# L206C AT DOCUMENT

**GSM/GPRS Module Series**

**Version**：V1.26

**Date**： 2019-05-17

## Notice

Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and therefore may not be activated or may be limited by local network operators or network service providers.

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# Revision History

| Date | Version | Description of change | Author |
|------|---------|----------------------|--------|
| 2017-2-17 | V1.0 | Initial | Caster |
| 2017-2-24 | V1.1 | Add commands | Caster |
| 2017-2-24 | V1.2 | Modified commands formats | Caster |
| 2017-3-3 | V1.3 | Modified commands formats | Caster |
| 2017-3-13 | V1.4 | Modified commands formats | Caster |
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| 2017-4-11 | V1.7 | Modified commands formats | Caster |
| 2017-4-18 | V1.8 | Modified AT+CLCC command<br>Modified AT+HTTPSCONT?<br>Modified FTP commands<br>Modified CNMI and CFGRI descripition | Ym.lin<br>L.yang<br>Fx.fu<br>Ym.lin |
| 2017-4-28 | V1.9 | Add Email AT commands<br>Add file system AT commands<br>Add double UART AT commands | Gd.yang<br>Caster<br>Caster |
| 2017-5-5 | V1.10 | Add AT+CIPSENDTIME | Caster |
| 2017-5-12 | V1.11 | Modified file system commands | Ym.lin |
| 2017-5-15 | V1.12 | Add SSL AT commands | Gd.yang |
| 2017-5-20 | V1.14 | Modified FTP commands | Fx.fu |
| 2017-5-20 | V1.15 | Modified AT+SSLSETCERT | Gd.yang |
| 2017-6-7 | V1.16 | Modified AT+EMAILSSL and AT+HTTPSSL<br>Modified CIPSSL, FTPSSL and SSLSETCERT<br>Add MQTT related commands | l.yang<br>gd.yang<br>Ym.lin |
| 2017-6-14 | V1.16 | Change ATI command | l.jiang |
| 2017-6-28 | V1.17 | Change MQTT command example | Ym.lin |
| 2017-6-28 | V1.18 | Change AT+CSTT timeout value | Caster |
| 2017-7-20 | V1.19 | Change AT+FSFLSIZE description<br>Add AT+CSMSREJ | Caster<br>Ym.lin |
| 2017-7-20 | V1.20 | Change AT+CAGCSET description<br>Change AT+CIPHEAD description | Caster<br>Ym.lin |
| 2017-7-21 | V1.21 | Modified MQTT commands | Ym.lin |
| 2017-9-21 | V1.22 | Change AT+SSLSETCERT description | Caster |
| 20171129 | V1.23 | Add AT+FSPLAY and AT+FSSTOP | Caster |

| 20171220 | V1.24 | Modified AT+FSPLAY | Ym.lin |
|----------|-------|-------------------------------------------|--------|
| 20171220 | V1.25 | Modified Chapter:Overview of SSL AT Commands | Caster |

# Table of Contents

# 1    Introduction

## 1.1    Overview

This document introduces the supported AT command set of L206C project. The target MP branch is L206C related product and after.

We don't suggest using proprietary command in a multiple command. There might be abnormal situation occurs.

## 1.2    References

- [1] 3GPP TS 27.007 V3.13.0 (2003-03)
- [2] ETSI TS 27.005 V3.1.0 (2000-01)
- [3] ITU-T V.25 ter (07/1997)

# 2   V.25ter AT Commands

## 2.1 A/   Re-issues the Last Command Given

| Execution Command | Response |
|---|---|
| **A/** | Re-issues the previous Command |
| Reference<br>V.25ter | Note |

## 2.2 ATA   Answer an Incoming Call

Answers and initiates a connection to an incoming call.

| Execution Command | Response |
|---|---|
| **ATA** | **CONNECT**<br>**CONNECT** <text><br>**NO CARRIER**<br>**ERROR** |
| Reference | Note<br>In UCM project , ATA command will sent to MMI for SYNC |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<text>** | **28800** | Connected with data bit rate of28800 bits/s (HSCSD) |
| | **19200** | Connected with data bit rate of19200 bits/s (HSCSD) |
| | **14400** | Connected with data bit rate of14400 bits/s (HSCSD) |
| | **9600** | Connected with data bit rate of9600 bits/s |
| | **4800** | Connected with data bit rate of4800 bits/s |
| | **2400** | Connected with data bit rate of2400 bits/s |

## 2.3 **ATD    Mobile Originated Call to Dial a Number**

Initiates a phone connection, which may be data, facsimile (+FCLASS> 0), or voice (phone number terminated by semicolon). The phone number used to establish the connection will consist of digits and modifiers, or a stored number specification. ATD memory dial can originate call to phone number in entry location <n> (the memory storage of +CPBS setting will be used.). ATDL is used to dial LDN (last dialed number) and it will always dial as voice call.

| Execution Command | Response |
|---|---|
| **ATD<dial string>**<br>Memory dial command :<br>**ATD><n> [<mgsm][;]** | **CONNECT**<br>**CONNECT** <text><br>**NO CARRIER**<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **< dial string>** | .0 1 2 3 4 5 6 7 8 9 +. | Valid characters for origination |
| | W | The W modifier is ignored but is included for compatibility reasons only, The comma modifier is ignored but is included for compatibility reasons only; Informs the Infrared Modem that the number is a voice number rather than a fax or data number |
| | T | The T modifier is ignored but is included only for compatibility purposes |
| | P | The P modifier is handled (pulse DTMF dialing functionality) |
| **<text>** | 28800 | Connected with data bit rate of28800 bits/s (HSCSD) |
| | 19200 | Connected with data bit rate of19200 bits/s (HSCSD) |
| | 14400 | Connected with data bit rate of14400 bits/s (HSCSD) |
| | 9600 | Connected with data bit rate of9600 bits/s |
| | 4800 | Connected with data bit rate of4800 bits/s |
| | 2400 | Connected with data bit rate of2400 bits/s |
| **<mgsm>** | String of **GSM** modifiers: | |
| | I | Actives **CLIR** (Disables presentation of own number to called party) |

| | | |
|---|---|---|
| | **i** | Deactivates **CLIR** (Enable presentation of own number<br>to called party) |
| | **G** | Activates Closed User Group invocation for this call only |
| | **g** | Deactivates Closed User Group invocation for this call<br>only |
| **<;>** | | Only required to set up voice call, return to Command state |

## 2.4 **ATD><n>   Originate Call to Phone Number in Current Memory**

Originate Call to Phone Number in Current Memory.

| Execution Command | Response |
|---|---|
| **ATD><n>[<clir>][ <cug>][;<br>]** | **OK**<br>**Or**<br>**ERROR**<br><br>If no dial tone<br>**NO DIALTONE**<br><br>If busy<br>**BUSY**<br><br>If a connection cannot be established<br>**NO CARRIER**<br><br>If the remote station does not answer<br>**NO ANSWER**<br><br>If connection successful and non-voice call.<br>CONNECT<text> TA switches to data mode.<br>Note: <text> output only if ATX<value> parameter setting with the<value>>0<br>When TA returns to Command mode after call release<br>**OK**<br><br>If successfully connected and voice call<br>**OK** |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<n>** | Integer type memory location should be in the range of locations available in the memory used | |
| **<clir>** | I | Override the CLIR supplementary service subscription default value for this call Invocation (restrict CLI presentation) |
| | i | Override the CLIR supplementary service subscription default value for this call Suppression (allow CLI presentation) |
| **<cug>** | G | Control the CUG supplementary service information for this call CUG Not supported |
| | g | Control the CUG supplementary service information for this call CUG Not supported |
| **<;>** | Only required to set up voice call , return to command state | |

## 2.5 **ATD><str>   Originate Call to Phone Number in Memory Which Corresponds to <str>**

Originate Call to Phone Number in Memory Which Corresponds to <str>.

| Execution Command | Response |
|---|---|
| **ATD><str>[<clir>][<cug>][ ;]** | **OK** **Or** **ERROR** If no dial tone **NO DIALTONE** If busy **BUSY** If a connection cannot be established **NO CARRIER** If the remote station does not answer |

**NO ANSWER**

If connection successful and non-voice call.
CONNECT<text> TA switches to data mode.
Note: <text> output only if ATX<value> parameter setting with the<value>>0
When TA returns to Command mode after call release
**OK**

If successfully connected and voice call
**OK**

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<str>** | String type (string should be included in quotation marks) | |
| **<clir>** | I | Override the CLIR supplementary service subscription default value for this call<br>Invocation (restrict CLI presentation) |
| | i | Override the CLIR supplementary service subscription default value for this call<br>Suppression (allow CLI presentation) |
| **<cug>** | G | Control the CUG supplementary service information for this call<br>CUG Not supported |
| | g | Control the CUG supplementary service information for this call<br>CUG Not supported |
| **<;>** | Only required to set up voice call , return to command state | |

## 2.6 **ATDL    Redial Last Telephone Number Used**

Redial Last Telephone Number Used.

| Execution Command | Response |
|---|---|
| **ATDL** | **OK**<br>**Or**<br>**ERROR**<br><br>If no dial tone<br>**NO DIALTONE**<br><br>If busy<br>**BUSY**<br><br>If a connection cannot be established<br>**NO CARRIER**<br><br>If the remote station does not answer<br>**NO ANSWER**<br><br>If connection successful and non-voice call.<br>CONNECT<text> TA switches to data mode.<br>Note: <text> output only if ATX<value> parameter setting with the<value>>0<br>When TA returns to Command mode after call release<br>**OK**<br><br>If successfully connected and voice call<br>**OK** |
| Reference | Note<br>This Command redials the last voice and data call number used.<br>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. |

## 2.7 **ATE   Set Command Echo Mode**

The setting of this parameter determines whether or not the DCE echoes characters received from the DTE during command state and online command state.

| Execution Command | Response |
|---|---|
| **ATE**[<value>] | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **< value>** | **0**    DCE does not echo characters during command state and online command state. |
|  | **1**    DCE echoes characters during command state and online command state. |

## 2.8 **ATH   Disconnect Existing Connection**

This command is used to terminate a connection.

| Execution Command | Response |
|---|---|
| **ATH** | **OK** |
|  | Note<br>In non-UCM projects (excluding Neptune Gemini with BT supported) projects, ATH can only hang up the call from the same source. In UCM project , ATH command will sent to MMI for SYNC |

## 2.9 **ATI    Display Product Identification Information**

Request Identification Information.

| Execution Command | Response |
|---|---|
| **ATI** | **<text>**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<text>** | product information for example: **L206Cv01.01b04** |

## 2.10    **ATL    Set Monitor speaker loudness**

Set volume of the monitor speaker.

| Execution Command | Response |
|---|---|
| **ATL[<value>]** | **OK** |
| Reference<br>V.25ter | Note<br>No effect in GSM |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | 0..9    Volume |

## 2.11    **ATM    Set Monitor Speaker Mode**

This command is used to set monitor speaker mode.

| Execution Command | Response |
|---|---|
| **ATM[<value>]** | **OK** |
| Reference<br>V.25ter | Note<br>No effect in GSM |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | 0..9    Mode |

## 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.<br>**OK**<br><br>To prevent the **+++** escape sequence from being misinterpreted as data, it should comply to following sequence:<br>1.  No characters entered for T1 time (1 second)<br>2.  "+++" characters entered with no characters in between (0.5 second)<br>3.  No characters entered for T1 timer (0.5 second)<br>4.  Switch to Command mode, otherwise go to step 1. |
| Reference<br>V.25ter | Note<br>To return from Command mode back to data mode: Enter **ATO**. |

## 2.13 ATO Switch from Command Mode to Data Mode

Switch from on-line command mode to on-line data mode during an active call. This command will return ERROR when not in on-line command mode.

| Execution Command | Response |
|---|---|
| **ATO[n]** | 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 |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0   Switch from command mode to data mode. |
| **<text>** | **28800**   Connected with data bit rate of28800 bits/s (HSCSD) <br> **19200**   Connected with data bit rate of19200 bits/s (HSCSD) <br> **14400**   Connected with data bit rate of14400 bits/s (HSCSD) <br> **9600**   Connected with data bit rate of9600 bits/s <br> **4800**   Connected with data bit rate of4800 bits/s <br> **2400**   Connected with data bit rate of2400 bits/s |

## 2.14 ATP Select Pulse Dialing

Select Pulse Dialing

| Execution Command | Response |
|---|---|
| **ATP** | **OK** |
| Reference V.25ter | Note No effect in GSM |

## 2.15 **ATQ Set Result Code Presentation Mode**

Set result code suppression mode.

| Execution Command | Response |
|---|---|
| **ATQ<value>** | **OK** If value is **0**. <br> **(none)** If value is **1** (because result codes are suppressed). <br> **ERROR** For unsupported values (if previous value was **Q0**). <br> **(none)** For unsupported values (if previous value was **Q1**). |
| | Note <br> If use input ATQ, it is equal to ATQ1 by default |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<value>** | **0** | DCE transmits result codes. |
| | **1** | Result codes are suppressed and not transmitted. |

## 2.16 **ATS0 Set Number of Rings before Automatically Answering the Call**

Automatic answer.

This S-parameter controls the automatic answering feature of the DCE. If set to 0, automatic answering is disabled. If set to a non-zero value, the DCE shall cause the DCE to answer when the incoming call indication (ring) has occurred the number of times indicated by the value.

| Execution Command | Response |
|---|---|
| **ATS0=<value>** | This parameter setting determines the number of rings before auto-answer <br> **OK** |
| Read Command <br><br> **ATS0?** | Response <br> **<value>** <br><br> **OK** |
| Reference <br> V.25ter | Note <br> If <value> is set too high, the calling party may hang up before the call can be answered automatically. <br> If using CMUX port, ATH and AT+CHUP can hang up the call(automatically answering) only in the CMUX channel 0. <br> If using dual-physical serial port, ATH and AT+CHUP can hang up the call(automatically answering) only in UART1. |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **\<value\>** | **0** | Automatic answering is disabled.. |
| | **1-255** | Number of rings the modem will wait for before answering the phone if a ring is detected |

## 2.17 ATS3 Set Command Line Termination Character

Command line termination character
This S-parameter represents the decimal IA5 value of the character recognized by the DCE from the DTE to terminate an incoming command line. It is also generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S4 parameter (see the description of the V parameter for usage).

| Execution Command<br><br>**ATS3=\<value\>** | Response<br>This parameter setting determines the character recognized by TA to terminate an incoming Command line. The TA also returns this character in output.<br>**OK or ERROR** |
|---|---|
| Read Command<br><br>**ATS3?** | Response<br>**\<value\>**<br><br>**OK** |
| Reference<br>V.25ter | Note<br>Default 13=CR. It only supports default value. |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **\<value\>** | **13** | Command line termination character. |

## 2.18 ATS4 Set Response Formatting Character

This S-parameter represents the decimal IA5 value of the character generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with theS3parameter(see the description of the V parameter for usage).

| Execution Command<br><br>**ATS4=\<value\>** | Response<br>This parameter setting determines the character generated by the TA for result code and information text.<br>**OK**<br>**ERROR** |
|---|---|
| Read Command<br><br>**ATS4?** | Response<br>**\<value\>**<br><br>**OK** |
| Reference<br>V.25ter | Note<br>Default 10 = LF. It only supports default value. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<value\>** | <u>**10**</u>    Response formatting character. |

## 2.19   ATS5   Set Command Line Editing Character

Command line editing character.
This S-parameter represents the decimal IA5 value of the character recognized by the DCE as are quest to delete from the command line the immediately preceding character.

| Execution Command<br><br>**ATS5=\<value\>** | Response<br>This parameter setting determines the character recognized by TA as a request to delete from the Command line the immediately preceding character.<br>**OK or ERROR** |
|---|---|
| Read Command<br><br>**ATS5?** | Response<br><br>**\<value\>**<br><br>**OK** |
| Reference<br>V.25ter | Note<br>Default 8=Backspace.. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<value\>** | **0-<u>8</u>-127**   Response formatting character. |

## 2.20 ATS6 Pause Before Blind Dialing

Pause before blind dialing.

| Read Command | Response |
|---|---|
| **ATS6?** | **\<n\>**<br>**OK** |
| Execution Command<br><br>**ATS6=\<n\>** | Response<br><br>**OK**<br>Or<br><br>**ERROR** |
| Reference<br>V.25ter | Note<br>No effect in GSM |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<n\>** | **0. . .999**     time |

## 2.21 ATS7 Set Number of Seconds to Wait for Connection Completion

Connection completion timeout.

This parameter specifies the amount of time, in seconds, that the DCE shall allow between either answering a call (automatically or by the A command) or completion of signaling of call addressing information to network (dialing), and establishment of a connection with the remote DCE. If no connection is established during this time, the DCE disconnects from the line and returns are result code indicating the cause of the disconnection.

| Execution Command<br><br>**ATS7=<value>** | Response<br>This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call.<br>**OK** or **ERROR** |
|---|---|
| Read Command<br><br>ATS7? | Response<br><value><br><br>**OK** |
| Reference<br>V.25ter | Note<br>If called party has specified a high value for ATS0=<value>, call setup may fail.<br>The correlation between ATS7 and ATS0 is important<br>Example: Call may fail if ATS7=30 and ATS0=20.<br>ATS7 is only applicable to data call |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | **1-60-255**   Number of seconds to wait for connection completion. |

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

Comma dial modifier time.

This parameter specifies the amount of time, in seconds, that the DCE shall pause, during signaling of call addressing information to the network (dialing), when a "," (comma) dial modifier is encountered in a dial string.

| Execution Command | Response |
|---|---|
| **ATS8=\<value\>** | **OK** or **ERROR** |
| Read Command<br><br>ATS8? | Response<br>**\<value\>**<br><br>**OK** |
| Reference<br>V.25ter | Note<br>No effect in GSM |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **\<value\>** | **0-255** | The value of this register determines how long the modem should pause when it sees a comma in the dialing string |

## 2.23  ATS10   Set Disconnect Delay after Indicating the Absence of Data Carrier

Automatic disconnect delay.

This parameter specifies the amount of time, in tenths of a second,   that the DCE will remain connected to the line (off-hook) after the DCE has indicated the absence of received line signal. If the received line signal is once again detected before the time specified in S10 expires, the DCE remains connected to the line and the call continues.

| Execution Command<br><br>**ATS10=<value>** | Response<br>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.<br>**OK** or **ERROR** |
|---|---|
| Read Command<br><br>**ATS10?** | Response<br><br>**<value>**<br><br>**OK** |
| Reference<br>V.25ter | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | **1-15-254**    Number of tenths seconds of delay |

## 2.24  ATT   Select Tone Dialing

We do not support.
This setting is ignored.

## 2.25 **ATV TA Response Format**

Set DCE response format.

| Execution Command | Response |
|---|---|
| **ATV[<value>]** | This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses. |
| |     When<value>=0 |
| | **0** |
| |     When<value>=1 |
| | **OK** |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<value>** | **0** | Information response: <text><CR><LF>Short result code format: <numeric code><CR> |
| | **1** | Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF> |
| **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 |

## 2.26 ATX　Set CONNECT Result Code Format and Monitor Call Progress

The setting of this parameter determines whether or not the DCE transmits particular result codes to the DTE. It also controls whether or not the DCE verifies the presence of dial tone when it first goes off-hook to begin dialing, and whether or not engaged tone (busy signal) detection is enabled. However, this setting has no effect on the operation of the W dial modifier, which always checks for dial tone regardless of this setting, nor on the busy signal detection capability of the W and @dial modifiers.

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

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<value>** | **0** | CONNECT result code is given upon entering online data state. Dial tone and busy detection are disabled. |
| | **1** | CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are disabled. |
| | **2** | CONNECT <text> result code is given upon entering online data state. Dial tone detection is enabled, and busy detection is disabled. |
| | **3** | CONNECT <text> result code is given upon entering online data state. Dial tone detection is disabled, and busy detection is enabled. |
| | <u>**4**</u> | CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are both enabled. |

## 2.27  ATZ   Reset Default Configuration

Reset to default configuration

| Execution Command | Response |
|---|---|
| **ATZ[<value>]** | TA sets all current parameters to the user defined profile. **OK**<br><br>**ERROR** |
| Reference<br>V.25ter | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | <u>0</u>        Restore profile 0 |

## 2.28  AT&C   Set DCD Function Mode

Set DCD Function Mode

| Execution Command | Response |
|---|---|
| **AT&C[<value>]** | This parameter determines how the state of circuit 109 **(DCD)** relates to the detection of received line signal from the distant end.<br>**OK**<br>Or<br><br>**ERROR** |
| Reference<br>V.25ter | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | 0        **DCD** line is always ON<br><u>1</u>        **DCD** line is ON only in the presence of data carrier |

## 2.29  **AT&V   Display Current Configuration**

Display Current Configuration

| Execution Command | Response |
|---|---|
| **AT&V[<n>]** | TA returns the current parameter setting.<br><current configurations text><br>**OK**<br><br>**ERROR** |
| Reference<br>V.25ter | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0        Responses in numeric format |

## 2.30  **AT&W   Store Active Profile**

Store Active Profile.

| Execution Command | Response |
|---|---|
| **AT&W[<n>]** | TA stores the current parameter setting in the user defined profile.<br>**OK**<br><br>**ERROR** |
| Reference<br>V.25ter | Note<br>The user defined profile is stored in non volatile memory. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0        Store the current configuration in profile 0 |

Parameter stored by &W

| Command | Parameter name | Displayed by &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+CBST | <speed>,<name>,<ce> | 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+CSCLK | <n> | Y |
| AT+CIURC(AUTO_SAVE) | <mode> | Y |
| AT+CFGRI | <mode> | Y |
| AT+CMTE | <mode> | Y |
| AT+CANT(AUTO_SAVE) | <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(AUTO_SAVE) | <mode> | Y |

| AT+SVR | <voice_rate_coding> | Y |
|---|---|---|
| AT+CCPD(AUTO_SAVE) | <mode> | Y |
| AT+CSGS(AUTO_SAVE) | <mode> | Y |
| AT+CNETLIGHT(AUTO_SAVE) | <mode> | Y |
| AT+SLEDS(AUTO_SAVE) | <mode>,<timer_on>,<timer_off> | Y |
| AT+CSDT | <mode> | Y |
| AT+CSMINS(AUTO_SAVE) | <n> | Y |
| AT+EXUNSOL(AUTO_SAVE) | <exunsol> | Y |
| AT+IPR | <n> | Y |
| AT+IFC | <TA_by_TE>, <TE_by_TA> | Y |
| AT+ICF | <format>,<parity> | Y |
| AT+CMNRP | <mode> | Y |
| AT+ECHARGE | <n> | Y |
| AT+SIMTIMER | <time> | Y |
| AT+CSNS | <mode> | Y |

## 2.31 AT&F  Factory Defined Configuration

Set to factory-defined configuration.

| Execution Command<br>**AT&F[<value>]** | Response<br>TA sets all current parameters to the manufacturer defined profile.<br>**OK** |
|---|---|
| Reference<br>Parameter impacted by **&F** command: refer to **AT&W** | Note<br>Parameters related to UART operation, like **CSCLK**, **IPR**, **ICF**, **IFC** and **CMNRP**, will not be reset to default configuration. |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<value>** | 0 | Set all TA parameters to manufacturer defaults. |

## 2.32 **AT&D   Set DTR Function Mode**

Set DTR Function Mode.

| Execution Command | Response |
|---|---|
| **AT&D[<value>]** | This parameter determines how the TA responds when circuit 108/2 (DTR) is changed from the ON to the OFF condition during data mode. **OK** **ERROR** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | 0   TA ignores status on DTR<br>1   ON->OFF on DTR: Change to Command mode with remaining the connected call.<br>2   ON->OFF on DTR: Disconnect call, change to Command mode. During state DTR=OFF is auto-answer off. |

## 2.33 **AT+GMI   Request Manufacturer Identification**

Same as AT+CGMI

## 2.34 **AT+GMM   Request TA Model Identification**

Same as AT+CGMM

## 2.35 **AT+GMR   Request TA Revision Identification of Software Release**

Same as AT+CGMR

## 2.36   **AT+IPR   Set TE-TA Fixed Local Rate**

Specifies the data rate, in addition to 1200 bits/s or 9600 bits/s, at which the DCE will accept commands. May be used to select operation at rates at which the DCE is not capable of automatically detecting the data rate being used by the DTE.

| Execution Command<br><br>**AT+IPR=[<rate>]** | Response<br><br>**OK** |
|---|---|
| Test Command<br><br>**AT+IPR=?** | Response<br>**+IPR:** (list of supported auto detectable **<rate>**s),(list of supported fixed-only **<rate>**s)<br><br>**OK** |
| Read Command<br><br>**AT+IPR?** | Response<br><br>**+IPR: <rate>**<br>**OK** |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<rate>** | **rate** | The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported:0, 1200, 2400, 4800, 9600, 19200,38400, 57600, 115200, 230400, and 460800. If unspecified, or set to zero, automatic detection is selected, and the character format is forced to auto-detect(AT+IPR=0) |

## 2.37 AT+ICF   Set TE-TA Control Character Framing

| Test Command | Response |
|---|---|
| **AT+ICF=?** | **+ICF:** (list of supported \<format\>s),(list of supported \<parity\>s) <br><br> **OK** |
| Read Command <br><br> **AT+ICF?** | Response <br><br> **+ICF: \<format\>,\<parity\>** <br><br> **OK** |
| Write Command <br><br> **AT+ICF=\<format\>[,\<parity\>]** | Response <br><br> This parameter setting determines the serial interface character framing format and parity received by TA from TE. <br><br> **OK** |
|  | Note <br> ● The Command is applied for Command state; <br> ● In **\<format\>** parameter, "0 parity" means no parity; <br> The **\<parity\>** field is ignored if the **\<format\>** field specifies no parity and string "**+ICF: \<format\>,255**" will be response to **AT+ICF**? Command. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<format\>** | 1   8 data 0 parity 2 stop <br> 2   8 data 1 parity 1 stop <br> <u>3</u>   8 data 0 parity 1 stop <br> 4   7 data 0 parity 2 stop <br> 5   7 data 1 parity 1 stop <br> 6   7 data 0 parity 1 stop |
| **\<parity\>** | 0   odd <br> 1   even <br> <u>3</u>   space (0) |

## 2.38 **AT+IFC   Set TE-TA Local Data Flow Control**

AT+IFC Set TE-TA Local Data Flow Control

| Test Command | Response |
|---|---|
| **AT+IFC=?** | **+IFC: (0-2),(0-2)**<br><br>**OK** |
| Read Command<br><br>**AT+ IFC?** | Response<br>**+IFC: <dce_by_dte>,<dte_by_dce>**<br>**OK** |
| Write Command<br><br>**AT+IFC=[<dce_by_dte>[,<dte_by_ dce>]]** | Response<br>This parameter setting determines the data flow control on the serial interface for data mode.<br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<dce_by_dte>** | Specifies the method will be used by TE at receive of data from TA<br>    <u>0</u>    No flow control<br>    1    Software flow control<br>    2    Hardware flow control |
| **<dte_by_dce>** | Specifies the method will be used by TA at receive of data from TE<br>    <u>0</u>    No flow control<br>    1    Software flow control<br>    2    Hardware flow control |

Example:

| Commands | Response |
|---|---|
| **AT+IFC?** | **+IFC: 0, 0**<br><br>**OK** |

## 2.39 **AT+GCAP Request Complete TA Capabilities List**

Request complete capabilities list.

| Execution Command | Response |
|---|---|
| **AT+GCAP** | **+GCAP: +FCLASS, +CGSM**<br>**OK** |
| Test Command | Response |
| **AT+GCAP=?** | **OK** |

# 3 General commands

## 3.1 AT+CGMI Request manufacturer identification

The command causes the phone to return one or more lines of information text<manufacturer> which is intended to permit the user of the ITAE/ETAE to identify the manufacturer of the phone to which it is connected to.

| Execution Command | Response |
|---|---|
| **AT+CGMI** | **<manufacturer>**<br><br>**OK** |
| Test Command<br><br>**AT+CGMI=?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<manufacturer>** | The ID of manufacturer |

## 3.2 AT+CGMM Request model identification

The command causes the phone to return one or more lines of information text <model> which is intended to permit the user of the ITAE/ETAE to identify the specific model of phone to which it is connected to.

| Execution Command | Response |
|---|---|
| **AT+CGMM** | **L206C**<br><br>**OK** |
| Test Command<br><br>**AT+CGMM=?** | Response<br><br>**OK** |

## 3.3  AT+CGMR  Request revision identification

The command causes the phone to return a string containing information regarding SW version.

| Execution Command | Response |
|---|---|
| AT+CGMR | **Revision: <revision>**<br><br>**OK** |
| Test Command | Response |
| AT+CGMR=? | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<revision>** | Product software version identification text |

## 3.4  AT+CGSN  Request product serial number identification

Returns the IMEI number of the phone.

| Execution Command | Response |
|---|---|
| AT+CGSN | **<IMEI>**<br>**OK**<br><br>Or<br><br>**+CME ERROR: <err>** |
| Test Command | Response |
| AT+CGSN=? | **OK** |

## 3.5   AT+CSCS   Select TE character set

Set command informs TA which character set <chset>is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets.

| Test Command | Response |
|---|---|
| AT+CSCS=? | +CSCS: (list of supported <chset>s)<br>OK |
| Read Command<br><br>AT+CSCS? | Response<br><br>+CSCS: <chset><br>OK |
| Write Command<br><br>AT+CSCS=<chset> | Response<br><br>OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <chset> | "GSM"        GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems. |
| | "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 [13]) |
| | "HEX"         Character strings consist only of hexadecimal |
| | "PCCP"     PC character set Code Page |
| | "PCDN"     PC Danish/Norwegian character set |
| | "8859-1"       ISO 8859 Latin character set |

## 3.6 AT+CIMI Request international mobile subscriber identity

Execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual SIM which is attached to ME. Refer [1] 9.2 for possible <err> values.

| Test Command | Response |
|---|---|
| **AT+CIMI=?** | **OK** |
| Execution Command<br><br>**AT+CIMI** | Response<br>**<IMSI>**<br>**OK**<br>Or<br>***+CME ERROR: <err>*** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<IMSI>** | International Mobile Subscriber Identity (string without double quotes) |

# 4　Call Control commands

## 4.1　AT+CSTA　Select type of address

Selects the type of number for further dialing commands (D) according to GSM/UMTS specifications.

| Test Command | Response |
|---|---|
| **AT+CSTA=?** | **+CSTA: (list of supported <type>s)**<br>**OK** |
| Write Command | Response |
| **AT+CSTA=<type>** | **OK**<br><br>Or<br><br>***+CME ERROR: <err>*** |
| Read Command | Response |
| **AT+CSTA?** | **+CSTA: <type>**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **< type>** | Type of address octet in integer format;<br><u>129</u>　Unknown type<br>145　International number type<br>161　National number type<br>177　Network specific number |

## 4.2 **AT+CHUP Hang up call**

Request to hang up the current GSM call.

| Test Command | Response |
|---|---|
| **AT+CHUP=?** | **OK** |
| Execution Command | Response |
| **AT+CHUP** | **OK** |
| Reference | Note<br>In non-UCM projects (excluding Neptune Gemini with BT supported) projects, AT+CHUP can only hang up the call from the same source. In UCM project , this command will sent to MMI for SYNC. |

## 4.3  AT+CR   Service reporting control

Service reporting control.

