p> <p>0 Enable SMS retransmission 1 Disable SMS retransmission</p>
Reference	Note

6.2.69 AT+CELLIST Perform a Net Survey to Show All the Cells' Information

AT+CELLIST Perform a Net Survey to Show All the Cells' Information	
Test Command AT+CELLIST=?	<p>Response +CELLIST: (list of supported <mode>s), (list of supported <period>s)</p> <p>OK</p> <p>Parameters</p>

	See Write Command
Read Command AT+CELLIST?	Response +CELLIST: <mode>,<period> OK
	Parameters See Write Command
Write Command AT+CELLIST= <mode>[,<period >]	Response OK Parameters <mode> 0 Disable scan cell information 1 Enable scan cell information <period> 10-7200 Scan period, default value is 30. Unit is second.
Execution Command AT+CELLIST	Response +CELLIST: <MCC>,<MNC>,<Arfcn>,<Rxlev>,<CellID>,<Lac>,<Bsic> OK
	Parameters <MCC> Mobile country code. <MNC> Mobile network code. <Rxlev> Recieve level, in decimal format. <CellID> Cell identifier, in hexadecimal format. <Arfcn> Absolute radio frequency channel number, in decimal format. <Lac> Location area code, in hexadecimal format. <Bsic> Base station identity code, in hexadecimal format.
Parameter Saving Mode	NO_SAVE
Reference	Note <ul style="list-style-type: none"> ● If the CELLIST function is enabled, the module will scan full frequency in accordance with the set of <period>, it will affect the normal network registration, so it is recommended to enable the function and the <period> value is greater than 30 after the network registration. ● Enable the CELLIST function will increase the flow of the module. ● The function of CELLIST and CNETSCAN are the same. CNETSCAN is synchronized to scan cell information, until the scan complete AT instructions to return to the cell information. CELLIST is an asynchronous operation, the internal module of the automatic scanning, the implementation of the AT+CELLIST to return the scan directly out of the cell information. ● After Enable the CELLIST function, the module need to wait for a period of time to read the cell information, this time is generally about

30 seconds.

6.2.70 AT+CLIST Query AT

AT+CLIST Query AT	
Test Command AT+CLIST=?	Response +CLIST: <module>s OK
	Parameters See Write Command
Write Command AT+CLIST=<module>	Response +CLIST: 001: <name> 002: <name> 003: <name> ... OK
	Parameters <module> My terminal's module, eg: SAT,NT,CALL_EXT, NETWORK_EXT,SIMCOM_ALL,PLATFORM. <name> AT command's name, eg: CFUN,CREG,CLIST,STKI.
Reference	Note Each row only shows four modules

6.2.71 AT+CBATCHK Set VBAT Checking Feature ON/OFF

AT+CBATCHK Set VBAT Checking Feature ON/OFF	
Test Command AT+CBATCHK=?	Response +CBATCHK: (0,1) OK
Read Command AT+CBATCHK?	Response +CBATCHK: <mode> OK
	Parameters See Write Command
Write Command AT+CBATCHK=<mode>	Response OK If failed: +CME ERROR: <err>
	Parameters

	<mode> 0 Close the function of VBAT checking 1 Open the function of VBAT checking
Parameter Saving Mode	
Max Response Time	-
Reference	Note

6.2.72 AT+SSIM Multi_SIMCard Control

AT+SSIM Multi_SIMCard Control	
Test Command AT+SSIM=?	Response +SSIM: (0,1) OK
Read Command AT+SSIM?	Response +SSIM: <n> OK Parameters See Write Command
Write Command AT+SSIM=<n>	Response OK If failed: +CME ERROR: <err> Parameters <n> 0 Internal SIMCard chip 1 External SIMCard interface
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note Save this setting with command AT&W, since this setting only takes effect after next power up.

6.2.73 AT+CCTURI RI PIN Control

AT+CCTURI RI PIN Control	
Test Command AT+CCTURI=?	Response +CCTURI: (0-2) OK

	<p>If error is related to ME functionality: +CME ERROR: <err></p>
<p>Read Command AT+ CCTURI?</p>	<p>Response +CCTURI: <status></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters See Write Command</p>
<p>Write Command AT+CCTURI=<status></p>	<p>Response OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters <status></p> <ul style="list-style-type: none"> <u>0</u> Off 1 On(RI pin controlled by +CREG,+CUSD) 2 On(RI pin controlled by all URC)
<p>Parameter Saving Mode</p>	<p>AT&W_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p>Note</p>

7 AT Commands for GPRS Support

7.1 Overview of AT Commands for GPRS Support

Command	Description
AT+CGATT	Attach or detach from GPRS service
AT+CGDCONT	Define PDP context
AT+CGQMIN	Quality of service profile (minimum acceptable)
AT+CGQREQ	Quality of service profile (requested)
AT+CGACT	PDP context activate or deactivate
AT+CGDATA	Enter data state
AT+CGPADDR	Show PDP address
AT+CGCLASS	GPRS mobile station class
AT+CGEREP	Control unsolicited GPRS event reporting
AT+CGREG	Network registration status
AT+CGSMS	Select service for MO SMS messages

7.2 Detailed Descriptions of AT Commands for GPRS Support

7.2.1 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

	<p><state> Indicates the state of GPRS attachment</p> <p>0 Detached</p> <p>1 Attached</p> <p>Other values are reserved and will result in an ERROR response to the Write Command.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds
Reference	Note

7.2.2 AT+CGDCONT Define PDP Context

AT+CGDCONT Define PDP Context	
<p>Test Command</p> <p>AT+CGDCONT=?</p>	<p>Response</p> <p>+CGDCONT: (range of supported <cid>s),<PDP_type>,,(list of supported<d_comp>s),(list of supported<h_comp>s)</p> <p>[<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,(list of supported <d_comp>s),(list of supported <h_comp>s)[...]]</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p>AT+CGDCONT?</p>	<p>Response</p> <p>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp></p> <p>[<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp> [...]]</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Write Command</p> <p>AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]</p>	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><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</p>

	<p>(minimum value=1) is returned by the test form of the command.</p> <p><PDP_type> (Packet Data Protocol type) IP Internet Protocol (IETF STD 5)</p> <p><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 "object-connected.fr".</p> <p><PDP_addr> A string parameter (IP address). 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</p> <p><d_comp> A numeric parameter that controls PDP data compression 0 –PDP data compression off (default if value is omitted)</p> <p><h_comp> A numeric parameter that controls PDP data compression 0 –PDP header compression off (default if value is omitted)</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

7.2.3 AT+CGQMIN Quality of Service Profile (Minimum Acceptable)

AT+CGQMIN Quality of Service Profile (Minimum Acceptable)	
Test Command	Response
AT+CGQMIN=?	<p>+CGQMIN: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)</p> <p>[<CR><LF>+CGQMIN: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)</p> <p>[...]</p> <p>OK</p>
	Parameters
	See Write Command

<p>Read Command AT+CGQMIN?</p>	<p>Response +CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> [<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> [...]]</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]</p>	<p>Response OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><cid> 1..3 A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command)</p> <p><precedence> <u>0</u> QOS precedence class subscribed value 1..3 QOS precedence class</p> <p><delay> <u>0</u> QOS delay class subscribed value 1..4 QOS delay class subscribed</p> <p><reliability> <u>0</u> QOS reliability class subscribed value 1..5 QOS reliability class.</p> <p><peak> <u>0</u> QOS peak throughput class subscribed value 1..9 QOS peak throughput class</p> <p><mean> <u>0</u> QOS mean throughput class subscribed value 1..18 QOS mean throughput class 31 QOS mean throughput class best effort</p>
<p>Parameter Saving Mode</p>	<p>AUTO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p>Note</p>

7.2.4 AT+CGQREQ Quality of Service Profile (Requested)

AT+CGQREQ Quality of Service Profile (Requested)

<p>Test Command AT+CGQREQ=?</p>	<p>Response +CGQREQ: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),<list of supported <peak>s),(list of supported <mean>s) [<CR><LF>+CGQREQ: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s) [...]] OK</p> <p>Parameters See Write Command</p>
<p>Read Command AT+CGQREQ?</p>	<p>Response +CGQREQ: <cid>,<<precedence>>,<<delay>>,<<reliability>>,<<peak>>,<<mean>> [<CR><LF>+CGQREQ: <cid>,<<precedence>>,<<delay>>,<<reliability>>,<<peak>>,<<mean>> [...]] OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+CGQREQ=cid>,<<precedence>>,<<delay>>,<<reliability>>,<<peak>>,<<mean>>]]]]</p>	<p>Response OK If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><cid> A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command)</p> <p>The following parameter are defined in GSM 03.60</p> <p><precedence> A numeric parameter which specifies the precedence class <u>0</u> QOS precedence class subscribed value 1..3 QOS precedence class</p> <p><delay> A numeric parameter which specifies the delay class <u>0</u> QOS delay class subscribed value 1..4 QOS delay class</p> <p><reliability> A numeric parameter which specifies the reliability class 0 QOS reliability class subscribed value 1..5 QOS reliability class; default value: <u>3</u></p> <p><peak> A numeric parameter which specifies the peak throughput class <u>0</u> QOS peak throughput class subscribed value 1..9 QOS peak throughput class</p>

	<mean>	A numeric parameter which specifies the mean throughput class 0 QOS mean throughput class subscribed value 1..18 QOS mean throughput class 31 QOS mean throughput class best effort
Parameter Saving Mode	AUTO_SAVE	
Max Response Time	-	
Reference	Note	

7.2.5 AT+CGACT PDP Context Activate or Deactivate

AT+CGACT PDP Context Activate or Deactivate	
Test Command AT+CGACT=?	Response +CGACT: (list of supported <state>s) OK Parameters See Write Command
Read Command AT+CGACT?	Response +CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid>,<state>...] OK Parameters See Write Command
Write Command AT+CGACT=<state>[,<cid>]	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.
Parameter Saving Mode	NO_SAVE
Max Response	150 seconds

Time	
Reference	<p>Note</p> <ul style="list-style-type: none"> ● This command is used to test PDPs with network simulators. Successful activation of PDP on real network is not guaranteed. ● Refer to AT+CGDATA clarification for more information.

7.2.6 AT+CGDATA Enter Data State

AT+CGDATA Enter Data State	
<p>Test Command</p> <p>AT+CGDATA=?</p>	<p>Response</p> <p>+CGDATA: list of supported <L2P>s</p> <p>OK</p> <p>Parameter</p> <p>See Write Command</p>
<p>Write Command</p> <p>AT+CGDATA=<L2P>[,<cid>]</p>	<p>Response</p> <p>CONNECT</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p><L2P> A string parameter (string should be included in quotation marks) that indicates the layer 2 protocol to be used between the TE and MT: "PPP" Point to Point protocol for a PDP such as IP Other values are not supported and will result in an ERROR response to the execution Command.</p> <p><cid> A numeric parameter which specifies a particular PDP context definition (see +CGDCONT Command)</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
Reference	Note

7.2.7 AT+CGPADDR Show PDP Address

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

Write Command AT+CGPADDR= <cid>	Response +CGPADDR: <cid>,<PDP_addr> [<CR><LF>+CGPADDR: <cid>,<PDP_addr>[...]] OK ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Write command returns address provided by the network if a connection has been established.

7.2.8 AT+CGCLASS GPRS Mobile Station Class

AT+CGCLASS GPRS Mobile Station Class	
Test Command AT+CGCLASS= ?	Response +CGCLASS: (list of supported <class>s) OK
	Parameter See Write Command
Read Command AT+CGCLASS?	Response +CGCLASS: <class> OK
	Parameter See Write Command
Write Command AT+CGCLASS= <class>	Response OK ERROR If error is related to ME functionality: +CME ERROR: <err>
	Parameter <class> A string parameter(string should be included in quotation marks) which indicates the GPRS mobile class (in descending order of functionality)

	<p>B Class-B mode of operation (A/Gb mode), (not applicable in Iu mode) MT would operate PS and CS services but not simultaneously</p> <p>CG Class C in GPRS only mode</p> <p>CC Class C in circuit switched only mode (lowest)</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note It only supports Class B, CG and CC.

7.2.9 AT+CGEREP Control Unsolicited GPRS Event Reporting

AT+CGEREP Control Unsolicited GPRS Event Reporting	
Test Command AT+CGEREP=?	<p>Response +CGEREP: (list of supported <mode>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CGEREP?	<p>Response +CGEREP: <mode></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CGEREP=<mode>	<p>Response OK ERROR</p> <p>Parameters <mode></p> <p style="padding-left: 40px;">0 Disable event reporting. 1 Enable event reporting.</p> <p>Unsolicited Result Codes supported: +CGEV: NW DEACT <PDP_type>,<PDP_addr>[,<cid>] +CGEV: ME DEACT <PDP_type>,<PDP_addr>[,<cid>] +CGEV: NW DETACH +CGEV: ME DETACH</p> <p>Parameters <PDP_type> Packet Data Protocol type (see +CGDCONT</p>

	Command) <PDP_addr> Packet Data Protocol address (see +CGDCONT Command) <cid> Context Id (see +CGDCONT Command)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

7.2.10 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>] OK If error is related to ME functionality: +CME ERROR: <err> Parameters See Write Command
Write Command AT+CGREG=[<n>]	Response OK ERROR Parameters <n> 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code 2 Enable network registration and location information unsolicited result code +CGREG:<stat> 2 Enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>] <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

	<p>searching an operator to register to. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available.</p> <p>3 Registration denied, The GPRS service is disabled, the UE is not allowed to attach for GPRS if it is requested by the user.</p> <p>4 Unknown</p> <p>5 Registered, roaming</p> <p><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)</p> <p><ci> String type (string should be included in quotation marks); two bytes cell ID in hexadecimal format</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	Note

7.2.11 AT+CGSMS Select Service for MO SMS Messages

AT+CGSMS Select Service for MO SMS Messages	
Test Command AT+CGSMS=?	<p>Response</p> <p>+CGSMS: (list of currently available <service>s)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CGSMS?	<p>Response</p> <p>+CGSMS: <service></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CGSMS=<service>	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p><service> A numeric parameter which indicates the service or service preference to be used</p> <p>0 Packet Domain</p> <p>1 Circuit switched</p>

	<p>2 Packet Domain preferred (use circuit switched if GPRS not available)</p> <p>3 Circuit switched preferred (use Packet Domain if circuit switched not available)</p>
Parameter Saving Mode	AUTO_SAVE
Max Response Time	-
Reference	Note

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8 AT Commands for TCPIP Application Toolkit

8.1 Overview

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

AT+CIPTKA

Set TCP keepalive parameters

8.2 Detailed Descriptions of Commands

8.2.1 AT+CIPMUX Start Up Multi-IP Connection

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

8.2.2 AT+CIPSTART Start Up TCP or UDP Connection

AT+CIPSTART Start Up TCP or UDP Connection	
Test Command AT+CIPSTART=?	Response 1) If AT+CIPMUX=0 +CIPSTART: (list of supported <mode>),(<IP address>),(<port>) +CIPSTART: (list of supported <mode>),(<domain name>),(<port>) OK 2) If AT+CIPMUX=1

	<p>+CIPSTART: (list of supported <n>),(list of supported <mode>),(<IP address>),(<port>) +CIPSTART: (list of supported <n>),(list of supported <mode>),(<domain name>),(<port>)</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command</p> <p>1)If single IP connection (+CIPMUX=0) AT+CIPSTART= <mode>,<IP address>,<port> Or AT+CIPSTART= <mode>,<domain name>,<port></p> <p>2)If multi-IP connection (+CIPMUX=1) AT+CIPSTART= <n>,<mode>,<address>,<port> AT+CIPSTART= <n>,<mode>,<domain name>,<port></p>	<p>Response</p> <p>1)If single IP connection (+CIPMUX=0) If format is right response OK otherwise response If error is related to ME functionality: +CME ERROR <err> Response when connection exists ALREADY CONNECT Response when connection is successful CONNECT OK Otherwise STATE: <state></p> <p>CONNECT FAIL</p> <p>2)If multi-IP connection (+CIPMUX=1) If format is right OK, otherwise response If error is related to ME functionality: +CME ERROR <err> Response when connection exists <n>,ALREADY CONNECT If connection is successful <n>,CONNECT OK Otherwise <n>,CONNECT FAIL</p> <p>Parameters</p> <p><n> 0..5 A numeric parameter which indicates the connection number</p> <p><mode> A string parameter which indicates the connection type "TCP" Establish a TCP connection "UDP" Establish a UDP connection</p> <p><IP address> A string parameter which indicates remote server IP address</p> <p><port> Remote server port</p>

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

8.2.3 AT+CIPSEND Send Data Through TCP or UDP Connection

AT+CIPSEND Send Data Through TCP or UDP Connection	
Test Command	Response
AT+CIPSEND=?	1) For single IP connection (+CIPMUX=0) +CIPSEND: <length>

	<p>OK</p> <p>2) For multi IP connection (+CIPMUX=1) +CIPSEND: (0-5),<length></p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Read Command AT+CIPSEND?</p>	<p>Response</p> <p>1) For single IP connection (+CIPMUX=0) +CIPSEND: <size></p> <p>OK</p> <p>2) For multi IP connection (+CIPMUX=1) +CIPSEND: <n>,<size></p> <p>OK</p> <p>Parameters <n> A numeric parameter which indicates the connection number <size> A numeric parameter which indicates the data length sent at a time</p>
<p>Write Command</p> <p>1) If single IP connection (+CIPMUX=0) AT+CIPSEND=<length></p> <p>2) If multi IP connection (+CIPMUX=1) AT+CIPSEND=<n>[,<length>]</p>	<p>Response</p> <p>This Command is used to send changeable length data</p> <p>If single IP is connected (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: +CME ERROR <err></p> <p>If sending is successful: When +CIPQSEND=0 SEND OK</p> <p>When +CIPQSEND=1 DATA ACCEPT:<length></p> <p>If sending fails: SEND FAIL</p> <p>If multi IP connection is established (+CIPMUX=1) If connection is not established or module is disconnected: If error is related to ME functionality: +CME ERROR <err></p> <p>If sending is successful: When +CIPQSEND=0 <n>,SEND OK</p> <p>When +CIPQSEND=1 DATA ACCEPT:<n>,<length></p> <p>If sending fails: <n>,SEND FAIL</p>

	<p>Parameters</p> <p><n> A numeric parameter which indicates the connection number</p> <p><length> A numeric parameter which indicates the length of sending data, it must be less than <size></p>
<p>Execution Command</p> <p>AT+CIPSEND response">", then type data for send, tap CTRL+Z to send, tap ESC to cancel the operation</p>	<p>Response</p> <p>This Command is used to send changeable length data.</p> <p>If single IP connection is established (+CIPMUX=0)</p> <p>If connection is not established or module is disconnected: If error is related to ME functionality: +CME ERROR <err></p> <p>If sending is successful: When +CIPQSEND=0 SEND OK When +CIPQSEND=1 DATA ACCEPT:<length></p> <p>If sending fails: SEND FAIL</p> <p>Note</p> <p>This Command can only be used in single IP connection mode (+CIPMUX=0) and to send data on the TCP or UDP connection that has been established already. Ctrl-Z is used as a termination symbol. ESC is used to cancel sending data. There are at most <size> bytes which can be sent at a time.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	When +CIPQSEND=0 and the remote server no response, after 645 seconds, "CLOSE" will be reported.
Reference	<p>Note</p> <ul style="list-style-type: none"> ● The data length which can be sent depends on network status. ● Set the time that send data automatically with the Command of AT+CIPATS. ● Only send data at the status of established connection.

8.2.4 AT+CIPQSEND Select Data Transmitting Mode

AT+CIPQSEND Select Data Transmitting Mode	
<p>Test Command</p> <p>AT+CIPQSEND=?</p>	<p>Response</p> <p>+CIPQSEND: (0,1)</p> <p>OK</p>
	Parameters

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

8.2.5 AT+CIPACK Query Previous Connection Data Transmitting State

AT+CIPACK Query Previous Connection Data Transmitting State	
Test Command AT+CIPACK=?	Response OK
Write Command If in multi IP connection (+CIPMUX=1) AT+CIPACK=<n>	Response +CIPACK: <txlen>, <acklen>, <nacklen> OK
	Parameters <n> A numeric parameter which indicates the connection number <txlen> The data amount which has been sent <acklen> The data amount confirmed successfully by the server <nacklen> The data amount without confirmation by the server
Execution Command If in single IP connection (+CIPMUX=0) AT+CIPACK	Response +CIPACK: <txlen>, <acklen>, <nacklen> OK
	Parameters See Write Command
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note

8.2.6 AT+CIPCLOSE Close TCP or UDP Connection

AT+CIPCLOSE Close TCP or UDP Connection	
Test Command AT+CIPCLOSE=?	Response OK
Write Command 1) If single IP connection (+CIPMUX=0) AT+CIPCLOSE=<n> 2) If multi IP connection (+CIPMUX=1) AT+CIPCLOSE=<id>,<n>	Response: 1) For single IP connection (+CIPMUX=0) CLOSE OK 2) For multi IP connection (+CIPMUX=1) <id>, CLOSE OK
Parameters AT+CIPCLOSE=<n> 2) If multi IP connection (+CIPMUX=1) AT+CIPCLOSE=<id>,<n>	Parameters <n> 0 Slow close 1 Quick close <id> A numeric parameter which indicates the connection number
Execution Command AT+CIPCLOSE	Response If close is successfully: CLOSE OK If close fails: ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note AT+CIPCLOSE only closes connection at corresponding status of TCP/UDP stack. To see the status use AT+CIPSTATUS command. Status should be: TCP CONNECTING, UDP CONNECTING, SERVER LISTENING or CONNECT OK in single-connection mode (see <state> parameter); CONNECTING or CONNECTED in multi-connection mode (see <client state>); OPENING or LISTENING in multi-connection mode (see <server state>). Otherwise it will return ERROR".

8.2.7 AT+CIPSHUT Deactivate GPRS PDP Context

AT+CIPSHUT Deactivate GPRS PDP Context	
Test Command AT+CIPSHUT=?	Response OK
Execution Command AT+CIPSHUT	Response If close is successful: SHUT OK If close fails: ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	65 seconds
Reference	Note <ul style="list-style-type: none"> ● If this command is executed in multi-connection mode, all of the IP connection will be shut. ● User can close gprs pdp context by AT+CIPSHUT. After it is closed, the status is IP INITIAL. ● If "+PDP: DEACT" urc is reported which means the gprs is released by the network, then user still needs to execute "AT+CIPSHUT" command to make PDP context come back to original state.

8.2.8 AT+CLPORT Set Local Port

AT+CLPORT Set Local Port	
Test Command AT+CLPORT=?	Response 1) For single IP connection (+CIPMUX=0) +CLPORT: ("TCP","UDP"),(0-65535) OK 2) For multi IP connection (+CIPMUX=1) +CLPORT: (0-5),("TCP","UDP"),(0-65535) OK
	Parameters See Write Command
Read Command AT+CLPORT?	Response 1) For single IP connection (+CIPMUX=0) +CLPORT: <TCP port>,<UDP port> OK 2) For multi IP connection (+CIPMUX=1) +CLPORT: 0,<TCP port>,<UDP port>

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

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

AT+CSSTT Start Task and Set APN, USER NAME, PASSWORD	
Test Command AT+CSSTT=?	<p>Response +CSSTT: "APN","USER","PWD"</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CSSTT?	<p>Response +CSSTT: <apn>,<user name>,<password></p> <p>OK</p> <p>Parameters See Write Command</p>

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

8.2.10 AT+CIICR Bring Up Wireless Connection with GPRS or CSD

AT+CIICR Bring Up Wireless Connection with GPRS or CSD	
Test Command AT+CIICR=?	Response OK
Execution Command AT+CIICR	Response OK ERROR
Parameter Saving Mode	NO_SAVE
Max Response Time	85 seconds
Reference	Note <ul style="list-style-type: none"> ● AT+CIICR only activates moving scene at the status of IP START, after operating this Command is executed, the state will be changed to IP CONFIG. ● After module accepts the activated operation, if it is activated successfully, module state will be changed to IP GPRSACT, and it responds OK, otherwise it will respond ERROR.

8.2.11 AT+CIFSR Get Local IP Address

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

8.2.12 AT+CIPSTATUS Query Current Connection Status

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

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

Time	
Reference	Note

8.2.13 AT+CDNSCFG Configure Domain Name Server

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

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

AT+CDNSGIP Query the IP Address of Given Domain Name	
Test Command AT+CDNSGIP=?	Response OK
Write Command AT+CDNSGIP=<domain name>	Response OK ERROR

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

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

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

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

8.2.16 AT+CIPATS Set Auto Sending Timer

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

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

AT+CIPSPRT Set Prompt of '>' When Module Sends Data	
Test Command AT+CIPSPRT=?	Response +CIPSPRT: (list of supported <send prompt>s) OK
	Parameters See Write Command
Read Command AT+CIPSPRT?	Response +CIPSPRT: <send prompt> OK
	Parameters See Write Command
Write Command AT+CIPSPRT=<send prompt>	Response OK ERROR
	Parameters <send prompt> A numeric parameter which indicates whether to echo prompt '>' after module issues AT+CIPSEND command. <ul style="list-style-type: none"> 0 It shows "send ok" but does not prompt echo '>' when sending is successful. <u>1</u> It prompts echo '>' and shows "send ok" when sending is successful. 2 It neither prompts echo '>' nor shows "send ok" when sending is successful.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.18 AT+CIPSERVER Configure Module as Server

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

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

8.2.19 AT+CIPCSGP Set CSD or GPRS for Connection Mode

AT+CIPCSGP Set CSD or GPRS for Connection Mode	
Test Command AT+CIPCSGP=?	Response +CIPCSGP:0-CSD,DIALNUMBER,USER NAME,PASSWORD,RATE(0-3) +CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD OK Parameters See Write Command
Read Command AT+CIPCSGP?	Response +CIPCSGP: <mode>, <apn>, <user name>, <password>[,<rate>] OK Parameters See Write Command
Write Command AT+CIPCSGP=< mode>],	Response OK ERROR

<p>(<apn>,<user name>, <password>),(<dial number>,<user name>,<password>,<rate>)]</p>	<p>Parameters</p> <p><mode> A numeric parameter which indicates the wireless connection mode</p> <p>0 set CSD as wireless connection mode</p> <p><u>1</u> set GPRS as wireless connection mode</p> <p>GPRS parameters:</p> <p><apn> A string parameter which indicates the access point name</p> <p><user name> A string parameter which indicates the user name</p> <p><password> A string parameter which indicates the password CSD parameters:</p> <p><dial number> A string parameter which indicates the CSD dial numbers</p> <p><user name> A string parameter which indicates the CSD user name</p> <p><password> A string parameter which indicates the CSD password</p> <p><rate> A numeric parameter which indicates the CSD connection rate</p> <p>0 2400</p> <p>1 4800</p> <p><u>2</u> 9600</p> <p>3 14400</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p>Note</p>

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

<p>AT+CIPSRIP Show Remote IP Address and Port When Received Data</p>	
<p>Test Command AT+CIPSRIP=?</p>	<p>Response</p> <p>+CIPSRIP: (list of supported <mode>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Read Command AT+CIPSRIP?</p>	<p>Response</p> <p>+CIPSRIP: <mode></p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+CIPSRIP=<mode></p>	<p>Response</p> <p>OK</p> <p>ERROR</p>

	<p>Parameters</p> <p><mode> A numeric parameter which shows remote IP address and port.</p> <p><u>0</u> Do not show the prompt</p> <p>1 Show the prompt, the format is as follows:</p> <p>1) For single IP connection (+CIPMUX=0) +RECV FROM:<IP ADDRESS>:<PORT></p> <p>1) For multi IP connection (+CIPMUX=1) +RECEIVE,<n>,<data length>,<IP ADDRESS>:<PORT></p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	

8.2.21 AT+CIPDPPD Set Whether to Check State of GPRS Network Timing

AT+CIPDPPD Set Whether to Check State of GPRS Network Timing	
Test Command AT+CIPDPPD=?	<p>Response</p> <p>+CIPDPPD: (list of supported<mode>s, list of supported <interval>, list of supported <timer>)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+CIPDPPD?	<p>Response</p> <p>+CIPDPPD: <mode>, <interval>, <timer></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+CIPDPPD=<mode>[,<interval>,<timer>]	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Parameters</p> <p><mode></p> <p>0 Not set detect PDP</p> <p><u>1</u> Set detect PDP</p> <p><interval></p> <p>1<=interval<=180(s), default value is 10.</p> <p><timer></p> <p>1<=timer<=10, default value is 3.</p>

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note If "+PDP: DEACT" urc is reported because of module not attaching to gprs for a certain time or other reasons, user still needs to execute "AT+CIPSHUT" command makes PDP context come back to original state.

8.2.22 AT+CIPMODE Select TCPIP Application Mode

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

8.2.23 AT+CIPCCFG Configure Transparent Transfer Mode

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

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

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

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

Test Command AT+CIPSHOWTP =?	Response +CIPSHOWTP: (list of supported <mode>s) OK
	Parameters See Write Command
Read Command AT+CIPSHOWTP ?	Response +CIPSHOWTP: <mode> OK
	Parameters See Write Command
Write Command AT+CIPSHOWTP =<mode>	Response OK ERROR Parameters <mode> A numeric parameter which indicates whether to display transfer protocol in IP header to received data or not 0 Not display transfer protocol 1 Display transfer protocol, the format is "+IPD, <data size>,<TCP/UDP>:<data>"
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> ● This command will be effective only in single connection mode (+CIPMUX=0). ● Only when +CIPHEAD is set to 1, the setting of this command will work.

8.2.25 AT+CIPUDPMODE UDP Extended Mode

AT+CIPUDPMODE UDP Extended Mode	
Test Command AT+CIPUDPMOD E=?	Response 1) For single IP connection (+CIPMUX=0) +CIPUDPMODE: (0-2),("0-255).(0-255).(0-255).(0-255)",(1-65535) OK 2) For multi IP connection (+CIPMUX=1) +CIPUDPMODE: (0-5),(0-2),("0-255).(0-255).(0-255).(0-255)",(1-65535) OK
	Parameters

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

8.2.26 AT+CIPRXGET Get Data from Network Manually

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

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

	<p>+CIPRXGET: 3,<id>,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>] 5151... OK if <mode>=4 +CIPRXGET: 4, <id>,<cnflength></p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p>
	<p>Parameters</p> <p><mode></p> <ul style="list-style-type: none"> 0 Disable getting data from network manually, the module is set to normal mode, data will be pushed to TE directly. 1 Enable getting data from network manually. 2 The module can get data, but the length of output data can not exceed 1460 bytes at a time. 3 Similar to mode 2, but in HEX mode, which means the module can get 730 bytes maximum at a time. 4 Query how many data are not read with a given ID. <p><id> A numeric parameter which indicates the connection number</p> <p><reqlength> Requested number of data bytes (1-1460 bytes) to be read</p> <p><cnflength> Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note To enable this function, parameter <mode> must be set to 1 before connection.

8.2.27 AT+CIPSCONT Save TCPIP Application Context

AT+CIPSCONT Save TCPIP Application Context	
Read Command AT+CIPSCONT ?	<p>Response</p> <p>TA returns TCPIP Application Context, which consists of the following AT Command parameters.</p> <p>+CIPSCONT: <mode0> +CIPCSGP: <mode> Gprs Config APN: <apn> Gprs Config UserId: <user name></p>

	<p>Gprs Config Password: <password> +CIPHEAD: <mode> +CIPSHOWTP: <mode> +CIPSRIP: <mode> +CIPATS: <mode>,<time> +CIPSPRT: <send prompt>,<notshowsendok> +CIPQSEND: <n> +CIPMODE: <mode> +CIPCCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>,<Rxmode>,<RxSize>,<Rxtimer> +CIPMUX: <n> +CIPDPDP: <mode>,<interval>,<timer> +CIPRXGET: <mode> +CIPRDTIMER: <rdsigtimer>,<rdmuxtimer></p> <p>OK</p> <p>Parameters</p> <p><mode0> 0 Saved, the value from NVRAM 1 Unsaved, the value from RAM</p> <p>For other parameters, see the related command.</p>
Execution Command AT+CIPSCONT	<p>Response</p> <p>Module saves current TCPIP Application Contexts to NVRAM. When system is rebooted, the parameters will be loaded automatically.</p> <p>OK</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

8.2.28 AT+CIPRDTIMER Set Remote Delay Timer

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

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

8.2.29 AT+CIPSGTXT Select GPRS PDP context

AT+CIPSGTXT	Select GPRS PDP context
Test Command AT+CIPSGTXT=?	Response +CIPSGTXT: (0,1) OK
	Parameters See Write Command
Write Command AT+CIPSGTXT=<mode>	Response OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <mode> <u>0</u> Select first PDP context 1 Select second PDP context
Parameter Saving Mode	NO_SAVE
Max Response Time	-

Reference	Note This command is used to select pdp context, only for multi IP connection (+CIPMUX=1).
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8.2.30 AT+CIPTKA Set TCP Keepalive Parameters

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

9 AT Commands for IP Application

9.1 Overview

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

9.2 Detailed Descriptions of Commands

9.2.1 AT+SAPBR Bearer Settings for Applications Based on IP

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

	<p>0 Bearer is connecting 1 Bearer is connected 2 Bearer is closing 3 Bearer is closed</p> <p><ConParamTag> Bearer parameter</p> <p>"CONTYPE" Type of Internet connection. Value refer to</p> <p><ConParamValue_ConType></p> <p>"APN" Access point name string: maximum 64 characters</p> <p>"USER" User name string: maximum 32 characters "PWD" Password string: maximum 32 characters "PHONENUM" Phone number for CSD call "RATE" CSD connection rate. For value refer to <ConParamValue_Rate></p> <p><ConParamValue> Bearer parameter value</p> <p>If <ConParamValue_ConType> is "APN", the default value of <ConParamValue> is "object-connected.fr".</p> <p><ConParamValue_ConType></p> <p>"CSD" Circuit-switched data call. "GPRS" GPRS connection.</p> <p><ConParamValue_Rate></p> <p>0 2400 1 4800 2 9600 3 14400</p> <p><IP_Addr> The IP address of bearer</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	When <cmd_type> is 1, 85 seconds When <cmd_type> is 0, 65 seconds
Reference	Note This command is applied to activate some applications such as HTTP, FTP.

10 AT Commands for PING Support

10.1 Overview

Command	Description
AT+CIPPING	Ping request
AT+CIPCTL	Set the mode when receiving an IP packet
AT+CIPFLT	Set the rules of IP filter
AT+CIPBEIPING	Set the module to be PING or not

10.2 Detailed Descriptions of Commands

10.2.1 AT+CIPPING PING Request

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

	<p>Parameters</p> <p><IPAddr> Address of the remote host,string type.This parameter can be either: - IP address in the format:”xxx.xxx.xxx.xxx” - Host name solved by a DNS query</p> <p><retryNum> The number of Ping Echo Request to send 1-100 Default: 4</p> <p><dataLen> The length of Ping Echo Request data 0-1024 Default: 32</p> <p><timeout> The timeout,in units of 100 ms,waiting for a single Echo Reply 1-600 Default: 100(10 seconds)</p> <p><ttl> Time to live 1-255 Default: 64</p> <p><replyId> Echo Reply number</p> <p><IP Address> IP Address of the remote host</p> <p><replyTime> Time,in units of 100 ms, required to receive the response</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● Before sending PING Request the GPRS context must be activated. ● When the Echo Request timeout expires (no reply received on time), the response will contains <replyTime> setting to 600 and <ttl> setting to 255. ● When executing this command, if PDP context is deactivated for some reasons, such as out of service, etc., the “+PDP: DEACT” URC is reported and the command will end immediately.

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

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

		+CME ERROR: <err>
		<p>Parameters</p> <p><action> 0 Remove the rule specified by <item>. <item> must be given.</p> <p> 1 Add the rule specified by <item>. If <item> is not given, it can find an empty item automatically. <ipAddr> and <mask> must be given.</p> <p> 2 Delete all of rules</p> <p><item> The item of IP filter rule</p> <p> 1-20</p> <p><ipAddr> Remote IP address,string type. It can be any valid IP address in the format of "xxx.xxx.xxx.xxx"</p> <p><mask> Mask to be applied to the<ipAddr>,string type. It can be any valid IP address mask in the format of "xxx.xxx.xxx.xxx"</p>
Parameter Saving Mode		NO_SAVE
Max Response Time		-
Reference		<p>Note</p> <ul style="list-style-type: none"> When a packet comes from the IP address <coming_IP>, All rules will be scanned to match the following criterion: $\text{<coming_IP> \& \<mask> = \<ipAddr> \& \<mask>}$ If the criterion is matched, the IP packet will be accepted and the rule scan is finished. If the criterion is not matched, the IP packet will be ignored. The rule is stored in non volatile memory.