Set command controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE. If enabled, the 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 the intermediate result code CONNECT is transmitted.

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

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | <u>0</u>     disables reporting<br><br>1     enables reporting |

## 4.4  AT+CEER   Extended error report

Execution command causes the TA to return one or more lines of information text <report>,
which offer the user of the TA an extended report of the reason for
- the failure in the last unsuccessful call setup (originating or answering) or in-call modification;
- the last call release;

| Test Command | Response |
|---|---|
| **AT+CEER=?** | **+CEER: (**list of supported**<n>**s**)**<br><br>**OK** |

| Read Command | Response |
|---|---|
| **AT+CEER?** | **+CEER: <n>** <br><br> **OK** |
| Write Command <br><br> **AT+CEER=<n>** | Response <br><br> **OK** |
| Execution Command <br><br> **AT+CEER** | Response <br><br> **OK** <br><br> Or <br><br> **+CEER: <report>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | <u>0</u>  The reason for last call release as text code <br> 1   The reason for last call release as number code |
| **<report>** | If AT+CEER=0,   return <s> <br> **<s>**  a string that represents the Cause <br> If AT+CEER=1,   return <br>   **Cause: <c>** <br> **<c>**number representing the Cause <br> <c>(number) <s>(string) <br> 0 (No cause) <br> 1 (unassigned (unallocated) number) <br> 3(no route to destination) <br> 6 (channel unacceptable) <br> 8(operator determined barring) <br> 16 (normal call clearing) <br> 17(user busy) <br> 18 (no user responding) <br> 19 (user alerting, no answer) <br> 21 (call rejected) <br> 22 (number changed) <br> 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)

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)

65 (bearer service not implemented)

68 (ACM equal to or greater than ACMmax)

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)

## 4.5　AT+CRC　Cellular result code

Set command controls whether or not the extended format of incoming call indication or GPRS network request for PDP context activation is used. When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.

| Test Command | Response |
|---|---|
| **AT+CRC=?** | **+CRC: (list of supported <mode>s)**<br>**OK** |
| Write Command | Response |
| **AT+CRC=[<mode>]** | **OK** |
| Read Command | Response |
| **AT+CRC?** | **+CRC: <mode>**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | <u>0</u>　disables extended format<br><br>1　enables extended format |

## 4.6 **AT+CSNS Single Numbering Scheme**

Set command selects the bearer or tele-service to be used when mobile terminated single numbering scheme call is established.

| Test Command | Response |
|---|---|
| **AT+CSNS=?** | **+CSNS: (list of supported <mode>s)**<br>**OK** |
| Write Command | Response |
| **AT+CSNS=[<mode>]** | **OK** |
| Read Command | Response |
| **AT+CSNS?** | **+CSNS: <mode>**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0  voice<br><br>1  alternating voice/fax, voice first (TS 61)<br><br>2  fax (TS 62)<br><br>3  alternating voice/data, voice first (BS 61)<br><br>4  data<br><br>5  alternating voice/fax, fax first (TS 61)<br><br>6  alternating voice/data, data first (BS 61)<br><br>7  voice followed by data (BS 81) |

## 4.7 **AT+CVHU  Voice Hangup Control**

Set command selects whether ATH or "drop DTR" shall cause a voice connection to be disconnected or not. By voice connection is also meant alternating mode calls that are currently in voice mode.

| Test Command | Response |
|---|---|
| **AT+CVHU=?** | **OK** <br><br> Or <br> **ERROR** |
| Write Command <br><br> **AT+CVHU=[<mode>]** | Response <br><br> **OK** |
| Read Command <br><br> **AT+CVHU?** | Response <br><br> **+CVHU:<mode>** <br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   "Drop DTR" ignored but OK response given. ATH disconnects. <br><br> 1   "Drop DTR" and ATH ignored but OK response given. |

## 4.8　AT+CMOD　Configure Alternating Mode Calls

Selects the call mode for future dialing commands for the next answering command.

| Test Command | Response |
|---|---|
| AT+CMOD=? | +CMOD: (0)<br><br>OK |
| Write Command<br><br>AT+CMOD=[<mode>] | Response<br><br>OK<br><br>Or<br><br>ERROR |
| Read Command<br><br>AT+CMOD? | Response<br><br>+CMOD: <mode><br><br>OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | 0　Only single mode is supported |

## 4.9　AT+HVOIC　Disconnect Voice Call Only

| Execution Command | Response |
|---|---|
| AT+HVOIC | Disconnect existing voice call<br>OK |

# 5   Network Service related commands

## 5.1   AT+CNUM   Subscriber Number

Returns the MSISDNs related to the subscriber (this information can be stored in the SIM/UICC or in the MT).

| Test Command<br><br>**AT+CNUM=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br><br>**AT+CNUM** | Response<br><br>**+CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>]**<br>**[<CR><LF>+CNUM:[<alpha2>],<number2>,<type2>[,<speed>,**<br>**<service>]**<br>**[...]]**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<alpha*x*>** | Optional alphanumeric string associated with *<numberx>*; used character set should be the one selected with Command Select TE Character Set +CSCS |
| **<number*x*>** | String type(string should be included in quotation marks) phone number of format specified by <type*x*> |
| **<type*x*>** | Type of address octet in integer format (refer GSM04.08[8]subclause 10.5.4.7) |

| <speed> | 0   auto baud |
|---|---|
| | 4   2400bps (V.22bis) |
| | 5   2400bps (V.26ter) |
| | 6   4800bps (V.32) |
| | 7   9600bps (V.32) |
| | 12  9600bps (V.34) |
| | 14  14400bps (V.34) |
| | 68  2400bps (V.110 or X.31) |
| | 70  4800bps (V.110 or X.31) |
| | 71  9600bps (V.110 or X.31) |
| | 75  14400bps (V.110 or X.31) |
| | 134   64000bps (V.110 or X.31) |
| <service> | (service related to the phone number:) |
| | 0    Asynchronous modem |
| | 1    Synchronous modem |
| | 2    PAD Access (asynchronous) |
| | 3    Packet Access (synchronous) |
| | 4    Voice |
| | **5**    Fax |

## 5.2 **AT+CREG Network Registration**

Set command controls the presentation of an unsolicited result code +CREG: <stat>when<n>=1 and there is a change in the MT network registration status, or code +CREG: <stat>[,<lac>,<ci>[,<AcT>]] when <n>=2 and there is a change of the network cell. Read command returns the status of result code presentation and an integer <stat>which shows whether the network has currently indicated the registration of the MT. Location information elements <lac>,<ci> and <Act>are returned only when <n>=2 and MT is registered in the network.

| Test Command | Response |
|---|---|
| **AT+CREG=?** | **+CREG: (list of supported <n>s)** **OK** |
| Write Command | Response |
| **AT+CREG=[<n>]** | **OK** |
| Read Command | Response |
| **AT+CREG?** | **+CREG:** **<n>,<stat>[,<lac>,<ci>[,<Act>]]** **OK** Or ***+CME ERROR: <err>*** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0 disable network registration unsolicited result code |
| | 1 enable network registration unsolicited result code +CREG: <stat> |
| | 2 enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>,[<Act>]]. |
| **<stat>** | 0 not registered, MT is not currently searching a new operator to register to |
| | 1 registered, home network |
| | 2 not registered, but MT is currently searching a new operator to register to |
| | 3 registration denied |
| | 4 unknown |

| | 5   registered, roaming |
|---|---|
| **\<lac\>** | string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195in decimal) |
| **\<ci\>** | string type; four byte cell ID in hexadecimal format |
| **\<Act\>** | 0   GSM<br><br>2   UTRAN<br><br>3   GSM w/EGPRS<br><br>4   UTRAN w/HSDPA<br><br>5   UTRAN w/HSUPA<br><br>6   UTRAN w/HSDPA and HSUPA |

## 5.3 **AT+COPS   Operator Selection**

Set command forces an attempt to select and register the GSM/UMTS network operator. If the selected operator is not available, ERROR is returned.

Read command returns the current mode, the currently selected operator.

Test command returns operator list present in the network.

| Test Command | Response |
|---|---|
| **AT+COPS=?** | **+COPS: (list of supported<stat>,long alphanumeric<oper>,short alphanumeric<oper>,numeric <oper>)s[,,(list of supported <mode>s),** <br> **(list of supported <format>s)]** <br> **OK** <br><br> **Or** <br><br> ***+CME ERROR: <err>*** |
| Write Command <br><br> **AT+COPS=<mode>[, <forma t>,<oper>[,<Act>]]** | Response <br><br> **OK** <br><br> Or <br><br> ***+CME ERROR: <err>*** |
| Read Command <br><br> **AT+COPS?** | Response <br><br> **+COPS: <mode>[,<format>,<oper>]** <br><br> **OK** <br><br> **Or** <br><br> ***+CME ERROR: <err>*** |

| Reference | Note |
|---|---|
| | **We DO NOT support full set of alphanumeric format of <oper>, since the code size will become very large. If the customer needs the alphanumeric format, the table can be customized in mcu\custom\common\customer_operator_names.c.** +COPS? response is not alphanumeric format when setting with alphanumeric format example: +COPS: 0,0," KG Telecom Co." If you got +COPS: 0,0,"46688" This is possibly due to there is no alphanumeric format name mapping to the operator id ------------------------------------------------------------------- You can define operator name table in the following file under custom folder. mcu\custom\common\customer_operator_name.c Please check if there is operator name mapping in the name table. If not , Please add your operator name and operator id There is comment information in the file to guide you . Please read the guide before modification. After modification .then 'remake custom' There are two places shall be modified 1. RMMI_PLMN_NAME_ENTRIES 2. rmmi_plmn_table □□<mode>=2 supported in projects with __NW_DETACH_SUPPORT__ option. (available after W1012) |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0 automatic (<oper> field is ignored) 1 manual (<oper> field shall be present) 2 deregister from network (disable form 05.48) 3 set only <format> (for read command +COPS?), do not attempt registration/deregistration 4 Manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered |

| **<format>** | 0   long format alphanumeric <oper> |
| --- | --- |
|    | 1   short format alphanumeric <oper> |
|    | 2   numeric <oper> |
| **<oper>** | string type |
| **<stat>** | 0   unknown |
|    | 1   available |
|    | 2   current |
|    | 3   forbidden |

## 5.4 **AT+CLCK Facility Lock**

Execute command is used to lock, unlock or interrogate a ME or a network facility <fac>.

| Test Command | Response |
|---|---|
| **AT+CLCK=?** | **+CLCK: (list of supported <fac>s)**<br>**OK**<br>Or<br>***+CME ERROR: <err>*** |
| Write Command<br><br>**AT+CLCK=<fac>,<mode>[,<passwd>,<class>]]** | Response<br><br>**when <mode>=2 and command successful:**<br>**+CLCK: <status>[,<class1>**<br>**[<CR><LF>+CLCK: <status>,<class2>**<br>**[...]]**<br>**OK**<br><br>Or<br><br>***+CME ERROR: <err>*** |
| | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| | |

| <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 dialing 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 |
| <status> | 0     not active |
| <passwd> | 1     active |
| | string type |
| <classx> | is a sum of integers each representing a class of information (default 7) |
| | 1     voice (telephony) |
| | 2     data (refers to all bearer services) |
| | 4     fax (facsimile services) |
| | 8     short message service |
| | 16    data circuit sync |
| | 32    data circuit async |
| | 64    dedicated packet access |
| | 128 dedicated PAD access |

## 5.5  **AT+CPWD   Change Password**

Action command sets a new password for the facility lock function defined by command Facility Lock +CLCK..

| Test Command | Response |
|---|---|
| **AT+CPWD=?** | **+CPWD: list of supported (<fac>,<pwdlength>)s**<br><br>**OK**<br>Or<br>*+CME ERROR: <err>* |
| Write Command | Response |
| **AT+CPWD=<fac>,<oldpwd>,<newpwd>** | **OK**<br>**or**<br>*+CME ERROR: <err>* |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<fac>** | "P2" SIM PIN2<br><br>refer Facility Lock +CLCK for other values |
| **<oldpwd>** | string type |
| **<newpwd>** | string type |
| **<pwdlength>** | integer type maximum length of the password for the facility |

## 5.6 AT+CLIP Calling line identification presentation

Requests calling line identification. Determines if the +CLIP unsolicited result code is activated. When the presentation of the CLI at the TE is enabled (and calling subscriber allows), +CLIP: <number>,<type>[,<subaddr>,<satype>,<alphaId>,<CLIvalidity>] response is returned after every RING.

| Test Command | Response |
|---|---|
| AT+CLIP=? | +CLIP: (list of supported <n>s)<br><br>OK |
| Write Command | Response |
| AT+CLIP=<n> | OK<br>Or<br>+CME ERROR: <err> |
| Read Command | Response |
| AT+CLIP? | +CLIP: <n>,<m><br><br>OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <n> | 0   disable<br>1   enable |
| <m> | 0   CLIP not provisioned<br>1   CLIP provisioned<br>2   unknown (e.g. no network, etc.) |
| <number> | string type phone number of format specified by <type> |
| <type> | type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7) |
| <subaddr> | string type subaddress of format specified by <satype> |
| <satype> | type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8) |

## 5.7 **AT+CLIR   Calling line identification restriction**

Requests calling line identification restriction.

| Test Command | Response |
|---|---|
| **AT+CLIR=?** | **+CLIR: (list of supported <n>s)**<br><br>**OK** |
| Write Command | Response |
| **AT+CLIR=[<n>]** | **OK**<br>Or<br>***+CME ERROR: <err>*** |
| Read Command | Response |
| **AT+CLIR?** | **+CLIR: <n>,<m>**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0   presentation indicator is used according to the subscription of the CLIR service<br>1   CLIR invocation<br>2   CLIR suppression |
| **<m>** | 0   CLIR not provisioned<br>1   CLIR provisioned in permanent mode<br>2   unknown (e.g. no network, etc.)<br>3   CLIR temporary mode presentation restricted<br>4   CLIR temporary mode presentation allowed |

## 5.8 **AT+COLP Connected line identification presentation**

This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.

When enabled (and called subscriber allows), +COLP:
<number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is
returned from TA to TE before any +CR or V.250 [14] responses.

| Test Command | Response |
|---|---|
| **AT+COLP=?** | **+COLP: (list of supported <n>s)** <br><br> **OK** |
| Write Command <br><br> **AT+COLP=[<n>]** | Response <br><br> **OK** <br> **Or** <br> ***+CME ERROR: <err>*** |
| Read Command <br><br> **AT+COLP?** | Response <br><br> **+COLP: <n>,<m>** <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0 disable <br> 1 enable |
| **<m>** | 0 COLP not provisioned <br> 1 COLP provisioned <br> 2 unknown (e.g. no network, etc.) |

## 5.9  **AT+CCUG   Closed user group**

This command allows control of the Closed User Group supplementary service.
Set command enables the served subscriber to select a CUG index, to suppress the Outgoing Access (OA), and to suppress the preferential CUG.

| Test Command | Response |
|---|---|
| **AT+CCUG=?** | **OK** |
| Write Command | Response |
| **AT+CCUG=[<n>[,<index>[,< info>]]]** | **OK** <br> **Or** <br> ***+CME ERROR: <err>*** |
| Read Command | Response |
| **AT+CCUG?** | **+CCUG: <n>,<index>,<info>** <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0   disable CUG temporary mode <br> 1   enable CUG temporary mode |
| **<index>** | 0...9   CUG index <br> 10   no index (preferred CUG taken from subscriber data) |
| **<info>** | 0   no information <br> 1   suppress OA <br> 2   suppress preferential CUG <br> 3   suppress OA and preferential CUG |

## 5.10 **AT+CCFC Call forwarding number and conditions**

Sets the call forwarding number and conditions. Registration, erasure, activation, deactivation and status query operations are supported.

| Test Command | Response |
|---|---|
| **AT+CCFC=?** | **+CCFC: (list of supported <reason>s)** <br><br> **OK** |
| Write Command <br><br> **AT+CCFC=<reason>,<mode>** <br> **[,<number>** <br> **[,<type>** <br> **[,<class>** <br> **[,<subaddr>** <br> **[,<satype>** <br> **[,<time>]]]]]]** | Response <br><br> *+CME ERROR: <err>* <br> **when <mode>=2 and command successful:** <br> **+CCFC: <status>,<class1>[,<number>,<type>** <br> **[,<subaddr>,<satype>[,<time>]]][** <br> **<CR><LF>+CCFC:** <br> **<status>,<class2>[,<number>,<type>** <br> **[,<subaddr>,<satype>[,<time>]]]** <br> **[...]]** <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<reason>** | 0 unconditional <br> 1 mobile busy <br> 2 no reply <br> 3 not reachable <br> 4 all call forwarding (refer 3GPP TS 22.030 [19]) <br> 5 all conditional call forwarding (refer 3GPP TS 22.030 [19]) |
| **<mode>** | 0 disable <br> 1 enable <br> 2 query status <br> 3 registration <br> 4 erasure |
| **<number>** | string type phone number of forwarding address in format specified by <type> |
| **<type>** | type of address |
| **<subaddr>** | string type subaddress of format specified by <satype> |

| <satype> | type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8); default 128 |
|---|---|
| <classx> | 1 voice (telephony)<br>2 data (refers to all bearer services)<br>4 fax (facsimile services)<br>7 All classes<br>8 short message service |
| <time> | 1...30 when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded |
| <status> | 0 not active<br>1 active |

## 5.11 **AT+CCWA   Call waiting**

This command allows control of the Call Waiting supplementary service. Activation, deactivation and status query are supported. Parameter <n>is used to disable/enable the presentation of an unsolicited result code +CCWA: <number>,<type>,<class>[,<alpha>]to the TE when call waiting service is enabled.

| Test Command | Response |
|---|---|
| AT+CCWA=? | +CCWA: (0,1) <br><br> OK <br> Or <br><br> ERROR |
| Write Command <br><br> AT+CCWA=[<n>[,<mode>[,<class>]]] | Response <br><br> when <mode>=2 and command successful <br> +CCWA: <status>,<class1> <br> [<CR><LF>+CCWA: <status>,<class2> <br> [...]] <br> OK <br> Or <br> *+CME ERROR: <err>* |
| Read Command <br><br> AT+CCWA? | Response <br><br> +CCWA: <n> <br> OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <n> | 0   disable <br> 1   enable |
| <mode> | 0   disable <br> 1   enable <br> 2   query status |

| <classx> | 1 voice (telephony) |
|---|---|
| | 2 data (refers to all bearer services) |
| | 4 fax (facsimile services) |
| | 8 short message service |
| | 16 data circuit sync |
| | 32 data circuit async |
| | 64 dedicated packet access |
| | 128 dedicated PAD access |
| <status> | 0 not active |
| | 1 active |
| <number> | string type phone number of calling address in format specified by <type> |
| <type> | type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7) |
| <alpha> | Optional string type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book. |

## 5.12 **AT+CHLD Call Hold and Multiparty**

Requests call-related supplementary services. Refers to a service that allows a call to be temporarily disconnected from the ME but the connection to be retained by the network, and to a service that allows multiparty conversation. Calls can be put on hold, recovered, released and added to a conversation.

| Test Command | Response |
|---|---|
| **AT+CHLD=?** | **[+CHLD: (list of supported <n>s)]** <br> **OK** |
| Write Command | Response |
| **AT+CHLD=<n>** | **OK** <br> Or <br><br> **+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0  Releases all held calls, or sets User-Determined User Busy for a waiting call <br> 1  Releases all active calls and accepts the other (waiting or held) call <br> 1x  Releases the specific active call X <br> 2  Places all active calls on hold and accepts the other (held or waiting) call <br> 2x  Places all active calls, except call X, on hold <br> 3  Adds a held call to the conversation <br> 4  Connects two calls and disconnects the subscriber from both calls |

## 5.13 **AT+CUSD   Unstructured supplementary service data**

Allows control of the Unstructured Supplementary Service Data (USSD). Both network- and mobile-initiated operations are supported. This command is used to enable the unsolicited result code +CUSD.

| Test Command | Response |
|---|---|
| **AT+CUSD=?** | **+CUSD: (0-2)** |
| | **OK** |
| Write Command | Response |
| **AT+CUSD=[<n>[,<str>[,<dcs>]]]** | **OK** |
| Read Command | Response |
| **AT+CUSD?** | **+CUSD: <n>** |
| | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0    disable the result code presentation to the TE |
| | 1    enable the result code presentation to the TE |
| | 2    cancel session (not applicable to read command response) |
| **<str>** | string type USSD string |
| **<dcs>** | Cell Broadcast Data Coding Scheme in integer format (default 0) |

## 5.14 **AT+CSSN   Supplementary service notifications**

This command refers to supplementary service related network initiated notifications. The set command enables/disables the presentation of notification result codes from TA to TE.
When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: <code1>[,<index>] is sent to TE before any other MO call setup result codes presented in the present document or in V.250 [14]. When several different <code1>s are received from the network, each of them shall have its own +CSSI result code.
When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received, unsolicited result code +CSSU:
<code2>[,<index>[,<number>,<type>[,<subaddr>,<satype>]]] is sent to TE. In
case of MT call setup, result code is sent after every +CLIP result code (refer command "Calling line identification presentation +CLIP") and when several different <code2>s are received from the network, each of them shall have its own +CSSU result code.

| Test Command<br><br>AT+CSSN=? | Response<br>**+CSSN: (list of supported <n>s),(list of supported <m>s)**<br><br>**OK** |
|---|---|
| Write Command<br><br>**AT+CSSN=[<n>[,<m>]]** | Response<br><br>**OK**<br>Or<br><br>**+CME ERROR: <err>** |
| Read Command<br><br>**AT+CSSN?** | Response<br><br>**+CSSN: <n>,<m>**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0   disable<br>1   enable |
| **<m>** | 0   disable<br>1   enable |

## 5.15  **AT+CLCC    List current calls**

Returns list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.

| Test Command | Response |
|---|---|
| **AT+CLCC=?** | **+CLCC: (0,1)** <br><br> **OK** |
| Read Command <br><br> **AT+CLCC?** | Response <br><br> **+CLCC: <n>** <br><br> **OK** |
| Write Command <br><br> **AT+CLCC=<n>** | Response <br><br> **OK** |
| Execution Command <br><br> **AT+CLCC** | Response <br><br> **[+CLCC: <idx>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>,<alphaID>]** <br> **[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[, <number>,<type>,<alphaID>]** <br> **[...]]]** <br> **OK** <br> Or <br><br> ***+CME ERROR: <err>*** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0    Don't report a list of current calls of ME automatically when the current call status changes. <br> 1    Report a list of current calls of ME automatically when the current call status changes. |
| **<idx>** | integer type; call identification number as described in 3GPP TS 22.030 [19] subclause4.5.5.1; this number can be used in +CHLD command operations. |
| **<dir>** | 0    mobile originated (MO) call <br> 1    mobile terminated (MT) call |

| <stat> | 0 active |
|---|---|
| | 1 held |
| | 2 dialing (MO call) |
| | 3 alerting (MO call) |
| | 4 incoming (MT call) |
| | 5 waiting (MT call) |
| | 6 disconnect |
| <mode> | 0 voice |
| | 1 data |
| | 2 fax |
| <mpty> | 0 call is not one of multiparty (conference) call parties |
| | 1 call is one of multiparty (conference) call parties |
| <number> | string type phone number in format specified by <type> |
| <type> | type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7) |

## 5.16 **AT+CPOL    Preferred operator list**

This command is used to edit the SIM preferred list of networks. Execute command writes an entry in the SIM list of preferred operators (EFPLMNsel). If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free

location. If only <format> is given, the format of the <oper> in the read command is changed.

| Test Command | Response |
|---|---|
| **AT+CPOL=?** | **+CPOL: (list of supported <index>s),** <br> **(list of supported <format>s)** <br> **OK** <br> or <br> *+CME ERROR: <err>* |
| Write Command <br><br> **AT+CPOL=<index>[,<format>,<oper>]** | Response <br> **OK** <br> or <br> *+CME ERROR: <err>* |
| Read Command <br><br> **AT+CPOL?** | Response <br><br> **+CPOL:** <br> **<index1>,<format>,<oper1>** <br> **[<CR><LF>+CPOL:** <br> **<index2>,<format>,<oper2>** <br> **[...]]** <br><br> **OK** <br> or <br> *+CME ERROR: <err>* |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<indexn>** | the order number of operator in the SIM/USIM preferred operator list |
| **<format>** | 0    long format alphanumeric <oper> <br> 1    short format alphanumeric <oper> <br> 2    numeric <oper> |
| **<opern>** | string type; <format> indicates if the format is alphanumeric or numeric (see +COPS) |

## 5.17 **AT+COPN    Read operator name**

Execute command returns the list of operator names from the MT. Each operator code <numericn> that has an alphanumeric equivalent <alphan> in the MT memory shall be returned.

| Execution Command | Response |
|---|---|
| **AT+COPN** | **+COPN: <numeric1>,<alpha1>**<br>**[<CR><LF>+COPN: <numeric2>,<alpha2>**<br>**[...]]**<br>**OK**<br>Or<br><br>**+CME ERROR: <err>** |
| Test Command<br><br>**AT+COPN=?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<numericn>** | string type; operator in numeric format (see +COPS) |
| **<alphan>** | string type; operator in long alphanumeric format (see +COPS) |

MT control and status command

## 5.18 AT+CPAS　Phone activity status

Returns the activity status <pas> of the ME. It can be used to interrogate the ME before requesting action from the phone. If the command is executed without the <mode> parameter, only <pas> values from 0 to 128 are returned. If the <mode> parameter is included in the execution command, <pas> values from 129 to 255 may also be returned.

| Test Command | Response |
|---|---|
| **AT+CPAS=?** | **+CPAS: (list of supported <pas>s)** <br> **OK** <br> Or <br><br> *+CME ERROR: <err>* |
| Execution Command <br><br> **AT+CPAS** | Response <br><br> **+CPAS: <pas>** <br> **OK** <br> Or <br><br> *+CME ERROR: <err>* |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<pas>** | 0　ready (MT allows commands from TA/TE) <br> 2　unknown (MT is not guaranteed to respond to instructions) <br> 3　ringing (MT is ready for commands from TA/TE, but the ringer is active) <br> 4　call in progress (MT is ready for commands from TA/TE, but a call is in progress) |

## 5.19 **AT+CFUN    Set Phone Functionality**

AT+CFUN = 0 turn off radio and SIM power.

AT+CFUN = 1, 1 or AT+CFUN=4,1 can reset the target.

AT+CFUN = 1 can enter normal mode.