10.2.4 AT+CIPBEIPING Set the Module to be PING or Not

AT+CIPBEIPING Set the Module to be PING or Not	
<p>Test Command</p> <p>AT+CIPBEIPING=?</p>	<p>Response</p> <p>+CIPBEIPING: (0,1)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
<p>Read Command</p> <p>AT+CIPBEIPING?</p>	<p>Response</p> <p>+CIPBEIPING: <mode></p>

	OK
	Parameters See Write Command
Write Command AT+CIPBEIPING= <mode>	Response OK or ERROR or +CME ERROR: <err>
	Parameters <mode> <u>0</u> Disable the module to be PING. 1 Enable the module to be PING.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> ● If the user want the module can be PING by other device, the user must excute the AT+CIPBEIPING=1 before the module is PING. ● Part of the projects supported by this AT command, please refer to chapter 21 for details.

11 AT Commands for HTTP Application

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

11.1 Overview

Command	Description
AT+HTTPIPINIT	Initialize HTTP service
AT+HTTPIPTERM	Terminate HTTP service
AT+HTTPIP PARA	Set HTTP parameters value
AT+HTTPIP DATA	Input HTTP data
AT+HTTPIP ACTION	HTTP method action
AT+HTTPIP READ	Read the HTTP server response
AT+HTTPIP SCONT	Save HTTP application context
AT+HTTPIP STATUS	Read HTTP status
AT+HTTPIP HEAD	Read the HTTP header information of server response

11.2 Detailed Descriptions of Commands

11.2.1 AT+HTTPIPINIT Initialize HTTP Service

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

HTTPINIT should first be executed to initialize the HTTP service.

11.2.2 AT+HTTPTERM Terminate HTTP Service

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

11.2.3 AT+HTTTPARA Set HTTP Parameters Value

AT+HTTTPARA Set HTTP Parameters Value	
Test Command AT+HTTTPARA=?	Response +HTTTPARA: "HTTTPParamTag","HTTTParmValue" OK Parameters See Write Command
Read Command AT+HTTTPARA?	Response +HTTTPARA: <HTTTPParamTag>,<HTTTParmValue> OK Parameters See Write Command
Write Command AT+HTTTPARA=<HTTTPParamTag>,<HTTTParmValue>	Response OK If error is related to ME functionality: +CME ERROR: <err> Parameters

<HTTPParamTag>	<p>HTTP Parameter</p> <p>"CID" (Mandatory Parameter) Bearer profile identifier</p> <p>"URL" (Mandatory Parameter) HTTP client URL <code>"http://server'/path':tcpPort' "</code> "server": FQDN or IP-address "path": path of file or directory "tcpPort": default value is 80. Refer to "IETF-RFC 2616".</p> <p>"UA" The user agent string which is set by the application to identify the mobile. Usually this parameter is set as operation system and software version information. Default value is "SIMCom_MODULE".</p> <p>"PROIP" The IP address of HTTP proxy server</p> <p>"PROPORT" The port of HTTP proxy server</p> <p>"REDIR" This flag controls the redirection mechanism of the Heracles when it is acting as HTTP client (numeric). If the server sends a redirect code (range 30x), the client will automatically send a new HTTP request when the flag is set to (1). Default value is 0 (no redirection).</p> <p>"BREAK" Parameter for HTTP method "GET", used for resuming broken transfer.</p> <p>"BREAKEND" Parameter for HTTP method "GET", used for resuming broken transfer. which is used together with "BREAK", If the value of "BREAKEND" is bigger than "BREAK", the transfer scope is from "BREAK" to "BREAKEND". If the value of "BREAKEND" is smaller than "BREAK", the transfer scope is from "BREAK" to the end of the file.</p> <p>"TIMEOUT" If both "BREAKEND" and "BREAK" are 0, the resume broken transfer function is disabled. HTTP session timeout value, scope: 30-1000 second. Default value is 120 seconds. HTTP Parameter value. Type and supported content depend on related <HTTPParamTag>.</p> <p>"CONTENT" Used to set the "Content-Type" field in HTTP header.</p> <p>"USERDATA" User data</p>
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	<HTTPParamValue> HTTP Parameter value. Type and supported content depend on related <HTTPParamTag> .
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note Not all the HTTP Server supports "BREAK" and "BREAKEND" parameters

11.2.4 AT+HTTPDATA Input HTTP Data

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

11.2.5 AT+HTTPACTION HTTP Method Action

AT+HTTPACTION HTTP Method Action	
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<p>Test Command AT+HTTPACTION=?</p>	<p>Response +HTTPACTION: (0-3)</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+HTTPACTION=<Method></p>	<p>Response OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Unsolicited Result Code +HTTPACTION: <Method>,<StatusCode>,<DataLen></p> <p>Parameters</p> <p><Method> HTTP method specification:</p> <ul style="list-style-type: none"> 0 GET 1 POST 2 HEAD 3 DELETE <p><StatusCode> HTTP Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616)</p> <ul style="list-style-type: none"> 100 Continue 101 Switching Protocols 200 OK 201 Created 202 Accepted 203 Non-Authoritative Information 204 No Content 205 Reset Content 206 Partial Content 300 Multiple Choices 301 Moved Permanently 302 Found 303 See Other 304 Not Modified 305 Use Proxy 307 Temporary Redirect 400 Bad Request 401 Unauthorized 402 Payment Required 403 Forbidden 404 Not Found 405 Method Not Allowed

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

11.2.6 AT+HTTPREAD Read the HTTP Server Response

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

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

11.2.7 AT+HTTPSCONT Save HTTP Application Context

<p>AT+HTTPSCONT Save HTTP Application Context</p>	
<p>Read Command AT+HTTPSCONT?</p>	<p>Response</p> <p>TA returns HTTP Application Context, which consists of the following AT Command parameters.</p> <p>+HTTPSCONT:<mode> CID:<value> URL: <value></p>

	<p>UA: <value> PROIP: <value> PROPORT: <value> REDIR: <value> BREAK: <value> BREAKEND: <value> USERDATA: <value></p> <p>OK</p> <p>Parameters</p> <p><mode> 0 Saved, the value from NVRAM 1 Unsaved, the value from RAM</p> <p>For other parameters, see the related command.</p>
<p>Execution Command AT+HTTPSCONT</p>	<p>Response</p> <p>TA saves HTTP Application Context which consists of following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically.</p> <p>OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p>Note</p> <p>This command can only be used after run AT+HTTPINIT.</p>

11.2.8 AT+HTTPSTATUS Read HTTP Status

AT+HTTPSTATUS Read HTTP Status	
<p>Test Command AT+HTTPSTATUS=?</p>	<p>Response OK</p>

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

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

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

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

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12 AT Commands for FTP Application

Heracles 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.

12.1 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+FTPSCONT	Save FTP application context
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+FTPTRMD	Remove directory on the remote machine
AT+FTPLIST	List contents of directory on the remote machine
AT+FTPGETTOFS	Download file and save in file system
AT+FTPPUTFRMFS	Upload file from file system
AT+FTPEXTGET	Extend download file
AT+FTPFILEPUT	Load file in RAM from file system then upload with FTPPUT
AT+FTPQUIT	Quit current FTP session

12.2 Detailed Descriptions of Commands

12.2.1 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.

12.2.2 AT+FTPMODE Set Active or Passive FTP Mode

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

=<value>	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

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

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

12.2.4 AT+FTPPUTOPT Set FTP Put Type

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

12.2.5 AT+FTPCID Set FTP Bearer Profile Identifier

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

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

12.2.6 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

12.2.7 AT+FTPSERV Set FTP Server Address

AT+FTPSERV Set FTP Server Address	
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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

12.2.8 AT+FTPUN Set FTP User Name

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

	<p>If error is related to ME functionality: +CME ERROR: <err></p>
	<p>Parameters <value> Alphanumeric ASCII text string up to 49 characters.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

12.2.9 AT+FTPPW Set FTP Password

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

12.2.10 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

12.2.11 AT+FTPGETPATH Set Download File Path

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

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

12.2.12 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

12.2.13 AT+FTPPUTPATH Set Upload File Path

AT+FTPPUTPATH Set Upload File Path	
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Test Command AT+FTPPUTPA TH=?	Response OK
Read Command AT+FTPPUTPA TH?	Response +FTPPUTPATH: <value> OK
	Parameters See Write Command
Write Command AT+FTPPUTPA TH=<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

12.2.14 AT+FTPGET Download File

AT+FTPGET Download File	
Test Command AT+FTPGET=?	Response OK
Write Command AT+FTPGET=< mode>[,<reqleng th>]	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:

	<p>+FTPGET: 2,<cnflength> 012345678... OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><mode> 1 For opening FTP get session 2 For reading FTP download data.</p> <p><reqlength> Requested number of data bytes (1-1460) to be read</p> <p><cnflength> Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read.</p> <p><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 86 Manual quit</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	<p>Note</p> <p>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.</p>

12.2.15 AT+FTPPUT Set Upload File

AT+FTPPUT Set Upload File	
Test Command	Response
AT+FTPPUT=?	OK

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

12.2.16 AT+FTPSCONT Save FTP Application Context

<p>AT+FTPSCONT Save FTP Application Context</p>	
<p>Read Command</p>	<p>Response</p>

<p>AT+FTPSCONT ?</p>	<p>TA returns FTP Application Context, which consists of the following AT Command parameters.</p> <p>+FTPSCONT:<mode> +FTPSERV: <value> +FTPPORT: <value> +FTPUN: <value> +FTPPW: <value> +FTPCID: <value> +FTPMODE: <value> +FTPTYPE: <value> +FTPPUTOPT: <value> +FTPREST: <value> +FTPGETNAME: <value> +FTPGETPATH: <value> +FTPPUTNAME: <value> +FTPPUTPATH: <value> +FTPTIMEOUT: <value> OK</p> <p>Parameters</p> <p><mode> 0 Saved, the value from NVRAM 1 Unsaved, the value from RAM</p> <p>For other parameters, see the related command.</p>
<p>Execution Command AT+FTPSCONT</p>	<p>Response</p> <p>TA saves FTP Application Context which consists of following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically.</p> <p>OK</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p>Note</p>

12.2.17 AT+FTPDELE Delete Specified File in FTP Server

<p>AT+FTPDELE Delete Specified File in FTP Server</p>	
<p>Test Command AT+FTPDELE=?</p>	<p>Response</p> <p>OK</p> <p>Parameters</p>

Execution Command AT+FTPDELE	Response If succeeded: 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.

12.2.18 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
Execution Command AT+FTPSIZE	Response If succeeded: OK +FTPSIZE: 1,0,<size> If failed: OK +FTPSIZE: 1,<error> 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.

12.2.19 AT+FTPSTATE Get the FTP State

AT+FTPSTATE Get the FTP State	
Test Command AT+FTPSTATE=?	Response OK
	Parameters
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

12.2.20 AT+FTPEXTPUT Extend Upload File

AT+FTPEXTPUT Extend Upload File	
Test Command AT+FTPEXTPUT=?	Response OK
Write Command AT+FTPEXTPUT=<mode>[,<pos>,<	Response If mode is 0 or 1 OK

len>,<timeout>]	<p>If mode is 2 +FTPEXTPUT: <pos>,<len> If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters <mode> 0 use default FTTPUT method 1 use extend FTTPUT method 2 download data which need to PUT to RAM <pos> data offset address 0-300k <len> data length 0-300k <timeout> timeout value of serial port 1000ms-1000000ms</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	<p>Note When extend FTTPUT mode is activated, input data then execute "AT+FTTPUT=1" to transmit, after session is complete, if successful, it returns "+FTTPUT: 1,0", otherwise it returns "+FTTPUT: 1,<error>", <error> see "AT+FTPGET".</p>

12.2.21 AT+FTPMKD Make Directory on the Remote Machine

AT+FTPMKD Make Directory on the Remote Machine	
Test Command AT+FTPMKD=?	Response OK
Execution Command AT+FTPMKD	<p>Response If success: OK +FTPMKD: 1,0</p> <p>If failed: OK +FTPMKD: 1,<error></p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters <error> See "AT+FTPGET"</p>
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.

12.2.22 AT+FTPRMD Remove Directory on the Remote Machine

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

12.2.23 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

		<p>If mode is 1 and it is a failed FTP get session: OK +FTPLIST: 1,<error></p> <p>If mode is 2: +FTPLIST: 2,<cnflength> 012345678... OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p>
		<p>Parameters</p> <p><mode></p> <ul style="list-style-type: none"> 1 For opening FTP get file list session 2 For reading FTP file list <p><reqlength> Requested number of data bytes (1-1460) to be read</p> <p><cnflength> Confirmed number of data bytes to be read, which may be less than <reqlength>. 0 indicates that no data can be read.</p> <p><error> See "AT+FTPGET"</p>
Parameter	Saving Mode	NO_SAVE
Max Time	Response Time	75 seconds(In case no response is received from server)
Reference		<p>Note</p> <p>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.</p>

12.2.24 AT+FTPGETTOFS Download File and Save in File System

AT+FTPGETTOFS Download File and Save in File System	
Test Command	Response
AT+FTPGETTOFS=?	OK
Read Command	Response
AT+FTPGETTOFS?	+FTPGETTOFS: <status>[,<receivedLength>,<writeLength>] OK
	<p>Parameters</p> <p><status> The process status of downloading and saving File to File System through FTP</p> <ul style="list-style-type: none"> 0 Not in the process 1 During the process <p><receivedLength> The data length received from FTP</p>

	<writeLength>	The data length saved in File System
Write Command AT+FTPGETTOFS=<loc>,<filename>[,<num>,<time>]	Response	<p>If it is a successful FTP get session: OK</p> <p>If data transfer finished. +FTPGETTOFS: 0,<totalLength></p> <p>If it is a failed FTP get session: OK +FTPGETTOFS: <error></p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><loc> file saved in ROM or SD card. 0 Saved in ROM, file will be saved in "Disk1:\user\ftp" 1 Saved in SD card, file will be saved in "Disk2:\ftp" Note: The local drive "Disk1" or SD drive "Disk2" can be got by AT+FSDRIVE.</p> <p><filename> File name. Alphanumeric ASCII text string up to 64 characters</p> <p><num> Number of automatic reconnect times, from 0 to 255.Default value is 3.</p> <p><time> Wait time before module start automatic reconnect, from 0 to 60 seconds.Default value is 5 seconds.</p> <p><totalLength> The total length of data bytes have been saved</p> <p><error> 85 An error related with file system. Other errors please see FTPGET.</p>
Parameter Saving Mode		NO_SAVE
Max Response Time		75 seconds(In case no response is received from server)
Reference	Note	<ul style="list-style-type: none"> ● Automatic reconnection will start at break point. ● File will be overwritten if you start this function twice with a same file name.

12.2.25 AT+FTPPUTFRMFS Upload File from File System.

AT+FTPPUTFRMFS Upload File from File System	
Test Command AT+FTPPUTFRMFS=?	Response OK

<p>Read Command AT+FTPPUTFR MFS?</p>	<p>Response +FTPPUTFRMFS: <status>[,<putLength>]</p> <p>OK</p> <p>Parameters <status> The process status of uploading File from File System through FTP 0 Not in the process 1 During the process <putLength> The data length uploaded from File System</p>
<p>Write Command AT+FTPPUTFR MFS=<filepath>[, <num>,<time>]</p>	<p>Response If it is a successful FTP put session: OK</p> <p>If data transfer finished. +FTPPUTFRMFS: 0,<totalLength></p> <p>If it is a failed FTP put session: OK +FTPPUTFRMFS: <error></p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters <filepath> File path. Alphanumeric ASCII text string up to 128 characters <num> Number of automatic reconnect times, from 0 to 255. Default value is 3. <time> Wait time before module start automatic reconnect, from 0 to 60 seconds. Default value is 5 seconds. <totalLength> The data length uploaded from File System <error> 85 An error related with file system. Other errors pls see FTPGET.</p>
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>75 seconds(In case no response is received from server)</p>
<p>Reference</p>	<p>Note Automatic reconnect will start at break point.</p>

12.2.26 AT+FTPEXTGET Extend Download File

<p>AT+FTPEXTGET Extend Download File</p>	
<p>Test Command AT+FTPEXTGE</p>	<p>Response OK</p>

T=?	
Read Command AT+FTPEXTGET T?	Response +FTPEXTGET: <status>[,<receivedLength>] OK Parameters <status> Whether run FTPEXTGET or not 0 Not run FTPEXTGET 1 Run FTPEXTGET <receivedLength> Length module has received from FTP server
Write Command 1)if mode is 0 or 1 AT+FTPEXTGET T=<mode> 2)if mode is 2 AT+FTPEXTGET T=<mode>,<filename> 3)if mode is 3 AT+FTPEXTGET T=<mode>,<readPosition>,<readLength>	Response If mode is 0 OK If it is a successful FTP get session in mode 1: OK If data transfer finished in mode 1 +FTPEXTGET: 1,0 If it is a failed FTP get session in mode 1: OK +FTPEXTGET: 1,<error> If mode is 2: +FTPEXTGET: 2,<totalLength> OK If mode is 3: +FTPEXTGET: 3,<outputLength> If error is related to ME functionality: +CME ERROR: <err>
	Parameters <mode> 0 Use default FTPGET method 1 Start extend FTPGET method 2 Save download data to filesystem 3 Output download data <filename> File name to write data in mode 2. Alphanumeric ASCII text string up to 64 characters. <readPosition> Position start read data in mode 3. <readLength> Read length in mode 3

	<p><totalLength> The total length of data bytes have been download</p> <p><outputLength> Total length will be output from serial port</p> <p><error> 85 An error related with file system. Other errors pls see FTPGET.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	<p>Note</p> <ul style="list-style-type: none"> ● Can not use this function when set FTPEXTPUT mode 1. ● If file size (<receivedLength>) <300Kbytes, customer can use this command. If file size (<receivedLength>) >=300Kbytes, please use default FTPGET method (AT+FTPEXTGET=0).