AT+CFUN = 4 can enter flight mode.

| Test Command | Response |
|---|---|
| **AT+CFUN=?** | **+CFUN: (list of supported <fun>s), (list of supported <rst>s)**<br>**OK**<br>Or<br><br>*+CME ERROR: <err>* |
| Write Command | Response |
| **AT+CFUN=[<fun>[,<rst>]]** | **OK**<br>Or<br><br>*+CME ERROR: <err>* |
| Reference | Note |
| | |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<fun>** | 0   enable functionality<br>1   full functionality<br>4   disable phone both transmit and receive RF circuits |
| **<rst>** | 0   do not reset the MT before setting it to <fun> power level<br>1   reset the MT before setting it to <fun> power level |

## 5.20 **AT+CPIN Enter PIN**

Set command sends to the ME a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards ME and an error message, +CME ERROR, is returned to TE. Refer [1] 9.2 for possible <err> values.
If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the SIM.

| Test Command | Response |
|---|---|
| **AT+CPIN=?** | **OK** <br> or <br> **ERROR** |
| Write Command <br><br> **AT+CPIN=<pin>[,<newpin>]** | Response <br><br> **OK** <br> Or <br><br> *+CME ERROR: <err>* |
| Read Command <br><br> **AT+CPIN?** | Response <br><br> **+CPIN: <code>** <br> **OK** <br><br> Or <br><br> *+CME ERROR: <err>* |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<pin>** | string type values |
| **<newpin>** | string type values |

| <code> | <code>values reserved by the present document: |
|---|---|
| | READY MT is not pending for any password |
| | SIM PIN MT is waiting SIM PIN to be given |
| | SIM PUK MT is waiting SIM PUK to be given |
| | PH-SIM PIN MT is waiting phone to SIM card password to be given |
| | PH-FSIM PIN MT is waiting phone-to-very first SIM card password to be given |
| | PH-FSIM PUK MT is waiting phone-to-very first SIM card unblocking password to be given |
| | SIM PIN2 MT is waiting SIM PIN2 to be given |
| | SIM PUK2 MT is waiting SIM PUK2 to be given |
| | PH-NET PIN MT is waiting network personalization password to be given |
| | PH-NET PUK MT is waiting network personalization unblocking password to be given |
| | PH-NETSUB PIN MT is waiting network subset personalization password to be given |
| | PH-NETSUB PUK MT is waiting network subset personalization unblocking password to be given |
| | PH-SP PIN MT is waiting service provider personalization password to be given |
| | PH-SP PUK MT is waiting service provider personalization unblocking password to be given |
| | PH-CORP PIN MT is waiting corporate personalization password to be given |
| | PH-CORP PUK MT is waiting corporate personalization unblocking password to be given |

## 5.21 **AT+CBC    Battery Charge**

Execution and read command returns battery connection status <bcs> and battery level <bcl>of the ME.

| Test Command | Response |
|---|---|
| **AT+CBC=?** | **+CBC:** (list of supported <**bcs**>s),(list of supported <**bcl**>s) ,(<**voltage**>) <br><br> **OK** |
| Execution Command <br><br> **AT+CBC** | Response <br><br> **+CBC: <bcs>,<bcl>,<voltage>** <br> **OK** <br> or <br> **+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<bcs>** | 0   MT does not have a battery connected <br> 1   ME is charging <br> 2   Charging has finished |
| **<bcl>** | Battery connection level <br> 1...100   vbat has 1 to 100 percent of capacity remaining |
| **<voltage>** | Battery voltage(mV) |

## 5.22 **AT+CSQ Signal Quality**

The command returns received signal strength indication <rssi> and channel bit error rate <ber> from the ME.

| Execution Command | Response |
|---|---|
| **AT+CSQ** | **+CSQ:** (list of supported **<rssi>**s),(list of supported **<ber>**s)<br><br>**OK**<br>Or<br><br>*+CME ERROR: <err>* |
| Test Command<br>**AT+CSQ=?** | Response<br>**OK**<br>Or<br><br>**ERROR** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<rssi>** | 0        -113 dBm or less<br>1        -111 dBm<br>2...30   -109...- 53 dBm<br>31        -51 dBm or greater<br>99 not known or not detectable |
| **<ber>** | 0...7   as RXQUAL values in the table in TS 45.008 [20] subclause 8.2.4<br>99   not known or not detectable |

## 5.23 **AT+CMEC    Mobile Termination control mode**

Set command selects the equipment, which operates MT keypad, writes to MT display and sets MT indicators. If operation mode is not allowed by the MT, +CME ERROR: <err> is returned.

Test command returns the modes supported as compound values.

| Test Command | Response |
|---|---|
| **AT+CMEC=?** | **+CMEC: (list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s)** <br> **OK** |
| Write Command <br><br> **AT+CMEC=[<keyp>[,<disp>[ ,<ind>]]]** | Response <br><br> **OK** <br> Or <br><br> **+CME ERROR: <err>** |
| Read Command <br><br> **AT+CMEC?** | Response <br><br> **+CMEC: <keyp>,<disp>,<ind>** <br> **OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<keyp>** | 0   MT can be operated only through its keypad (execute command of +CKPD cannot be used) <br> 1   MT can be operated only from TE (with command +CKPD) <br> 2 MT can be operated from both MT keypad and TE |
| **<disp>** | 0   only MT can write to its display (command +CDIS can only be used to read the display) <br> 1   only TE can write to MT display (with command +CDIS) <br> 2   MT display can be written by both MT and TE |
| **<ind>** | 0   only MT can set the status of its indicators (command +CIND can only be used to read the indicators) <br> 1   only TE can set the status of MT indicators (with command +CIND) <br> 2   MT indicators can be set by both MT and TE |

---

## 5.24 **AT+CIND    Indicator control**

Displays the value of ME indicators.

| Test Command | Response |
|---|---|
| **AT+CIND=?** | **+CIND: (<descr>,(list of supported <ind>s)) [,(<descr>,(list of supported <ind>s))[,...]]** <br> **OK** <br> Or <br><br> **+CME ERROR: <err>** |
| Read Command <br><br> **AT+CIND?** | Response <br><br> **+CIND: <ind>[,<ind>[,...]]** <br> **OK** <br> Or <br><br> **+CME ERROR: <err>** |
| Reference | Note <br> "call setup" is proprietary defined in MTK solution and only used when BT supported. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<ind>** | integer type value, which shall be in range of corresponding <descr> <descr> values reserved by the present document and their <ind> ranges: <br> "battchg" battery charge level (0 5) <br> "signal" signal quality (0 5) <br> "service" service availability (0 1) <br> "message" message received (0 1) <br> "call" call in progress (0 1) <br> "roam" roaming indicator (0 1) <br> "call setup" call setup indicator(0 3) <br> "smsfull" a short message memory storage in the MT has become full(1) or <br> memory locations are available (0) |

## 5.25 URC: +CIEV NITZ indicator event

This URC is the result code of an NITZ indicator event.

| | Response |
| --- | --- |
| | **Unsolicited result code** |
| | **+CIEV: <ind>,<value1>[,<value2>,…]** |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<ind>** | 9: NITZ date/time/timezone information<br>**+CIEV: 9,<UT>,<TZ>[,<DST>]**<br><UT> , Universal Time , String type<br>"YY/MM/DD,HH:MM:SS"<br><TZ>: Local Time Zone, Integer type<br>ex: +4 or -4<br><DST>: Daylight Saving Time , Integer type<br>1: Summer time<br>0: Winter time<br>**ex: +CIEV: 9,"09/05/16,16:56:00",-28,1** |

## 5.26 **AT+CMER   Mobile Termination event reporting**

Set command enables or disables sending of unsolicited result codes from TA to TE in the case of key pressings, display changes, and indicator state changes.

Test command returns the modes supported as compound values.

| Test Command | Response |
|---|---|
| **AT+CMER=?** | **+CMER: (list of supported <mode>s),(list of supported <key>s),(list of supported <disp>s), (list of supported <ind>s),(list of supported <bfr>s)** <br><br> **OK** |
| Write Command <br><br> **AT+CMER=[<mode>[,<keyp> > [,<disp>[,<ind>[,<bfr>]]]]]** | Response <br><br> **OK** <br><br> **Or** <br><br> **ERROR** |
| Read Command <br><br> **AT+CMER?** | Response <br><br> **+CMER:<mode>,<keyp>,<disp>,<ind>,<bfr>** <br><br> **OK** |
| Reference | Note <br> We don't support set command of +CIND to set the values of MT indicators. So behaviors of <br> <ind> 1 and 2 are currently the same. <br> The +CKEV URC which set by <keyp> parameter only reports when UART setting is SIM1. <br> <tscrn> parameter take effect after W1021. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0  buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded<br>1  discard unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE<br>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<br>3  forward unsolicited result codes directly to the TE; TA-TE link specific in band technique used to embed result codes and data when TA is in on-line data mode |
| **<keyp>** | 0  no keypad event reporting<br>1  keypad event reporting using result code +CKEV: <key>, <press>, <key> indicates the key (refer IRA values defined in table in subclause "Keypad control +CKPD") and<press> if the key is pressed or released (1 for pressing and 0 for releasing). Only those key pressing, which are not caused by +CKPD shall be indicated by the TA to the TE.<br>NOTE 1: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.2 Keypad event reporting using result code +CKEV: <key>, <press>. All key pressings shall be directed from TA to TE.<br>NOTE 2: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting. |
| **<disp>** | 0  no display event reporting |
| **<ind>** | 0  no indicator event reporting<br>1  indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to TE<br>2  indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE |
| **<bfr>** | 0  TA buffer of unsolicited result codes defined within this command is cleared when<br>1  TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes) |

## 5.27 **AT+CPBS   Select Phonebook Memory Storage**

Selects the phonebook memory storage <storage> that is used by other phonebook commands.

| Test Command | Response |
|---|---|
| **AT+CPBS=?** | **+CPBS: (list of supported <storage>s)**<br><br>**OK** |
| Write Command<br><br>**AT+CPBS=<storage>** | Response<br><br>**OK**<br>or<br>**+CME ERROR: <err>** |
| Read Command<br><br>**AT+CPBS?** | Response<br><br>**+CPBS: <storage>[,<used>,<total>]**<br><br>**OK**<br>or<br>**+CME ERROR: <err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<storage>** | "ON"    SIM own numbers (MSISDNs) list<br>"SM"     SIM/UICC phonebook<br>"ME"     MT phonebook<br>"FD"    SIM/USIM fix dialing-phonebook |
| **<used>** | Integer type value indicating the total number of used locations in selected memory |
| **<total>** | Integer type value indicating the total number of locations in selected memory |

## 5.28 **AT+CPBR    Read phonebook entries**

Returns phone book entries in location number range <index1>...<index2> from the current phonebook memory storage selected by AT+CPBS. If <index2> is omitted, only location <index1> is returned. Entry fields returned are location number <indexn>, phone number <number> in <indexn>, and text <text> associated with the number.

| Test Command | Response |
|---|---|
| **AT+CPBR=?** | **+CPBR: (list of supported <index>s),[<nlength>],[<tlength>]**<br>*+CME ERROR: <err>*<br><br>**OK** |
| Write Command<br><br>**AT+CPBR=<index1>[,<index2>]** | Response<br><br>**[+CPBR: <index1>,<number>,<type>,<text>[,<hidden>]][[...] <CR><LF>+CPBR: <index2>,<number>,<type>,<text>[,<hidden>]]]**<br><br>**OK**<br>**or**<br>*+CME ERROR: <err>* |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index>** | integer type values in the range of location numbers of phonebook memory |
| **<index1>** | integer type values in the range of location numbers of phonebook memory |
| **<index2>** | integer type values in the range of location numbers of phonebook memory |
| **<number>** | string type phone number of format <type> |
| **<type>** | type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7) |
| **<text>** | string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS |
| **<nlength>** | integer type value indicating the maximum length of field <number> |
| **<tlength>** | integer type value indicating the maximum length of field <text> |
| **<hidden>** | 0: phonebook entry not hidden<br>1: phonebook entry hidden |

## 5.29 AT+CPBF Find Phonebook entries

Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>(Prefix match). Entry fields returned are location number <indexn>, phone number stored there <number> (of format <type>) and text <text> associated with the number.

| Test Command | Response |
|---|---|
| **AT+CPBF=?** | **+CPBF: [<nlength>],[<tlength>]**<br><br>**Ok**<br>**or**<br>***+CME ERROR: <err>*** |
| Write Command | Response |
| **AT+CPBF=<findtext>** | **[+CPBF: <index1>,<number>,<type>,<text> [[...]**<br>**<CR><LF>+CBPF:**<br>**<index2>,<number>,<type>,<text>]]**<br><br>**OK**<br>**or**<br>**+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index1>, <index2>** | integer type values in the range of location numbers of phonebook memory |
| **<number>** | string type phone number of format <type> |
| **<type>** | type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7) |
| **<findtext>, <text>** | string type field of maximum length <tlength>. Only support "IRA" |
| **<nlength>** | integer type value indicating the maximum length of field <number> |
| **<tlength>** | integer type value indicating the maximum length of field <text> |

## 5.30 **AT+CPBW    Write Phonebook entries**

Writes phonebook entry in location number <index> in the current phonebook memory storage area, selected with AT+CPBS. If the <number> and <text> parameters are omitted, the entry is deleted. If <index> is omitted but <number> is included, the entry is written to the first free location in the phonebook.

| Test Command | Response |
|---|---|
| **AT+CPBW=?** | **+CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>]**<br><br>**OK**<br>**or**<br>**+CME ERROR: <err>** |
| Write Command | Response |
| **AT+CPBW=[<index>][,<number>[,<type>[,<text>]]]** | **OK**<br>**or**<br>**+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index>** | integer type values in the range of location numbers of phonebook memory |
| **<number>** | string type phone number of format <type> |
| **<type>** | type of address |
| **<text>** | string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS. "UCS2"", and "IRA"" are supported. |
| **<nlength>** | integer type value indicating the maximum length of field <number> |
| **<tlength>** | integer type value indicating the maximum bytes of field <text> after encoding |

## 5.31  **AT+CCLK    Clock**

Set command sets the real-time clock of the MT.

Read command returns the current setting of the clock.

| Test Command | Response |
|---|---|
| **AT+CCLK=?** | **OK** |
| Write Command | Response |
| **AT+CCLK=<time>** | **OK** <br> *or* <br><br> **+CME ERROR: <err>** |
| Read Command | Response |
| **AT+CCLK?** | **+CCLK: <time>** <br> **OK** <br> *or* <br><br> **+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<time>** | string type value; format is "yy/MM/dd,hh:mm:ss", where characters indicate year (two last digits), month, day, hour, minutes, seconds. |

## 5.32 **AT+CALA Alarm**

Sets an alarm time in the ME.

| Test Command | Response |
|---|---|
| **AT+CALA=?** | **+CALA:**<br>**("yy/mm/dd,hh:mm:ss","hh:mm:ss"),(1-5),(0-7)**<br><br>**OK** |
| Write Command<br><br>**AT+CALA=<time>[,<n> ,<recur>]]** | Response<br><br>**OK** |
| Read Command<br><br>**AT+CALA?** | Response<br><br>**+CALA: <time>,<n1>,[<recurr>]**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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>** | integer type value indicating the index of the alarm (range 1 to 5). |
| **<recurr>** | string type value indicating day of weeks for the alarm in one of the following format: "<1..7>[,<1..7>[…]]" – Sets a recurrent alarm for one or more days in the week. Thedigits 1 to 7 corresponds 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" – Sets a recurrent alarm for all days in the week. |

## 5.33 **AT+CSIM   Generic SIM Access**

Set command transmits to the MT the <command> it then shall send as it is to the SIM. In the same manner the SIM <response> shall be sent back by the MT to the TA as it is. Refer subclause 9.2 for <err> values.

This command allows a direct control of the SIM by an distant application on the TE. The TE shall then take care of processing SIM information within the frame specified by SM/UMTS.

| Test Command | Response |
|---|---|
| **AT+CSIM=?** | **OK** |
| Write Command<br><br>**AT+CSIM=<length>,<comm and>** | Response<br><br>**+CSIM: <length>,<response>**<br><br>**OK**<br>**or**<br>**+CME ERROR: <err>** |
| Reference | Note<br>1. The command only support when __CSIM__ is defined<br>2. We support AT+CSIM with limitation: We only support SELECT, STATUS, READ BINARY, UPDATE BINARY, READ RECORD,UPDATE RECORD, GET RESPONSE commands. We don't allow the AT users to select another application, send termination indication or initialization indication. If the user send SELECT by AID, STATUS by initialization or termination, he will get ERROR in return.<br>3. We support AT+CSIM with GSM CLA, and UICC CLA, but we don't support logical channels other than the default channel. |

Example

1. SELECT

(1) (P1 = SELECT MF by file id)

AT+CSIM=14,"00A4000C023F00"

+CSIM: 4, "9000"

OK

2. SELECT

(1) (P1 = SELECT by DF name)

AT+CSIM=42,"00A4040C10A0000000871002FF477001890 00001FF"

ERROR

3. READ BINARY

(1) (Pre-condition: SELECT EF_IMSI (P1 = SELECT by path from MF, P2 = return with FCP))

AT+CSIM=20,"00A40804047FFF6F0700"

+CSIM: 64,

"621C8202412183026F07A5038001718A01058B036F0605 800200098801389000"

OK

(2) READ BINARY

AT+CSIM=10,"00B0000009"

+CSIM: 22, "0849667914305241049000"

OK

4. UPDATE BINARY

(1) (Pre-condition: SELECT EF_PLMNwAcT(P1 = SELECT by path from MF, P2 = return with

FCP))

AT+CSIM=20,"00A40804047FFF6F6000"

+CSIM: 64,

"621C8202412183026F60A5038001718A01058B036F0606 800200878801509000"

OK

(2) READ BINARY

AT+CSIM=10,"00B0000087"

+CSIM: 18,

"888888008854F400808025F510808005F221808015F0018 08005F520808015F52080

8004F401808004F454808004F429808004F430808004F49 4808004F404808054F050808025F0

1080

8054F5108080FFFFFF0000FFFFFF0000FFFFFF0000FFFF FF0000FFFFFF0000FFFFFF0000F

FFFFF00

00FFFFFF0000FFFFFF0000FFFFFF0000FFFFFF00009000 "

OK

(3) UPDATE BINARY

AT+CSIM=20,"00D600000521F3548080"

+CSIM: 4, "9000"

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<length>** | integer type; length of the characters that are sent to TE in <command> or <response>(two times the actual length of the command or response) |
| **<command>** | command passed on by the MT to the SIM in the format as described in 3GPP TS51.011 [28] (hexadecimal character format; refer +CSCS) |
| **<response>** | response to the command passed on by the SIM to the MT in the format as described in 3GPP TS 51.011 [28] (hexadecimal character format; refer +CSCS) |

## 5.34 **AT+CRSM** **Restricted SIM access**

Set command transmits to the MT the SIM <command> and its required parameters.

| Test Command | Response |
|---|---|
| **AT+CRSM=?** | **OK** |
| Write Command<br><br>**AT+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]]** | Response<br><br>**+CRSM: <sw1>,<sw2>[,<response>]**<br><br>**OK** |
| Reference | Note<br><pathid> + <fileid> can be a unique identifier on the SIM/UICC.<br>In USIM, the response of STATUS and GETRESPONSE is TLV format, and length is not fixed. So the P3 should be assigned as "00" as 256 bytes, which is the maximum value of response data. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<command\>** | 176 READ BINARY<br>178 READ RECORD<br>192 GET RESPONSE<br>214 UPDATE BINARY<br>220 UPDATE RECORD<br>242 STATUS |
| **\<fileid\>** | integer type; this is the identifier of a elementary data file on SIM.<br>\<P1\>, \<P2\>, \<P3\>: integer type; parameters passed on by the MT to the SIM.(For detailed information , please refer 3GPP TS11.11 Section 9.2) |
| **\<data\>** | information which shall be written to the SIM (hexadecimal character format; refer +CSCS) |
| **\<pathid\>** | string type; contains the path of an elementary file on the SIM/UICC in hexadecimal format as defined in ETSI TS 102 221 [60] (e.g. "7F205F70" in SIM and UICC case). The \<pathid\> shall only be used in the mode "select by path from MF" as defined in ETSI TS 102 221 [60]. NOTE: Since valid elementary file identifiers may not be unique over all valid dedicated file identifiers the \<pathid\> indicates the targeted UICC/SIM directory path in case of ambiguous file identifiers. For earlier versions of this specification or if\<pathid\> is omitted, it could be implementation specific which one will be selected.\<sw1\>, \<sw2\>: integer type; information from the SIM about the execution of the actual command. |
| **\<response\>** | response of a successful completion of the command previously issued (hexadecimal character format)<br>[Note1]: READ BINARY command is used for transparent EF. READ RECORD is used for linear fixed or cyclic<br>EF<br>[Note2]:Before using READ BINARY, READ RECORD, UPDATE BINARY, UPDATE RECORD, please use command<br>GET RESPONSE to get the exact length information first. |

Example:

| Commands | Response |
|---|---|
| AT+CRSM=176,28423,0,0,250,"3F00" | +CRSM:145,66,"084906201617246107FFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF"<br><br>OK |
| at+crsm=192,28423 | +CRSM:144,0,"62238202412183026F07A506800171C00 1008A01058B036F0603800200098102001788 0138"<br><br>OK |

## 5.35 **AT+CRSL Ringer Sound Level**

Set the incoming call ringer sound level.

| Test Command | Response |
|---|---|
| **AT+CRSL=?** | **+CRSL: (list of supported <level>s)**<br>*OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Write Command | Response |
| **AT+CRSL=<level>** | *OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Read Command | Response |
| **AT+CRSL?** | **+CRSL: <level>**<br>*OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Reference | Note<br>This command can't be used when UART setting is SIM2 |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<level>** | integer type value(0-100) with manufacturer specific range |

## 5.36 **AT+CLVL   Loudspeaker volume level**

Sets the volume of the internal speaker in the ME

| Test Command | Response |
|---|---|
| **AT+CLVL=?** | **+CLVL: (list of supported <level>s)**<br>*OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Write Command | Response |
| **AT+CLVL=<level>** | *OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Read Command | Response |
| **AT+CLVL?** | **+CLVL: <level>**<br>*OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Reference | Note<br>This command can't be used when UART setting is SIM2 |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<level>** | integer type value(0-100) with manufacturer specific range. |

## 5.37 **AT+CMUT   Mute Control**

Enable/Disable the uplink voice muting during a voice call.

| Test Command | Response |
|---|---|
| **AT+CMUT=?** | **+CMUT: (list of supported <n>s)**<br>*OK* |
| Read Command<br><br>**AT+CMUT?** | Response<br><br>**+CMUT: <n>**<br>*OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Write Command<br><br>**AT+CMUT=<n>** | Response<br><br>*OK*<br>*or*<br><br>*+CME ERROR: <err>* |
| Reference | Note<br>This command can't be used when UART setting is SIM2 |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0   mute off<br>1   mute on |

☐☐

## 5.38  **AT+CALD    Delete Alarm**

Cancel an alarm clock

| Test Command<br>**AT+CALD=?** | Response<br>**+CALD:** (list of supported **<n>**s)<br><br>**OK** |
|---|---|
| Write Command<br>**AT+CALD=<n>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | Integer type value indicating the index of the alarm; default is manufacturer specific (only 0). |

## 5.39 **AT+CADC   Read ADC**

Read ADC.

| Test Command | Response |
|---|---|
| **AT+CADC=?** | **+CADC: (**list of supported **<status>**s),(list of supported **<value>**s**)** <br><br> **OK** |
| Read Command <br><br> **AT+CADC?** | Response <br><br> +CADC: <status>,<value> <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<status>** | 1   Success <br> 0   Fail |
| **<value>** | Integer 0-2800 |

## 5.40 **AT+CDSCB   Reset Cell Broadcast**

Reset cell broadcast.

| Execution   Command | Response |
|---|---|
| **AT+CDSCB** | **OK** |
| Reference | Note <br> Please also refer to AT+CSCB. |

## 5.41 **AT+CFGRI Indicate RI When Using URC**

Indicate RI when using URC

| Test Command | Response |
|---|---|
| **AT+CFGRI=?** | **+CFGRI: (0-2)** <br><br> **OK** |
| Read Command <br><br> **AT+CFGRI?** | Response <br><br> **+CFGRI: \<status\>** <br><br> **OK** |
| Write Command <br><br> **AT+CFGRI=\<status\>** | Response <br><br> **OK** <br> OR <br> **ERROR** |
| Reference | Note <br> If AT+CFGRI=1 : <br> When TCPIP create a connection or close the connection or TCPIP received data from server, the level of RI pin will changed to low level and hold at low level about 120 ms, then it is changed back to HIGH |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<status\>** | 0 Off <br> 1 On (TCPIP and FTP control Ring PIN) <br> 2 On (only TCPIP control Ring PIN) |

## 5.42  **AT+CLTS   Get Local Timestamp**

Get local timestamp

| Test Command | Response |
|---|---|
| **AT+CLTS=?** | **+CLTS: "yy/MM/dd,hh:mm:ss+/-zz"**<br><br>**OK** |
| Read Command<br><br>**AT+CLTS?** | Response<br><br>**+CLTS: <mode>**<br><br>**OK** |
| Write Command<br><br>**AT+CLTS=< mode>** | Response<br><br>**OK**<br>or<br>**ERROR** |
| Reference | Note<br>Support for this Command will be network dependent.<br>Set AT+CLTS=1, it means user can receive network time<br>updating and use AT+CCLK to show current time. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **< mode>** | 0   Disable<br>1   Enable |

## 5.43 **AT+CDRIND   CS Voice/Data Call Termination Indication**

CS voice/data call termination indication

| Test Command | Response |
|---|---|
| **AT+CDRIND=?** | **+CDRIND: (**list of supported **<n>**s**)** <br><br> **OK** |
| Read Command <br><br> **AT+CDRIND?** | Response <br><br> **+CDRIND: <n>** <br><br> **OK** |
| Write Command <br><br> **AT+ CDRIND=**<n> | Response <br><br> **OK** <br> **or** <br> **ERROR** |
| | Response <br> When enabled, an unsolicited result code is returned after the connection has been terminated <br> **+CDRIND: <type>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<type>** | Connection type <br> 0   CSV connection <br> 1   CSD connection(not support) <br> 2   PPP connection |
| **<n>** | A numeric parameter to enable an unsolicited event code indicating whether a CS voice call, CS data has been terminated. <br> 0   Disable <br> 1   Enable |

## 5.44 **AT+CSPN Get Service Provider Name from SIM**

Get local service provider name from SIM

| Read Command | Response |
|---|---|
| **AT+CSPN?** | **+CSPN: \<spn\>,\<display mode\>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err\>** |
| Reference | Note<br>CME errors occur if SIM is not inserted. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<spn\>** | String type(string should be included in quotation marks); service provider name on SIM |
| **\<display mode\>** | 0    Display SPN. Not display PLMN. Already registered on PLMN<br>1    Display PLMN |

## 5.45 **AT+CBAND   Get and Set Mobile Operation Band**

Get and set mobile operation band

| Test Command | Response |
|---|---|
| **AT+CBAND=?** | **+CBAND: (**list of supported **<op_band>**s**)** <br><br> **OK** |
| Read Command <br><br> **AT+ CBAND?** | Response <br><br> **+CBAND: <op_band> [,<ALL_BAND>]** <br><br> **OK** |
| Write Command <br><br> **AT+ CBAND=**<op_band> | Response <br><br> **OK** <br> If error is related to ME functionality: <br> **+CME ERROR: <err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<op_band>** | A string parameter which indicate the operation band. <br> And the following strings should be included in quotation marks. <br> EGSM_MODE <br> DCS_MODE <br> GSM850_MODE <br> PCS_MODE <br> EGSM_DCS_MODE <br> GSM850_PCS_MODE <br> EGSM_PCS_MODE <br> ALL_BAND |

## 5.46  AT+SNDLEVEL   Set the Sound Level of Special AT Command

Set the sound level of special AT command

| Test Command | Response |
|---|---|
| **AT+SNDLEVEL=?** | **+SNDLEVEL: (0-1),(0-100)**<br><br>**OK** |
| Read Command | Response |
| **AT+SNDLEVEL?** | **+SNDLEVEL:(0,<soundlevel0>),(1,< soundlevel1>)**<br><br>**OK** |
| Write Command | Response |
| AT+**SNDLEVEL**=<mode>,<sou ndlevel> | **OK**<br>or<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    adjust the sound level of STTONE and SIMTONE<br>1    adjust the sound level of CLDTMF |
| **<sound level>** | 0-100    Integer type value with manufacturer specific range (smallest value represents the lowest sound level). |

## 5.47 **AT+CCVM Get and Set the Voice Mail Number on the SIM**

Get and set the voice mail number on the SIM

| Test Command<br>**AT+CCVM=?** | Response<br>**+CCVM:** maximum length of field **<vm number>,** maximum length of field **<alpha string>**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ CCVM?** | Response<br>If voice mail number is not set:<br>**OK**<br>If voice mail number is set:<br>**+CCVM: <vm number>[,<alpha string>]**<br><br>**OK** |
| Write Command<br>**AT+CCVM=<vmnumber>**<br>**[,<alphastring>]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference | Note<br>AUTO_SAVE |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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 |

## 5.48 **AT+DTAM    Set TTS and RECORD Play Mode in Call**

Set TTS and RECORD Play Mode in Call.

| Test Command | Response |
|---|---|
| **AT+DTAM=?** | **+DTAM: (0-2)**<br>**OK** |
| Read Command<br><br>**AT+ DTAM?** | Response<br><br>**+DTAM:<mode>**<br><br>**OK** |
| Write Command<br><br>**AT+DTAM=<mode>** | Response<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference | Note<br>This command takes effect only in call. TTS and record not in call only play locally no matter what the mode is. Setting takes effect before TTS or record play. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | <mode> TTS and record play mode<br>0    Local<br>1    Remote<br>2    Local and remote |