12.2.27 AT+FTPFILEPUT Load File in RAM from File System then Upolad with FTTPUT

AT+FTPFILEPUT Load File in RAM from File System then Upload with FTTPUT	
Test Command AT+FTPFILEPUT=?	Response OK
Write Command AT+FTPFILEPUT T=<mode>[,filename]	<p>Response</p> <p>If success: OK</p> <p>If error is related to ME functionality: +CME ERROR: <err></p> <p>Parameters</p> <p><mode></p> <p>0 Not use FTPFILEPUT method 1 Use FTPFILEPUT method</p> <p><filename> File name to write data in mode 1. Alphanumeric ASCII text string up to 64 characters.</p> <p><error> 85 An error related with file system. Other errors pls see FTPGET.</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	75 seconds(In case no response is received from server)
Reference	<p>Note</p> <p>This function can not be used when FTPEXTPUT mode has been set as 1.</p>

12.2.28 AT+FTPQUIT Quit Current FTP Session

AT+FTPQUIT Quit Current FTP Session	
Test Command AT+FTPQUIT=?	Response OK
Execution Command AT+FTPQUIT	Response If success: OK If error is related to ME functionality: +CME ERROR: <err>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

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13 AT Commands for GSM Location Application

Heracles support GSM location operation.

13.1 Overview

Command	Description
AT+CIPGSMLOC	GSM location and time

13.2 Detailed Descriptions of Commands

13.2.1 AT+CIPGSMLOC GSM Location and Time

AT+CIPGSMLOC GSM Location and Time	
Test Command AT+CIPGSMLOC=?	Response +CIPGSMLOC: (1,2),(1-3) OK Parameters See Write Command
Write Command AT+CIPGSMLOC=<type>,<cid>	Response If <type>=1: +CIPGSMLOC: <locationcode>[,<longitude>,<latitude>,<date>,<time>] OK If <type>=2: +CIPGSMLOC: <locationcode>[,<date>,<time>] OK If error is related to ME functionality: +CME ERROR: <err>
	Parameters <type> 1 View the longitude, latitude and time 2 View time <cid> network parameters, refer to AT+SAPBR <locationcode> 0 Success If the operation failed, the location code is not 0, such as: 404 Not Found

		<p>408 Request Time-out 601 Network Error 602 No memory 603 DNS Error 604 Stack Busy 65535 Other Error</p> <p><longitude> Current longitude in degrees <latitude> Current latitude in degrees <date> Format is YYYY/MM/DD, the time zone is GMT E.g. 2011/01/26 <time> Format is hh/mm/ss,the time zone is GMT.E.g. 06:10:46</p>
Parameter Saving Mode		NO_SAVE
Max Response Time		60 seconds
Reference		Note

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14 AT Commands for Email Application

1. Heracles supports to send an Email with an attachment via SMTP protocol. It also supports carbon copy (abbreviated Cc:) recipient and blind carbon copy (abbreviated Bcc:) recipient.
2. Heracles supports to retrieve and delete the Email via POP3 protocol, the Email may be with attachments.
3. Heracles supports all of POP3 commands but APOP. By these POP3 commands, you can get the specific Email's size and unique-id.
4. Heracles does not support that SMTP and POP3 operations are executed at the same time.

14.1 Overview

Command	Description
AT+EMAILCID	Set Email bearer profile identifier
AT+EMAILTO	Set timeout value of SMTP/POP3 server response
AT+SMTPSRV	Set SMTP server address and port
AT+SMTPAUTH	Set user name and password for SMTP authentication
AT+SMTPFROM	Set sender address and name
AT+SMTPRCPT	Set the Email recipient(to/cc/bcc) address and name
AT+SMTPSUB	Set the Email subject
AT+SMTPBODY	Set the Email body
AT+SMTPFILE	Set the Email attachment
AT+SMTPSEND	Send the Email
AT+SMTPFT	Transfer the Email attachment
AT+SMTPCS	Set the Email charset
AT+POP3SRV	Set POP3 server and account
AT+POP3IN	Log in POP3 server
AT+POP3NUM	Get Email number and total size
AT+POP3LIST	Get the specific Email size
AT+POP3UIDL	Get the specific Email unique-id
AT+POP3CMD	Get multi-line response
AT+POP3READ	Read multi-line response
AT+POP3DEL	Mark the specific Email to delete
AT+POP3RSET	Unmark the emails that be marked as deleted
AT+POP3OUT	Log out POP3 server

14.2 Detailed Descriptions of Commands

14.2.1 AT+EMAILCID Set Email Bearer Profile Identifier

AT+EMAILCID Set Email Bearer Profile Identifier	
Test Command AT+EMAILCID=?	Response +EMAILCID: (range of supported <cid>s) OK Parameters See Write Command
Read Command AT+EMAILCID?	Response +EMAILCID: <cid> OK Parameters See Write Command
Write Command AT+EMAILCID=<cid>	Response OK If error is related to ME functionality: ERROR Parameters <cid> bearer profile identifier refer to AT+SAPBR
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.2 AT+EMAILTO Set Timeout Value of SMTP/POP3 Server Response

AT+EMAILTO Set Timeout Value of SMTP/POP3 Server Response	
Test Command AT+EMAILTO=?	Response +EMAILTO: (range of supported <timeout>s) OK Parameters See Write Command
Read Command AT+EMAILTO?	Response +EMAILTO: <timeout>

	OK
	Parameters See Write Command
Write Command AT+EMAILTO=<timeout>	Response OK If error is related to ME functionality: ERROR
	Parameters <timeout> The timeout value of SMTP/POP3 server response, in 1 second unit. 10-120 Default: 30(seconds)
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.3 AT+SMTPSRV Set SMTP Server Address and Port

AT+SMTPSRV	Set SMTP Server Address and Port
Test Command AT+SMTPSRV=?	Response +SMTPSRV: <smtpServerLength>,(range of supported <smtpPort>s) OK
	Parameters See Write Command
Read Command AT+SMTPSRV?	Response +SMTPSRV: <smtpServer>,<smtpPort> OK
	Parameter See Write Command
Write Command AT+SMTPSRV=<smtpServer>[,<smtpPort>]	Response OK If error is related to ME functionality: ERROR
	Parameters <smtpServer> SMTP server address, string type. This parameter can be either: - IP address in the format: xxx.xxx.xxx.xxx

		- Host name to be solved with a DNS query <smtpPort> The SMTP port 1-65535 Default: 25 <smtpServerLength> The max length of <smtpServer>
Parameter Saving Mode		NO_SAVE
Max Response Time		-
Reference		Note

14.2.4 AT+SMTPAUTH Set User Name and Password for SMTP Authentication

AT+SMTPAUTH Set User Name and Password for SMTP Authentication		
Test Command AT+SMTPAUTH=?	Response +SMTPAUTH: (range of supported<authType>s),<userNameLength>,<passwordLength> OK	Parameters See Write Command
Read Command AT+SMTPAUTH?	Response +SMTPAUTH: <authType>,<userName>,<password> OK	Parameters See Write Command
Write Command AT+SMTPAUTH=<authType>[,<userName>,<password>]	Response OK If error is related to ME functionality: ERROR	Parameters <authType> The type of SMTP authentication 0 SMTP server does not request authentication. <userName> and <password> must not be given. 1 SMTP server requests authentication <userName> The user name for SMTP authentication. <userNameLength> The max length of <userName>. <password> The password for SMTP authentication. <passwordLength> The max length of <password>.
Parameter Saving Mode		NO_SAVE
Max Response Time		-

Reference	Note
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14.2.5 AT+SMTPFROM Set Sender Address and Name

AT+SMTPFROM Set Sender Address and Name	
Test Command AT+SMTPFROM=?	Response +SMTPFROM: <senderAddressLength>,<senderNameLength> OK Parameters See Write Command
Read Command AT+SMTPFROM?	Response +SMTPFROM: <senderAddress>,<senderName> OK Parameter See Write Command
Write Command AT+SMTPFROM=<senderAddress>[,<senderName>]	Response OK If error is related to ME functionality: ERROR Parameters <senderAddress> The Email sender address,string type. <senderAddressLength> The max length of <senderAddress> <senderName> The Email sender name,string type. <senderNameLength> The max length of <senderName>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.6 AT+SMTPRCPT Set the Email Recipient(TO/CC/BCC) Address and Name

AT+SMTPRCPT Set the Email Recipient(TO/CC/BCC) Address and Name	
Test Command AT+SMTPRCPT=?	Response +SMTPRCPT: (range of supported <rcptType>s),(range of supported <index>s),<rcptAddressLength>,<rcptNameLength> OK

	Parameters See Write Command
Read Command AT+SMTPRCPT?	Response [+SMTPRCPT: <rcptType>,<index>,<rcptAddress>,<rcptName> [<CR><LF>+SMTPRCPT: <rcptType>,<index>,<rcptAddress>,<rcptName>[...]]] OK
	Parameter See Write Command
Write Command AT+SMTPRCPT=<rcptType>[,<index>[,<rcptAddress>[,<rcptName>]]]	Response OK If error is related to ME functionality: ERROR
	Parameters <rcptType> The type of recipient, the types of TO and CC are used to construct e-mail header in the field:”To:” or “Cc:”. 0 TO, Normal Recipient. 1 CC, Carbon Copy recipient. 2 BCC, Blind Carbon Copy recipient. <index> Index of the type of recipient, decimal format <rcptAddress> The Email recipient address. <rcptName> The Email recipient name. <rcptAddressLength> The max length of <rcptAddress>. <rcptNameLength> The max length of <rcptName>.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> ● If only <rcptType> is given, it will delete all items of <rcptType>. ● If only <rcptType> and <index> are given, it will delete the <index> item of <rcptType>.

14.2.7 AT+SMTPSUB Set the Email Subject

AT+SMTPSUB	Set the Email Subject
Test Command AT+SMTPSUB=?	Response +SMTPSUB: <subjectLength> OK

	Parameters See Write Command
Read Command AT+SMTPSUB?	Response +SMTPSUB: <subject> OK Parameter See Write Command
Write Command AT+SMTPSUB=<subject>	Response OK If error is related to ME functionality: ERROR Parameters <subject> The Email subject, string type. It will be present in the header of the Email sent by SMTP client in the field: "Subject:" <subjectLength> The max length of <subject>.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note If the Email charset is not ASCII, <subject> must be in hexadecimal format.

14.2.8 AT+SMTPBODY Set the Email Body

AT+SMTPBODY	Set the Email Body
Test Command AT+SMTPBODY=?	Response +SMTPBODY: <bodyLength> OK Parameters See Write Command
Write Command AT+SMTPBODY=<length> ,then type data as Email body. When body's length equal length, command is over!	Response DOWNLOAD OK If error is related to ME functionality: ERROR Parameters <length> The length of Email body.

Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● If the Email charset is not ASCII, the body of Email must be in hexadecimal format. ● After URC string "DOWNLOAD", User can input email's body.

14.2.9 AT+SMTPFILE Set the Email Attachment

AT+SMTPFILE	Set the Email Attachment
Test Command AT+SMTPFILE=?	Response +SMTPFILE: (range of <fileType>s),<fileNameLength>,(range of <encodeType>s) OK Parameters See Write Command
Read Command AT+SMTPFILE?	Response +SMTPFILE: <fileType>,<fileName>,<encodeType> OK Parameter See Write Command
Write Command AT+SMTPFILE=<fileType>[,<fileName>,<fileNameLength>,<encodeType>]	Response OK If error is related to ME functionality: ERROR Parameters <fileType> The type of the Email attachment. 0 No attachment 1 Attach a txt file 2 Attach a binary file (bmp, mp3, video...) <fileName> The name of the Email attachment. <fileNameLength> The max length of <fileName>. <encodeType> Content-Transfer-Encoding used for attachment 0 "7bit" means data all represented as short lines of US-ASCII data 1 "base64" designed to represent arbitrary sequences of octets in a form that need not be humanly readable
Parameter Saving Mode	NO_SAVE

Max Response Time	-
Reference	Note <ul style="list-style-type: none"> ● If a txt file (<fileType>=1) is attached, <encodeType> must be 0. ● If a binary file (<fileType>=2) is attached, <encodeType> must be 1.

14.2.10 AT+SMTPSEND Send the Email

AT+SMTPSEND	Send the Email																				
Test Command AT+SMTPSEND=?	Response OK																				
	Parameters																				
Execution Command AT+SMTPSEND	Response OK If error is related to ME functionality: ERROR If send successfully or not, return: +SMTPSEND: <code>																				
	Parameters <table border="0"> <tr> <td><code></td> <td>The result of sending Email.</td> </tr> <tr> <td>1</td> <td>The Email has been sent successfully.</td> </tr> <tr> <td>61</td> <td>Network error.</td> </tr> <tr> <td>62</td> <td>DNS resolve error</td> </tr> <tr> <td>63</td> <td>SMTP TCP connection error.</td> </tr> <tr> <td>64</td> <td>Timeout of SMTP server response</td> </tr> <tr> <td>65</td> <td>SMTP server response error</td> </tr> <tr> <td>66</td> <td>Not authentication</td> </tr> <tr> <td>67</td> <td>Authentication failed. SMTP user name or password may be not right.</td> </tr> <tr> <td>68</td> <td>Bad recipient.</td> </tr> </table>	<code>	The result of sending Email.	1	The Email has been sent successfully.	61	Network error.	62	DNS resolve error	63	SMTP TCP connection error.	64	Timeout of SMTP server response	65	SMTP server response error	66	Not authentication	67	Authentication failed. SMTP user name or password may be not right.	68	Bad recipient.
<code>	The result of sending Email.																				
1	The Email has been sent successfully.																				
61	Network error.																				
62	DNS resolve error																				
63	SMTP TCP connection error.																				
64	Timeout of SMTP server response																				
65	SMTP server response error																				
66	Not authentication																				
67	Authentication failed. SMTP user name or password may be not right.																				
68	Bad recipient.																				
Parameter Saving Mode	NO_SAVE																				
Max Response Time	-																				
Reference	Note																				

14.2.11 AT+SMTPPFT Transfer the Email Attachment

AT+SMTPPFT	Transfer the Email Attachment
Test Command AT+SMTPPFT=?	Response OK

	Parameters See Write Command
Write Command AT+SMTPFT=<reqLength>	<p>Response</p> <p>When the URC below is reported, the attachment can be transferred: +SMTPFT: 1,<maxLength></p> <p>If <reqLength> is not 0 and send data successfully: +SMTPFT: 2,<cnfLength> //Input data OK</p> <p>If <reqLength> is not 0 and send data unsuccessfully: +SMTPFT: 2,<cnfLength> //Input data ERROR</p> <p>If <reqLength> is 0,it indicates that transferring the attachment have finished: OK</p> <p>If error is related to ME functionality: ERROR</p> <p>If some error occur: +SMTPSEND: <code></p> <p>Parameters</p> <p><reqLength> Requested number of data bytes(0-<maxLength>) to be transmitted</p> <p><cnfLength> Confirmed number of data bytes to be transmitted</p> <p><maxLength> The max length of data can be sent at a time. It depends on the network status.</p> <p><code> See AT+SMTPSEND</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● <reqLength> can not be greater than <maxLength>. ● When "+SMTPFT: 1,<maxLength>" is reported, then use "AT+SMTPFT=<reqLength>" to send data.

14.2.12 AT+SMTPCS Set the Email Charset

AT+SMTPCS Set the Email Charset

Test Command AT+SMTPCS=?	Response +SMTPCS: <charsetLength> OK
	Parameters See Write Command
Read Command AT+SMTPCS?	Response +SMTPCS: <charset> OK
	Parameter See Write Command
Write Command AT+SMTPCS=<charset>	Response OK If error is related to ME functionality: ERROR
	Parameters <charset> The Email charset, string type. It shows which charset the subject and the body are encoded in. If <charset> is not ASCII but UTF-8 or other, the subject and the body must be in hexadecimal format (e.g. "TEST" should be converted to "54455354"). The default charset is ASCII. <charsetLength> The max length of <charset> .
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.13 AT+POP3SRV Set POP3 Server and Account

AT+POP3SRV	Set POP3 Server and Account
Test Command AT+POP3SRV=?	Response +POP3SRV: <pop3ServerLength>,<userNameLength>,<passwordLength>,(range of supported <pop3Port>s) OK
	Parameters See Write Command

Read Command AT+POP3SRV?	Response +POP3SRV: <pop3Server>,<userName>,<password>,<pop3Port> OK
	Parameters See Write Command
Write Command AT+POP3SRV=<pop3Server>,<userName>,<password>[,<pop3Port>]	Response OK If error is related to ME functionality: ERROR
	Parameters <pop3Server> POP3 server address, string type. This parameter can be either: - IP address in the format: xxx.xxx.xxx.xxx - Host name to be solved with a DNS query <userName> The user name to log in POP3 server, string type. <password> The password to log in POP3 server, string type. <pop3Port> The port of POP3 server. 1-65535 Default: 110 <pop3ServerLength> The max length of <pop3Server> . <userNameLength> The max length of <userName> . <passwordLength> The max length of <password> .
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.14 AT+POP3IN Log in POP3 Server

AT+POP3IN	Log in POP3 Server
Test Command AT+POP3IN=?	Response OK
	Parameters
Execution Command AT+POP3IN	Response OK If error is related to ME functionality: ERROR If logging in POP3 server or not, return: +POP3IN: <code>

	Parameters
	<p><code> The result of logging in POP3 server</p> <p>1 Log in POP3 server successfully</p> <p>61 Network error</p> <p>62 DNS resolve error</p> <p>63 POP3 tcp connection error</p> <p>64 Timeout of POP3 server response</p> <p>65 POP3 server response error</p> <p>66 POP3 server rejects to log in</p> <p>67 Incorrect user name</p> <p>68 Incorrect user name or password</p> <p>69 Timeout of read data</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.15 AT+POP3NUM Get Email Number and Total Size

AT+POP3NUM	Get Email Number and Total Size
Test Command	Response
AT+POP3NUM=?	OK
	Parameter
Execution Command	Response
AT+POP3NUM	<p>OK</p> <p>If error is related to ME functionality: ERROR</p> <p>If POP3 server issues a positive response: +POP3NUM: 1,<totalNumber>,<totalSize></p> <p>If POP3 server issues a negative response: +POP3NUM: 0</p> <p>If some error occur: +POP3OUT: <code></p>
	Parameters
	<p><totalNumber> The Email number on the POP3 server, decimal format.</p> <p><totalSize> The total size of all Email and the unit is in byte.</p> <p><code> The result of logging out POP3 server</p> <p>1 Normally log out POP3 server</p> <p>61 Network error</p> <p>62 DNS resolve error</p>