# 6  GPRS commands(27.007)

## 6.1  AT+CGDCONT   Define PDP Context

Specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter    <cid>.

| Write Command | Response |
|---|---|
| **AT+CGDCONT=[<cid>[,<PDP_type>[ ,<APN> [,<PDP_addr> [,<d_comp>[,<h_comp>[,<pd1>[,…[, pdN]]]]]]]]]** | **OK**<br>or<br>**ERROR** |
| Read Command<br><br>**AT+CGDCONT?** | Response<br><br>**+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]]**<br>**[<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]]**<br>**[...]]**<br>**OK** |
| Test Command<br><br>**AT+CGDCONT=?** | Response<br><br>**+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]]**<br>**[<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]]**<br>**[...]]**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<cid>** | (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command. |
| **\<PDP_type>** | (Packet Data Protocol type) a string parameter.<br>IP Internet Protocol (IETF STD 5) |
| **\<APN>** | (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.<br>If the value is null or omitted, then the subscription value will be requested. |
| **\<PDP_address >** | a string parameter that identifies the MT in the address space applicable tothe PDP.<br>If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.<br>The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command. |
| **\<d_comp>** | a numeric parameter that controls PDP data compression (applicable for SNDCP only)0 - off (default if value is omitted) |
| **\<h_comp>** | a numeric parameter that controls PDP header compression<br>0 - off (default if value is omitted) |
| **\<pd1>,…**<br>**\<pdN>** | zero to N string parameters whose meanings are specific to the \<PDP_type> |

## 6.2 **AT+CGQREQ   Quality of Service Profile (Requested)**

This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.

| Write Command | Response |
|---|---|
| **AT+CGQREQ=[<cid>[,<prec edence >[,<delay>[,<reliabil ity.>[,<peak>[,<mean>]]]]]]** | **OK**<br>or<br>**ERROR** |
| Read Command<br><br>**AT+CGQREQ?** | Response<br><br>**+CGQREQ: <cid>, <precedence >,<delay>, <reliability>, <peak>, <mean>[<CR><LF>+CGQREQ: <cid>, <precedence>, <delay>, <reliability.>, <peak>,<mean>[…]]**<br><br>**OK** |
| Test Command<br><br>**AT+CGQREQ=?** | Response<br><br>**+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)**<br>**[<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)[…]]**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<cid>** | a numeric parameter which specifies a particular PDP context definition |
| **<precedence>** | a numeric parameter which specifies the precedence class |
| **<delay>** | a numeric parameter which specifies the delay class |
| **<reliability>** | a numeric parameter which specifies the reliability class |
| **<peak>** | a numeric parameter which specifies the peak throughput class |
| **<mean>** | a numeric parameter which specifies the mean throughput class |

## 6.3  AT+CGQMIN    Quality of Service Profile (Minimum

## acceptable)

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.

| Write Command | Response |
|---|---|
| **AT+CGQMIN=[<cid>[,<precedence >[,<delay>[,<reliability.>[,<peak> [,<mean>]]]]]]** | **OK<br>or<br>ERROR** |
| Read Command<br><br>**AT+CGQMIN?** | Response<br><br>**+CGQMIN: <cid>, <precedence >,<delay>, <reliability>, <peak>,<mean>[<CR><LF>+CGQMIN: <cid>, <precedence>, <delay>, <reliability.>, <peak>,<mean>[…]]<br><br>OK** |
| Test Command<br><br>**AT+CGQMIN=?** | Response<br><br>**+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)<br>[<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)[…]]<br><br>OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<cid>** | a numeric parameter which specifies a particular PDP context definition |
| **<precedence>** | a numeric parameter which specifies the precedence class |
| **<delay>** | a numeric parameter which specifies the delay class |
| **<reliability>** | a numeric parameter which specifies the reliability class |
| **<peak>** | a numeric parameter which specifies the peak throughput class |
| **<mean>** | a numeric parameter which specifies the mean throughput class |

## 6.4  **AT+CGATT   PS attach or detach**

The execution command is used to attach the MT to, or detach the MT from, the Packet
Domain service. After the command has completed, the MT remains in V.250 command state.

| Write Command | Response |
|---|---|
| **AT+CGATT= <state>** | **OK**<br>or<br>**ERROR** |
| Read Command | Response |
| **AT+CGATT?** | **+CGATT: <state>**<br>**OK** |
| Test Command | Response |
| **AT+CGATT=?** | **+CGATT: (list of supported <state>s)**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<state>** | indicates the state of PS attachment<br>0   detached<br>1   attached |

## 6.5 **AT+CGACT PDP Context activate or deactivate**

To activate or deactivate the specified PDP context (s).

| Write Command | Response |
|---|---|
| **AT+CGACT=<state> [,<cid>]** | **OK** or **ERROR** |
| Read Command | Response |
| **AT+CGACT?** | **+CGACT: <cid>, <state>[<CR><LF>+CGACT: <cid>, <state>[...]]** **OK** |
| Test Command | Response |
| **AT+CGACT=?** | **+CGACT: (list of supported <state>s)** **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<state>** | indicates the state of PDP context activation<br>0 deactivated<br>1 activated<br>Other values are reserved and will result in an ERROR response to the execution command. |
| **<cid>** | a numeric parameter which specifies a particular PDP context definition. If no <cid> is specified, then UE assumes it as 1. The usage of omitted <cid> to activate/deactivate all is not supported. |

## 6.6 AT+CGDATA Enter data state

The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types.

| Write Command | Response |
|---|---|
| AT+CGDATA=[<L2P> ,[<cid >]] | CONNECT<br>or<br>ERROR |
| Test Command<br><br>AT+CGDATA=? | Response<br><br>+CGDATA: (list of supported <L2P>s)<br><br>OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <L2P> | A string parameter that indicates the layer 2 protocol to be used between the TE and MTPPP Point-to-point protocol for a PDP such as IP Other values will result in an ERROR response. |
| <cid> | A numeric parameter which specifies a particular PDP context definition (see the +CGDCONT command). |

## 6.7  AT+CGPADDR    Show PDP address

The execution command returns a list of PDP addresses for the specified context identifiers.
The test command returns a list of defined <cid>s.

| Write Command | Response |
|---|---|
| AT+CGPADDR=<cid> | +CGPADDR: <cid>,<PDP_addr><br>OK |
| Test Command | Response |
| AT+CGPADDR=? | +CGPADDR: (list of defined <cid>s)<br>OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <cid> | a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and command). If no <cid> is specified, an ERROR result code will be returned. Multiple <cid>field is not supported. when the context was defined. For a dynamic address it will be the one |
| <PDP_address > | a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT and assigned during the last PDP context activation that used the context definition referred to by <cid>.<PDP_address> is omitted if none is available. |

## 6.8 AT+CGCLASS GPRS mobile station class

The set command is used to set the MT to operate according to the specified GPRS mobile class. If the requested class is not supported, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.
The read command returns the current GPRS mobile class.
The test command is used for requesting information on the supported GPRS mobile classes.

| Write Command | Response |
|---|---|
| AT+CGCLASS=<class> | OK<br>or<br>ERROR |
| Read Command | Response |
| AT+CGCLASS? | +CGCLASS: <class><br>OK |
| Test Command | Response |
| AT+CGCLASS=? | +CGCLASS: (list of supported <class>s)<br>OK |
| Reference | Note<br>On MAUI and 09A branches, after W0918, the test command and the query command can be used while a normal SIM card is inserted. Before this, the +CGCLASS command can be only used while a test SIM is inserted. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <class> | A string parameter which indicates the GPRS mobile class (in descending order of functionality)<br>A    class A (highest)<br>B    class B<br>CG   class C in GPRS only mode<br>CC   class C in circuit switched only mode (lowest)<br>Other values are reserved and will result in an ERROR response to the set command.<br>If the MT is GPRS attached when the set command is issued with a <class> = CC specified, a detach request shall be sent to the network. |

## 6.9 **AT+CGREG GPRS network registration status**

The set command controls the presentation of an unsolicited result code +CGREG: <stat>when <n>=1 and there is a change in the MT's GPRS network registration status, or code+CGREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.
The read command returns the status of result code presentation and an integer <stat>which shows whether the network has currently indicated the registration of the MT. Locationinformation elements <lac>,<ci> are returned only when <n>=2 and MT isregistered in the network.

| Test Command<br><br>**AT+CGREG=?** | Response<br><br>**+CGREG: (0-2)**<br><br>**OK** |
|---|---|
| Write Command<br><br>**AT+CGREG=[<n>]** | Response<br><br>**OK**<br>or<br>**ERROR** |
| Read Command<br><br>**AT+CGREG?** | Response<br><br>**+CGREG:<n>,<stat>[,<lac>,<ci>]**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0   disable network registration unsolicited result code<br>1   enable network registration unsolicited result code +CGREG: <stat><br>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<br>1   registered, home network<br>2   not registered, but MT is currently trying to attach or searching an operator to register to.<br>3   registration denied<br>4   unknown<br>5   registered, roaming |
| **<lac>** | string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195in decimal) |
| **<ci>** | string type; four byte cell ID in hexadecimal format |

## 6.10  **AT+CGSMS   Select service for MO SMS messages**

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.
The read command returns the currently selected service or service preference.
The test command is used for requesting information on the currently available services and service preferences.

| Test Command | Response |
|---|---|
| **AT+CGSMS=?** | **+CGSMS: (0-3)**<br><br>**OK** |
| Read Command<br><br>**AT+CGSMS?** | Response<br><br>**+CGSMS: <service>**<br>**OK** |
| Write Command<br><br>**AT+CGSMS= <service>** | Response<br><br>**OK**<br><br>**Or**<br><br>**ERROR** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<service>** | 0   Packet Domain<br>1   circuit switched<br>2   Packet Domain preferred (use circuit switched if GPRS not available)<br>3   circuit switched preferred (use Packet Domain if circuit switched not available) |

# 7    Mobile Termination Errors

## 7.1    AT+CMEE Report Mobile Equipment Error

Set command disables or enables the use of result code +CME ERROR: <err>as an indication of an error relating to the functionality of the MT. When enabled, MT related errors cause +CME ERROR: <err>final result code instead of the regular ERROR final result code. ERROR is returned normally when error is related to syntax, invalid parameters, or TA functionality.
Test command returns values supported as a compound value.

| Write Command | Response |
|---|---|
| AT+CMEE=[<n>] | OK |

| Read Command | Response |
|---|---|
| AT+CMEE? | +CMEE: <n><br>OK |

| Test Command | Response<br>+CMEE: (list of supported <n>s)<br>OK |
|---|---|
| AT+CMEE=? | |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0 disable +CME ERROR: <err> result code and use ERROR instead |
| | 1enable +CME ERROR: <err> result code and use numeric <err> values (refer next subclause) |
| | 2enable +CME ERROR: <err> result code and use verbose <err> values (refer next subclause) |
| | <err> values (numeric format followed by verbose format): |
| | 9.2.1 General errors |
| | 0 phone failure |
| | 1 no connection to phone |
| | 2 phone adaptor link reserved |
| | 3 operation not allowed |
| | 4 operation not supported |
| | 5 PH SIM PIN required |
| | 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 calls only |
| | 40 network personalization PIN required |
| | 41 network personalization PUK required |
| | 42 network subset personalization PIN required |
| | 43 network subset personalization PUK required |
| | 44 service provider personalization PIN required |
| | 45 service provider personalization PUK required |
| | 46 corporate personalization PIN required |

47 corporate personalization PUK required

48 hidden key required (NOTE: This key is required when accessing hidden phonebook

entries.)

100 unknown

9.2.2 GPRS-related errors

9.2.2.1 Errors related to a failure to perform an Attach

103 Illegal MS (#3)

106 Illegal ME (#6)

107 GPRS service not allowed (#7)

111 PLMN not allowed (#11)

112 Location area not allowed (#12)

113 Roaming not allowed in this location area (#13)

(Values in parentheses are TS 24.008 cause codes.)

9.2.2.2 Errors related to a failure to Activate a Context

132 service option not supported (#32)

133 requested service option not subscribed (#33)

134 service option temporarily out of order (#34)

149 PDP authentication failure

(Values in parentheses are TS 24.008 cause codes.)

9.2.2.3 Other GPRS errors

150 invalid mobile class

148 unspecified GPRS error

Other values in the range 101-150 are reserved for use by GPRS

# 8    Annex C(27.007)

## 8.1    AT+VTS    Allows the transmission of DTMF tones

This command is write-only.

Note: The command is used only during voice calls.

| Test Command | Response |
|---|---|
| **AT+VTS=?** | **(list of supported <DTMF>s) ,(list of supported <duration>s)**<br>**OK** |
| Write Command | Response |
| **AT+VTS=<dtmf>** | **OK** |
| Reference | Note<br>When modem work with application (ex: WM smart phone RIL or ECMT tool) , the application expect the result of AT+VTS is returned immediately . Since user might press keypad to send DTMF very fast, so application would like to send DTMF before the previous DTMF is actually processed in NW(modem shall help to queue the DTMF request if previous is not finished yet). So we will response the result code immediately to prevent blocking the application's DTMF keypad handling. Currently, we only check if the digit is valid and if there is any call ongoing(ex: dialing , active exist). If yes, then we will return "OK". But please notice the "OK" doesn't imply that the DTMF is really processed successfully in NW. ex: it might fail due to MS doesn't have user connection yet. Or it might be fail due to there is no response from NW. Or it might be fail due to there is no speech channel (ex: data call)If __VTS_LATE_RESPONSE__ is turned on, "OK" is printed when SEND DTMF is acknowledged by network |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<DTMF>** | A single ASCII character in the set .0-9, #, *, A-D.<br>For example: AT+VTS = 9 or AT+VTS = A<br>You can use multiple command to achieve continuous DTMF tones.<br>For example : AT+VTS=6;+VTS=2;+VTS=8;+VTS=2 |
| **<duration>** | 1-255  Duration of the tone in 1/10 seconds |

## 8.2  AT+CLDTMF   Local DTMF Tone Generation

Play local DTMF tone

| Write Command | Response |
|---|---|
| **AT+CLDTMF=<n>,<DTMF string>[<timeBase>]** | **OK**<br>Or<br><br>**ERROR** |
| Test Command<br><br>**AT+ CLDTMF=?** | Response<br><br>**+CLDTMF:**<br>**(1-100),(0-9,A,B,C,D,E,F,a,b,c,d,e,f,*,#),(10-500)**<br><br>**OK** |
| Execution Command<br><br>**AT+CLDTMF** | Response<br><br>**OK**<br>Abort any DTMF tone currently being generated and any DTMF tone sequence |
| Reference | Note<br>Local DTMF tone can be played in call, play mode is controlled by AT+DTAM. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | A numeric parameter(1-100) which indicates the duration of all DTMF tones. |
| **<DTMF -string>** | A string parameter (string should be included in quotation marks) which has a max length of 20 chars of form <DTMF>, separated by commas. |
| **<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. |
| **<timeBase>** | TimeBase to generate DTMF sound. the DTMF on time is <n>*<timeBase>, DTMF off time is time Base, the default value is 100ms. |

# 9 SMS AT Commands(27.005)

Please refer to 27.005 Sec 3.1 Parameter Definition to see more details of the parameter fields in each command.

## 9.1 AT+CSMS Select Message Service

Selects the message service and returns the type of messages supported by the ME. If chosen service is not supported by the ME (but supported by the TA), +CME ERROR is returned.

| Write Command | Response |
|---|---|
| **AT+CSMS=<service>** | **+CSMS: <mt>,<mo>,<bm>**<br>**OK**<br>Or<br><br>***+CMS ERROR: <err>*** |
| Read Command | Response |
| **AT+CSMS?** | **+CSMS: <service>,<mt>,<mo>,<bm>**<br>**OK** |
| Test Command | Response |
| **AT+CSMS=?** | **+CSMS: (list of supported <service>s)**<br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<service>** | **0** 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]<br>**1** 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]<br>the requirement of <service> setting 1 is mentioned under corresponding command descriptions) |
| **<mt>** | **0** type not supported<br>**1** type supported |
| **<mo>** | **0** type not supported<br>**1** type supported |
| **<bm>** | **0** type not supported<br>**1** type supported |

## 9.2  **AT+CPMS    Preferred Message Storage**

Selects memory storage spaces to be used for reading, writing, etc. If chosen storage is not appropriate for the ME (but is supported by the TA), +CME ERROR is returned.

| Write Command<br><br>**AT+CPMS=<mem1>[,<mem 2>[,<mem3>]]** | Response<br><br>**+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>**<br><br>**OK**<br>or<br>*+CMS ERROR: <err>* |
|---|---|
| Read Command<br><br>**AT+CPMS?** | Response<br><br>**+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>, <mem3>,<used3>,<total3>**<br><br>**OK**<br>or<br>**+CMS ERROR: <err>** |
| Test Command<br><br>**AT+CPMS=?** | Response<br><br>**+CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mem1>** | Messages to be read and deleted from this memory storage<br>"SM"SIM message storage<br>"ME"        Phone message storage<br>"SM_P"    SIM message storage Preferred<br>"ME_P"    Phone message storage Preferred<br>"MT"        SM or ME message storage(SM    Preferred) |

| | |
|---|---|
| **\<mem2\>** | Messages will be written and sent to this memory storage<br>"SM"SIM message storage<br>"ME"　　Phone message storage<br>"SM_P"　SIM message storage Preferred<br>"ME_P"　Phone message storage Preferred<br>"MT"　　SM or ME message storage(SM　Preferred) |
| **\<mem3\>** | Received messages will be placed in this memory storage if routing to PC is not set ("+CNMI")<br>"SM"SIM message storage<br>"ME"　　Phone message storage<br>"SM_P"　SIM message storage Preferred<br>"ME_P"　Phone message storage Preferred<br>"MT"　　SM or ME message storage(SM　Preferred) |
| **\<usedx\>** | Integer type; Number of messages currently in \<memx\> |
| **\<totalx\>** | Integer type; Number of messages storable in \<memx\> |

## 9.3 **AT+CMGF Message Format**

Sets the input and output format to be used by the TA.

| Write Command | Response |
|---|---|
| **AT+CMGF=[<mode>]** | **OK** |
| Read Command | Response |
| **AT+CMGF?** | **+CMGF: <mode>**<br><br>**OK** |
| Test Command | Response |
| **AT+CMGF=?** | **+CMGF: (list of supported <mode>s)**<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | **0** PDU mode (default when implemented)<br>**1** text mode |

## 9.4  **AT+CSCA   Service Center Address**

Updates the SMCS address, through which mobile-originated SMSs are transmitted. In text mode, the setting is used by send (AT+CMGS) and write (AT+CMGW) commands. In PDU mode, the setting is used by the same commands, but only when the length of the SMCS address (coded into <pdu> parameter) equals zero.

| Write Command | Response |
|---|---|
| **AT+CSCA=<sca>[,<tosca>]** | 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.<br>Note: The Command writes the parameters in NON-VOLATILE memory.<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command | Response |
| **AT+CSCA?** | **+CSCA: <sca>,<tosca>[,<scaAlpha>]**<br><br>**OK** |
| Test Command | Response |
| **AT+CSCA=?** | **OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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 TS 07.07); type of address given by <tosca> |
| **<tosca>** | Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer <toda>) |
| **<scaAlpha>** | String type(string should be included in quotation marks) |

## 9.5  **AT+CSMP   Set Text Mode Parameters**

Setting Text Mode Parameters. Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. 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). The format of <vp> is given by <fo>.

| Write Command<br>**AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]** | Response<br>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).<br><br>Note: The Command writes the parameters in NON-VOLATILE memory.<br>**OK** |
|---|---|
| Read Command<br>**AT+CSMP?** | Response<br>**+CSMP:<fo>,<vp>,<pid>,<dcs>**<br><br>**OK** |
| Test Command<br>**AT+CSMP=?** | Response<br>**+CSMP: (**list of supported **<fo>**s**),(**list of supported **<vp>**s**),(**list of supported **<pid>**s**),(**list of supported **<dcs>**s**)**<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<fo>** | Depending on the command or result code: first octet of GSM 03.40,SMS-DELIVER,SMS-SUBMIT(default17),SMS-STATUS-RE PORT, or SMS-COMMAND (default 2) in integer format. SMS status report is supported under text mode if <fo> is set to 49. |
| **<vp>** | Depending on SMS-SUBMIT <fo> setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer <dt>) |
| **<pid>** | GSM 03.40 TP-Protocol-Identifier in integer format (default 0). |
| **<dcs>** | GSM 03.38 SMS Data Coding Scheme in Integer format. |

## 9.6 **AT+CSDH   Show Text Mode Parameters**

Set command controls whether detailed header information is shown in text mode result codes. Test command returns supported values as a compound value.

| Write Command | Response |
|---|---|
| **AT+CSDH=[<show>]** | **OK** |
| Read Command | Response |
| **AT+CSDH?** | **+CSDH: <show>** <br><br> **OK** |
| Test Command | Response |
| **AT+CSDH=?** | **+CSDH: (list of supported <show>s)** <br><br> **OK** |
| Reference | Note <br> We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<show>** | <u>0</u>   Do not show header values defined in commands +CSCA and +CSMP (<sca>,<tosca>,<fo>,<vp>,<pid> and <dcs>) nor <length>,<toda> or <tooa> in +CMT, +CMGL, +CMGR result codes for SMS-DELIVERs and SMS-SUBMITsin text mode <br> 1   Show the values in result codes |

## 9.7  **AT+CSCB   Select Cell Broadcast Message Types**

Selects which types of CBMs are to be received by the ME.

| Write Command | Response |
|---|---|
| **AT+CSCB=<mode>[,<mids>[,<dcss>]]** | TA selects which types of CBMs are to be received by the ME.<br>Note: The Command writes the parameters in NON-VOLATILE memory.<br>**OK**<br>If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Read Command<br><br>**AT+CSCB?** | Response<br><br>**+CSCB: <mode>,<mids>,<dcss>** |
| Test Command<br><br>**AT+CSCB=?** | Response<br><br>**+CSCB: (list of supported <mode>s)** |

| Reference | Note1 |
|---|---|
| | For \<mids\> of \<mode\>=0, our design is to open the \<mids\> from user input and close other \<mids\>. |
| | In the following case, user input \<mode\>=0 and \<mids\>=2. So open channel 2 and close other channel (channel 1). |
| | AT+CSCB? |
| | +CSCB: 0,**"1"**,"1" |
| | OK |
| | AT+CSCB=**0**,**"2"**,"2" |
| | OK |
| | AT+CSCB? |
| | +CSCB: 0,**"2"**,"1,2" |
| | OK |
| | In the following case, user input \<mode\>=0 without \<mids\>. So don't open any channel and close other channel (channel 1). |
| | AT+CSCB? |
| | +CSCB: 0,**"1"**,"1" |
| | OK |
| | AT+CSCB=**0** |
| | OK |
| | AT+CSCB? |
| | +CSCB: 0,**""**,"1" |
| | OK |
| | For \<dcss\> of \<mode\>=0, our design is to **increase** the \<dcss\> from user input. |
| | In the following case, user input \<mode\>=0 and \<dcss\>=2. So **increase** language 2. |
| | AT+CSCB? |
| | +CSCB: 0,"1",**"1"** |
| | OK |
| | AT+CSCB=**0**,"2",**"2"** |
| | OK |
| | AT+CSCB? |
| | +CSCB: 0,"2",**"1,2"** |
| | OK |
| | In the following case, user input \<mode\>=0 without \<dcss\>. So don't **increase** any language. |
| | AT+CSCB? |
| | +CSCB: 0,"1",**"1"** |
| | OK |
| | AT+CSCB=**0** |
| | OK |
| | AT+CSCB? |
| | +CSCB: 0,"",**"1"** |
| | OK |

| Reference | Note2 |
|---|---|
| | For <mids> of <mode>=1, our design is to close all <mids> no matter with <mids> or not. |
| | In the following case, user input <mode>=1. So close all channel. |
| | AT+CSCB? |
| | +CSCB: 0,**"2"**,"1,2" |
| | OK |
| | AT+CSCB=**1**,"2","2" |
| | OK |
| | AT+CSCB? |
| | +CSCB: 1,**""**,"1" |
| | OK |
| | In the following case, user input <mode>=1 without <mids>. Also close all channel. |
| | AT+CSCB? |
| | +CSCB: 0,**"1"**,"1" |
| | OK |
| | AT+CSCB=**1** |
| | OK |
| | AT+CSCB? |
| | +CSCB: 1,**""**,"1" |
| | OK |
| | For <dcss> of <mode>=1, our design is to **decrease** the <dcss> from user input. |
| | In the following case, user input <mode>=1 and <dcss>=2. So **decrease** language 2. |
| | AT+CSCB? |
| | +CSCB: 0,"2",**"1,2"** |
| | OK |
| | AT+CSCB=**1**,"2",**"2"** |
| | OK |
| | AT+CSCB? |
| | +CSCB: 1,"",**"1"** |
| | OK |
| | In the following case, user input <mode>=1 without <dcss>. So don't **decrease** any language. |
| | AT+CSCB? |
| | +CSCB: 0,"1",**"1"** |
| | OK |
| | AT+CSCB=**1** |
| | OK |
| | AT+CSCB? |
| | +CSCB: 1,"",**"1"** |
| | OK |

| Reference | Usage Note |
|---|---|
| | <mid> 3GPP TS 23.041 CBM Message Identifier in integer format |
| | $<dcs>$ depending on the command or result code: 3GPP TS 23.038 SM Data Coding Scheme |
| | (default 0), or Cell Broadcast Data Coding Scheme in integer format |
| | We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | **0**  message types specified in <mids> and <dcss> are accepted<br>**1**  message types specified in <mids> and <dcss> are not accepted |
| **<mids>** | We support **10** message identifiers at most.<br>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" |
| **string type** | all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string); |
| **<dcss>** | string type; all different possible combinations of CBM data coding schemes (refer<dcs>) (default is empty string);e.g. "0-3,5" |

## 9.8 **AT+CSAS** **Save Settings**

Execution command saves active message service settings to a non-volatile memory.
Settings specified in commands Service Centre Address +CSCA, Set Message Parameters +CSMP
and Select Cell Broadcast Message Types +CSCB (if implemented) are saved. Certain settings may
not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be saved.

| Write Command | Response |
|---|---|
| **AT+CSAS[=<profile>]** | **OK**<br>Or<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CSAS=?** | Response<br><br>**+CSAS: (list of supported <profile>s)**<br>**OK** |
| Execution Command<br><br>**AT+CSAS** | Response<br><br>Same as AT+CSAS=0.<br>***OK***<br><br>If error is related to ME functionality:<br>*+CMS ERROR <err>* |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<profile>** | 0-3    manufacturer specific profile number where settings are to be stored |

## 9.9 **AT+CRES   Restore Settings**

Execution command restores message service settings from non-volatile memory to active memory. A TA can contain several profiles of settings. Settings specified in commands Service Centre Address +CSCA, Set Message Parameters +CSMP and Select Cell Broadcast Message Types +CSCB (if implemented) are restored. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore cannot be restored.

| Test Command | Response |
|---|---|
| **AT+CRES=?** | **+CRES: (list of supported <profile>s)** <br><br> **OK** |
| Write Command <br><br> **AT+CRES[=<profile>]** | Response <br><br> **OK** <br> Or <br><br> **+CMS ERROR: <err>** |
| Execution Command <br><br> **AT+CRES** | Response <br><br> Same as AT+CRES=0. <br> *OK* <br> If error is related to ME functionality: <br> *+CMS ERROR <err>* |
| Reference | Note <br> We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<profile>** | 0...3 manufacturer specific profile number where settings are to be stored |

## 9.10 **AT+CNMI    New Message Indications to TE**

Selects the procedure how the reception of new messages from the network is indicated to the TE when TE is active (DTR signal is ON). IF TE is inactive (DTR signal OFF), message reception is carried out as specified in GSM 03.38. This command enables the unsolicited result codes +CMT, **+CMTI**, **+CBM**, and **+CDS**. (Please refer to 07.07 for more detail)

If received new SMS, Ring pin will change status as below table.

| Module status | Ring pin status |
|---|---|
| **Standby** | HIGH |
| **Received SMS** | When receiving SMS the RI will be changed to LOW and hold at low<br>level for about 120 ms then it is changed to HIGH' meanwhile the module Will report following URCs:<br>**+CMTI:**<br>**+CMT:**<br>**+CDS:** |
| **TCPIP events** | When execute following TCPIP AT command, the RI will be changed to LOW and hold at low level for about 120 ms, then it is changed to HIGH.<br>(1) TCPIP create the connection by **AT+CIPSTART** command.<br>(2) TCPIP close the connection by **AT+CIPCLOSE** command.<br>(3) TCPIP received data from remote server.(**AT+CFGRI=1**) |

Note:
    For L206C, Ring pin is named as **UART1_RI**.

| Write Command | Response |
|---|---|
| **AT+CNMI=<mode>[,<mt>[,<bm>[,<ds> [,<bfr>]]]]** | **OK**<br>Or<br>**+CMS ERROR: <err>** |
| Read Command | Response |
| **AT+CNMI?** | **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>**<br>**OK** |

| Test Command<br><br>AT+CNMI=? | Response<br><br><br>**+CNMI: (list of supported &lt;mode&gt;s),(list of supported &lt;mt&gt;s),(list of supported &lt;bm&gt;s),(list of supported &lt;ds&gt;s),(list of supported &lt;bfr&gt;s)**<br>**OK** |
|---|---|
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **&lt;mode&gt;** | **0**  Disable unsolicited result code<br>**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.<br>**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.<br>**3**  Forward unsolicited result codes directly to the TE. TA-TE link specific in band technique used to embed result codes and data when TA is in on-line data mode |
| **&lt;mt&gt;** | **0**  No SMS-DELIVER indications are routed to the TE.<br>**1**  If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: &lt;mem&gt;,&lt;index&gt;<br>**2**  SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group(store message)) are routed directly to the TE using unsolicited result code:<br>+CMT: [&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt; (PDU mode enabled); or<br>+CMT: &lt;oa&gt;, [&lt;alpha&gt;],&lt;scts&gt;[,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;sca&gt;,&lt;tosca&gt;, &lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt; (text mode enabled; about parameters in italics, refer command Show Text Mode Parameters +CSDH)<br>**3**  Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in &lt;mt&gt;=2. Messages of other data coding schemes result in indication as defined in &lt;mt&gt;=1 |

| **\<bm\>** | **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) If ME supports data coding groups which define special routing also |
| | | for messages other than class 3 (e.g. (U)SIM specific messages), ME may |
| | | choose not to route messages of such data coding schemes into TE |
| | | (indication of a stored CBM may be given as defined in \<bm\>=1). |
| | **3** | Class 3 CBMs are routed directly to TE using unsolicited result codes defined |
| | | in\<bm\>=2. If CBM storage is supported, messages of other classes result in |
| | | indication as defined in\<bm\>=1 |
| **\<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 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. |

## 9.11 **AT+CMGL (Text mode) List Message**

Returns messages with status value <stat> from returned message in preferred storage to the TE.

| Write Command | Response |
|---|---|
| **AT+CMGL=<stat>[,<mode>]** | **if text mode (+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERs:**<br>+CMGL:<br><index>,<stat>,<oa/da>,[<alpha>],[<scts>]*[,<tooa/toda>,<length>]*<CR><LF><data>[<CR><LF><br>+CMGL:<br><index>,<stat>,<da/oa>,[<alpha>],[<scts>]*[,<tooa/toda>,<length>]*<CR><LF><data>[...]]<br>**OK**<br>**if text mode (+CMGF=1), command successful and SMS-STATUS-REPORTs:**<br>+CMGL:<br><index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>><br>[<CR><LF><br>+CMGL:<br><index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>><br>[...]]<br>**OK**<br>**if text mode (+CMGF=1), command successful and SMS-COMMANDs:**<br>+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF><br>**OK** |
| Test Command<br><br>**AT+CMGL=?** | Response<br><br>**+CMGL: (list of supported <stat>s)**<br><br>**OK** |
| Execution Command<br><br>**AT+CMGL** | Response<br><br>**OK**<br>the same as AT+CMGL="REC UNREAD", received unread messages |

| Reference | Note |
|---|---|
| | We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |
| | Parameters look at the next command. |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<stat>** | "REC UNREAD" | Received unread messages |
| | "REC READ" | Received read messages |
| | "STO UNSENT" | Stored unsent messages |
| | "STO SENT" | Stored sent messages |
| | "ALL" | All messages |
| <mode> | 0 Normal | |
| | 1 Not change status of the specified SMS record | |

## 9.12 **AT+CMGL (PDU mode)   List Message**

Returns messages with status value <stat> from returned message in preferred storage to the TE.

| Write Command | Response |
|---|---|
| AT+CMGL=\<stat\>[,\<mode\>] | **if PDU mode (+CMGF=0) and command successful:**<br>+CMGL:<br>\<index\>,\<stat\>,[\<alpha\>],\<length\>\<CR\>\<LF\>\<pdu\><br>[\<CR\>\<LF\>+CMGL:\<index\>,\<stat\>,[\<alpha\>],\<length\>\<CR\><br>\<LF\>\<pdu\><br>[...]]<br>**OK**<br>**otherwise:**<br>*+CMS ERROR: \<err\>* |
| Test Command<br><br>AT+CMGL=? | Response<br><br>**+CMGL: (list of supported \<stat\>s)**<br>**OK** |
| Execution Command<br><br>AT+CMGL | Response<br><br>the same as AT+CMGL=0, received unread messages |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<stat\>** | <u>0</u>   Received unread messages<br>1   Received read messages<br>2   Stored unsent messages<br>3   Stored sent messages<br>4   All messages |
| **\<mode\>** | 0   Normal<br>1   Not change status of the specified SMS record |
| **\<alpha\>** | String type(string should be included in quotation marks)<br>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<br>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:<br>- if <dcs> indicates that GSM 03.38 default alphabet is used and <fo> indicates that GSM 03.40 TPUser-Data-Header-Indication is not set:<br>- 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<br>- 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))<br>- 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:<br>- if <dcs> indicates that GSM 03.38 default alphabet is used:<br>- 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<br>- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number<br>- if <dcs> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number |
| <length> | Integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) |
| <index> | Integer type; value in the range of location numbers supported by the associated memory |

| <oa> | GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer Command +CSCS in 3GPP TS 27.007); type of address given by <tooa> |
|------|---|
| <pdu> | In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format. |
| <scts> | GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer <dt>) |

## 9.13  AT+CMGR (Text mode)   Read Message

Returns messages with location value <index> from preferred message storage <mem1> to the TE.
If the status of the message is .received unread., the status in the storage changes
to .received read.. If reading fails, +CMS ERROR is returned.

| Write Command | Response |
|---|---|
| AT+CMGR=<index>[,<mode>] other is AT+CMGR=<index> | **if text mode (+CMGF=1), command successful and SMS-DELIVER:**<br>+CMGR:<br><stat>,<oa>,[<alpha>],<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data><br>**OK**<br>**if text mode (+CMGF=1), command successful and SMS-SUBMIT:**<br>+CMGR:<br><stat>,<da>,[<alpha>]*[,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]*<CR><LF><data><br>**OK**<br>**if text mode (+CMGF=1), command successful and SMS-STATUSREPORT:**<br>+CMGR:<br><stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st><br>**OK**<br>**if text mode (+CMGF=1), command successful and SMS-COMMAND:**<br>+CMGR:<br><stat>,<fo>,<ct>*[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]*<br>**OK**<br>**if text mode (+CMGF=1), command successful and CBM storage:**<br>+CMGR:<br><stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data><br>**OK**<br>**otherwise:**<br>*+CMS ERROR: <err>* |
| Test Command<br>**AT+CMGR=?** | Response<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index>** | Integer type; value in the range of location numbers supported by the associated memory |
| **<mode>** | 0    Normal<br>1    Not change status of the specified SMS record |

## 9.14  **AT+CMGR (PDU mode)    Read Message**

Returns messages with location value <index> from preferred message storage <mem1> to the TE.
If the status of the message is .received unread., the status in the storage changes
to .received read.. If reading fails, +CMS ERROR is returned.

| Write Command | Response |
|---|---|
| **AT+CMGR=<index>[,<mode>] other is AT+CMGR=<index>** | **if PDU mode (+CMGF=0) and command successful:**<br>+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu><br>**OK**<br>**otherwise:**<br>*+CMS ERROR: <err>* |
| Test Command<br>**AT+CMGR=?** | Response<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index>** | Integer type; value in the range of location numbers supported by the associated memory |
| **<mode>** | 0    Normal<br>1    Not change status of the specified SMS record |

## 9.15 **AT+CNMA (Text mode) New Message Acknowledgement to ME/TA**

Execution command confirms correct reception of a new message (SMS-DELIVER or SMSSTATUS-REPORT) which is routed directly to the TE. This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service>equals 1.

| Execution Command | Response |
|---|---|
| **if text mode (+CMGF=1):**<br>**AT+CNMA** | **OK**<br>Or<br><br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CNMA=?** | Response<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

## 9.16 **AT+CNMA (PDU mode) New Message Acknowledgement to ME/TA**

Execution command confirms correct reception of a new message (SMS-DELIVER or SMSSTATUS-REPORT) which is routed directly to the TE This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service>equals 1.

| Write Command | Response |
|---|---|
| **if PDU mode (+CMGF=0):**<br>AT+CNMA[=<n>[,<length>[<CR>*PDU is given*<ctrl-Z/ESC>]]] | **OK**<br>Or<br><br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CNMA=?** | Response<br><br>**if PDU mode (+CMGF=0):**<br>+CNMA: (list of supported<n>s)<br>**OK** |
| Reference | Note |

## 9.17 **AT+CMGS** (Text mode) Send Message

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr>is returned to the TE on successful message delivery.

| Write Command | Response |
|---|---|
| **if text mode (+CMGF=1):**<br>AT+CMGS=<da>[,<toda>]<CR<br>>*text is entered*<ctrl-Z/ESC><br>ESC quits without sending | if text mode (+CMGF=1) and sending successful:<br>**+CMGS: <mr>**<br>**OK**<br><br>if sending fails:<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMGS=?** | Response<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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 TS 07.07); type of address given by <toda> |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) |
| **<mr>** | GSM 03.40 TP-Message-Reference in integer format |

## 9.18  **AT+CMGS (PDU mode)   Send Message**

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr>is returned to the TE on successful message delivery.

| Write Command | Response |
|---|---|
| **if PDU mode (+CMGF=0):**<br>AT+CMGS=<length><CR><br>*PDU is given*<ctrl-Z/ESC> | **if PDU mode (+CMGF=0) and sending successful:**<br>+CMGS: <mr><br>**if sending fails:**<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMGS=?** | Response |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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) |
| **<mr>** | GSM 03.40 TP-Message-Reference in integer format |

## 9.19  AT+CMSS (Text mode)   Send Message from Storage

Execution command sends message with location value <index>from preferred message storage
<mem2>to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da>is given
for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value
<mr>is returned to the TE on successful message delivery.

| Write Command | Response |
|---|---|
| **AT+CMSS=<index>[,<da>[,<toda>]]** | **if text mode (+CMGF=1) and sending successful:**<br>+CMSS: <mr><br>**OK**<br><br>**if sending fails:**<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMSS=?** | Response<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index>** | Integer type; value in the range of location numbers supported by the associated memory |
| **<da>** | GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in TS 07.07); type of address given by <toda> |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) |
| **<mr>** | GSM 03.40 TP-Message-Reference in integer format |

## 9.20  **AT+CMSS (PDU mode)   Send Message from Storage**

Execution command sends message with location value <index>from message storage <mem2>to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da>is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr>is returned to the TE on successful message delivery.

| Write Command | Response |
|---|---|
| **AT+CMSS=<index>[,<da>[,<toda>]]** | **if PDU mode (+CMGF=0) and sending successful:**<br>**+CMSS: <mr>**<br>**OK**<br><br>**if sending fails:**<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMSS=?** | Response<br><br>**OK** |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index>** | Integer type; value in the range of location numbers supported by the associated memory |
| **<da>** | GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in TS 07.07); type of address given by <toda> |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) |
| **<mr>** | GSM 03.40 TP-Message-Reference in integer format |

## 9.21 AT+CMGW (Text mode)　Write Message to Memory

Execution command stores a message 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, support "stored"
unsent' and "stored sent"

| Write Command | Response |
|---|---|
| **if text mode (+CMGF=1):**<br>**AT+CMGW=**<oa/da>[,<tooa/to<br>da>][,<stat>]<CR><br>*text is entered*<ctrl-Z/ESC><br><ESC> quits without sending | **+CMGW: <index>**<br>**OK**<br>or<br>*+CMS ERROR: <err>* |
| Execution Command<br><br>**AT+CMGW** | Response<br><br>**+CMGW: <index>**<br>**OK**<br>or<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMGW=?** | Response<br><br>**OK** |
| Max Response<br>Time | 5s |
| Reference | Note<br>We don't support "+CMS ERROR" when AT command set is<br>SLIM_AT or ULC_AT |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<stat>** | the status of message in memory in string format; defined values:<br>"REC UNREAD" received unread message (i.e. new message)<br>"REC READ"　received read message<br>"STO UNSENT" stored unsent message (only applicable to SMs)<br>"STO SENT"　stored sent message (only applicable to SMs) |

| <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 TS 07.07);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 TS 07.07); type of address given by <toda> |
| <tooa> | GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer <toda>) |
| <toda> | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)129 Unknown type(IDSN format number)<br>161 National number type(IDSN format)<br>145 International number type(ISDN format)<br>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 |
| <index> | Index of message in selected storage <mem2> |

## 9.22 **AT+CMGW (PDU mode)    Write Message to Memory**

Execution command stores a message 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, support "stored unsent'and "stored sent"

| Write Command | Response |
|---|---|
| **if PDU mode (+CMGF=0):** **AT+CMGW=**<length>[,<stat>] <CR>**PDU is given** <ctrl-Z/ESC> | **+CMGW: <index>** **OK** Or **+CMS ERROR: <err>** |
| Test Command **AT+CMGW=?** | Response **OK** |
| Max Response Time | 5s |
| Reference | Note  is only supported for phone suite. Others can't use this command to do test. □We don t ̇support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT Shall construct the PDU in received short message format When the <stat> set 0 or 1. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<stat>** | Integer type value indicating the status of message in memory; defined values: **0**    "REC UNREAD" received unread message (i.e. new message) **1**    "REC READ" received read message **2**    "STO UNSENT" stored unsent message (only applicable to SMS) **3**    "STO SENT" stored sent message (only applicable to SMS) |
| **<length>** | 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>** | Index of message in selected storage <mem2> |

## 9.23 **AT+CMGD    Delete Message**

Deletes message from preferred message <mem1> (see AT+CPMS) storage location <index>.
If deletion fails, +CMS ERROR is returned.

| Write Command | Response |
|---|---|
| **AT+CMGD=<index>[,<delflag>]** | **OK**<br>or<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMGD=?** | Response<br><br>**+CMGD: (list of supported<index>s)[,(list of supported <delflag>s)]**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<index>** | Integer type; value in the range of location numbers supported by the associated memory |
| **<delflag>** | **0**  (or omitted) Delete the message specified in <index><br>**1**  Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not)untouched<br>**2**  Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched<br>**3**  Delete all read messages from preferred message storage, sent and unsent mobile originated Messages leaving unread messages untouched.<br>**4**  Delete all messages from preferred message storage including unread messages. |

## 9.24 **AT+CMGC (Text mode) Send Command**

Execution command sends a command message from a TE to the network (SMSCOMMAND).

| Write Command | Response |
|---|---|
| **if text mode (+CMGF=1):**<br>+CMGC=<fo>,<ct>[,<pid>[,<mn>[,<da>[,<toda>]]]]<CR><br>***text is entered***<ctrl-Z/ESC> | **if text mode (+CMGF=1) and sending successful:**<br>+CMGC: <mr>[,<scts>]<br>**OK**<br><br>**if sending fails:**<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMGC=?** | Response<br><br>**OK** |
| Reference | Note |

## 9.25 **AT+CMGC (PDU mode) Send Command**

Execution command sends a command message from a TE to the network (SMSCOMMAND).

| Write Command | Response |
|---|---|
| **if PDU mode (+CMGF=0):**<br>+CMGC=<length><CR><br>***PDU is given***<ctrl-Z/ESC> | **if PDU mode (+CMGF=0) and sending successful:**<br>+CMGC: <mr>[,<ackpdu>]<br>**OK**<br><br>**if sending fails:**<br>*+CMS ERROR: <err>* |
| Test Command<br><br>**AT+CMGC=?** | Response<br><br>**OK** |
| Reference | Note |

## 9.26 **AT+CMMS   More Message to Send**

Set command controls the continuity of SMS relay protocol link. When feature is enabled (and supported by network) multiple messages can be sent much faster as link is kept open.
Test command returns supported values as a compound value.

| Write Command | Response |
| --- | --- |
| **AT+CMMS=[<n>]** | **OK**<br>Or<br>**ERROR** |
| Read Command | Response |
| **AT+CMMS?** | **+CMMS: <n>**<br>**OK** |
| Test Command | Response |
| **AT+CMMS=?** | **+CMMS: (list of supported <n>s)**<br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<n>** | **0**   disable<br>**2**   enable (if the time between the response of the latest message send command and the next send command exceeds 1-5 seconds (the exact value is up to ME implementation), ME shall close the link but TA shall not switch automatically back to<n>=0) |

## 9.27 **AT+EQSI　Query storage index**

To query storage index.

| Write Command | Response |
|---|---|
| **AT+EQSI=<storage>** | **+EQSI: <storage>, , <end>,<used>** **OK/ERROR** |
| Test Command | Response |
| **AT+EQSI=?** | **+EQSI: (list of supported<storage>s)** **OK/ERROR** |
| Reference | Note This command is only supported for phone suite. Others can't use this command to do test |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<storage>** | String type; SM or ME |
| **** | Beginning of index |
| **<end>** | Ending of index |
| **<used>** | Number of messages in <storage> |

# 10 Hardware Testing AT Commands

These AT commands are designed for tools to do factory hardware testing and should be tested exclusively. Test only one command/item at the same time.

## 10.1 AT+EALT    Audio Sound loop back test

This Command is used to turn on/off the loop back test.

| Test Command | Response |
|---|---|
| **AT+EALT =?** | **+EALT: (list of supported\<op\>s)**<br><br>**OK** |
| Write Command | Response |
| **AT+EALT = \<op\>** | **OK \| ERROR \| +CME ERROR: \<err\>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **op** | <u>0</u>   turn off the loop back test.<br>1   turn on the loop back test. |

## 10.2 **AT+ESAM    Set Audio Mode**

This Command is used to set audio mode. We have three audio mode , normal, loud speaker and handset.

| Test Command | Response |
|---|---|
| **AT+ESAM=?** | **+ESAM: (0-2)** <br><br> **OK** |
| Read Command <br><br> **AT+ESAM?** | Response <br><br> **+ESAM: <mode>** <br><br> **OK** |
| Write Command <br><br> **AT+ESAM=<mode>** | Response <br><br> **OK** <br> Or <br> **ERROR** |
| Reference | Note <br> For L206C module, onlymode2 will take effect |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **mode** | <u>0</u>   normal <br> 1   handset <br> 2   loudspeaker |

## 10.3 **AT+ESLP    Sleep Mode**

This Command is used to enable and disable sleep mode in the mobile.

| Test Command | Response |
|---|---|
| **AT+ESLP=?** | **+ESLP: (0, 1)** <br><br> **OK** |
| Write Command <br><br> **AT+ESLP=<op>** | Response <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **op** | 0    disable <br> 1    enable |

## 10.4 **AT+CSCLK    Configure Slow Clock**

This Command is used to Configure Slow Clock.

| Test Command | Response |
|---|---|
| **AT+CSCLK=?** | **+CSCLK: (**list of supported **<n>**s**)** <br> **OK** |
| Read Command <br> **AT+CSCLK?** | Response <br> **+CSCLK: <n>** <br> **OK** |
| Write Command <br><br> **AT+CSCLK=<n>** | Response <br> **OK** <br><br> Or <br><br> **ERROR** |

| Reference | Note |
|---|---|
|  | There are two caveats when you want to quit sleep mode in mode 2: <br> 1, You should input some characters (at least one) to awake module <br> 2, An interval time of 100ms more is necessary between waking characters <br> and following AT commands, otherwise the waking characters will not be <br> discarded completely, and messy codes will be produced which may leads to <br> UART baud rate re-adaptation. <br>     The +CSCLK value can not be reset by AT&F or ATZ command. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **< n>** | **0** Disable slow clock, module will not enter sleep mode. <br> **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. <br> **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. |

## 10.5 AT+CHF   Configure Hands Free Operation

This Command is used to set audio mode. We have three audio mode , normal, loud speaker and handset.

| Write Command | Response |
|---|---|
| AT+CHF=<ind>[,<state>] | OK<br><br>ERROR |
|  | Unsolicited Result Code<br>+CHF: <state> |
| Test Command<br><br>AT+CHF=? | Response<br><br>+CHF: (list of supported <ind>s),(list of supported <state>s)<br><br>OK |
| Read Command<br><br>AT+ CHF? | Response<br><br>+CHF: <ind>,<state><br><br>OK |
| Reference | Note<br>For L206(D) module, onlymode2 will take effect.<br>Do not support AT+CHF=1 |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <ind> | 0   Unsolicited result code disabled<br>1   Unsolicited result code enabled |
| <state> | 0   Main audio channel<br>1   Aux audio channel(not support)<br>2   Main audio channel hand free mode |

## 10.6  AT+CHFA   Swap the Audio Channels

This Command is used to swap the audio channels.

| Write Command | Response |
|---|---|
| **AT+CHFA=<mode>** | **OK**<br><br>**ERROR** |
| Test Command<br><br>**AT+CHFA=?** | Response<br><br>**+CHFA: (0 = NORMAL_AUDIO,2 = HANDFREE_AUDIO)**<br><br>**OK** |
| Read Command<br><br>**AT+ CHFA?** | Response<br><br>**+CHFA: <mode>**<br><br>**OK** |
| Reference | Note<br>For L206C   module, onlymode2 will take effect. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **mode** | 0   Main audio channel<br>1   Aux audio channel(not support)<br>2   Main audio channel hand free mode |

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

This Command is used to control the GPIO by PIN index.

| Write Command | Response |
|---|---|
| **AT+CGPIO=<operation>,<GP IO>,<function>,<level>** | **OK**<br>or<br>**ERROR** |
| Test Command<br><br>**AT+CGPIO=?** | Response<br><br>**+CGPIO: (0-1),(4,7,12,17,18),(0-1),(0-1)**<br><br>**OK** |
| Reference | Note<br>Scope of parameter <GPIO> is different among different module. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<Operation>** | 0    Set the GPIO function including the GPIO output<br>1    Read the GPIO level. Please note that only when the gpio is set as input, user can use parameter 1 to read the GPIO level, otherwise the module will return "ERROR". |
| **<GPIO>** | The GPIO you want to be set. (It has relations with the hardware, please refer to the hardware manual) |
| **<function>** | Only when <Operation> is set to 0, this option takes effect.<br>0    Set the GPIO to input.<br>1    Set the GPIO to output |
| **<level>** | 0    Set the GPIO low level<br>1    Set the GPIO high level |

Supported GPIO numbers are listed below:

| PIN number | PIN name | <GPIO>number | Note |
|---|---|---|---|
| 7 | UART1_RI | 18 | |
| 22 | UART2_TXD | 17 | |
| 23 | UART2_RXD | 12 | |
| 41 | NETLIGHT | 4 | Need send **AT+NETLIGHT=**1 first |
| 42 | STATUS | 7 | |

# 11  STK AT Commands

Overview of STK AT Commands:

| AT Command | Description |
| --- | --- |
| AT+STKMENU | STK Main menu command |
| AT+STKTR | STK Terminal Response |
| AT+STKTRS | STK Terminal Response (String) |
| AT+STKENV | STK Envelope Command |
| AT+STKENVS | STK Envelope Command |
| AT+STKCALL | STK call setup |
| AT+STKSMS | STK SMS delivery |
| AT+STKSS | STK SS setup |
| AT+STKUSSD | STK USSD setup |
| AT+STKDTMF | STK sending DTMF |
| AT+STKPCI | STK Proactive Command Indication |
| AT+STKPCIS | STK URC switch command |

## 11.1  AT+STKMENU   STK Main menu command

| Test Command | Response |
|---|---|
| AT+STKMENU=? | OK |
| Read Command <br><br> AT+STKMENU? | Response <br><br> [+ STKMENU:\<index\>,\<id\>,\<text\>] <br> [+ STKMENU:\<index\>,\<id\>,\<text\>] <br> [+ STKMENU:\<index\>,\<id\>,\<text\>] <br> [...] <br><br> OK |
| Reference | Note <br> When "AT+STKPCIS=0",read command response is null. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| \<index\> | The menu's index begin 1 |
| \<id\> | The item identifier |
| \<text\> | The content of item, code by EFADN |

## 11.2  AT+STKTR   STK Terminal Response

This command is used to STK Terminal Response.

| Test Command | Response |
|---|---|
| **AT+STKTR=?** | **OK** |
| Read Command | Response |
| **AT+STKTR?** | **OK** |
| Write Command | Response |
| **AT+STKTR=<result>** | **OK** |
| | Or |
| | **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<result>** | HEX string of STK response |

## 11.3  AT+STKTRS   STK Terminal Response(string)

This command is used to STK Terminal Response.

| Test Command<br>**AT+STKTRS=?** | Response<br>**+STKTRS: <result_length>,<text_length>**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+STKTRS?** | Response<br><br>**OK** |
| Write Command<br>**AT+STKTRS=<result>[,<text>]** | Response<br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<result>** | HEX String --specified in GSM11.14[12.12]<br>- "00" = Command performed successfully;<br>- "10" = Proactive SIM session terminated by the user;<br>- "11" = Backward move in the proactive SIM session requested by the user;<br>…<br>- "2000" = ME currently unable to process command, No specific cause can be given;<br>- "2001" = ME currently unable to process command, Screen is busy;<br>… |
| **<text>** | Hex String<br>If response to GET INPUT or GET INKEY --specified in GSM11.14[12.15]<br>-text string, the first 2 char is Data coding scheme<br>If response to SELECT ITEM --specified in GSM11.134[12.10]<br>-Identifier of item chosen |

## 11.4 **AT+STKENV    STK Envelope Command**

This command is used to STK Envelope Command.

| Test Command<br>**AT+STKENV=?** | Response<br><br>**OK** |
|---|---|
| Read Command<br>**AT+STKENV?** | Response<br><br>**OK** |
| Write Command<br>**AT+STKENV=<command>** | Response<br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<command>** | HEX string of STK envelope command |

## 11.5 **AT+STKENVS STK Envelope Command(String)**

This command is used to STK Envelope Command.

| Test Command | Response |
|---|---|
| **AT+STKENVS=?** | **+STKENVS: <command_length>,<data_length>** |
| | **OK** |
| Read Command | Response |
| **AT+STKENVS?** | |
| | **OK** |
| Write Command | Response |
| **AT+STKENVS=<command>[,<data]** | **OK** |
| | Or |
| | **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<command>** | HEX String --specified in GSM11.14[13.1] |
| | "D3"= Menu Selection; |
| | "D6" =Event download; |
| **<data>** | Hex String |
| | If command is 'D3' --specified in GSM11.14[8.2] |
| | -Item identifier of main menu |
| | If command is 'D6' --specified in GSM11.14[11] |
| | -event list |
| | - 04 = User activity |
| | - 05 = Idle screen available |
| | - 07 = Language selection |

## 11.6　**AT+STKCALL　STK call setup**

This command is used to STK call setup.

| Test Command<br>**AT+STKCALL=?** | Response<br><br>**OK** |
|---|---|
| Write Command<br>**AT+STKCALL=<command>** | Response<br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<command>** | stk call command<br>0　　(Trigger modem to send STK CALLSETUP)<br>4　　(Trigger modem to send STK CALLSETUP but icon cannot<br>be displayed)<br>16　　(Proactive session terminated by user)<br>18　　(No response from user)<br>32　　(ME currently unable to process this command)<br>34　　(User reject setup call)<br>50　　(Command data not understood by ME)<br>(Note: Above are the possible terminal response value needed to be<br>responded by application. It's modem's responsibility to response for<br>other terminal response value) |

## 11.7  **AT+STKSMS   STK SMS delivery**

This command is used to STK SMS delivery.

| Test Command<br>**AT+STKSMS=?** | Response<br><br>**OK** |
|---|---|
| Write Command<br>**AT+STKSMS=\<command\>** | Response<br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br>Above are the possible terminal response value needed to be responded by application.<br>It's modem's responsibility to response for other terminal response value |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<command\>** | 0   (Trigger modem to send STK SMS)<br>4   (Trigger modem to send STK SMS but icon cannot be displayed) |

## 11.8 **AT+STKSS    STK SS setup**

This command is used to STK SS setup.

| Test Command<br>**AT+STKSS=?** | Response<br><br>**OK** |
|---|---|
| Write Command<br>**AT+STKSS=<command>** | Response<br>**OK**<br><br>**Or**<br><br>**ERROR** |
| Reference | Note<br>Above are the possible terminal response value needed to be responded by application.<br>It's modem's responsibility to response for other terminal response value |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<command>** | 0    (Trigger modem to send STK SS)<br>4    (Trigger modem to send STK SS but icon cannot be displayed)<br>50 (Command data not understood by ME) |

## 11.9  **AT+STKUSSD   STK USSD setup**

This command is used to STK USSD setup.

| Test Command<br>**AT+STKUSSD=?** | Response<br><br>**OK** |
|---|---|
| Write Command<br>**AT+STKUSSD=<command>** | Response<br>**OK**<br><br>**Or**<br><br>**ERROR** |
| Reference | Note<br>Above are the possible terminal response value needed to be responded by application.<br>It's modem's responsibility to response for other terminal response value |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<command>** | 0   (Trigger modem to send STK USSD)<br>4   (Trigger modem to send STK USSD but icon cannot be displayed)<br>50 (Command data not understood by ME) |

## 11.10 **AT+STKDTMF STK sending DTMF**

This command is used to STK sending DTMF.