		63	POP3 tcp connection error
		64	Timeout of POP3 server response
Parameter Saving Mode		NO_SAVE	
Max Response Time		-	
Reference		Note	

14.2.16 AT+POP3LIST Get the Specific Email Size

AT+POP3LIST		Get the Specific Email Size	
Test Command		Response	
AT+POP3LIST=?		+POP3LIST: (range of supported <msgNumber>s)	
		OK	
		Parameter See Write Command	
Write Command		Response	
AT+POP3LIST=<msgNumber>		OK	
		If error is related to ME functionality: ERROR	
		If POP3 server issues a positive response: +POP3LIST: 1,<msgNumber>,<size>	
		If POP3 server issues a negative response: +POP3LIST: 0	
		If some error occur: +POP3OUT: <code>	
		Parameters	
		<msgNumber> The message number of Email.	
		<size> The size of Email <msgNumber> and the unit is in byte.	
		<code> The result of logging out POP3 server	
		1 Normally log out POP3 server	
		61 Network error	
		62 DNS resolve error	
		63 POP3 tcp connection error	
		64 Timeout of POP3 server response	
Parameter Saving Mode		NO_SAVE	
Max Response Time		-	
Reference		Note	

14.2.17 AT+POP3UIDL Get the Specific Email Unique-id

AT+POP3UIDL		Get the Specific Email Unique-id
Test Command AT+POP3UIDL=?	Response	+POP3UIDL: (range of supported <msgNumber>s) OK
	Parameters	See Write Command
Write Command AT+POP3UIDL=<msgNumber>	Response	OK If error is related to ME functionality: ERROR If POP3 server issues a positive response: +POP3UIDL: 1,<msgNumber>,<uid> If POP3 server issues a negative response: +POP3UIDL: 0 If some error occur: +POP3OUT: <code>
	Parameters	<msgNumber> The message number of Email . <UID> The Email unique-id, the unique-id is an arbitrary server-determined string, consisting of 1 to 70 characters in the range 0x21 to 0x7E, which uniquely identifies a message within a maildrop and which persists across sessions. <code> The result of logging out POP3 server 1 Normally log out POP3 server 61 Network error 62 DNS resolve error 63 POP3 tcp connection error 64 Timeout of POP3 server response
Parameter Saving Mode		NO_SAVE
Max Response Time		-
Reference		Note

14.2.18 AT+POP3CMD Get Multi-line Response

AT+POP3CMD		Get Multi-line Response
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<p>Test Command AT+POP3CMD=?</p>	<p>Response +POP3CMD: (range of supported <cmdType>s),(range of supported <msgNumber>s),(range of supported <lineNumber>s)</p> <p>OK</p> <p>Parameters See Write Command</p>
<p>Write Command AT+POP3CMD=<c mdType>[,<msgNum ber>[,<lineNumber]]</p>	<p>Response OK</p> <p>If error is related to ME functionality: ERROR</p> <p>If POP3 server issues a positive response: +POP3CMD: 1</p> <p>If POP3 server issues a negative response: +POP3CMD: 0</p> <p>If some error occur: +POP3OUT: <code></p> <p>Parameters <cmdType> The values that supported POP3 user command</p> <ol style="list-style-type: none"> 1 List command The "List" command returns a multi-line "scan listing". For each message on the maildrop list of the server the POP3 service returns a line containing the message number and its size in bytes. A final "dotline" will be printed at the end of the "scan listing". If there are no messages on the maildrop list of the server, the POP3 service returns a positive response, i.e. It does not issue an error response, but the "scan listing" will be empty. In either case, each scan listing will be finished by so-called "dotline", i.e. a new line with just a single dot. <msgNumber> and <lineNumber> must not be given. 2 Uidl command The "Uidl" command returns a multi-line "unique-id Listing". For each message on the maildrop list of the Server the POP3 service returns a line containing the message number and its unique-id. A final "dotline" will be printed at the end of the "unique-id listing" If there are no messages on the maildrop list of the server. The POP3 service returns a positive response, i.e. It does not issue an error response, but the "unique-id listing" will be empty. In either case, each unique-id listing will be finished by so-called "dotline", i.e. a new line with just a single dot. <msgNumber> and <lineNumber> must not be given.

	<p>3 Top command</p> <p>The command retrieves the number of lines of the message's body from the POP3 server's maildrop list. The POP3 server sends the headers of the message, the blank line separating the headers from the body, and then the number of lines of the message's body. If the number of lines requested by The POP3 client is greater than the number of lines in the body, then the POP3 server sends the entire message. If no such message exists on the server the POP3 service issues an error response to the user. Each email will be finished by a so-called "dotline", i.e.a new line with just a single dot.</p> <p><msgNumber> and <lineNumber> must be given.</p> <p>4 Retrieve command</p> <p>The command retrieves the related message from the POP3 server's maildrop list. If no such message exists on the server the POP3 service issues an error response to the user. Each email will be finished by a so-called "dotline", i.e. a new line with just a single dot.</p> <p><msgNumber> must be given.</p> <p><msgNumber> The message number of Email. <lineNumber> The number of lines of the message body. <code> The result of logging out POP3 server</p> <ul style="list-style-type: none"> 1 Normally log out POP3 server 61 Network error 62 DNS resolve error 63 POP3 tcp connection error 64 Timeout of POP3 server response
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note After sending these POP3 commands and POP3 server issuing a positive response, you can get the response by "AT+POP3READ".

14.2.19 AT+POP3READ Read Multi-line Response

AT+POP3READ	Read Multi-line Response
Test Command	Response
AT+POP3READ=?	+POP3READ: (range of supported <reqLength>s)
	OK
	Parameters
	See Write Command

<p>Write Command AT+POP3READ=<reqLength></p>	<p>Response</p> <p>If the data of response not to be read completely: +POP3READ: 1,<cnfLength></p> <p>If the data of response to be read completely: +POP3READ: 2,<cnfLength></p> <p>If some data need to be read,the URC below is reported: +POP3READ: 3,<dataLength></p> <p>If error is related to ME functionality: ERROR</p> <p>If some error occur: +POP3OUT: <code></p> <hr/> <p>Parameters</p> <p><reqLength> Requested number of data bytes (1-1460) to be read</p> <p><cnfLength> Confirmed number of data bytes to be read, which may be less than <reqLength>. 0 indicates that no data can be read.</p> <p><dataLength> Received number of data bytes.</p> <p><code> The result of logging out POP3 server</p> <ul style="list-style-type: none"> 1 Normally log out POP3 server 61 Network error 62 DNS resolve error 63 POP3 tcp connection error 64 Timeout of POP3 server response 69 Read data timeout
<p>Parameter Saving Mode</p>	<p>NO_SAVE</p>
<p>Max Response Time</p>	<p>-</p>
<p>Reference</p>	<p>Note</p> <ul style="list-style-type: none"> ● Other AT commands (but "AT+POP3OUT") can not be executed until the data of response are read completely. ● If <cnfLength> is less than <reqLength>, you should wait for a URC "+POP3READ: 3,<dataLength>" reported. Then you may continue to read data by "AT+POP3READ". ● If the module has some unread data, the URC "+POP3READ: 3,<dataLength>" is reported every once in a while. After some time, these data are not still been read, the module will quit the POP3 process.

14.2.20 AT+POP3DEL Mark the Specific Email to Delete

AT+POP3DEL Mark the Specific Email to Delete

Test Command AT+POP3DEL=?	Response +POP3DEL: (range of supported <msgNumber>s) OK
	Parameters See Write Command
Write Command AT+POP3DEL=<msgNumber>	Response OK If error is related to ME functionality: ERROR If POP3 server issues a positive response: +POP3DEL: 1 If POP3 server issues a negative response: +POP3DEL: 0 If some error occur: +POP3OUT: <code>
	Parameters <msgNumber> The message number of Email <code> The result of logging out POP3 server 1 Normally log out POP3 server 61 Network error 62 DNS resolve error 63 POP3 tcp connection error 64 Timeout of POP3 server response
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note The POP3 server marks the Email as deleted. Any future reference to the message-number associated with the Email in a POP3 command generates an error. The POP3 server does not actually delete the Email until the POP3 client logs out POP3 server and closes the session normally.

14.2.21 AT+POP3RSET Unmark the Emails that Be Marked as Deleted

AT+POP3RSET	Unmark the Emails that Be Marked as Deleted
Test Command AT+POP3RSET=?	Response OK
	Parameter
Execution Command	Response

AT+POP3RSET	<p>OK</p> <p>If error is related to ME functionality:</p> <p>ERROR</p> <p>If POP3 server issues a positive response:</p> <p>+POP3RSET: 1</p> <p>If POP3 server issues a negative response:</p> <p>+POP3REST: 0</p> <p>If some error occur:</p> <p>+POP3OUT: <code></p> <p>Parameters</p> <p><code> The result of logging out POP3 server</p> <p>1 Normally log out POP3 server</p> <p>61 Network error</p> <p>62 DNS resolve error</p> <p>63 POP3 tcp connection error</p> <p>64 Timeout of POP3 server response</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note

14.2.22 AT+POP3OUT Log Out POP3 Server

AT+POP3OUT	Log Out POP3 Server
Test Command AT+POP3OUT=?	<p>Response</p> <p>OK</p> <p>Parameters</p>
Execution Command AT+POP3OUT	<p>Response</p> <p>OK</p> <p>If error is related to ME functionality:</p> <p>ERROR</p> <p>If the process is completed, return:</p> <p>+POP3OUT: <code></p> <p>Parameters</p> <p><code> The result of logging out POP3 server</p> <p>1 Normally log out POP3 server</p> <p>61 Network error</p> <p>62 DNS resolve error</p> <p>63 POP3 tcp connection error</p> <p>64 Timeout of POP3 server response</p> <p>69 Timeout of read data</p>

Parameter	Saving	NO_SAVE
Mode		
Max Response Time		-
Reference		Note

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15 AT Commands for MMS Application

Heracles support MMS operation.

15.1 Overview

Command	Description
AT+CMMSURL	Set the URL of the MMS center
AT+CMMSPROTO	Set the protocol parameter and MMS proxy
AT+CMMSCID	Set the network parameters for MMS
AT+CMMSSENDCFG	Set the parameters for sending MMS
AT+CMMSEDIT	Enter or exit edit mode
AT+CMMSDOWN	Download the file data or title from UART
AT+CMMSDELFILE	Delete the file of the edited MMS by file index
AT+CMMSSEND	Start MMS sending
AT+CMMSRECP	Add recipients
AT+CMMSCC	Add copy recipients
AT+CMMSBCC	Add secret recipients
AT+CMMSDELRECP	Delete recipients
AT+CMMSDELCC	Delete copy recipients
AT+CMMSDELBCC	Delete secret recipients
AT+CMMSRECV	Receive MMS
AT+CMMSVIEW	Get the MMS into buffer and show the information
AT+CMMSREAD	Read the given file of the MMS in the buffer
AT+CMMSRDPUSH	Read the information of the MMS push message
AT+CMMSUA	Set User Agent
AT+CMMSPROFILE	Set User Agent Profile
AT+CMMS TIMEOUT	Set MMS Timeout
AT+CMMSSTATUS	Get MMS Status
AT+CMMSINIT	Initialize MMS Function
AT+CMMS TERM	Exit MMS function
AT+CMMS SCNT	Save MMS context

15.2 Detailed Descriptions of Commands

15.2.1 AT+CMMSURL Set the URL of the MMS Center

AT+CMMSURL Set the URL of the MMS Center

Test Command AT+CMMSURL=?	Response +CMMSURL: "URL" OK Parameters See Write Command
Read Command AT+CMMSURL?	Response +CMMSURL: <mmscurl> OK Parameters See Write Command
Write Command AT+CMMSURL=<mmscurl>	Response OK or ERROR or +CME ERROR: <err> Parameters <mmscurl> The URL of the MMS center.
Parameter Saving Mode	AT+CMMSSCONT
Max Response Time	-
Reference	Note

15.2.2 AT+CMMSPROTO Set the Protocol Parameter and MMS Proxy

AT+CMMSPROTO Set the Protocol Parameter and MMS Proxy	
Test Command AT+CMMSPROTO=?	Response +CMMSPROTO: "(0-255).(0-255).(0-255).(0-255)",(1-65535) OK Parameters See Write Command
Read Command AT+CMMSPROTO?	Response +CMMSPROTO: <Gateway>,<Port> OK Parameters See Write Command

Write Command AT+CMMSPROTO =<Gateway>,<Port >	Response OK or ERROR or +CME ERROR: <err>
	Parameters <Gateway> IP address of MMS proxy. <Port> Port of MMS proxy.
Parameter Saving Mode	AT+CMMSCONT
Max Response Time	-
Reference	Note

15.2.3 AT+CMMSCID Set the Network Parameters for MMS

AT+CMMSCID Set the Network Parameters for MMS	
Test Command AT+CMMSCID=?	Response +CMMSCID: (1-3) OK
	Parameters See Write Command
Read Command AT+CMMSCID?	Response +CMMSCID: <value> OK
	Parameters See Write Command
Write Command AT+CMMSCID=<v alue>	Response OK or ERROR or +CME ERROR: <err>
	Parameters <value> network parameters, refer to "AT+SAPBR"
Parameter Saving Mode	AT+CMMSCONT
Max Response Time	-

Reference	Note
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15.2.4 AT+CMMSENDCFG Set the Parameters for Sending MMS

AT+CMMSENDCFG Set the Parameters for Sending MMS	
Test Command AT+CMMSENDCFG=?	Response +CMMSENDCFG: (0-6), (0-3),(0,1), (0,1),(0-2),(0-4),(1-2),(0,1) OK Parameters See Write Command
Read Command AT+CMMSENDCFG?	Response +CMMSENDCFG: <valid>,<pri>,<sendrep>,<readrep>,<visible>,<class>,<subctrl>,<notifrspcheck> OK Parameters See Write Command
Write Command AT+CMMSENDCFG=<valid>[,<pri>[,<sendrep>[,<readrep>[,<visible>[,<class>[,<subctrl>[,<notifrspcheck>]]]]]]	Response OK or ERROR or +CME ERROR: <err> Parameters <valid> The valid time of sent MMS 0 1 hour 1 12 hours 2 24 hours 3 2 days 4 1 week 5 maximum 6 Not set (default) <pri> Priority 0 lowest 1 normal 2 highest 3 Not Set (default) <sendrep> Whether it need deliver report 0 No (default) 1 Yes

	<p><readrep> Whether it need receive report</p> <p>0 No (default)</p> <p>1 Yes</p> <p><visible> Whether it need show the sender address</p> <p>0 hide the sender address</p> <p>1 show the sender address even if it is a secret address</p> <p>2 Not set (default)</p> <p><class> The class of the MMS</p> <p>0 Personal</p> <p>1 Advertisement</p> <p>2 Informational</p> <p>3 Auto</p> <p>4 Not set (default)</p> <p><subctrl> Subject control</p> <p>1 For Chinese character code</p> <p>2 For English character code</p> <p><notifrspcheck> Whether it need to check the HTTP response of MMS notifyrsp ind then to proceed the next step.</p> <p>0 Waiting for HTTP response</p> <p>1 Skip waiting for HTTP response</p>
Parameter Saving Mode	AT+CMMSSCONT
Max Response Time	-
Reference	Note

15.2.5 AT+CMMSEDT Enter or Exit Edit Mode

AT+CMMSEDT Enter or Exit Edit Mode	
Test Command AT+CMMSEDT=?	<p>Response</p> <p>+CMMSEDT: (0,1)</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CMMSEDT?	<p>Response</p> <p>+CMMSEDT: <mode></p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Write Command AT+CMMSEDT=<	<p>Response</p> <p>OK</p>

mode>	<p>or ERROR</p> <p>or +CME ERROR: <err></p> <p>Parameters</p> <p><mode> Whether it allows to edit MMS</p> <p><u>0</u> Not allow to edit MMS</p> <p>1 Allow to edit MMS</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>It includes adding and deleting receipt, downloading and deleting files, downloading title to edit MMS.</p>

15.2.6 AT+CMMSDOWN Download the File Data or Title from UART

AT+CMMSDOWN Download the File Data or Title from UART	
<p>Test Command</p> <p>AT+CMMSDOWN</p> <p>=?</p>	<p>Response</p> <p>+CMMSDOWN: "PIC", (1-307200), (5000-),"NAME"</p> <p>+CMMSDOWN: "TEXT", (1-15360), (2000-),"NAME"</p> <p>+CMMSDOWN: "TITLE", (1-40), (2000-)</p> <p>+CMMSDOWN: "AUDIO_ACC", (1-307200), (5000-),"NAME"</p> <p>+CMMSDOWN: "AUDIO_AMR", (1-307200), (5000-),"NAME"</p> <p>+CMMSDOWN: "AUDIO_BASIC", (1-307200), (5000-),"NAME"</p> <p>+CMMSDOWN: "AUDIO_MID", (1-307200), (5000-),"NAME"</p> <p>+CMMSDOWN: "AUDIO_MPEG", (1-307200), (5000-),"NAME"</p> <p>+CMMSDOWN: "VIDEO_3GPP", (1-307200), (5000-),"NAME"</p> <p>+CMMSDOWN: " VIDEO_MP4", (1-307200), (5000-),"NAME"</p> <p>OK</p>
<p>Write Command</p> <p>AT+CMMSDOWN</p> <p>=<type>,<size>,<time>[,<name>]</p>	<p>Response</p> <p>CONNECT</p> <p>or</p> <p>ERROR</p> <p>or</p> <p>+CME ERROR: <err></p> <p>Parameters</p> <p><type> A string parameter which indicates type of downloaded data</p> <p>"TITLE" MMS title data</p> <p>"TEXT" MMS text data</p> <p>"PIC" MMS image data</p> <p>"AUDIO_AAC" MMS aac audio data</p>

	<p>"AUDIO_AMR" MMS amr audio data "AUDIO_BASIC" MMS basic audio data "AUDIO_MID" MMS mid audio data "AUDIO_MPEG" MMS mpeg audio data "VIDEO_3GPP" MMS 3gpp video data "VIDEO_MP4" MMS mp4 video data</p> <p><size> Size in bytes of the data to be downloaded. <time> Maximum time in milliseconds to download data. <name> The file name of the image or the text to be downloaded, including extended name. The default name for image is "image<m>.jpg" and the default name for text is "text<n>.txt". <m> and <n> are in the range of 0~255</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	Decided by <time>
Reference	<p>Note</p> <ul style="list-style-type: none"> ● It is strongly recommended to set the time long enough to download all the file data and make sure that the real size of the file to download is not bigger than <size>. ● The maximum size of <name> is 40 Bytes and only ASCII code is recognized for <name>.