| Test Command<br>**AT+STKDTMF=?** | Response<br><br>**OK** |
|---|---|
| Write Command<br>**AT+STKDTMF=<command>** | Response<br>**OK**<br><br>**Or**<br><br>**ERROR** |
| Reference | Note<br>Above are the possible terminal response value needed to be responded by<br>application. It's modem's responsibility to response for other terminal<br>response value. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<command>** | 0   (Trigger modem to send STK DTMF)<br>4   (Trigger modem to send STK DTMF but icon cannot be displayed)<br>32 (ME currently unable to process command) |

## 11.11 **+STKPCI    STK Proactive Command Indication**

This unsolicited result code is used to indicate Proactive Command Indication.

|  | Unsolicited Result Code<br>**+STKPCI:<pci_type>[,<proactive_command>,…]** |
| --- | --- |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<pci_type>** | 0    The SAT command is handled by TE.<br>1    The SAT command is handled by ME.<br>2    No other command (end of session) |
| **<proactive_c ommand>** | HEX string of STK proactive command, sent when <pci_type> = 0 or 1<br>-DISPLAY TEXT,**<Command Qualifier>,<text string>**<br>-GET INKEY, **<Command Qualifier>,<text string>**<br>-GET INPUT, **<Command Qualifier>,<text string>,<Min length>,<Max length>**<br>-PLAY TONE,**<alpha id>,<tone>,< Time unit >,< Time interval>**<br>-SET UP MENU,**<the number of item >,<alpha id>**<br>-SELECT ITEM, **<the number of item >,<alpha id>**<br>-ITEM,**<index>,<id>,<item string>**<br>-SEND SHORT MESSAGE,**<alpha id>,<addr>,<sms tpdu>**<br>-SEND SS,**<alpha id>,<ss string>**<br>-SEND USSD,**<alpha id>,<ussd string>**<br>-SETUP CALL,**<alpha id>,<addr>**<br>-SET UP IDLE MODE TEXT,**<text string>**<br>-SEND DTMF,**<alpha id>,<dtmf string>**<br><br>If <alpha id> = 0, the alpha id is null<br>If <addr> = 0, the addr is null |

## 11.12 **AT+STKPCIS   STK URC switch command**

This command is used to STK URC switch command.

| Test Command | Response |
|---|---|
| **AT+STKPCIS=?** | **+STKPCIS: (0-1)**<br><br>**OK** |
| Read Command<br><br>**AT+STKPCIS?** | Response<br><br>**+STKPCIS: <switch>**<br><br>**OK** |
| Write Command<br><br>**AT+STKPCIS=<switch>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<switch>** | the switch of STK URC<br>0   the STK URC is off<br>1   the STK URC is ON |

# 12 Proprietary AT Commands For PS

## 12.1 AT+SPIC   Times Remained to Input SIM PIN/PUK

This command queries the number of remaining valid tries for PIN1, PIN2, PUK1, and PUK2

| Execution Command | Response |
|---|---|
| **AT+SPIC** | **+SPIC: <pin1>,<pin2>,<puk1>,<puk2>**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<pin1>, <pin2>, <puk1>,<puk2>** | **<pin1>**Times remained to input chv1<br>**<pin2>**Times remained to input chv2<br>**<puk1>**Times remained to input puk1<br>**<puk2>**Times remained to input puk2 |

## 12.2 **AT+CICCID    Read ICCID of SIM Card**

This command is used to read SIM card ICCID if SIM inserted. If SIM not inserted, return ERROR.

| Execution Command | Response |
|---|---|
| **AT+CICCID** | **\<iccid\>**<br>**OK**<br>**or**<br>**ERROR / +CME ERROR: 10** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<iccid\>** | string type |

□□□□□□□□□□□□□□□□□□□□□□Communication□□□□□□□□□□□□□□□□□□□□□□□□□□□□

# 13  Proprietary Unsolicited Result code

## 13.1  URC:+ECSQ

This URC is to report signal strength

| Execution Command | Unsolicited result code |
|---|---|
|  | **+ECSQ:** <br> **<rssi>,<ber>,<rssi_in_qdBm>[,<RSCP_in_qdBm>,<EcN0_in _qdBm>]** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **rssi** | 0-255   Received signal strength indication level |
| **ber** | 0-255   Bit error rate |
| **rssi_in_qdBm** | Received signal strength in quarter dBm |
| **RSCP_in_qdBm** | RSCP in quarter dBm. Only available when camp on UMTS network |
| **EcN0_in_qdBm** | EcN0 in quarter dBm. Only available when camp on UMTS network |

Example:

| Commands | Response |
|---|---|
| **AT+ECSQ=1** | **OK** |
|  | Unsolicited result code <br><br> **+ECSQ: 29, 99, -220** <br><br> **+ECSQ: 28, 99, -227** |

## 13.2  URC:+ECFU

This URC is intended to notify application to show CFU(Call Forwarding Unconditional) icon.

| Execution Command | Unsolicited result code |
| --- | --- |
| | **+ECFU: <status>,<line>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description | |
| --- | --- | --- |
| **status** | 0 | hide CFU icon |
| | 1 | show CFU icon |
| **line** | 1 | Line1 |
| | 2 | Line2 |

## 13.3  URC:+ESPEECH

This URC is to notify application to attach the speech for voice call (user connection). It's defined in spec 24.008 section5 call control .

| Execution Command | Unsolicited result code |
| --- | --- |
| | **+ESPEECH: <on_off>,<rat>,<irho_speech_on_off>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description | |
| --- | --- | --- |
| **on_off** | 0 | Detach speech |
| | 1 | Attach speech |
| **Rat** | 1 | GSM |
| | 2 | UMTS |
| | 3 | GSM |
| **irho_speech_on_o ff** | 0 | Not inter-rat handover |
| | 1 | Is inter-rat handover |

# 14  TCPIP AT commands

Overview of TCPIP AT Commands:

| AT Command | Description |
| --- | --- |
| AT+CIPMUX | Start Up Multiple IP Connection |
| AT+CIPMODE | Select TCPIP Application Mode |
| 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+CIPSTART | Start TCP or UDP Connection |
| AT+CIPSEND | Send data through TCP or UDP connection |
| AT+CIPCLOSE | Close TCP or UDP connection |
| AT+CIPSHUT | Deactivate GPRS PDP Context |
| AT+CIPSTATUS | Query Current Connection Status |
| AT+CIPRXGET | Get Data from Network Manually |
| AT+CIPHEAD | Add an IP Head at the Beginning of a Package Received |
| AT+CIPQSEND | Select Data Transmitting Mode |
| AT+CDNSGIP | Get IP address by Domain Name |
| AT+CIPTKA | Set TCP Keep-alive Parameters |
| AT+CIPACK | TCP/IP Data flow calculation |
| AT+CDNSCFG | Configure Domain Name Server |
| AT+CIPDPDP | Check State of GPRS Network Timing |
| AT+CIPSERVER | Configure Module as Server225 |
| AT+CIPSHOWTP | Display Transfer Protocol in IP Head When Received Data226 |
| AT+CIPUDPMODE | UDP Extended Mode |
| AT+CIPSCONT | Save TCPIP Application Context |
| AT+CIPRDTIMER | Set Remote Delay Timer |
| AT+CIPSGTXT | Select GPRS PDP context |
| AT+CLPORT | Set Local Port |
| AT+CIPCCFG | Configuration of TCP/IP Transparent mode |
| AT+CIPSPRT | Set Prompt of '>' When Module Sends Data |
| AT+CIPCSGP | Set CSD or GPRS for Connection Mode |
| AT+CIPSENDTIME | Set TCP send timeout value |
| AT+CIPSRIP | Show Remote IP Address and Port When Received Data |

## 14.1 **AT+CIPMUX    Start Up Multiple IP Connection**

This command is used to start Up Multiple IP Connection or single IP Connection.

| Test Command | Response |
|---|---|
| **AT+CIPMUX=?** | **+CIPMUX: (0,1)**<br><br>**OK** |
| Read Command<br><br>**AT+ CIPMUX?** | Response<br><br>**+ CIPMUX: <m>**<br><br>**OK**<br><br>Or<br><br>**Error** |
| Write Command<br><br>**AT+CIPMUX=<m>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br><br>Only in IP initial state, AT+CIPMUX=1 is effective;<br>Only when multi IP connection and GPRS application are both shut down,<br>AT+CIPMUX=0 is effective. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<m>** | _0_    Single IP connection<br>1    Multiple IP connection |

## 14.2  AT+CIPMODE   Select TCPIP Application Mode

This command is used to Select TCPIP Application Mode

| Test Command<br>**AT+CIPMODE=?** | Response<br><br>**+CIPMODE: (0-NORMAL       MODE,1-TRANSPARENT MODE)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ CIPMODE?** | Response<br><br>**+ CIPMODE: <mode>**<br><br>**OK** |
| Write Command<br>**AT+CIPMODE=<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br>Input +++ string to exit transparent mode |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Normal Mode<br>1   Transparent Mode |

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

This command is used to Start Task and Set APN, USER NAME, PASSWORD.

| Test Command | Response |
|---|---|
| **AT+CSTT=?** | **+CSTT: "APN","USER","PWD"** <br><br> **OK** |
| Read Command <br><br> **AT+CSTT?** | Response <br><br> **+CSTT: <APN>,<user name>,<password>** <br><br> **OK** |
| Write Command <br><br> **AT+CSTT=<APN>,<user name>,<password>** | Response <br><br> **OK** <br><br> Or <br><br> **ERROR** |
| Execution Command <br><br> **AT+CSTT** | Response <br><br> **OK** <br><br> Or <br><br> **ERROR** |
| Reference | Note <br><br> 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. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<APN>** | A string parameter which indicates the GPRS access point name |
| **<user name>** | A string parameter which indicates the GPRS user name |
| **<password>** | A string parameter which indicates the GPRS password |

## 14.4  AT+CIICR      Bring Up Wireless Connection with GPRS or CSD

This command is used to bring up wireless connection with GPRS or CSD.

| Test Command | Response |
|---|---|
| **AT+CIICR=?** | **OK** |
| Execution Command<br><br>**AT+CIICR** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br><br>1. Max Response Time 150 seconds (no signal)<br>2. 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.<br>3. 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. |

## 14.5 **AT+CIFSR**    **Get local IP address**

This command is used to get local IP address..

| Test Command | Response |
|---|---|
| **AT+CIFSR=?** | **OK** |
| Execution Command<br><br>**AT+CIFSR** | Response<br><br>**<IP address>**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br>Local IP Address can be obtained by AT+CIFSR, if module hasn't valid IP, it will respond ERROR. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<IP address>** | A string parameter which indicates the IP address assigned, for example:<br>**10.112.208.9** |

## 14.6 **AT+CIPSTART   Start TCP or UDP Connection**

This command is used to start TCP or UDP Connection.

| Test Command | Response |
|---|---|
| **AT+CIPSTART=?** | 1) If AT+CIPMUX=0<br><br> **+CIPSTART:   (list   of   supported   <mode>),(<IP address>),(<port>)**<br>**+CIPSTART:   (list   of   supported   <mode>),(<domain name>),(<port>)**<br>**OK**<br>2) If AT+CIPMUX=1<br><br> **+CIPSTART: (list of supported <n>),(list of supported <mode>),(<IP address>),(<port>)**<br>**+CIPSTART: (list of supported <n>),(list of supported <mode>),(<domain name>),(<port>)**<br><br>**OK** |

| Write Command | Response |
|---|---|
| 1)If single IP connection (AT+CIPMUX=0) **AT+CIPSTART=<mode>,<IP address or domain name>,<port>** 2)If multi-IP connection (AT+CIPMUX=1) **AT+CIPSTART=<id>,< mode>,< IP address or domain name>,<port>** | 1)If single IP connection (+CIPMUX=0) If format is right response **OK** otherwise response If error is related to ME functionality: **+CME ERROR <err>** Response when connection exists **ALREADY CONNECT** Response when connection is successful **CONNECT OK** Otherwise **STATE: <state>** **CONNECT FAIL** 2)If multi-IP connection (**AT+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** |
| Reference | Note Max Response Time 75 seconds (IP address and no signal) 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". |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<id>** | 0..5      A numeric parameter which indicates the connection number |
| **<mode>** | A string parameter which indicates the connection type<br>"TCP"   Establish a TCP connection<br>"UDP"   Establish a UDP connection |
| **<IP address or domain name>** | A string parameter which indicates remote server IP address, or domain name. |
| **<port>** | Remote server port |
| **<state>** | A string parameter which indicates the progress of connecting<br>IP INITIAL<br>CONNECT OK<br><br>In Multi-IP state:<br>IP INITIAL<br>CONNECT OK |

## 14.7  **AT+CIPSEND**    **Send data through TCP or UDP connection**

This command is used to send data through TCP or UDP connection.

| Test Command **AT+CIPSEND=?** | Response<br><br>1) For single IP connection (+CIPMUX=0)<br><br>**+CIPSEND: &lt;length&gt;**<br><br>**OK**<br><br>2) For multi IP connection (+CIPMUX=1)<br><br>**+CIPSEND: (0-5),&lt;length&gt;**<br><br>**OK** |
|---|---|
| Read Command **AT+CIPSEND?** | Response<br><br>1) For single IP connection (+CIPMUX=0)<br>**+CIPSEND: &lt;size&gt;**<br><br><br>**OK**<br><br>2) For multi IP connection (+CIPMUX=1)<br><br>**+CIPSEND: &lt;n&gt;,&lt;size&gt;**<br><br>**OK** |

| Write Command | Response |
|---|---|
| 1) If single IP connection (AT+CIPMUX=0) **AT+CIPSEND=<length>** <br><br> 2) If multi IP connection (AT+CIPMUX=1) **AT+CIPSEND=<id>[,<length>]** | If single IP is connected (+CIPMUX=0) If connection is not established or module is disconnected: <br><br> If error is related to ME functionality: **+CME ERROR <err>** <br><br> If sending is successful: When +CIPQSEND=0 **SEND OK** <br><br> When +CIPQSEND=1 **DATA ACCEPT:<length>** <br><br> If sending fails: **SEND FAIL** <br><br> 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>** <br><br> If sending is successful: **<n>,SEND OK** <br><br> If sending fails: **<id>,SEND FAIL** |

| Execution Command | Response |
|---|---|
| **AT+CIPSEND** response"**>**", then type data for send, tap CTRL+Z to send, tap ESC to cancel the operation | This Command is used to send changeable length data. If single IP connection is established (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: **SEND OK** If sending fails: **SEND FAIL** |
| Reference | Note If AT+CIPQSEND=0, TCP send timeout value depend on the setting of AT+CIPSENDTIME . 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. |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| **<id>** | 0-5 | A numeric parameter which indicates the connection number |
| **<size>** | 1-1460 | A numeric parameter which indicates the data length sent one time |

### 14.8  AT+CIPCLOSE   Close TCP or UDP connection

This command is used to Close TCP or UDP Connection.

| Test Command | Response |
|---|---|
| **AT+CIPCLOSE=?** | 1) For single IP connection (+CIPMUX=0)<br><br>**OK**<br>2) For multi IP connection (+CIPMUX=1)<br>**+CIPCLOSE: (0-5)**<br>**OK** |
| Write Command<br><br>If single IP connection<br>(AT +CIPMUX=0)<br>**AT+CIPCLOSE=<n>**<br><br>If multi-IP connection<br>(AT +CIPMUX=1)<br>**AT+CIPCLOSE=<id>[,<n>]** | Response<br><br>1) For single IP connection (+CIPMUX=0)<br>**CLOSE OK**<br>2)For multi IP connection (+CIPMUX=1)<br>**<id>, CLOSE OK** |
| Execution Command<br><br>**AT+CIPCLOSE** | Response<br><br>For single IP connection only (+CIPMUX=0):<br><br>If close is successfully:<br>**CLOSE OK**<br><br>If close fails:<br>**ERROR** |
| Reference | Note<br>This command only closes connection at the status of TCP/UDP which returns **CONNECTING** or **CONNECT OK**, otherwise it will return **ERROR**, after the connection is closed, the status is IP CLOSE in single IP mode. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<id>** | 0-5   A numeric parameter which indicates the connection number |
| **<n>** | <u>0</u>   Slow close<br>1   Quick close |

### 14.9 **AT+CIPSHUT** **Deactivate GPRS PDP Context**

This command is used to deactivate GPRS PDP Context

| Test Command | Response |
|---|---|
| **AT+CIPSHUT=?** | **OK** |
| Execution Command | Response |
| **AT+CIPSHUT** | If close is successful:<br>**SHUT OK**<br><br>If close fails:<br>**ERROR** |
| Reference | Note<br><br>Max Response Time 40 seconds（no signal）<br>If this command is executed in multi-connection mode, all of the IP connection will be shut.<br>User can close GPRS PDP context by **AT+CIPSHUT**. After it is closed, the status is **IP INITIAL**.<br>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. |

## 14.10 **AT+CIPSTATUS    Query Current Connection Status**

This command is used to Query Current Connection Status.

| Test Command | Response |
|---|---|
| **AT+CIPSTATUS=?** | **OK** |
| Write Command<br><br>If multi IP connection mode (AT+CIPMUX=1)<br><br>**AT+CIPSTATUS=\<id>** | Response<br><br><br>**+CIPSTATUS: \<id>,\<bearer>, \<TCP/UDP>, \<IP address>, \<port>,\<client state>**<br>**OK** |
| Execution Command<br><br>**AT+CIPSTATUS** | Response<br>1）If in single connection mode (+CIPMUX=0)<br>**OK**<br><br>**STATE:\<state>**<br><br>2) If in multi-connection mode (+CIPMUX=1)<br>**OK**<br>**STATE:\<state>**<br>If the module is set as server<br>**S: 0,\<bearer>,\<port>,\<server state>**<br>**C:\<n>,\<bearer>,\<TCP/UDP>,\<IP**<br>**address>,\<port>,\<client state>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<id>** | 0-5   A numeric parameter which indicates the connection number |
| **\<bearer>** | 0-1   GPRS bearer, default is 0 |

| <state> | A string parameter which indicates the progress of connecting<br>In single-IP state:<br>**IP INITIAL**<br>**IP START**<br>**IP GPRSACT**<br>**IP STATUS**<br>**TCP CONNECTING/UDP CONNECTING**<br>**CONNECT OK**<br>**TCP CLOSING/UDP CLOSING**<br>**TCP CLOSED/UDP CLOSED**<br>**PDP DEACT**<br>In Multi-IP state:<br>**IP INITIAL**<br>**IP START**<br>**IP GPRSACT**<br>**IP PROCESSING**<br>**IP STATUS**<br>**PDP DEACT** |
|---|---|
| <client state> | **IP INITIAL** pdp stack on initial status<br>**IP STATUS** pdp stack is ready<br>**TCP CONNECTING** tcp link on connecting status<br>**CONNECT OK** tcp or udp link is connected<br>**TCP CLOSE** tcp link closed<br>**UDP CLOSE** udp link closed<br>**CLOSED** tcp server or udp server close the link |
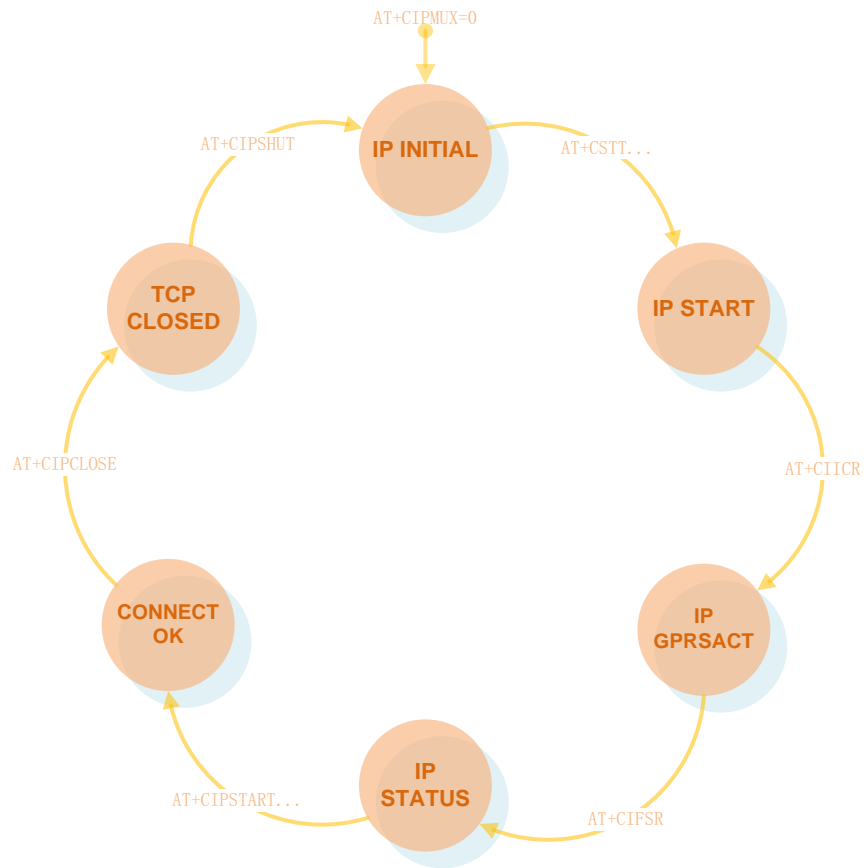
Figure 14-1Single-IP state(TCP)
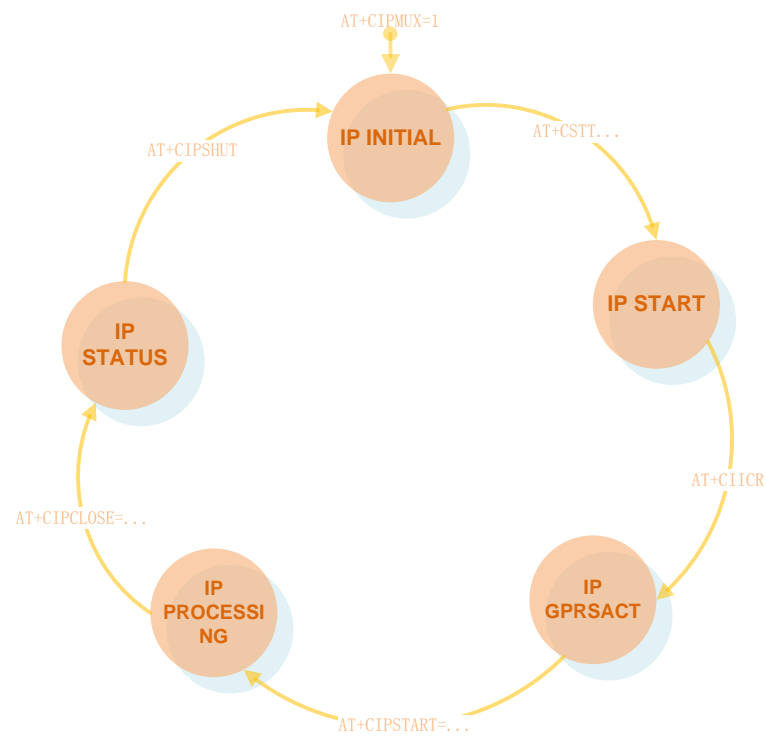


Figure 14-2Multi-IP state

## 14.11 **AT+CIPRXGET** Get Data from Network Manually

This command is used to Get Data from Network Manually.

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

| | OK |
|---|---|
| | 2)For multi IP connection |
| | If "AT+CIPSRIP=1" is set, IP address and port is |
| | contained. |
| | if <mode>=1 |
| | **OK** |
| | if <mode>=2 |
| | **+CIPRXGET: 2,<id>,<reqlength>,<cnflength>[,<IP** |
| | **ADDRESS>:<PORT>]** |
| | **1234567890…** |
| | **OK** |
| | if <mode>=3 |
| | **+CIPRXGET: 3,<id>,<reqlength>,<cnflength>[,<IP** |
| | **ADDRESS>:<PORT>]** |
| | **5151…** |
| | **OK** |
| | if <mode>=4 |
| | **+CIPRXGET: 4, <id>,<cnflength>** |
| | **OK** |
| | If error is related to ME functionality: |
| | **+CME ERROR: <err>** |
| Reference | Note |
| | 1. To enable this function, parameter <mode> must be |
| | set to 1 before connection. |
| | 2. If <mode>=1: |
| | After received data for remote server, Module will |
| | report URC information like: |
| | **"+RECEIVE,<n>,<data length>:"** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0 Disable getting data from network manually, the module is set to normal mode, data will be pushed to TE directly. |
| | 1 Enable getting data from network manually. |
| | 2 The module can get data, but the length of output data can't exceed 1460 bytes at a time. |
| | 3 Similar to mode 2, but in HEX mode, which means the module can get 730 bytes maximum at a time. |
| | 4 Query how many data are not read with a given ID. |
| **<id>** | A numeric parameter which indicates the connection number |
| **<reqlength>** | Requested number of data bytes (1-1460 bytes)to be read |

| <cnflength> | Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read. |
|---|---|
| <n> | Socket index |

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

This command is used to add an IP Head at the Beginning of a Package Received.

| Test Command | Response |
|---|---|
| **AT+CIPHEAD=?** | **+CIPHEAD: (0-NO HEADER,1-ADD HEADER)**<br>**OK** |
| Read Command<br><br>**AT+CIPHEAD?** | Response<br><br>**+ CIPHEAD: <mode>**<br><br>**OK**<br><br>Or<br><br>**Error** |
| Write Command<br><br>**AT+CIPHEAD=<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | A numeric parameter which indicates whether an IP header is added to the received data or not.<br>0    Not add IP header<br>1    Add IP header, the format is "+IPD,data length:"<br>1) For single IP connection (+CIPMUX=0)<br>+IPD,<data length>:<br>2) For multi IP connection (+CIPMUX=1)<br>+RECEIVE,<n>,<data length>: |

## 14.13 AT+CIPQSEND    Select Data Transmitting Mode

This command is used to select Data Transmitting Mode.

| Test Command | Response |
|---|---|
| **AT+CIPQSEND=?** | **+CIPQSEND: (0,1)**<br><br>**OK** |
| Read Command<br><br>**AT+CIPQSEND?** | Response<br><br>**+ CIPQSEND: <n>**<br><br>**OK**<br><br>Or<br><br>**Error** |
| Write Command<br><br>**AT+CIPQSEND=<n>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | 0   Normal mode – when the server receives TCP data, it will respond SEND OK.<br>1   Quick send mode – when the data is sent to module, it will respond DATA ACCEPT: <n>,<length>, while not responding SEND OK. |

## 14.14 **AT+CDNSGIP    Get IP address by Domain Name**

This command is used to get IP address by Domain Name.

| Test Command | Response |
|---|---|
| **AT+CDNSGIP=?** | **OK** |
| Write Command<br><br>**AT+CDNSGIP=<domain name>** | Response<br><br>**OK**<br><br>**+CDNSGIP: <result>,<domain name>,<IP addr1> [,<IP addr2>]**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **result** | 0  get ip address failure<br>1  get ip address successful |
| **domain name** | Domain name string, need use "" double quotes |
| **IP addr1** | A string parameter which indicates the first IP address corresponding to the domain name |
| **IP addr2** | A string parameter which indicates the second IP address corresponding to the domain name |

Example:

| Commands | Response |
|---|---|
| **AT+CDNSGIP="baidu.com"** | **OK**<br><br>**+CDNSGIP: 1,"baidu.com","111.13.100.91","111.13.100.93"** |

## 14.15 **AT+CIPTKA    Set TCP Keep-alive Parameters**

This command is used to set TCP network heartbeat packet function

| Test Command<br>**AT+CIPTKA=?** | Response<br>**+CIPTKA:** (list of supported**<mode>**s),(list of supported **<keepIdle>**s),(list of supported **<keepInterval>**),(list of supported **<keepCount>**s)<br><br>**OK** |
|---|---|
| Read Command<br><br>**AT+CIPTKA?** | Response<br><br>**+CIPTKA:<mode>,<keepIdle>,<keepInterval>,<keepCount>**<br><br>**OK** |
| Write Command<br><br>**AT+CIPTKA=<mode>[,<keepIdle>[,<keepInterval>[,<keepCount >]]]** | Response<br><br>**OK**<br>or<br><br>**ERROR** |
| Reference | Note<br>This command must be used before AT+CIPSTART, otherwise invalid |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | Set TCP keep-alive option.<br>0    Disable TCP keep alive mechanism<br>1    Enable TCP keep alive mechanism |
| **<keepIdle>** | Interval type; Idle before TCP send the initial keep alive probe<br>30-7200 Default 7200    (unit: second) |
| **<keepInterval>** | Interval type; between keep alive probes retransmission<br>30-600 Default 75 (unit: second) |
| **<keepCount>** | Interval type; Maximum number of keep alive probes to be sent.<br>1-9    Default 9 |

Example:

| Commands | Response |
|---|---|
| **AT+CIPTKA=1,180,75,9** | **OK** |

## 14.16 **AT+CIPACK** **TCP/IP Data flow calculation**

This command is used to calculate TCP/IP data flow status.

| Test Command | Response |
|---|---|
| **AT+CIPACK=?** | **OK** |
| Write Command<br><br>(+CIPMUX=1)<br>**AT+CIPACK=\<id>** | Response<br><br>**+CIPACK: \<txlen>,\<acklen>,\<nacklen>**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Active Command<br>(+CIPMUX=0)<br>**AT+CIPACK** | Response<br><br>**+CIPACK: \<txlen>,\<acklen>,\<nacklen>**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **id** | 0..5    A numeric parameter which indicates the connection number |
| **txlen** | The data amount which has been sent(MAX: $2^{32}-1$) |
| **acklen** | The data amount confirmed successfully by the server(MAX: $2^{32}-1$) |
| **nacklen** | The data amount without confirmation by the server(MAX: $2^{32}-1$) |