15.2.7 AT+CMMSDELFILE Delete the File of the Edited MMS by File Index

AT+CMMSDELFILE Delete the File of the Edited MMS by File Index	
Test Command AT+CMMSDELFI LE=?	Response OK
Write Command AT+CMMSDELFI LE=<fileIndex>	<p>Response OK or ERROR or +CME ERROR: <err></p> <p>Parameters <fileIndex> The index of the file to be deleted in the MMS. Refer to "AT+CMMSVIEW".</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note This command is valid when it is allowed to edit MMS.</p>

15.2.8 AT+CMMSSEND Start MMS Sending

AT+CMMSSEND Start MMS Sending	
Test Command AT+CMMSSEND= ?	Response +CMMSSEND: "ADDRESS" OK
Write Command AT+CMMSSEND= <address>	Response OK or ERROR or +CME ERROR: <err>
	Parameters <address> A string parameter which indicates address of recipients.
Execution Command AT+CMMSSEND	Response OK or ERROR or +CME ERROR: <err>
Parameter Saving Mode	NO_SAVE
Max Response Time	AT+CMMSTIMEOUT
Reference	Note It is not allowed to input <address> when it not allowed to edit MMS.

15.2.9 AT+CMMSRECP Add Recipients

AT+CMMSRECP Add Recipients	
Test Command AT+CMMSRECP= ?	Response +CMMSRECP: "ADDRESS" OK
Read Command AT+CMMSRECP?	Response +CMMSRECP: the list of <addr>s OK
	Parameters See Write Command
Write Command AT+CMMSRECP= <addr>	Response OK or ERROR

		or +CME ERROR: <err>
		Parameters <addr> A string parameter which indicates phone number or email address of recipients. The maximum length of the string is 40.
Parameter Mode	Saving	NO_SAVE
Max Response Time		-
Reference		Note The maximum of recipients is 20 and this command is valid only when it is allowed to edit MMS.

15.2.10 AT+CMMSCC Add Copy Recipients

AT+CMMSCC Add Copy Recipients		
Test Command		Response +CMMSCC: "ADDRESS" OK
Read Command		Response +CMMSCC: the list of <addr>s OK
		Parameters See Write Command
Write Command		Response OK or ERROR or +CME ERROR: <err>
		Parameters <addr> A string parameter which indicates phone number or email address of copy recipients. The maximum length of the string is 40.
Parameter Mode	Saving	NO_SAVE
Max Response Time		-
Reference		Note The maximum of copy recipients is 20 and this command is valid only when it is not allowed to edit MMS.

15.2.11 AT+CMMSBCC Add Secret Recipients

AT+CMMSBCC Add Secret Recipients	
Test Command AT+CMMSBCC=?	Response +CMMSBCC: "ADDRESS" OK
Read Command AT+CMMSBCC?	Response +CMMSBCC: the list of <addr>s OK
	Parameters See Write Command
Write Command AT+CMMSBCC=<addr>	Response OK or ERROR or +CME ERROR: <err>
	Parameters <addr> A string parameter which indicates phone number or email address of secret recipients. The maximum length of the string is 40.
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note The maximum of secret recipients is 20 and this command is valid only when it is allowed to edit MMS

15.2.12 AT+CMMSDELRECP Delete Recipients

AT+CMMSDELRECP Delete Recipients	
Test Command AT+CMMSDELRECP=?	Response +CMMSDELRECP: "ADDRESS" OK
Write Command AT+CMMSDELRECP=<addr>	Response OK or ERROR or +CME ERROR: <err>

	<p>Parameters</p> <p><addr> A string parameter which indicates phone number or email address of recipient. The maximum length of the string is 40.</p>
<p>Execution Command</p> <p>AT+CMMSDELRE</p> <p>CP</p>	<p>Delete all the recipients</p> <p>Response</p> <p>OK</p>
<p>Parameter Saving Mode</p>	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>This command is valid when it is allowed to edit MMS</p>

15.2.13 AT+CMMSDELCC Delete Copy Recipients

AT+CMMSDELCC Delete Copy Recipients	
<p>Test Command</p> <p>AT+CMMSDELCC</p> <p>=?</p>	<p>Response</p> <p>+CMMSDELCC: "ADDRESS"</p> <p>OK</p>
<p>Write Command</p> <p>AT+CMMSDELCC</p> <p>=<addr></p>	<p>Response</p> <p>OK</p> <p>or</p> <p>ERROR</p> <p>or</p> <p>+CME ERROR: <err></p>
	<p>Parameters</p> <p><addr> A string parameter which indicates phone number or email address of copy recipients. The maximum length of the string is 40.</p>
<p>Execution Command</p> <p>AT+CMMSDELCC</p>	<p>Delete all the copy recipients</p> <p>Response</p> <p>OK</p>
<p>Parameter Saving Mode</p>	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>This command is valid when it is allowed to edit MMS.</p>

15.2.14 AT+CMMSDELBC Delete Secret Recipients

AT+CMMSDELBC Delete Secret Recipients	
<p>Test Command</p> <p>AT+CMMSDELBC</p>	<p>Response</p> <p>+CMMSDELBC: "ADDRESS"</p>

C=?	OK
Write Command AT+CMMSDELBC C=<addr>	Response OK or ERROR or +CME ERROR: <err>
	Parameters <addr> A string parameter which indicates phone number or email address of secret recipient. The maximum length of the string is 40.
Execution Command AT+CMMSDELBC C	Delete all the secret recipients Response OK
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note This command is valid when it is allowed to edit MMS.

15.2.15 AT+CMMSRECV Receive MMS

AT+CMMSRECV Receive MMS	
Test Command AT+CMMSRECV= ?	Response +CMMSRECV: (range of <index>) OK
Write Command AT+CMMSRECV= <index>	Response +CMMSRECV: "<sender>","<time>","<subject>",<size><CR><LF> list of <fileIndex,name,type,filesize><CR><LF> OK or ERROR or +CME ERROR: <err>
	Parameters <index> The index of the push message saved in the SIM message box. <sender> The address of the sender <time> The time to receive the MMS

	<p><subject> the title of the MMS</p> <p><size> The size of the MMS</p> <p><fileIndex,name,type,filesize> The index, name and size of every file included in the MMS. The types are defined as following.</p> <table border="0"> <tr><td>2</td><td>text</td></tr> <tr><td>3</td><td>text/html</td></tr> <tr><td>4</td><td>text/plain</td></tr> <tr><td>5</td><td>image</td></tr> <tr><td>6</td><td>image/gif</td></tr> <tr><td>7</td><td>image/jpg</td></tr> <tr><td>8</td><td>image/tif</td></tr> <tr><td>9</td><td>image/png</td></tr> <tr><td>10</td><td>smil</td></tr> </table>	2	text	3	text/html	4	text/plain	5	image	6	image/gif	7	image/jpg	8	image/tif	9	image/png	10	smil
2	text																		
3	text/html																		
4	text/plain																		
5	image																		
6	image/gif																		
7	image/jpg																		
8	image/tif																		
9	image/png																		
10	smil																		
Parameter Saving Mode	NO_SAVE																		
Max Response Time	AT+CMMSTIMEOUT																		
Reference	<p>Note</p> <ul style="list-style-type: none"> ● This command is valid only when it is not allowed to edit MMS and the buffer for MMS will be clear up. So it is recommended to save the MMS in the buffer before receiving MMS. ● The received MMS is just saved in the buffer but not saved in the flash. ● The maximum number of inclosure is 10. 																		

15.2.16 AT+CMMSVIEW Get the MMS into Buffer and Show the Information

AT+CMMSVIEW Get the MMS into Buffer and Show the Information					
Test Command AT+CMMSVIEW=?	Response OK				
Execution Command AT+CMMSVIEW	<p>Response</p> <p>+CMMSVIEW: <mmstype>,"<sender>", "<receipts>", "<ccs>", "<bccs>", "<datetime>","<subject>",<size><CR><LF>list of <fileIndex, name, type, filesize><CR><LF></p> <p>OK</p> <p>or</p> <p>ERROR</p> <p>or</p> <p>+CME ERROR: <err></p>				
	<p>Parameters</p> <p><mmstype> The type of MMS</p> <table border="0"> <tr><td>0</td><td>Received MMS</td></tr> <tr><td>1</td><td>Sent MMS</td></tr> </table>	0	Received MMS	1	Sent MMS
0	Received MMS				
1	Sent MMS				

		<p>2 Unsent MMS</p> <p><sender> The address of th sender</p> <p><receipts> List of recipients, Separated by “;”</p> <p><ccs> List of copy recipients , Separated by “;”</p> <p><bccs> List of secret recipients , Separated by “;”</p> <p><datetime> The time of receive MMS</p> <p><subject> The title of MMS</p> <p><size> Data size of MMS</p> <p><fileIndex,name,type,filesize> The index, name and size of every file included in the MMS. The types are defined as following.</p> <table border="0"> <tr><td>2</td><td>text</td></tr> <tr><td>3</td><td>text/html</td></tr> <tr><td>4</td><td>text/plain</td></tr> <tr><td>5</td><td>image</td></tr> <tr><td>6</td><td>image/gif</td></tr> <tr><td>7</td><td>image/jpg</td></tr> <tr><td>8</td><td>image/tif</td></tr> <tr><td>9</td><td>image/png</td></tr> <tr><td>10</td><td>smil</td></tr> </table>	2	text	3	text/html	4	text/plain	5	image	6	image/gif	7	image/jpg	8	image/tif	9	image/png	10	smil
2	text																			
3	text/html																			
4	text/plain																			
5	image																			
6	image/gif																			
7	image/jpg																			
8	image/tif																			
9	image/png																			
10	smil																			
Parameter Saving Mode		NO_SAVE																		
Max Response Time		-																		
Reference		Note																		

15.2.17 AT+CMMSREAD Read the Given File of the MMS in the Buffer

AT+CMMSREAD Read the Given File of the MMS in the Buffer		
Test Command		Response
AT+CMMSREAD=?		OK
Write Command		Response
AT+CMMSREAD=<fileIndex>		+CMMSREAD: <name> <datSize> File content OK
		Parameters
	<fileIndex>	The index of the file to be read from the MMS in the buffer, i.e. the parameter <fileIndex> in "AT+CMMSRECV" and "AT+CMMSVIEW"
	<name>	The file name to be read
	<datSize>	The size of the file to be read
Parameter Saving Mode		NO_SAVE

Max Response Time	5s
Reference	Note If the file type is text, the character set of the output text is Unicode little endian without the header "FF FE".

15.2.18 AT+CMMSRDPUSH Read the Information of the MMS PUSH Message

AT+CMMSRDPUSH Read the Information of the MMS PUSH Message	
Test Command AT+CMMSRDPUS H=?	Response +CMMSRDPUSH: (range of <index>) OK
Write Command AT+CMMSRDPUS H=<index>	Response +CMMSRDPUSH: 2,"<sender>","<subject>","<transaction>","<location>","<time>",< class>,<size> OK or +CMMSRDPUSH: 6, "<receiver>","<time>",<status> OK or +CMMSRDPUSH: 255 OK or +CME ERROR: <err>
	Parameters The first parameter of the response should be 2 or 6, or the other type of the MMS PDU. <ul style="list-style-type: none"> 2 m-notification-ind^[2]. To inform the contents of a received MMS 6 m-delivery-ind^[2]. A delivery report 255 unknown MMS PDU <ul style="list-style-type: none"> <index> The index of the push message saved in the SIM message box. <sender> The address of the sender <receiver> The address of the receiver <subject> The title of the MMS <transaction> The X-Mms-Transation-ID^[2] of the received MMS <location> The X-Mms-Content-Location^[2] of the received MMS <class> The X-Mms-Class^[2] of the received MMS 0 Personal

	<ul style="list-style-type: none"> 1 Advertisement 2 Informational 3 Auto <p><time> Date and time of the received push message.</p> <p><size> The size of the MMS</p> <p><status> The status of the sent MMS</p> <ul style="list-style-type: none"> 0 Expired 1 Retrieved 2 Rejected 3 Defered 4 Unrecognized
Parameter Saving Mode	NO_SAVE
Max Response Time	5s
Reference	<p>Note</p> <ul style="list-style-type: none"> ● This command is valid only when it is not allowed to edit MMS and the buffer for MMS will be clear up. So it is recommended to save the MMS in the buffer before receiving MMS. ● The received MMS is just saved in the buffer but not saved in the flash.

15.2.19 AT+CMMSUA Set User Agent

AT+CMMSUA Set User Agent	
Test Command AT+CMMSUA=?	<p>Response</p> <p>+CMMSUA: "UserAgent"</p> <p>OK</p> <p>Parameters</p> <p>See Write Command</p>
Read Command AT+CMMSUA?	<p>Response</p> <p>+CMMSUA: <UA></p> <p>OK</p> <p>Parameter</p> <p>See Write Command</p>
Write Command AT+CMMSUA=<UA>	<p>Response</p> <p>OK</p> <p>or</p> <p>ERROR</p> <p>or</p> <p>+CME ERROR: <err></p> <p>Parameters</p>

	<UA>	string type user agent name
Parameter Saving Mode		AT+CMMSSCONT
Max Response Time		-
Reference		Note

15.2.20 AT+CMMSPROFILE Set User Agent Profile

AT+CMMSPROFILE Set User Agent Profile		
Test Command AT+CMMSPROFI LE=?	Response +CMMSPROFILE: "UserAgentProfile" OK	Parameters See Write Command
Read Command AT+CMMSPROFI LE?	Response +CMMSPROFILE: <UAProfile> OK	Parameter See Write Command
Write Command AT+CMMSPROFI LE=<UAProfile>	Response OK or ERROR or +CME ERROR: <err>	Parameters <UAProfile> string type user agent profile
Parameter Saving Mode		AT+CMMSSCONT
Max Response Time		-
Reference		Note

15.2.21 AT+CMMSTIMEOUT Set MMS Timeout

AT+CMMSTIMEOUT Set MMS Timeout		
Test Command AT+CMMSTIMEO UT=?	Response +CMMSTIMEOUT: (10-1000),(10-1000) OK	

	Parameters See Write Command
Read Command AT+CMMSTIMEOUT?	Response +CMMSTIMEOUT: <Send timeout>,<Recv timeout> OK
	Parameters See Write Command
Write Command AT+CMMSTIMEOUT=<Send timeout>,<Recv timeout>	Response OK or ERROR or +CME ERROR: <err>
	Parameters <Send timeout> Send timeout time, integer type, in seconds. <Recv timeout> Receive timeout time, integer type, in seconds.
Parameter Saving Mode	AT+CMMSSCONT
Max Response Time	-
Reference	Note

15.2.22 AT+CMMSSTATUS Get MMS Status

AT+CMMSSTATUS Get MMS Status	
Test Command AT+CMMSSTATUS=?	Response OK
	Parameters See Write Command
Read Command AT+CMMSSTATUS?	Response +CMMSSTATUS:<status> OK or ERROR or +CME ERROR: <err>
	Parameters <status> status of MMS action <u>MMS_IDLE</u> MMS_DOWNLOADING MMS_DOWNLOADED

		MMS_SENDING MMS_RECEIVING MMS_RECEIVED MMS_READING MMS_READING_PUSH
Parameter Saving Mode		NO_SAVE
Max Response Time		-
Reference		Note

15.2.23 AT+CMMSINIT Initialize MMS Function

AT+CMMSINIT Initialize MMS Function	
Test Command AT+CMMSINIT=?	Response OK
	Parameters No Parameter
Execution Command AT+CMMSINIT	Response OK or ERROR or +CME ERROR: <err>
	No Parameter
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note When first entering the MMS function, this command must be executed.

15.2.24 AT+CMMSTERM Exit MMS Function

AT+CMMSTERM Exit MMS Function	
Test Command AT+CMMSTERM=?	Response OK
	Parameters No Parameter

Execution Command AT+CMMSTERM	Response OK or ERROR or +CME ERROR: <err> No Parameter
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note When exiting the MMS function, this command must be executed.

15.2.25 AT+CMMSSCONT Save MMS Context

AT+CMMSSCONT Save MMS Context	
Test Command AT+CMMSSCONT=?	Response OK Parameters See Execution Command
Read Command AT+CMMSSCONT?	Response +CMMSSCONT: <mode> +CMMSCID: <value> +CMMSCURL: <mmscurl> +CMMSUA: <UA> +CMMSPROFILE: <UAProfile> +CMMSPROTO: <Gateway>,<Port> +CMMSENDCFG: <valid>,<pri>,<sendrep>,<readrep>,<visible>,<class>,<subctrl>,<no tifyskip> +CMMSTIMEOUT: <Send timeout>,<Recv timeout> OK Parameters See Execution Command
Execution Command AT+CMMSSCONT	Response OK Parameters <mode> 0 saved, the value from NVRAM For other parameters, see the related command.
Parameter Saving	NO_SAVE

Mode	
Max Response Time	-
Reference	Note

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16 AT Commands for DDET Application

DTMF detection can be set or activated by DDET command.