## 14.17 **AT+CDNSCFG**   **Configure Domain Name Server**

| Test Command | Response |
|---|---|
| **AT+CDNSCFG=?** | **+CDNSCFG: ("Primary DNS"),("Secondary DNS")**<br><br>**OK** |
| Read Command<br><br>**AT+CDNSCFG?** | Response<br><br>**PrimaryDns: <pri_dns>**<br>**SecondaryDns: <sec_dns>**<br><br>**OK** |
| Write Command<br><br>**AT+CDNSCFG=<1st_dns>**<br>**[,<2nd_dns>]** | Response<br><br>**OK**<br>or<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<1st_dns>** | A string parameter(string should be included in quotation marks) which indicates the IP address of the primary domain name server |
| **<2nd_dns>** | A string parameter (string should be included in quotation marks) which indicates the IP address of the secondary domain name server |

## 14.18 AT+CIPDPDP    Check State of GPRS Network Timing

| Test Command | Response |
|---|---|
| **AT+CIPDPDP=?** | **+CIPDPDP:**<br>**(0-NOT SET DET PDP,1-SET DET PDP),(1-180),(1-10)**<br><br>**OK** |
| Read Command<br><br>**AT+CIPDPDP?** | Response<br><br>**+CIPDPDP: <mode>,<interval>,<timer>**<br><br>**OK** |
| Write Command<br><br>**AT+CIPDPDP=<mode>[,<interval>,<timer>]** | Response<br><br>**OK**<br><br>**or**<br><br>**ERROR** |
| Reference | Note<br>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. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Not set detect PDP<br>1    Set detect PDP |
| **< interval>** | 1<=interval<=180(s) |
| **< timer>** | 1<=timer<=10 |

## 14.19 **AT+CIPSERVER**   **Configure Module as Server**

| Test Command | Response |
|---|---|
| **AT+CIPSERVER=?** | +CIPSERVER: (0-CLOSE SERVER, 1-OPEN SERVER),(1-65535)<br><br>**OK** |
| Read Command<br><br>**AT+CIPSERVER?** | Response<br><br>+CIPSERVER:                    **<mode>[,<port>,<channel id>,<bearer>]**<br><br>**OK** |
| Write Command<br><br>**AT+CIPSERVER=<mode>[,<port>]** | Response<br><br>**OK**<br><br>or<br><br>**ERROR** |
| Reference | Note<br>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. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Close server<br>1    Open server |
| **<port>** | 1..65535   Listening port |
| **<channel id>** | Channel id |
| **<bearer>** | GPRS bearer |

## 14.20 AT+CIPSHOWTP　　Display Transfer Protocol in IP Head When

### Received Data

This command is used to Display Transfer Protocol in IP Head When Received Data.

| Test Command | Response |
|---|---|
| AT+CIPSHOWTP =? | +CIPSHOWTP: (list of supported <mode>s) OK |
| Read Command AT+CIPSHOWTP? | Response +CIPSHOWTP: <mode> OK |
| Write Command AT+CIPSHOWTP=<mode> | Response OK or ERROR |
| Reference | Note This command will be effective only in single connection mode (+CIPMUX=0) Only when +CIPHEAD is set to 1, the setting of this command will work.. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| 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>" |

## 14.21 **AT+CIPUDPMODE**    **UDP Extended Mode**

This command is used to UDP Extended Mode.

| Test Command | Response |
|---|---|
| **AT+CIPUDPMODE=?** | 1) For single IP connection (+CIPMUX=0)<br>+CIPUDPMODE:<br>(0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)<br><br>OK<br>2) For multi IP connection (+CIPMUX=1)<br><br>+CIPUDPMODE:<br>(0-5),(0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-6553<br>5)<br><br>OK |
| Write Command<br><br>1) For single IP connection (+CIPMUX=0)<br>**AT+CIPUDPMODE=<mode>[,<IP address>,<Port>]**<br>2) For multi IP connection (+CIPMUX=1)<br>**AT+CIPUDPMODE=<n>,<mode>[, <IP address>,<Port>]** | **Response**<br>**OK**<br>**ERROR** |

| Read Command **AT+CIPUDPMODE?** | Response 1) For single IP connection (+CIPMUX=0) **+CIPUDPMODE: <mode> [,<IP address>,<Port>]** **OK** <br><br> 2) For multi IP connection (+CIPMUX=1) <br><br> **+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>]** <br><br> **OK** |
|---|---|
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **n** | 0-5   A numeric parameter which indicates the connection number |
| **mode** | 0   UDP Normal Mode<br>1   UDP Extended Mode<br>2   Set UDP address to be sent |
| **IP address** | A string parameter which indicates remote IP address |
| **port** | Remote port |

## 14.22 **AT+CIPSCONT   Save TCPIP Application Context**

This command is used to Save TCPIP Application Context.

| Read Command | Response |
|---|---|
| **AT+CIPSCONT?** | TA returns TCPIP Application Context, which consists of the following AT Command parameters. **+CIPSCONT: <mode0>** **+CIPCSGP: <mode>** **GPRSConfig APN: <apn>** **GPRSConfig UserId: <user name>** **GPRSConfig 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>** <br> **OK** |
| Active Command <br><br> **AT+CIPSCONT** | Response <br> Module saves current TCPIP Application Contexts to NVRAM. Whensystem is rebooted, the parameters will be loaded automatically. <br> **OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **mode0** | 0   Saved, the value from NVRAM <br> 1   Unsaved, the value from RAM |

---

## 14.23 **AT+CIPRDTIMER    Set Remote Delay Timer**

This command is used to Set Remote Delay Timer

| Test Command | Response |
|---|---|
| **AT+CIPRDTIMER=?** | **+CIPRDTIMER: (100-4000),(100-7000)**<br>**OK** |
| Write Command<br><br>**AT+CIPRDTIMER=<rdsigtimer>,<<br>rdmuxtimer>** | Response<br><br>**OK**<br><br>If error is related to ME functionality:<br><br>**+CME ERROR: <err>** |
| Read Command<br><br>**AT+CIPRDTIMER?** | Response<br><br>**+CIPRDTIMER: <rdsigtimer>,<rdmuxtimer>**<br><br>**OK** |
| Reference | Note<br>This command is used to shorten the disconnect time locally when the<br>remote server has been disconnected. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **rdsigtimer** | remote delay timer of single connection. |
| **rdmuxtimer** | remote delay timer of multi-connections. |

## 14.24 **AT+CIPSGTXT** **Select GPRS PDP context**

This command is used to Select GPRS PDP context

| Test Command | Response |
|---|---|
| **AT+CIPSGTXT=?** | **+CIPSGTXT: (0,1)**<br>**OK** |
| Write Command<br><br>**AT+CIPSGTXT=<mode>** | Response<br><br>**OK**<br>If error is related to ME functionality:<br><br>**+CME ERROR: <err>** |
| Reference | Note<br>This command is used to select pdp context, only for multi IP connection<br>(+CIPMUX=1). |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **mode** | 0   select first PDP context<br>1   select second PDP context. |

## 14.25 **AT+CLPORT   Set Local Port**

This command is used to set local port.

| Test Command | Response |
|---|---|
| **AT+CLPORT=?** | 1)For single IP connection(+CIPMUX=0)<br>**+ CLPORT: ("TCP","UDP"),(0-65535)**<br><br>**OK**<br><br>2)For multi IP connection(+CIPMUX=1)<br>**+ CLPORT: (0-5),("TCP","UDP"),(0-65535)**<br><br>**OK** |
| Read Command<br><br>**AT+ CLPORT?** | Response<br><br>1)For single IP connection(+CIPMUX=0)<br>**+ CLPORT: <TCP port>,<UDP port>**<br><br>**OK**<br><br>2)For multi IP connection(+CIPMUX=1)<br>**+ CLPORT: 0,<TCP port>,<UDP port>**<br>**+ CLPORT: 1,<TCP port>,<UDP port>**<br>**+ CLPORT: 2,<TCP port>,<UDP port>**<br>**+ CLPORT: 3,<TCP port>,<UDP port>**<br>**+ CLPORT: 4,<TCP port>,<UDP port>**<br>**+ CLPORT: 5,<TCP port>,<UDP port>**<br><br>**OK** |
| Write Command<br><br>1)For single IP connection (+CIPMUX=0)<br>**AT+ CLPORT =<mode>,<port>**<br><br>2)For multi IP connection (+CIPMUX=1)<br>**AT+ CLPORT =<n>,<mode>,<port>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |

| Reference | Note |
|---|---|
| | This command will be effective only in single connection mode (+CIPMUX=0) and when module is set as a Client |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **< n>** | 0..5      A numeric parameter which indicates the connection number |
| **<mode>** | A string parameter which indicates the connection type<br>"TCP"   Establish a TCP connection<br>"UDP"    Establish a UDP connection |
| **<port>** | Remote server port |

## 14.26 AT+CIPCCFG    Configuration of TCP/IP Transparent mode

This command is used to configure transparent mode of TCP/IP connection .

| Test Command | Response |
|---|---|
| AT+CIPCCFG=? | +CIPCCFG:(NmRetry:3-8),(WaitTm:2-10),(SendSz:1-1460),(esc:0,1) ,(Rxmode:0,1),(RxSize:50-1460),(Rxtimer:20-1000)<br><br>OK |
| Read Command<br><br>AT+CIPCCFG? | Response<br><br>+CIPCCFG: <retry>,<wait>,<size>,<esc>,<rxmode>,<rxSize>,<rxtimer><br><br><br>OK<br><br>Or<br><br>ERROR |
| Write Command<br><br>AT+CIPCCFG=<retry>,<wait>,<size>, <esc>[,<rxmode>,<rxSize>,<rxtimer>] | Response<br><br>OK<br><br>Or<br><br>ERROR |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<retry>** | 3-8    Number of retries to be made for an IP packet. |
| **<wait>** | 2-10   Number of 100ms intervals to wait for serial input before sending the packet. |
| **<size>** | 1-1460   Size in bytes of data block to be received from serial port before sending.（default：1024） |
| **<esc>** | 0-1   Whether turn on the escape sequence, default is TRUE. |

| **<rxmode>** | Whether to set time interval during output data from serial port. |
|---|---|
| | <u>0</u>   output data to serial port without interval |
| | 1   output data to serial port within <rxtimer> interval. |
| **<rxSize>** | 50-1460   Output data length for each time, default value is <u>1460</u>. |
| **<rxtimer>** | 20-1000   Time interval (ms) to wait for serial port to output data again. |
| | Default value: <u>50</u> ms |

## 14.27 **AT+CIPSPRT    Set Prompt of '>' When Module Sends Data**

This command is used to Set Prompt of '>' When Module Sends Data.

| Test Command          | Response                                            |
|-----------------------|-----------------------------------------------------|
| **AT+CIPSPRT=?**      | **+CIPSPRT: (**list of supported **<send prompt>**s**)** <br><br> **OK** |
| Read Command <br><br> **AT+ CIPSRT?** | Response <br><br> **+ CIPSPRT:<send prompt>** <br><br> **OK** |
| Write Command <br><br> **AT+ CIPSPRT =<send prompt>** | Response <br><br> **OK** <br><br> Or <br><br> **ERROR** |
| Reference             | Note                                                |

Parameters are defined below:

| Parameters | Description |
|------------|-------------|
| **<send prompt>** | A numeric parameter which indicates whether to echo prompt '>' after module issues AT+CIPSEND command. <br> 0  It shows "send ok" but does not prompt echo '>' when sending is successful. <br> <u>1</u>  It prompts echo '>' and shows "send ok" when sending is successful. <br> 2  It neither prompts echo '>' nor shows "send ok" when sending is successful. |

## 14.28 **AT+CIPCSGP    Set CSD or GPRS for Connection Mode**

This Command is used to Set CSD or GPRS for Connection Mode.

| Test Command<br>**AT+CIPCSGP=?** | Response<br>**+CIPCSGP: 0-CSD,DIALNUMBER,USER NAME,<br>PASSWORD,RATE(0-3)**<br>**+CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+CIPCSGP?** | Response<br>**+CIPCSGP: <mode>,<apn>,<user name>,<password>**<br>**[,<rate>]**<br><br>**OK** |
| Write Command<br>**AT+CIPCSGP=<mode>[,<br>(<apn>,<user name>,<br><password>),(<dial<br>number>,<br><user name>,<br><password>,<br><rate>)]** | Response<br>**OK**<br>**or**<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | A numeric parameter which indicates the wireless connection mode<br>0    set CSD as wireless connection mode<br>1    set GPRS as wireless connection mode |
| **<apn>** | A string parameter(string should be included in quotation marks)<br>which indicates the access point name |
| **<user name>** | A string parameter(string should be included in quotation marks)<br>which indicates the user name |
| **<password>** | A string parameter(string should be included in quotation marks)<br>which indicates the password CSD parameters: |
| **<dial number>** | A string parameter(string should be included in quotation marks)<br>which indicates the CSD dial numbers |
| **<user name>** | A string parameter(string should be included in quotation marks)<br>which indicates the CSD user name |
| **<password>** | A string parameter(string should be included in quotation marks)<br>which indicates the CSD password |

| <rate> | A numeric parameter which indicates the CSD connection rate |
|---|---|
| | 0   2400 |
| | 1   4800 |
| | 2   9600 |
| | 3   14400 |

## 14.29 AT+CIPSENDTIME    Set TCP send timeout value

This command is used to set TCP send timeout value.

| Test Command | Response |
|---|---|
| AT+CIPSENDTIME=? | +CIPSENDTIME: (1-120)<br><br>OK |
| Read Command | Response |
| AT+CIPSENDTIME? | +CIPSENDTIME: <sec><br><br>OK<br><br>Or<br><br>Error |
| Write Command | Response |
| AT+CIPSENDTIME=<sec> | OK<br><br>Or<br><br>ERROR |
| Reference | Note<br>Valid only if "AT+CIPQSEND=0". |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <sec> | 1-15-120   Approximate timeout value, unit: seconds |

Example:

| Commands | Response | Description |
|---|---|---|
| AT+CIPSENDTIME=10 | OK | Set timeout value 10 seconds |
| AT+CIPQSEND=0 | OK | Select Data Transmitting Mode 0: Normal mode |
| AT+CIPSEND=12 | > | Send 12 bytes data to server |
| 123456789012 | SEND OK | Send to server successful in 10 seconds |
| AT+CIPSEND=12 | > | Send 12 bytes data to server |

| 123456789012 | SEND FAIL | Send to server fail in 10 seconds |
|---|---|---|

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

This command is used to Show Remote IP Address and Port When Received Data.

| Test Command | Response |
|---|---|
| AT+CIPSRIP=? | + CIPSRIP: (list of supported < mode>s) <br><br> OK |
| Read Command <br><br> AT+ CIPSRIP? | Response <br><br> + CIPSRIP: <mode> <br><br> OK |
| Write Command <br><br> AT+ CIPSRIP =<mode> | Response <br><br> OK <br><br> Or <br><br> ERROR |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| < mode > | A numeric parameter which shows remote IP address and port. <br> 0   Do not show the prompt <br> 1   Show the prompt, the format is as follows: <br> 1) For single IP connection(+CIPMUX=0) <br> ECV FROM: <IPADDRESS>: <PORT> <br>  For multi IP connection(+CIPMUX=1) <br> RECEIVE, <n>,<data length>,<IPADDRESS>: <PORT> |

# 15 Proprietary AT commands

Overview of proprietary AT Commands:

| AT Command | Description |
|---|---|
| AT+SLEDS | Set the Timer Period of Net Light |
| AT+CNETLIGHT | Close the Net Light or Open It to Shining |
| AT+CSDT | Switch on or off Detecting SIM Card |
| AT+CSMINS | SIM Inserted Status Reporting |
| AT+CSGS | Net light Indication of GPRS Status |
| AT+CGEREP | Control Unsolicited GPRS Event Reporting |
| AT+DDET | DTMF Detection Control |
| AT+CCID | Read ICCID of SIM Card |
| AT+CMGDA | Delete All SMS |
| AT+GSV | Display Product Identification Information |
| AT+CGMSCLASS | Change GPRS Multi-slot Class |
| 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+CCALR | Call Ready Query |
| AT+CROAMING | Roaming State |
| AT+STTONE | Play SIM Toolkit Tone |
| AT+SIMTONE | Generate Specifically Tone |
| AT+CMICBIAS | Close or Open the microphone bias |
| AT+CMIC | Microphone Gain Level Change |
| AT+ECHO | Echo Cancellation Control |
| AT+SVR | Voice Coding Type for Voice Calls |
| AT+SCLASS0 | Store Class 0 SMS to SIM When Received Class 0 SMS |
| AT+CCPD | Enable or Disable Alpha String |
| AT+CGID | Get SIM Card Group Identifier |
| AT+CPSPWD | Change PS Super Password |

| AT+EXUNSOL | Enable or Disable Proprietary Unsolicited Indications |
|---|---|
| AT+CDEVICE | View Current Flash Device Type |
| AT+CANT | Antenna Detecting |
| AT+CAGCSET | Close Or Open AGC Function |
| AT+SKPD | Keypad Detecting Function |
| AT+SIMTONEX | Custom Tones |
| AT+CENG | Configure Engineering Mode |
| AT*CELLLOCK | Set the List of ARFCN Which Needs to Be Locked |
| AT+CNETSCAN | Performing A Net Survey to Show All the Cells Information |
| AT+CAAS | Control Auto Audio Switch |
| AT+CEMNL | Set the List of Emergency Number |
| AT+CEXTERNTONE | Close or Open the Microphone |
| AT+CWHITELIST | Set the White List |
| AT+CRLP | Select Radio Link Protocol Parameters |
| AT+SPEAKER | Speaker and MIC select |
| AT+SIDET | Change the side tone gain level |
| AT+CALM | Alert sound mode |
| AT+GOI | Request Global Object Identification |
| AT+GSN | Request TA Serial Number Identification (IMEI) |
| AT+GSMBUSY | Reject Incoming Call |
| AT+SJDR | Jamming detection control |
| AT+CMUX | Multiplexer Control |
| AT+VTD | Tone Duration |
| AT+CPOWD | Power Off |

## 15.1 **AT+SLEDS Set the Timer Period of Net Light**

This command is used to set the timer period of net light.

| Test Command | Response |
|---|---|
| **AT+SLEDS=?** | **+SLEDS: (1-3),(0,40-65535),(0,40-65535)**<br><br>**OK** |
| Read Command | Response |
| **AT+SLEDS?** | **+SLEDS: <mode>,<timer_on>,<timer_off>**<br><br>**OK** |
| Write Command<br><br>**AT+SLEDS=<mode>,<timer_on>, <timer_off>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br>The default value is :<br><mode>,<timer_on>,<timer_off><br>1,64,800<br>2,64,3000<br>3,64,300 |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 1 Set the timer period of net light while series does not register to the network<br>2 Set the timer period net light while series has already registered to the network<br>3 Set the timer period net light while series is in the state of PPP communication |
| **<timer_on>** | Timer period of "LED ON" in decimal format which range is 0 or 40-65535(ms) |
| **<timer_off>** | Timer period of "LED OFF" in decimal format which range is 0 or 40-65535(ms) |

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

This command is used to close the Net Light or open it to shining.

| Test Command | Response |
|---|---|
| **AT+CNETLIGHT=?** | **+CNETLIGHT: (0,1)**<br><br>**OK** |
| Read Command<br><br>**AT+CNETLIGHT?** | Response<br><br>**+CNETLIGHT: <mode>**<br><br>**OK** |
| Write Command<br><br>**AT+CNETLIGHT=<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Close the net light<br>1   Open the net light to shining |

## 15.3  **AT+CSDT    Switch on or off Detecting SIM Card**

This command is used to switch on or off detecting SIM Card.

| Test Command | Response |
|---|---|
| **AT+CSDT=?** | **+CSDT: (0-1)** <br><br> **OK** |
| Read Command <br><br> **AT+CSDT?** | Response <br><br> **+CSDT: <mode>** <br><br> **OK** |
| Write Command <br><br> **AT+CSDT=<mode>** | Response <br><br> **OK** <br><br> **Or** <br><br> **ERROR** |
| Reference | Note <br> 1. Need customized firmware. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Switch off detecting SIM card <br> 1    Switch on detecting SIM card |

## 15.4 AT+CSMINS SIM Inserted Status Reporting

This command is used to SIM inserted status reporting.

| Test Command | Response |
|---|---|
| **AT+CSMINS=?** | **+CSMINS: (0,1)**<br><br>**OK** |
| Read Command | Response |
| **AT+CSMINS?** | **+CSMINS:<n>,<SIM inserted>**<br><br>**OK** |
| Write Command | Response |
| **AT+CSMINS=<n>** | **OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | A numeric parameter to show an unsolicited event code indicating whether the SIM has been inserted or removed.<br>0   Disable<br>1   Enable |
| **<SIM inserted>** | A numeric parameter which indicates whether SIM card has been inserted.<br>0   Not inserted<br>1   Inserted |

## 15.5  AT+CSGS  Netlight Indication of GPRS Status

This command is used to netlight indication of GPRS status.

| Test Command | Response |
|---|---|
| **AT+CSGS=?** | **+CSGS: (0-2)**<br><br>**OK** |
| Read Command | Response |
| **AT+CSGS?** | **+CSGS: <mode>**<br><br>**OK** |
| Write Command | Response |
| **AT+CSGS=<mode>** | **OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Disable<br>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.<br>2   Enable, the netlight will blink according to AT+SLEDS in GPRS data transmission service. |

## 15.6  **AT+CGEREP   Control Unsolicited GPRS Event Reporting**

This command is used to control unsolicited GPRS event reporting.

| Test Command | Response |
|---|---|
| **AT+CGEREP=?** | **+CGEREP: (0,1)**<br><br>**OK** |
| Read Command<br><br>**AT+CGEREP?** | Response<br><br>**+CGEREP: <mode>**<br><br>**OK** |
| Write Command<br><br>**AT+CGEREP=<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | <u>0</u>   Disable event reporting.<br>1   Enable event reporting.<br>Unsolicited Result Codes supported:<br>+CGEV: NW DEACT <PDP_type>,<PDP_addr>[,<cid>]<br>+CGEV: ME DEACT <PDP_type>,<PDP_addr>[,<cid>]<br>+CGEV: NW DETACH<br>+CGEV: ME DETACH |
| **<PDP_type>** | Packet Data Protocol type (see +CGDCONT Command) |
| **<PDP_addr>** | Packet Data Protocol address (see +CGDCONT Command) |
| **<cid>** | Context Id (see +CGDCONT Command) |

## 15.7 **AT+DDET DTMF Detection Control**

This command is used to DTMF detection control.

| Test Command | Response |
|---|---|
| **AT+DDET=?** | **+DDET: (0,1),(0-10000),(0,1),(0,1)** <br><br> **OK** |
| Read Command <br><br> **AT+DDET?** | Response <br><br> **+DDET:** <br> **<mode>,<interval>,<reportMode>,<ssdet>** <br><br> **OK** |
| Write Command <br><br> **AT+DDET=<mode>[,<interval>]** **[,<reportMode>][,<ssdet>]** | Response <br><br> **OK** <br><br> **Or** <br><br> **ERROR** |
| Reference | Note |

Parameters are defined below

| Parameters | Description |
|---|---|
| **<mode>** | disable or enable DTMF detection control <br> <u>0</u>   disable <br> 1   enable |
| **<interval>** | the min interval between two same key URC. The range is 0-10000,the default value is 0. unit is millisecond. |
| **<reportMode>** | URC report mode <br> <u>0</u>   key value reported only <br> 1   key value and last time are reported, the last time is in ms <br> 1)If <reoportMode> is set to 0 <br> +DTMF: <key> <br> 2)If <reportMode> is set to 1 <br> +DTMF:<key>,<last time> |

| **\<key\>** | Key tone detected, 1-9,*,#,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 |
|---|---|
| **\<last time\>** | duration of key tone playing. unit is ms. |
| **\<ssdet\>** | single frequency sound detect function on off<br>0    switch off<br>1    switch on |

## 15.8  **AT+CCID    Read ICCID of SIM Card**

This command is used to read SIM card ICCID if SIM inserted. If SIM not inserted, return +CME ERROR: 10

| Test Command | Response |
|---|---|
| **AT+CCID=?** | **OK** |
| Execution Command<br>**AT+CCID** | Response<br>**<iccid>**<br>**OK**<br>**ERROR / +CME ERROR: 10** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<iccid>** | string type |

## 15.9 **AT+CMGDA Delete All SMS**

This command is used to delete all SMS.

| Test Command | Response |
|---|---|
| **AT+CMGDA=?** | **+CMGDA: (**list of supported **<type>**s**)** <br><br> **OK** <br> **+CMS ERROR: <err>** |
| Write Command <br><br> **AT+CMGDA=<type>** | Response <br><br> **OK** <br> Or <br> **ERROR** <br> Or <br> **+CMS ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<type>** | 1) If text mode: <br> "DEL READ"       Delete all read messages <br> "DEL UNREAD"    Delete all unread messages <br> "DEL SENT"       Delete all sent SMS <br> "DEL UNSENT"     Delete all unsent SMS <br> "DEL INBOX"      Delete all received SMS <br> "DEL ALL" Delete all SMS <br> 2) If PDU mode: <br>   1   Delete all read messages <br>   2   Delete all unread messages <br>   3   Delete all sent SMS <br>   4   Delete all unsent SMS <br>   5   Delete all received SMS <br>   6   Delete all SMS |

## 15.10 **AT+GSV    Display Product Identification Information**

This command is used to Display Product Identification Information.

| Execution Command<br><br>**AT+GSV** | Response<br>(TA returns product information text)<br><br>**OK** |
|---|---|

Example :

| Commands | Response |
|---|---|
| **AT+GSV** | **L206Cv01.01b01**<br><br>**OK** |

## 15.11 **AT+CGMSCLASS    Change GPRS Multi-slot Class**

This Command is used to Change GPRS Multi-slot Class

| Test Command<br><br>**AT+CGMSCLASS=?** | Response<br><br>**MULTISLOT CLASS: (2,4,8,9,10,12)**<br><br>**OK** |
|---|---|
| Read Command<br><br>**AT+ CGMSCLASS?** | Response<br><br>**MULTISLOT CLASS:<class>**<br><br>**OK** |
| Write Command<br><br>**AT+ CGMSCLASS =<class>** | Response<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<class>** | GPRS multi-slot class |

## 15.12 AT+MORING    Show State of Mobile Originated Call

This Command is used to Show State of Mobile Originated Call.

| Test Command<br><br>AT+MORING=? | Response<br><br>+MORING: (0,1)<br><br>OK |
|---|---|
| Read Command<br>AT+ MORING? | Response<br><br>+MORING: <mode><br><br>OK |
| Write Command<br><br>AT+ MORING =<mode> | Response<br><br>OK<br>If error is related to ME functionality:<br>+CME ERROR: <err> |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | <u>0</u>    Not show call state of mobile originated call<br>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. |

## 15.13 **AT+CMGHEX** **Enable or Disable Sending Non-ASCII Character SMS**

This Command is used to Enable or Disable Sending Non-ASCII Character SMS.

| Test Command<br><br>AT+CMGHEX=? | Response<br><br>+CMGHEX: (list of supported **\<mode\>**s)<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ CMGHEX?** | Response<br><br>+ CMGHEX: \<mode\><br><br>**OK** |
| Write Command<br><br>AT+ CMGHEX =\<mode\> | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err\>** |
| Reference | Note<br>Only be available in TEXT mode and AT+CSCS="GSM". |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<mode\>** | <u>0</u>   Send SMS in ordinary way<br>1   Enable to send SMS varying from **0x00** to **0x7f except 0x1a**<br>and**0x1b**under text mode and GSM character set |

## 15.14 **AT+CCODE    Configure SMS Code Mode**

This Command is used to Configure SMS Code Mode.

| Test Command | Response |
|---|---|
| **AT+CCODE=?** | **+CCODE: (0-1)** **OK** |
| Read Command **AT+ CCODE?** | Response **+ CCODE:<mode>** **OK** |
| Write Command **AT+ CCODE =<mode>** | Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Code mode compatible with NOKIA  1   Code mode compatible with SIEMENS |

## 15.15 AT+CIURC   Enable or Disable Initial URC Presentation

This Command is used to Enable or Disable Initial URC Presentation.

| Test Command | Response |
|---|---|
| AT+CIURC=? | +CIURC: (0,1)<br><br>OK |
| Read Command<br>AT+ CIURC? | Response<br><br>+ CIURC:<mode><br><br>OK |
| Write Command<br><br>AT+ CIURC =<mode> | Response<br>OK<br>If error is related to ME functionality:<br>+CME ERROR: <err> |
| Reference | Note<br>When module is powered on and initialization procedure is over.<br>URC "Call Ready" will be presented if <mode> is 1. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | 0   Disable URC presentation.<br>1   Enable URC presentation |

## 15.16 AT+CCALR   Call Ready Query

This Command is used to Call Ready Query.