16.1 Overview

Command	Description
AT+DDET	DTMF detection control

16.2 Detailed Descriptions of Commands

16.2.1 AT+DDET DTMF Detection Control

AT+DDET DTMF Detection Control	
Test Command AT+DDET=?	<p>Response</p> <p>+DDET: (0,1),(0-10000),(0,1),(0,1)</p> <p>OK</p> <p>Parameters See Write Command</p>
Read Command AT+DDET?	<p>Response</p> <p>+DDET: <mode>,<interval>,<reportMode>,<ssdet></p> <p>OK</p> <p>Parameters See Write Command</p>
Write Command AT+DDET=<mode>[,<interval>][,<reportMode>][,<ssdet>]	<p>Response</p> <p>OK</p> <p>ERROR</p> <p>Unsolicited Result Code</p> <p>1)If <reportMode> is set to 0 +DTMF: <key></p> <p>2)If <reportMode> is set to 1 +DTMF: <key>,<last time></p>

	<p>Parameters</p> <p><mode> Disable or enable DTMF detection control</p> <p> <u>0</u> Disable</p> <p> 1 Enable</p> <p><interval> The min interval between two same key URC. The range is 0-10000, the default value is 0. unit is ms.</p> <p><reportMode> URC report mode</p> <p> <u>0</u> Key value reported only</p> <p> 1 Key value and last time are reported, the last time is in ms</p> <p><key> Keytone detected, 0-9,*,#,A,B,C,D.if <ssdet> is 1,Single frequency sound 1400 and 2300 is supported too, when single frequency 1400HZ sound or 2300HZ sound is detected, +DTMF:1400 or +DTMF:2300 is reported</p> <p><last time> Duration of keytone playing. unit is ms.</p> <p><ssdet> Single frequency sound detect function on off</p> <p> <u>0</u> Switch off</p> <p> 1 Switch on</p>
Parameter Saving Mode	AT&W_SAVE
Max Response Time	-
Reference	<p>Note</p> <p>The parameters <interval>, <reportMode> and <ssdet> can not power off save.</p>

17 AT Commands for RECORD Application

17.1 Overview

Command	Description
AT+CREC	Record operation
AT+CRECORD	Record and send data to UART

17.2 Detailed Descriptions of Commands

17.2.1 AT+CREC Record Operation

AT+CREC Record Operation	
Test Command AT+CREC=?	Response +CREC: (1-n),(1-10) OK Parameters See Write Command
Read Command AT+CREC?	Response +CREC: <status> OK Parameters <status> 0 idle state 1 recording state 2 playing state
Write Command AT+CREC=<mode>,<id>	Response OK 1) mode=1,start record AT+CREC=1,<id>,<form>,<time>,<location>,<quality>,<input path> OK 2) mode=2,stop record AT+CREC=2 OK +CREC: 2,<id>,<form>,<time>,<len> 3) mode=3,delete record

AT+CREC=3,<id>
OK

4) mode=4,play record file
AT+CREC=4,<id>,<channel>,<level>[,<repeat>]
OK

5) mode=5,stop play record file
AT+CREC=5
+CREC: 0

OK

6) mode=6,read record data
AT+CREC=6,<id>,<len>,<offset>
+CREC: 6,<id>,<len>
<data>

OK

7) mode=7,view record file infomation
AT+CREC=7,[<id>]
+CREC: 7,<id>,<len>,<form>

OK

8) mode=8,query free space for recording
 If SD card is supported
AT+CREC=8
+CREC: 8,sys:<len> sd:<len>

OK
 If SD card is not supported
AT+CREC=8
+CREC: 8,<len>

OK

9) mode=9, create record file directory.
AT+CREC=9,<location>
OK

If error is related to ME functionality:
+CME ERROR: <err>

<err>	5000	Be recoding
	5001	Be playing
	5002	Audio busy
	5003	No space
	5004	Format error

- 5005 File operation failure
- 5006 File is null
- 5007 File size is error
- 5008 File is not exist

Parameters

<n> Number of operation support, if SD card is supported, the number will be 9, or will be 8

- <mode>**
- 1 Start record
 - 2 Stop record
 - 3 Delete record
 - 4 Play record
 - 5 Stop play record
 - 6 Get record data in hex format, the max length is 32K in bytes
 - 7 List record files information
 - 8 Query free space in bytes
 - 9 Create record file directory

<id> File ID number, 1-10 or file path with double quotation marks, such as "C:\User\1155165.amr".

- <form>** Record file format
- 0 AMR
 - 1 WAV
 - 2 WAV_ADPCM

<time> Recording time limit. The recording will be stopped if the recording time reaches the time limit, or there is a mistake/memory full/other events disturbed (call setup, etc.)/ Or manual operation. If 0 or default value is set, no time limit is set.

- <channel>** Channel
- 0 Main channel
 - 1 Aux channel

<level> 0-100, play volume

- <repeat>** Repeat
- 0 Play once
 - 1 Play infinitely

<len> Length in bytes. When read record data, the max length is 32K

<offset> Offset of the record file, it is less than the length of record file. When read the record file, if the **<len>+<offset>** is larger than the file length, then we need to return to the actual data length.

<data> Record file data in hex format

- <location>** Record file location
- 0 System FAT
 - 1 SD card

- <inputpath>** Input channel
- 0 MIC1

	1 MIC2 <quality> Record quality 0 Low 1 Medium 2 High 3 Best
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	Note <ul style="list-style-type: none"> Record will overwrite the record file with the same ID when free space is enough, but overwrite the record file with the same ID and format when free space is not enough. About 40K FAT space will remain for system use. The setting of input path doesn't take effect when record in call. Play in call support low quality WAV record file. Location relative setting only take effect when SD card is support and plugged in. When DDET is set to 1, record is not allowed in call. The value of parameter <id> of "AT+CREC=7" can not support file path. The value of parameter <form> of "AT+CREC=1" is invalid if the value of <id> is file path. The record file format can get from file path. The max length of parameter <len> of "AT+CREC=6" is 32K bytes.

17.2.2 AT+CRECORD Record and Send Data to UART

AT+CRECORD Record and Send Data to UART	
Test Command AT+CRECORD =?	Response +CRECORD: (0,1) OK
	Parameters See Write Command
Write Command AT+CRECORD =<mode>[,<interval>][,<crcmode>] >]	Response OK or +CRECORD:<data> or ERROR

	<p>Parameters</p> <p><data> UART data output in specified form, which is decided by</p> <p><crcmode></p> <p><mode></p> <p>0 Stop record</p> <p>1 Start record</p> <p><interval> UART data output interval, the range is 1-50, the default value is 50. unit is 20ms.</p> <p><crcmode> Data form</p> <p>0 UART data is the audio data</p> <p>1 0x7E is added to the head, 0x7E is converted to 0x7D 0x5E, 0x7D is converted to 0x7D 0x5D.</p> <p>2 0x7E is added to the head, 0x7E is converted to 0x7D 0x5E, 0x7D is converted to 0x7D 0x5D, a 2byte CRC code is added to the end</p>
Parameter Saving Mode	NO_SAVE
Max Response Time	-
Reference	<p>Note</p> <ul style="list-style-type: none"> ● When "AT+CRECORD" is set to 1, data mode will be entered and audio data will output on the UART every the interval time, any input on the UART will stop the record. "AT+CRECORD=0" take no effect. ● AMR 4.75K is supported only ● AMR file head "#*AMR\n" is not outputed

18 Supported Unsolicited Result Codes

18.1 Summary of CME ERROR Codes

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

<err> values used by common messaging commands:

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

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

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

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

18.2 Summary of CMS ERROR Codes

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

<err> values used by common messaging commands:

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

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

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

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

18.3 Summary of Unsolicited Result Codes

URC	Description	AT Command
+CCWA: <number>,<type>,<class>[,<alpha>]	Indication of a call that is currently waiting and can be accepted.	AT+CCWA=1
+CLIP: <number>,<type>,<subaddr>,<satype>,<alphaId>,<CLI validity>	The calling line identity (CLI) of the calling party when receiving a mobile terminated call.	AT+CLIP=1
+CRING: <type>	Indicates incoming call to the TE if extended format is enabled.	AT+CRIC=1
+CREG: <stat>[,<lac>,<ci>]	There is a change in the MT network registration status or a change of the network cell.	AT+CREG=<n>
+CCWV	Shortly before the ACM (Accumulated Call Meter) maximum value is reached. The warning is issued approximately when 5 seconds call time remains. It is also issued when starting a call if less than 5 s call time remains.	AT+CCWE=1
+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):
+COLP: <number>,<type>[,<subaddr>,<satype>,<alphaId>]	The presentation of the COL (Connected Line) at the TE for a mobile originated call.	AT+COLP=1
+CSSU: <code2>	Presentation status during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received.	AT+CSSN=<n>[,<m>]<m>=1
+CSSI: <code1>[,<index>]	Presentation status after a mobile originated call setup	AT+CSSN=<n>[,<m>]<n>=1
+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>,<alphaID>] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty> [,<number>,<type>,<alphaID>][...]]	Report a list of current calls of ME automatically when the current call status changes.	AT+CLCC=1
*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 zone>",<dst>	Refresh time and time zone by network.	
+CTZV: "<time zone>"	Refresh network time zone by network.	
DST: <dst>	Refresh Network Daylight Saving Time by network.	
+CSMINS: <n>,<SIM inserted>	Indicates whether SIM card has been inserted.	AT+CSMINS=1
+CDRIND: <type>	Indicates whether a CS voice call, CS data has been terminated.	AT+CDRIND=1
+CHF: <state>	Indicates the current channel.	AT+CHF=1
+CENG: <cell>,"<arfcn>,<rxl>,<rxq>,<mcc>,<mnc>,<bsic>,<cellid>,<rla>,<txp>,<lac>,<TA>"	Report of network information.	AT+CENG=<mode>[,<Ncell>] <mode>=2
MO RING	Shows call state of mobile originated	

	call: the call is alerted.	AT+MORING=1
MO CONNECTED	Shows call state of mobile originated call: the call is established.	AT+MORING=1
+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.	
+CSQN: <rsssi>,<ber>	Displays signal strength and channel bit error rate when <rsssi>, <ber>values change.	AT+EXUNSOL="SQ",1
+SIMTONE: 0	The generated tone playing is stopped or completed.	AT+SIMTONE
+STTONE: 0	The SIM Toolkit tone playing is stopped or completed.	AT+STTONE
+CR: <serv>	An intermediate result code is transmitted during connect negotiation when the TA has determined the speed and quality of service to be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. CONNECT) appears.	AT+CR=1
+CUSD: <n>[,<str_urc>[,<dcs>]]	Indicates an USSD response from the network, or network initiated operation.	AT+CUSD=1
RING	An incoming call signal from network is detected.	
NORMAL POWER DOWN	Heracles is powered down by the PWRKEY pin or AT command "AT+CPOWD=1".	
UNDER-VOLTAGE POWER DOWN	Under-voltage automatic power down.	
UNDER-VOLTAGE WARNING	under-voltage warning	
OVER-VOLTAGE POWER DOWN	Over-voltage automatic power down.	
OVER-VOLTAGE WARNING	over-voltage warning	
CHARGE-ONLY MODE	The module is charging by charger. (require hardware support)	
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
Call Ready	Module is powered on and phonebook initialization procedure is over.	AT+CIURC=1
SMS Ready	Module is powered on and SMS initialization procedure is over.	

+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	
RCV FROM: <IP ADDRESS>: <PORT>	shows remote IP address and port (only in single connection mode)	AT+CIPSRIP=1
+IPD, <data size>,<TCP/UDP>:<data>	display transfer protocol in IP header to received data or not (only in single connection mode)	AT+CIPHEAD AT+CIPSHOWTP
+RECEIVE, <n>,<length>	Received data from remote client (only in multiple connection mode)	
REMOTE IP: <IP ADDRESS>	Remote client connected in	
+CDNSGIP: 1,<domain name>,<IP>[,<IP2>]	DNS successful	AT+CDNSGIP
+CDNSGIP: 0,<dns error code>	DNS failed	
+PDP: DEACT	GPRS is disconnected by network	
+SAPBR <cid>: DEACT	The bearer based on IP connection of SIMCom application is deactivated.	
+HTTPACTION: <Method>,<StatusCode>,<DataLen>	Indicates HTTP method, Status Code responded by remote server and the length of data got.	AT+HTTPACTION=<Method>
+FTPGET: 1,<res>	FTPGET session	AT+FTPGET=1
+FTPPUT: 1,1,<maxlength>	It is ready to upload data.	AT+FTPPUT
+FTPPUT: 1,<res>	FTP return result	AT+FTPPUT
+FTPDELE: 1,<res>	FTP delete session	AT+FTPDELE
+FTPSIZE: 1,<res>,<size>	FTP size session	AT+FTPSIZE
+FTPMKD: 1,<res>	FTP create directory (not supported for all versions)	AT+FTPMKD
+FTPRMD: 1,<res>	FTP delete directory (not supported for all versions)	AT+FTPRMD
+FTPLIST: 1,<res>	FTP list session (not supported for all versions)	AT+FTPLIST

+CGREG: <stat>[,<lac>,<ci>]	Network Registration Status	AT+CGREG=<n>
ALARM RING +CALV: <n>	Indicate expired alarm.	AT+CALA=<time>[,<n>[,<recurr>]]

SIMCOM CONFIDENTIAL FILE

19 AT Commands Examples

19.1 Profile Commands

Demonstration	Syntax	Expect Result
The AT Command interpreter actively responds to input.	AT	OK
Display the product name and the product release information.	ATI	R14.18 OK
Display product identification information: the manufacturer, the product name and the product revision information.	AT+GSV	SIMCOM_Ltd SIMCOM_Heracles Revision: 1418B01HeraclesM32 OK
Display current configuration, a list of the current active profile parameters.	AT&V	[A complete listing of the active profile] OK
Reporting of mobile equipment errors. The default CME error reporting setting is disabled. Switch to verbose mode Displays a string explaining the error in more details.	AT+CMEE=? AT+CMEE? AT+CSCS=? AT+CSCS="TEST" AT+CMEE=2 AT+CSCS="TEST"	+CMEE: (0-2) OK +CMEE: 1 OK +CSCS: ("IRA","GSM","UCS2","HEX","PCCP","PCDN", "8859-1") OK ERROR OK +CME ERROR: invalid input value
Store the current configuration in nonvolatile memory. When the board is reset, the configuration	ATE0&W AT [Reset the board] AT	OK [No echo] OK [No echo]

changes from the last session are loaded.	ATE1&W AT	OK [No echo] OK [Echo on] OK
Set the ME to minimum functionality	AT+IPR? AT+CFUN=0 AT+IPR=115200 AT+IPR? AT+CFUN=0	+IPR: 0 OK OK +CPIN: NOT READY OK +IPR: 115200 OK OK +CPIN: NOT READY
ME has entered full functionality mode	AT+CFUN?	+CFUN:1 OK

19.2 SIM Commands

Demonstration	Syntax	Expect Result
List available phonebooks, and select the SIM phonebook.	AT+CPBS=? AT+CPBS="SM"	+CPBS: ("SM","ME","ON","FD") OK OK
Display the ranges of phonebook entries and list the contents of the phonebook.	AT+CPBR=? AT+CPBR=1,10	+CPBR: (1-250),40,14 OK [a listing of phonebook contents] OK
Write an entry to the current phonebook.	AT+CPBW=,"1391818xxxx",129,"Daniel" AT+CPBR=1,10	OK [a listing of phonebook contents] OK

Find an entry in the current phonebook using a text search.	AT+CPBF="Daniel"	+CPBF: 5, "13918186089",129,"Daniel" OK
Delete an entry from the current phonebook specified by its position index.	AT+CPBW=2 AT+CPBR=1,10	OK [a listing of phonebook contents] OK
Switch on engineering mode	AT+CENG =1,1 AT+CENG?	OK +CENG: 1,1 +CENG: 0,"0081,55,00,460,00,31,f9a1,08,05,1816,255" +CENG: 1,"0014,40,15,f2a1,460,00,1816" +CENG: 2,"0012,27,48,f411,460,00,1816" +CENG: 3,"0565,23,55,f1a1,460,00,1816" +CENG: 4,"0584,19,24,f1a3,460,00,1816" +CENG: 5,"0027,17,13,f412,460,00,1816" +CENG: 6,"0028,15,14,6253,460,00,1823" OK
Switch on engineering mode, and activate the URC report of network information	AT+CENG =2,1 AT+CENG?	OK +CENG: 2,1 +CENG: 0,"0081,55,00,460,00,31,f9a1,08,05,1816,255" +CENG: 1,"0014,42,15,f2a1,460,00,1816" +CENG: 2,"0012,25,48,f411,460,00,1816" +CENG: 3,"0565,21,55,f1a1,460,00,1816" +CENG: 4,"0584,19,24,f1a3,460,00,1816" +CENG: 5,"0027,17,13,f412,460,00,1816" +CENG: 6,"0028,17,14,6253,460,00,1823" OK
Switch on engineering mode, and with limited network information	AT+CENG =3,1 AT+CENG?	OK +CENG: 3,1 +CENG: 0,"460,00,1816,f9a1,31,56" +CENG: 1,"460,00,1816,f2a1,15,38" +CENG: 2,"460,00,1816,f411,48,26" +CENG: 3,"460,00,1816,f1a3,24,17" +CENG: 4,"460,00,1816,f412,13,16" +CENG: 5,"460,00,1823,6253,14,16" +CENG: 6,"460,00,1816,f2c3,43,14"

		OK
Switch on engineering mode, and with extern information	AT+CENG =4,1 AT+CENG?	OK +CENG: 4,1 //Dedicated mode: +CENG: 0,"0081,47,00,460,00,31,f9a1,08,05,1816,00,-66,0,0,64,7,64,0,0,0,EFR" //Idle mode: +CENG: 0,"0081,56,00,460,00,31,f9a1,08,05,1816,255,-57,177,617,x,x,x,x,x,x" +CENG: 1,"0014,35,15,f2a1,460,00,1816,91,531" +CENG: 2,"0012,25,48,f411,460,00,1816,51,491" +CENG: 3,"0565,24,55,f1a1,460,00,1816,45,485" +CENG: 4,"0027,20,13,f412,460,00,1816,31,471" +CENG: 5,"0584,20,24,f1a3,460,00,1816,29,469" +CENG: 6,"0028,16,14,6253,460,00,1823,18,455" OK
Perform a net survey to show all the cells' Information	AT+CELLIST=? AT+CELLIST=1,50 AT+CELLIST? AT+CELLIST	+CELLIST: (0,1),(10-7200) OK OK +CELLIST: 1,50 OK +CELLIST: 460,00,81,42,f9a1,1816,31 +CELLIST: 460,00,14,34,f2a1,1816,15 +CELLIST: 460,00,572,25,f2c3,1816,43 +CELLIST: 460,00,19,21,f2a3,1816,27 +CELLIST: 460,00,584,19,f1a3,1816,24 +CELLIST: 460,01,97,58,b5f0,144f,30 OK

19.3 General Commands

Demonstration	Syntax	Expect Result
Display the current network operator that the handset is currently registered with.	AT+COPS?	+COPS: 0,0,"CHINA MOBILE" OK
Display a full list of network operator names.	AT+COPN	+COPN: "20201", "COSMO" [skip a bit] +COPN: "901012","Maritime Comm Partner AS" OK
reduce its functionality. This will deregister the handset from the network.	AT+IPR? AT+CFUN=0 [wait for deregister] ATD6241xxxx; AT+CFUN=1	+IPR: 0 OK OK ERROR OK
Request the IMSI	AT+CIMI	460008184101641 OK

19.4 Call Control Commands

Demonstration	Syntax	Expect Result
Make a voice call	ATD6241xxxx;	OK MS makes a voice call
Hang up a call	ATH	OK Call dropped
Make a voice call using the last number facility. The initial call is established and then cancelled. The second call is made using the previous dial string.	ATD6241xxxx; ATH ATDL	OK OK OK
Example of a MT voice call Make MT voice call to MS.	ATA ATH	RING RING OK[accept call] OK[hang up call]

<p>Call related to supplementary service: AT+CHLD. This Command provides support for call waiting functionality.</p>	<p>AT+CHLD=<N></p>	<p>Return value: (0,1,1x,2,2x,3,4)</p>
<p>Terminate current call and accept waiting call. Establish a voice call from EVB, receive an incoming call (incoming call accepts waiting status), terminate active call and accept incoming call. Note call waiting must be active for this option – use "AT+CCWA=1,1" before running this demonstration.</p>	<p>AT+CCWA=1,1 ATD6241xxxx; <RX incoming call> AT+CHLD=1</p>	<p>OK OK RING +CCWA: "62418148 ",129,1,"" OK <waiting call active></p>
<p>Set current call to busy state and accept waiting call. Establish a voice call from EVB, receive an incoming call (incoming call accepts waiting status), place active call on hold and switch to incoming call. Terminate active call and switch back to original call. Note call waiting must have been previously enabled for this demonstration to work.</p>	<p>ATD6241xxxx; <RX incoming call> AT+CHLD=2 AT+CHLD=1</p>	<p>OK RING +CCWA: "13918186089",129,1,"" OK <waiting call active other call on hold> OK <incoming call terminated, dialed number now active></p>
<p>Switch between active and held calls. Establish a voice call from EVB, receive an incoming call (incoming call accepts</p>	<p>ATD6241xxxx; <RX incoming call> AT+CHLD=2</p>	<p>OK RING +CCWA: "13918186089",129,1,"" OK <incoming call activated, original on hold></p>

<p>waiting status), place active call on hold and switch to incoming call. Switch between both calls, placing each in the hold state whilst the other is active before terminating each one. This feature relies on knowing each call's ID. This is done using the List Current Calls (AT+CLCC) Command. A call's ID is required to switch between held and active calls. Held calls are not automatically resumed when all other calls are terminated. They need to be made active using the AT+CHLD=2x Command. Note call waiting must have been previously enabled for this demonstration to work.</p>	<p>AT+CHLD=21 AT+CLCC AT+CHLD=22 AT+CHLD=12 AT+CHLD=11</p>	<p>OK <original call activated, incoming call held> +CLCC: 1,0,0,0,0,"62418148",129,"" +CLCC: 2,1,1,0,0, "13918186089",129, "" OK <Note incoming call held flag set> OK <original call held, incoming call active> OK <terminate incoming call> OK <terminate original call></p>
<p>Send busy status to incoming waiting caller. Establish a voice call from EVB, receive an incoming call (incoming call accepts waiting status), send 'busy' status to waiting mobile. Note call waiting must have been previously enabled for this demonstration to work.</p>	<p>ATD6241xxxx; <RX incoming call> AT+CHLD=0</p>	<p>OK RING +CCWA: "13918186089",129,1,"" OK <incoming call sent busy msg, current call retained></p>
<p>Drop all calls on hold. Establish a voice call from EVB, receive an incoming call</p>	<p>ATD6241xxxx; <RX incoming call> AT+CHLD=2</p>	<p>OK RING +CCWA: "13918186089",129,1,"" OK</p>

(incoming call accepts waiting status), switch to incoming call and drop all waiting calls. Note call waiting must have been previously enabled for this demonstration to work.	AT+CHLD=0	<incoming call activated,original on hold> OK <incoming call activated, current call terminate>
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19.5 SIM Toolkit Commands

Please refer to SIM800 Series_STK_Application Note.

19.6 Audio Commands

Demonstration	Syntax	Expect Result
DTMF tones	AT+CLDTMF=2, "1,2,3,4,5"	OK
	AT+CLDTMF=2,"A ,B,C,D,E,F",50	OK

19.7 SMS Commands

Demonstration	Syntax	Expect Result
Set SMS system into text mode, as opposed to PDU mode.	AT+CMGF=1	OK
Send an SMS to myself.	AT+CSCS="GSM" AT+CMGS="+8613 91818xxxx" >This is a test <Ctrl+Z>	OK +CMGS: 34 OK
Unsolicited notification of the SMS arriving		+CMTI: "SM",1
Read SMS message that has just arrived. Note: the number should be the same as that given in the +CMTI notification.	AT+CMGR=1	+CMGR: "REC UNREAD", "+8613918186089", "", "02/01/30,20:40:31+00" This is a test OK
Reading the message again and change the	AT+CMGR=1	+CMGR: "REC READ", "+8613918186089", "", "02/01/30,20:40:31+00"

status to "READ" from "UNREAD"		This is a test OK
Send another SMS to myself.	AT+CMGS="+861391818xxxx" >Test again<Ctrl+Z>	+CMGS: 35 OK
Unsolicited notification of the SMS arriving		+CMTI: "SM",2
List all SMS messages. Note:"ALL" must be in uppercase.	AT+CMGL="ALL"	+CMGL: 1, "REC READ", "+8613918186089", "", "02/01/30,20:40:31+00" This is a test +CMGL: 2, "REC UNREAD", "", "+8613918186089", "", "02/01/30,20:45:12+00" Test again OK
Delete an SMS message.	AT+CMGD=1	OK
List all SMS messages to show message has been deleted.	AT+CMGL="ALL"	+CMGL: 2, "REC READ", "+8613918186089", "", "02/01/30,20:45:12+00" Test again OK
Send SMS using Chinese characters	AT+CSMP=17,167,2,25 AT+CSCS="UCS2" AT+CMGS="0031003300390031003800310038003x003x003x003x" >4E014E50<Ctrl+Z> >	OK OK +CMGS: 36 OK

19.8 GPRS Commands

Demonstration	Syntax	Expect Result
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Establish a GPRS context.	Setup modem driver Setup dial up connection with *99# Run internet explorer	Should be able to surf the web using Internet explorer.
There are two GPRS Service Codes for the ATD Command: Value 88 and 99. Establish a connection by service code 99. Establish a connection by service code 99 and using CID 1	ATD*99# ATD*99***1#	CONNECT CONNECT
Check if the MS is connected to the GPRS network Detach from the GPRS network Check if the MS is connected to the GPRS network	AT+CGATT? AT+CGATT=0 AT+CGATT?	+CGATT: 1 OK OK +CGATT: 0 OK
Check the class of the MS	AT+CGCLASS?	+CGCLASS: B OK
Establish a context using the terminal equipment: defines CID 1 and sets the PDP type to IP, access point name and IP address aren't set.	AT+CGDCONT=1, "IP", "object-connected.fr" ATD*99#	OK CONNECT
Cancel a context using the terminal equipment	AT+CGDCONT=1, "IP", "object-connected.fr" ATD*99#	OK CONNECT

Pause data transfer and enter Command mode by +++	+++	OK
Stop the GPRS data transfer	ATH	OK
Reconnect a context using the terminal equipment	AT+CGDCONT=1, "IP", "object-connected.fr" ATD*99#	OK CONNECT
Resume the data transfer	+++ ATO	OK CONNECT

*Quality of Service (QOS) is a special parameter of a CID which consists of several parameters itself.

The QOS consists of

The precedence class

The delay class

The reliability class

The peak throughput class

The mean throughput class

And is decided in "requested QOS" and "minimum acceptable QOS".

All parameters of the QOS are initiated by default value (=0) except the reliability class is 3. To define a QOS use the AT+CGQREQ or AT+CGQMIN Command.

Overwrite the precedence class of QOS of CID 1 and sets the QOS of CID 1 to be present	AT+CGQREQ=1,0,0,3,0,0	OK
Response: all QOS values of the activated CID.	AT+CGQREQ?	+CGQREQ: 1,0,0,3,0,0 +CGQREQ: 2,0,0,3,0,0 +CGQREQ: 3,0,0,3,0,0 OK
Set the QOS of CID 1 to not present. Once defined, the CID can be activated.	AT+CGQREQ=1	OK
Activate CID 1, if the CID is already active, the mobile returns OK at once. If no CID is defined the mobile	AT+CGACT=1,1 AT+CGACT=1,3	OK +CME ERROR: requested service option not subscribed.

<p>responds +CME ERROR: invalid index. Note: If the mobile is NOT attached by AT+CGATT=1 before activating, the attachment is automatically done by the AT+CGACT Command.</p>		
<p>Use the defined and activated CID to get online. The mobile can be connected using the parameters of appointed CID or using default parameter</p>	<p>AT+CGDATA="PP P", 1</p>	<p>CONNECT</p>

The mobile supports Layer 2 Protocol (L2P) PPP only.

Note: If the mobile is NOT attached by AT+CGATT=1 and the CID is NOT activated before connecting, attaching and activating is automatically done by the AT+CGDATA Command. Some providers require using an APN to establish a GPRS connection. So if user uses the Microsoft Windows Dial-Up Network and ATD*9... to connect to GPRS, user must provide the context definition as part of the modem definition (Modem properties/Connection/Advanced.../Extra settings.) As an alternative, user can define and activate the context in a terminal program (e.g. Microsoft HyperTerminal) and then use the Dial-Up Network to send only the ATD Command.

19.9 TCPIP Commands

Please refer to SIM800 Series_TCPIP_Application Note.

19.10 IP Commands

Please refer to SIM800 Series_IP_Application Note. Chapter 3.1 describes how to config bearer contexts of HTTP and FTP applications.

19.11 PING Commands

Demonstration	Syntax	Expect Result
Ping Request	AT+CGATT?	+CGATT: 1 OK

	<p>AT+CSTT="object-connected.fr"</p> <p>AT+CIICR</p> <p>AT+CIFSR</p> <p>AT+CIPPING="www.google.cn"</p>	<p>OK</p> <p>OK</p> <p>10.78.245.128</p> <p>+CIPPING: 1,"203.208.37.99",70,239 +CIPPING: 2,"203.208.37.99",53,238 +CIPPING: 3,"203.208.37.99",60,239 +CIPPING: 4,"203.208.37.99",50,239</p> <p>OK</p>
Other Device Ping To The Module	<p>On the Modem: AT+CGATT?</p> <p>AT+CSTT="object-connected.fr"</p> <p>AT+CIPBEIPING=1 (If on 6252 platform, don't need this at)</p> <p>AT+CIICR</p> <p>AT+CIFSR</p> <p>On the Other Device: AT+CIPPING="10.78.245.128"</p>	<p>On the Modem: +CGATT: 1</p> <p>OK</p> <p>OK</p> <p>OK</p> <p>OK</p> <p>10.78.245.128</p> <p>On the Other Device: +CIPPING: 1," 10.78.245.128",70,239 +CIPPING: 2," 10.78.245.128",53,238 +CIPPING: 3," 10.78.245.128",60,239 +CIPPING: 4," 10.78.245.128",50,239</p> <p>OK</p>
IP Filter Setting	<p>AT+CIPFLT=1,1,"198.211.19.12","255.255.0.0"</p> <p>AT+CIPFLT=1,, "10.43.21.69","255.0.0.0"</p>	<p>OK</p> <p>OK</p>

	AT+CIPFLT=0,1	OK
	AT+CIPFLT=2	OK
Set the Mode When Receiving an IP Packet	AT+CIPCTL=0	OK
	AT+CIPCTL=1	OK
	AT+CIPCTL=2	OK

19.12 HTTP and FTP Commands

Please refer to SIM800 Series_IP_Application Note.

19.13 GSM Location Commands

Demonstration	Syntax	Expect Result
Activate bearer profile	AT+SAPBR=3,1,"Con ontype","GPRS"	OK
	AT+SAPBR=3,1,"A PN","object-connect ed.fr"	OK
	AT+SAPBR =1,1	OK
	AT+SAPBR=2,1	+SAPBR: 1,1,"10.89.193.1" OK
Get location	AT+CIPGSMLOC= 1,1	+CIPGSMLOC: 0,121.354848,31.221402,2011/01/26,02:41:06 OK
	AT+CIPGSMLOC= 2,1	+CIPGSMLOC: 0,2011/01/26,03:12:58 OK
Deactivate bearer profile	AT+SAPBR=0,1	OK

19.14 EMAIL Commands

Please refer to SIM800 Series_Email_Application Note.

19.15 MMS Commands

Demonstration	Syntax	Expect Result
Initialization	AT+CMMSINIT	OK
Configuration	AT+CMMSCURL= "mmsc.monternet.co m"	OK
	AT+CMMSCID=1	OK
	AT+CMMSPROTO ="10.0.0.172",80	OK
	AT+CMMSSEND CG=6,3,0,0,2,4	OK
Active bearer profile	AT+SAPBR=3,1,"C ontype","GPRS"	OK
	AT+SAPBR=3,1,"A PN","CMWAP"	OK
	AT+SAPBR=1,1	OK
	AT+SAPBR=2,1	+SAPBR: 1,1,"10.89.193.1" OK
Send MMS	AT+CMMSEDIT=1	OK
	AT+CMMSDOWN ="PIC",12963,2000 0	CONNECT OK
	AT+CMMSDOWN ="TITLE",3,5000	CONNECT OK
	AT+CMMSRECP="13918181818"	OK
	AT+CMMSSEND OK
Receive MMS When received a MMS push message,UART will output	AT+CMMSRECV=3	OK +CMMSRECV: "+8613818181818", "2008-05-02, 03:38:12", "", 26670

message, such as "+CMTI: "SM",3,"MMS PUSH"		1, "image0.jpg",7,26625 OK
	AT+CMGD=3	OK
Receive MMS when the MMS push message is a concatenated message. UART output messages: +CMTI: "SM",1,"MMS PUSH",2,1 +CMTI: "SM",2,"MMS PUSH",2,2 +CMTI: "SM",1,"MMS PUSH"	AT+CMMSEEDIT=0 AT+CMMSRECV=1	OK +CMMSRECV: "+85266097746","2009-04-15,10:41:21","",49 1,"text0.txt",4,7 OK
	AT+CMGD=1	OK
Read a file of MMS	AT+CMMSREAD=1	+CMMSREAD: "image0.jpg", 26625 OK
Exit MMS function	AT+CMMSTERM	OK

19.16 DDET Commands

Demonstration	Syntax	Expect Result
enable DTMF detection	AT+DDET=1,0,0 <i>//start DDET, interval is 0, report mode is 0</i>	OK
Set up a call connection	ATD*****;	OK If module detected DTMF, URC will be reported via serial port +DTMF:1 <i>//report DTMF value</i> +DTMF:2 +DTMF:3
Receive an incoming call	ATA	OK If module detected DTMF, URC will be reported via serial port +DTMF:1 <i>//report DTMF</i>

		<i>value</i> +DTMF:2 +DTMF:3 +DTMF:4
enable DTMF detection	AT+DDET=1,1000, 1 <i>//start DDET,</i> <i>interval is 1000ms,</i> <i>report mode is 1</i>	OK
Set up a call connection	ATD*****;	OK If module detected DTMF, URC will be reported via serial port, the minimal interval between two identic DTMF is 1000ms. +DTMF: 1,160 <i>//report DTMF value and last time</i> +DTMF: 2,300 +DTMF: 3,200
Receive an incoming call	ATA	OK If module detected DTMF, URC will be reported via serial port +DTMF: 1,160 <i>//report DTMF value and last time</i> +DTMF: 2,300 +DTMF: 3,200

19.17 RECORD Commands

Demonstration	Syntax	Expect Result
Start record	AT+CREC=1,1,0 <i>//start record</i>	OK <i>// the record id is 1, format is AMR</i>
Stop record	AT+CREC=2 <i>//stop record</i>	OK +CREC: 2,1,0,15,16386 <i>//URC will be reported after stopping, which</i>

		<i>indicate the format, including record id, time in seconds, length in bytes</i>
Delete record	AT+CREC=3,1 <i>//delete record with id 1</i>	OK
Play record file	AT+CREC=4,1,0,80 <i>//play record file, channel is 0, the volume is 80</i>	OK
Stop play record file	AT+CREC=5 <i>//stop play record file</i>	+CREC: 0 OK <i>//URC is reported to show statuses IDLE</i>
Get record status	AT+CREC? <i>//get record status</i>	+CREC: 2 OK <i>//Recording ,delete and other play operations are not allowed when playing</i>
List record file information	AT+CREC=7 <i>//list record file list</i>	+CREC: 7,1,7728,0 +CREC: 7,2,53820,1 OK <i>// two record file, one Is</i>
Get record file data	AT+CREC=6,1,200,0 <i>//get 200 bytes from record file with offset 0 to file head</i>	+CREC: 6,1,200 2321414D520A04923231D828E7B0E222B6D0 B604941AEC23377C8A442AFC93440450E01 33334D31577CB8E88FE0450A54AD57AC230 86C24529FC0422434276AB0E88DCF481E23 A0419F050336489D54CB57224B0042119466 B5B5521D542FF354204C0422385A00B20DB C67DC322049D8708488970630CECBFE40004 C0892EF5914BD62A234C0B5804334110F881 8197ECA9D7F02E046EDAD5EBA75928D948 FBB19E046EAF1C3A90168351C302DF88044 60C1409B18966E0187F88B404CA88F4F891B FE72BCF45D7 OK <i>//data in Hex format</i>
Query free space	AT+CREC=8 <i>//query free memory space</i>	+CREC: 8,938600 OK <i>//the free memory space is 938600 bytes</i>
Create record file	AT+CREC=9,0	OK

directory

```
//create record file  
directory on system  
FAT
```

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