| Test Command | Response |
|---|---|
| **AT+CCALR=?** | **+CCALR: (0,1)**<br><br>**OK** |
| Read Command<br>**AT+ CCALR?** | Response<br><br>ME returns the status of result code presentation and an integer <n> which shows whether the module is currently ready for phone call.<br>**+CCALR: <mode>**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | A numeric parameter which indicates whether the module is ready for phone call.<br>0   Module is not ready for phone call<br>1   Module is ready for phone call |

## 15.17 **AT+CROAMING    Roaming State**

This command is used to show roaming state.

| Execution Command | Response |
|---|---|
| **AT+CROAMING** | **+ CROAMING: <state>**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<state>** | 0   Home Network<br>1   International Network(different MCC)<br>2   Other Network(different MNC but same operator) |

## 15.18 **AT+STTONE    Play SIM Toolkit Tone**

This Command is used to Play SIM Toolkit Tone.

| Test Command | Response |
|---|---|
| **AT+STTONE=?** | **+STTONE: (**list of supported **<mode>**s**),(**list of supported **<tone>**s**),(**list of supported **<duration>**s**)**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Write Command<br><br>**AT+ STTONE =<mode> ,<tone>,<duration >** | Response<br><br>**OK**<br><br>The playing is stopped or completed.<br>**+STTONE: 0**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

| Reference | Note |
|---|---|
| | The default \<tone\>, if none is entered, it should be General Beep.<br>The default \<duration\>, if none is entered, it should be 500ms. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<mode\>** | 0   Stop playing tone<br>1   Start playing tone |
| **\<tone\>** | Numeric type<br>1   Dial Tone<br>2   Called Subscriber Busy<br>3   Congestion<br>4   Radio Path Acknowledge<br>5   Radio Path Not Available / Call Dropped<br>6   Error / Special information<br>7   Call Waiting Tone<br>8   Ringing Tone<br>16   General Beep<br>17   Positive Acknowledgement Tone<br>18   Negative Acknowledgement or Error Tone<br>19   Indian Dial Tone<br>20   American Dial Tone |
| **\<duration\>** | Numeric type, in milliseconds.<br>Max requested value=255*60*1000=15300000ms<br>(supported range=10-15300000) |

## 15.19 **AT+SIMTONE   Generate Specifically Tone**

This Command is used to Generate Specifically Tone.

| Test Command | Response |
|---|---|
| **AT+SIMTONE=?** | **+SIMTONE: (0,1),(20-20000),(200-25500), (0,100-25500), (10-500000)**<br><br>**OK** |
| Write Command<br><br>**AT+SIMTONE =<mode>,<frequency>, <periodOn>,<periodOff >[,<duration>]** | Response<br><br>**OK**<br><br>The playing is stopped or completed.<br>**+SIMTONE: 0**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Stop playing tone<br>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 |

## 15.20 **AT+CMICBIAS   Close or Open the microphone bias**

Close or open the microphone bias.

| Write Command | Response |
|---|---|
| **AT+CMICBIAS=<mode>** | **OK**<br>or<br>**ERROR** |
| Test Command<br><br>**AT+CMICBIAS=?** | Response<br><br>**+CMICBIAS: (0,1)**<br>**OK** |
| Read Command<br><br>**AT+CMICBIAS?** | Response<br><br>**+CMICBIAS: <mode>**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | 0    Turn off the microphone bias<br>1    Turn on the microphone bias |

## 15.21 **AT+CMIC   Microphone Gain Level Change**

| Test Command | Response |
|---|---|
| **AT+CMIC=?** | **+CMIC: (**list of supported**<channel>**s**),(**list of supported **<gain level>**s**)**<br><br>**OK** |
| Read Command<br><br>**AT+CMIC?** | Response<br><br>**+CMIC:**<br>**(<channel0>,<gainlevel0>),…,(<channel***n***>,<gainlevel***n***>)**<br><br>**OK** |
| Write Command<br><br>**AT+CMIC=<channel >,< gainlevel>** | Response<br><br>**OK**<br>or<br>**ERROR** |
| Reference | Note<br>Currently for L206C, we only support channel 0 and channel 2. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<channel>** | 0    Main audio handset channel<br>1    Aux audio headset channel<br>2    Main audio hand free channel<br>3    Aux audio hand free channel |

| **\<gainlevel\>** | 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 |

## 15.22 AT+ECHO    Echo Cancellation Control

This command is used to echo cancellation control.

| Test Command | Response |
|---|---|
| AT+ECHO=? | +ECHO: (0,1),(0-65535),(0-65535),(0-65535),(0-65535),(0,1)<br><br>OK |
| Read Command<br><br>AT+ECHO? | Response<br><br>+ECHO: (<mic0>,<nlp0>,<aec0>,<nr0>, <ns0>), (<micn>,<nlpn>,<aecn>,<nrn>, <nsn>)<br><br>OK |
| Write Command<br><br>AT+ECHO=<mic>,<nlp>,<aec>, <nr>,<ns>[,<mode>] | Response<br><br>OK |
| Reference | Note<br>For this command, please refer to actual model.<br>The default state the echo algorithm be actived, and the read command is not displayed |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mic> | Audio channel<br>0    Main audio handset channel<br>1    Main audio hand free channel. |
| <nlp> | Nonlinear processing remove residual echo and background noise. |
| <aec> | Acoustic echo cancellation. |
| <nr> | Noise reduction. |
| <ns> | Noise suppression. |
| <mode> | Enable or disable to close echo algorithm<br>0    Echo algorithm be closed<br>1    Echo algorithm be actived. |

## 15.23 **AT+SVR    Voice Coding Type for Voice Calls**

| Test Command | Response |
|---|---|
| **AT+SVR=?** | **+SVR: (**list of supported **<voice_rate_coding>**s**)**<br><br>**OK** |
| Read Command<br><br>**AT+SVR?** | Response<br><br>**+SVR: <voice_rate_coding>**<br><br>**OK** |
| Write Command<br><br>**AT+SVR=<voice_rate_coding>** | Response<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <error>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<voice_rate_coding>** | A number parameter which indicates the voice coding type.<br>    0:FR<br>    1:EFR/FR<br>    2.HR/FR<br>    3:FR/HR<br>    4:HR/EFR<br>    5:EFR/HR<br>    6:AMR-FR/EFR,AMR-HR<br>    7:AMR-FR/EFR,AMR-HR/HR<br>    8:AMR-HR/HR/AMR-FR/EFR<br>    9:AMR-HR/AMR-FR/EFR<br>    10:AMR-HR/AMR-FR/FR<br>    11:AMR-HR/HR/AMR-FR<br>    12:AMR-FR/AMR-HR<br>    13:AMR-FR/FR/AMR-HR<br>    14:AMR-FR/FR/AMR-HR/HR<br>    15:AMR-FR/EFR/FR/AMR-HR/HR<br>    16:AMR-HR/AMR-FR/EFR/FR/HR<br>    17: AMR-FR/AMR-HR/EFR/FR/HR |

## 15.24 **AT+SCLASS0 Store Class 0 SMS to SIM When Received Class 0 SMS**

This command is used to Store Class 0 SMS to SIM When Received Class 0 SMS.

| Test Command<br>**AT+SCLASS0=?** | Response<br>**+SCLASS0: (0,1)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ SCLASS0?** | Response<br>**+SCLASS0: <mode>**<br><br>**OK** |
| Write Command<br>**AT+SCLASS0=<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | <u>0</u>   Disable to store Class 0 SMS to SIM when module receives Class 0 SMS<br>1   Enable to store Class 0 SMS to SIM when module receives Class 0 SMS |

## 15.25 **AT+CCPD    Enable or Disable Alpha String**

This command is used to Enable or Disable Alpha String.

| Test Command<br>**AT+CCPD=?** | Response<br>**+ CCPD: (0, 1)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ CCPD?** | Response<br>**+ CCPD: <mode>**<br><br>**OK** |
| Write Command<br>**AT+ CCPD=<mode>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Disable to present alpha string<br>1    Enable to present alpha string |

## 15.26 AT+CGID    Get SIM Card Group Identifier

This command is used to Get SIM Card Group Identifier

| Execution Command | Response |
|---|---|
| **AT+CGID** | **+GID: <gid1>,<gid2>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<gid1>** | Integer type of SIM card group identifier 1 |
| **<gid2>** | Integer type of SIM card group identifier 1 |

## 15.27 AT+CPSPWD    Change PS Super Password

This command is used to Change PS Super Password.

| Write Command | Response |
|---|---|
| **AT+ CPSPWD=<oldpwd>,**<br>**<newpwd>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference | Note<br>● Default value of <oldpwd> is "12345678".<br>● 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.<br>● It is not supported temporarily. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<oldpwd>** | String type(string should be included in quotation marks).<br>Old password and length should be 8. |
| **<newpwd>** | String type(string should be included in quotation marks).<br>New password and length should be 8. |

## 15.28 **AT+EXUNSOL　Enable or Disable Proprietary Unsolicited Indications**

This command is used to Enable or Disable Proprietary Unsolicited Indications.

| Test Command<br>**AT+EXUNSOL=?** | Response<br>**+EXUNSOL: (**list of supported**<exunsol>**s**)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+EXUNSOL=<exunsol>,<br><mode>** | Response<br>**OK**<br>**or**<br>**+CME ERROR: <err>** |
| Reference | Note<br>Only support "SQ" |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<exunsol>** | String type(string should be included in quotation marks). Values are currently reserved by the present document<br>　　"SQ"　Signal Quality Report<br>　　Displays signal strength and channel bit error rate (similar to AT+CSQ) in form +CSQN: <rssi>,<ber>when values change. |
| **<mode>** | 0　Disable<br>1　Enable<br>2　Query |

## 15.29 **AT+CDEVICE　View Current Flash Device Type**

This command is used to View Current Flash Device Type.

| Read Command<br>**AT+ CDEVICE?** | Response<br>**Device Name: Current flash device type**<br><br>**OK** |
|---|---|
| Reference | Note |

## 15.30 AT+CANT    Antenna Detecting

This command is used to Antenna Detecting.

| Test Command<br>**AT+CANT=?** | Response<br>**+ CANT:** (list of supported **<mode>**s), (list of supported **<UrcEnable>**s), (list of supported **<timer>**s)<br><br>**OK**<br>**+CME ERROR:<err>** |
|---|---|
| Read Command<br>**AT+ CANT?** | Response<br>**+ CANT: <mode>,<UrcEnable>,<timer>**<br><br>**OK**<br>**+CME ERROR:<err>** |
| Write Command<br>**AT+ CANT =<mode>,**<br>**<UrcEnable>,<timer>** | Response<br><br>**OK**<br><br>**+CANT:<status>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Disable the antenna detecting function<br>1   Enable the antenna detecting function |
| **<UrcEnable>** | 0   Disable reporting antenna state by URC<br>1   Enable reporting antenna state by URC |
| **<timer>** | 0-3600    Reporting timer in units of seconds,range:0-3600.Set timer to 0 will close detect, the recommend value is 10. |
| **<status>** | 0   Connected Normally<br>1   Connected to GND<br>2   Connected to other power source<br>3   Not connected |

## 15.31 **AT+CAGCSET   Close Or Open AGC Function**

This command is used to Close Or Open AGC Function.

| Test Command<br>**AT+CAGCSET=?** | Response<br>**+ CAGCSET: (0, 1)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ CAGCSET?** | Response<br>**+ CAGCSET: <mode>**<br><br>**OK** |
| Write Command<br>**AT+ CAGCSET =<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br>This command is not support. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Close AGC Function<br>1   Open AGC Function |

## 15.32 **AT+SKPD** **Keypad Detecting Function**

This command is used to enable or disable keypad detecting function.

| Test Command<br>**AT+SKPD=?** | Response<br>**+ SKPD: (0, 1)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ SKPD?** | Response<br>**+ SKPD: <mode>**<br><br>**OK** |
| Write Command<br>**AT+ SKPD =<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR**<br><br>If key has pressed or released,The URC report is:<br>**+SKPD: <value>,<event>** |
| Reference | Note<br>This command is not support. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Disable keypad detecting function<br>1    Enable keypad detecting function |
| **<value>** | The value of pressed or released keypad |
| **<event>** | The status of keypad<br>0    Key released<br>1    Key pressed |

## 15.33 **AT+SIMTONEX    Custom Tones**

This Command is used to custom tones.

| Test Command | Response |
|---|---|
| AT+SIMTONEX=? | **+SIMTONEX: (0,1),(10-500000),(20-20000),(0-20000), (200-25500),(10-25500),(0-4)...**<br><br>**OK** |
| Write Command<br><br>**AT+ SIMTONEX =<mode>,<duration>,<freq1>,<freq2>,<periodOn>,<periodOff>,<nextIndex>[,<freq1>,<freq2>,<periodOn>,<periodOff>,<nextIndex>...]** | Response<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br><br>The playing is stopped or completed.<br>**+SIMTONEX: 0** |
| Reference | Note<br>A group of parameters **<freq1>,<freq2>,<periodOn>, <periodOff>,<nextIndex>**is used to define a tone. The index is defined from 0 to 4.**AT+SIMTONEX** support up to five tone and the tones will play cyclically according the order specified by **<nextIndex>**.For example, with **"AT+SIMTONEX=1,10000,800,0,500,10,2,2000,0,500,100, 3,2600,0,500,10,1,1700,0,500,10,4,2200,0,600,100,0"** , the order is 800->2600->2000->1700->2200->800 and so on.<br>This command support play in call, but the **<duration>** is limited to 10s |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Stop playing tone<br>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 |

## 15.34 AT+CENG　Configure Engineering Mode

This command is used to configure engineering mode.

| Test Command | Response |
|---|---|
| **AT+CENG=?** | **+CENG: (0-4),(0-1)** |
| | **OK** |
| Read Command | Response |
| **AT+CENG?** | Engineering Mode is designed to view the network information when <mode>=1 or <mode>=2.<cell> carry with them corresponding network interaction. |
| | **+CENG: <mode>,<Ncell>** |
| | **[+CENG: <cell>,"<arfcn>,<rxl>,<rxq>,<mcc>,<mnc>,<bsic>,<cellid>,<rla>, <txp>,<lac>,<TA>"** |
| | **<CR><LF>+CENG: <cell>,"<arfcn>,<rxl>,<bsic>[,<cellid>],<mcc>,<mnc>,<lac>"…]** |
| | **OK** |
| | if <mode>=3 |
| | **+CENG: <mode>,<Ncell>** |
| | **[+CENG: <cell>,<mcc>,<mnc>,<lac>,<cellid>,<bsic>,<rxl> <CR><LF>+CENG: <cell>,<mcc>,<mnc>,<lac>,<cellid>, <bsic>,<rxl>…]** |
| | **OK** |
| | if <mode>=4 |
| | **+CENG: <mode>,<Ncell>** |
| | **[+CENG: <cell>,"<bcch>,<rxl>,<rxq>,<mcc>,<mnc>,<bsic>,<cellid>,<rla>, <txp>,<lac>,<TA>,<dbm>,<c1>,<c2>,<tch>,<ts>,<maio>,<hsn>,<rx q_sub>,<rxq_full>,<ch_mod>"<CR><LF>+CENG: <cell>,"<bcch>,<rxl>,<bsic>,<cellid>,<mcc>,<mnc>,<lac>,<c1>,<c 2>"…]** |
| | **OK** |

| Write Command | Response |
|---|---|
| **AT+CENG=<mode >[,<Ncell>]** | Switch on or off engineering mode. Module will report +CENG: (network information) automatically if <mode>=2. **OK** or **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Switch off<br>1    Switch on<br>2    Switch on, and activate the URC report of network information<br>3    Switch on engineering mode, with limited URC report<br>4    Switch on engineering mode, with extern information |
| **<Ncell>** | 0    Un-display neighbor cell ID<br>1    Display neighbor cell ID ，If <mode>=3, ignore this parameter. |
| **<cell>** | 0    The serving cell<br>1-6  The index of the neighboring cell |
| **<arfcn>** | Absolute radio frequency channel number |
| **<rxl>** | Receive level |
| **<rxq>** | Receive quality |
| **<mcc>** | Mobile country code |
| **<mnc>** | Mobile network code |
| **<bsic>** | Base station identity code |
| **<cellid>** | Cell id |
| **<lac>** | Location area code |
| **<rla>** | Receive level access minimum |
| **<txp>** | Transmit power maximum CCCH |
| **<TA>** | Timing Advance |
| **<dbm>** | Receiving level in dBm |
| **<c1>** | C1 value |
| **<c2>** | C2 value |
| **<tch>** | ARFCN of the TCH carrier, in decimal format |
| **<ts>** | Timeslot number |
| **<maio>** | MAIO value |
| **<hsn>** | HSN value |
| **<rxq_sub>** | Receiving quality (sub), range is 0 - 7 |
| **<rxq_full>** | Receiving quality (full), range is 0 – 7 |
| **<ch_mod>** | Speech channel type, in string format |

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

This command is used to set the list of arfcn which needs to be locked, if locked the signal will

blocked.

| Write Command | Response |
|---|---|
| AT*CELLLOCK=<mode>,[< amount>,<locked arfcn list>,<locked arfcn list>[,<locked arfcn list>….]] | *OK* *or* ERROR |
| Read Command AT*CELLLOCK? | Response *CELLLOCK: <mode>[,<amount>,<locked arfcn list>[,<locked arfcn list>…]] OK |
| Test Command AT*CELLLOCK=? | Response *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)]]] OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | 0　　disable 1　　enable |
| <amount> | Amount of arfcn to be set. Up to 3 arfcn supported. |
| <locked arfcn list> | Arfcn needs to be locked by user. Scope: (0-124), (128-251), (512-885) or (975-1023). |

## 15.36 **AT+CNETSCAN   Performing A Net Survey to Show All the Cells Information**

This command is used to Performing A Net Survey to Show All the Cells Information.

| Test Command<br>**AT+CNETSCAN=?** | Response<br>**+ CNETSCAN: (**list of supported**<format>**s**)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ CNETSCAN?** | Response<br>**+ CNETSCAN: <format>**<br><br>**OK** |
| Write Command<br>**AT+ CNETSCAN =<br><format>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Execution Command<br>**AT+ CNETSCAN** | Response<br>If format's value is 0:<br>**Operator:"<Network_Operator_name>",MCC:<MCC>,<br>MNC :<MNC>, Rxlev :<Rxlev>, Cellid :<Cellid>,<br>Arfcn :<Arfcn>[<CR><LF><br>Operator:<Network_Operator_name2>, MCC:<MCC2>,<br>MNC:<MNC2>, Rxlev:<Rxlev2>, Cellid:<Cellid2>,<br>Arfcn:<Arfcn2> […]]**<br>If format's value is 1:<br>**Operator:"<Network_Operator_name>",MCC:<MCC>,<br>MNC :<MNC>, Rxlev :<Rxlev>, Cellid :<Cellid>,<br>Arfcn :<Arfcn>,Lac:<Lac>,Bsic:<Bsic>[<CR><LF><br>Operator:<Network_Operator_name2>, MCC:<MCC2>,<br>MNC:<MNC2>, Rxlev:<Rxlev2>, Cellid:<Cellid2>,<br>Arfcn:<Arfcn2> , Lac:<Lac2>,Bsic:<Bsic2> […]]** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<format>** | 0   Hide lac and bsic information<br>1   Show lac and bsic information |
| **<Network_Operator_name>** | Long format alphanumeric of Network operator |
| <**MCC**> | Mobile country code |
| <**MNC**> | Mobile network code |
| **<Rxlev>** | Receive 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 |

## 15.37 **AT+CAAS    Control Auto Audio Switch**

| Test Command | Response |
|---|---|
| **AT+CAAS=?** | **+CAAS: (0-2)** <br><br> **OK** |
| Read Command <br><br> **AT+CAAS?** | Response <br><br> **+CAAS: <mode>** <br><br> **OK** |
| Write Command <br><br> **AT+CAAS=<mode>** | Response <br><br> **OK** <br> If error is related to ME functionality: <br> **+CME ERROR: <err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Disable automatic audio channel switch function, the headset HOOK function is disabled; <br> 1    Enable automatic audio channel switch function, the headset HOOK function is enabled; <br> 2    Disable automatic audio channel switch function, the headset HOOK function is enabled. |

## 15.38 AT+CEMNL    Set the List of Emergency Number

This command is used to set the List of Emergency Number.

| Test Command<br>**AT+CEMNL=?** | Response<br>**+CEMNL: (0-1),(1-11),("0"-"999")…**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+ CEMNL?** | Response<br>**+CEMNL: <mode>[,<amount>,<emergency numbers>]**<br><br>**OK** |
| Write Command<br>**AT+ CEMNL = <mode>[,<amount>,<emergency numbers>]** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    disable<br>1    enable |
| **<amount>** | Amount of emergency number to be set. Up to 11 emergency numbers supported. |
| **<emergency numbers>** | Emergency numbers to be set by user which range is 0-999 |

## 15.39 AT+CEXTERNTONE　Close or Open the Microphone

This command is used to Close or Open the Microphone.

| Test Command AT+CEXTERNTONE=? | Response +CEXTERNTONE: (0,1) OK |
|---|---|
| Read Command AT+ CEXTERNTONE? | Response +CEXTERNTONE: <mode> OK |
| Write Command AT+ CEXTERNTONE = <mode> | Response OK Or ERROR |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | 0   Re-open the microphone 1   Close the microphone |

## 15.40 AT+CWHITELIST    Set the White List

| Test Command | Response |
|---|---|
| AT+CWHITELIST=? | +CWHITELIST: (0-3)<br><br>OK |
| Read Command<br><br>AT+CWHITELIST? | Response<br><br>+CWHITELIST: <mode>,<phone number1>,<phone number2>,…< phone number30><br><br>OK |
| Write Command<br><br>AT+CWHITELIST=<mode> [,<index>,<phone number>] | Response<br><br>OK<br>Or<br>ERROR |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | 0    disable<br>1    enable only call white list<br>2    enable only SMS white list<br>3    enable call and SMS white list |
| <index> | The index of phone number, scope: 1-30 |
| <phone number> | Phone number to be set |

## 15.41 AT+CRLP   Select Radio Link Protocol Parameters

This command is used to Select Radio Link Protocol Parameters.

| Write Command<br>**AT+ CRLP<br>=<iws>[,<mws>[,<T1>[,<N2<br>> [,<T4>]]]]** | Response<br>TA sets radio link protocol (RLP) parameters used when non-transparent data calls are setup.<br>**OK** |
|---|---|
| Read Command<br>**AT+ CRLP?** | Response<br>TA returns current settings for RLP version.   RLP versions 0 and 1 share the same parameter set.<br>**+CRLP: <iws>,<mws>,<T1>,<N2>,<T4>**<br><br>**OK** |
| Test Command<br>**AT+CRLP=?** | Response<br>TA returns values supported.   RLP versions 0 and 1 share the same parameter set.<br>**+CRLP: (**list of supported **<iws>**s),**(**list of supported **<mws>**s),**(**list of supported **<T1>**s),**(**list of supported **<N2>**s), (**list of supported **<T4>**s)<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<iws>** | 0-61    Interworking window size (IWF to MS) |
| **<mws>** | 0-61    Mobile window size(MS to IWF) |
| **<T1>** | 44-255    Acknowledgment timer T1 in 10 ms units |
| **<N2>** | 1-255     Retransmission attempts N2 |
| **<T4>** | 7    Re-sequencing period in integer format, in units of 10 ms. |

## 15.42 **AT+SPEAKER   Speaker and MIC select**

This command is used to select speaker and MIC.

| Test Command | Response |
|---|---|
| **AT+SPEAKER=?** | **+SPEAKER: (0-1), (0-1)**<br><br>**OK** |
| Read Command<br><br>**AT+SPEAKER?** | Response<br><br>**+ SPEAKER: <speaker channel>,<MIC channel>**<br><br>**OK**<br><br>Or<br><br>**Error** |
| Write Command<br><br>**AT+SPEAKER=<speaker channel>,<MIC channel>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<speaker channel>** | 0   speaker channel 0<br>1   speaker channel 1 |
| **<MIC channel>** | 0   MIC channel 0<br>1   MIC channel 1 |

## 15.43 **AT+SIDET   Change the side tone gain level**

This command is used to change the side tone gain level.

| Test Command | Response |
|---|---|
| **AT+SIDET=?** | **+SIDET: (0,2), (0-16)**<br><br>**OK** |
| Read Command<br><br>**AT+SIDET?** | Response<br><br>**+ SIDET: <channel 0 level>,<channel 1 level>**<br><br>**OK**<br><br>**Or**<br><br>**Error** |
| Write Command<br><br>**AT+SIDET=<channel number>, <channel n level>** | Response<br><br>**OK**<br><br>**Or**<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<channel number>** |  0  channel number 0<br> 2   channel number 2 |
| **<channel n level>** | 0 -16   channel level (**n** refer to **<channel number>**) |

Example:

| Commands | Response |
|---|---|
| **AT+SIDET=?** | **+SIDET: (0,2),(0-16)**<br><br>**OK** |
| **AT+SIDET=0,11** | **OK** |

## 15.44 **AT+CALM   Alert sound mode**

This command is used to set alert sound mode.

| Test Command | Response |
|---|---|
| **AT+CALM=?** | **+CALM: (0-1)** **OK** |
| Read Command **AT+CALM?** | Response **+ CALM: <mode>** **OK** Or **Error** |
| Write Command **AT+CALM=<mode>** | Response **OK** Or **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   Normal mode 1   Silent mode (all sounds from ME are prevented) |

Example:

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

## 15.45 **AT+GOI    Request Global Object Identification**

| Test Command<br><br>**AT+GOI=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br><br>**AT+GOI** | Response<br><br>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.<br>**<Object Id>**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<Object Id>** | Identifier of device type<br>see X.208, 209 for the format of <Object Id> |

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

This command is used to request TA Serial Number Identification (IMEI).

| Test Command<br><br>**AT+GSN=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br><br>**AT+GSN** | Response<br><br>**<IMEI>**<br><br>**OK**<br><br>Or<br><br>**Error** |

| Reference | Note |
|-----------|------|
|           |      |

## 15.47 **AT+GSMBUSY** **Reject Incoming Call**

| Test Command | Response |
|--------------|----------|
| **AT+GSMBUSY=?** | **+GSMBUSY: (0,1,2)** <br><br> **OK** |
| Read Command | Response |
| **AT+GSMBUSY?** | **+GSMBUSY: <mode>** <br><br> **OK** |
| Write Command | Response |
| **AT+GSMBUSY=<mode>** | **OK** <br> If error is related to ME functionality: <br> **+CME ERROR: <error>** |
| Reference | Note |
|           |      |

Parameters are defined below:

| Parameters | Description |
|------------|-------------|
| **<mode>** | <u>0</u>   Enable incoming call <br> 1   Forbid all incoming calls <br> 2   Forbid incoming voice calls but enable CSD calls |

## 15.48 **AT+CSMSREJ    SMS rejection**

This command is used to reject short messages.

| Test Command | Response |
|---|---|
| **AT+CSMSREJ=?** | **+CSMSREJ: (0-1)** <br><br> **OK** |
| Read Command <br><br> **AT+CSMSREJ?** | Response <br><br> **+CSMSREJ: <mode>** <br><br> **OK** |
| Write Command <br><br> **AT+CSMSREJ=<mode>** | Response <br><br> **OK** <br> Or <br> **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    enable module to receive SMS (default state is 0) <br> 1    disable module to receive SMS |

## 15.49 AT+SJDR    Jamming detection control

This command is used to control jamming detection function.

| Test Command | Response |
|---|---|
| **AT+SJDR=?** | **+SJDR: (0,1)**<br><br>**OK** |
| Read Command | Response |
| **AT+SJDR?** | **+SJDR: \<status>,\<mode>,\<var>,\<display>,\<result>**<br>**OK**<br>Or<br><br>**Error** |
| Write Command | Response |
| **AT+SJDR=\<status>[,\<mode>][,\<var>[,\<display>]]** | **OK**<br>Or<br><br>**ERROR**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<status>** | <u>0</u> Disable jamming detection<br> 1  Enable jamming detection |
| **\<mode>** | <u>0</u> Should inquire status by reading command<br>1  Only report jamming status from serial port<br>2  Only report jamming status by PIN (no effect)<br>3  Report jamming status from serial port, as well as by PIN. (no effect) |
| **\<var>** | 1-<u>255</u>  The threshold to generate "+SJDR: JAMMING DETECTED" |
| **\<display>** | <u>0</u>  Report jamming status via URC every 3000ms.<br>    (only when \<mode> is set to "1" or "3")<br> 1  Report jamming status via URC when jamming status changed.<br>    (only when \<mode> is set to "1" or "3") |

| <result> | 0 means no jamming |
|----------|--------------------|
|          | 1 means jamming is detected |

## 15.50 AT+CMUX   Multiplexer Control

This command is used to Multiplexer Control.

| Test Command<br>**AT+CMUX=?** | Response<br>**+CMUX: (0)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+CMUX?** | Response<br>**+CMUX:[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]]**<br><br>**OK**<br>**ERROR** |
| Write Command<br>**AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]** | Response<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference<br>GSM 07.07 [13] | Note<br>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<br>Multiplexer control channels are listed as follows:<br>**Channel Number Type       DLCI**<br>None                Multiplexer Control        0<br>1                      07.07 and 07.05             1<br>2                      07.07 and 07.05             2<br>3                      07.07 and 07.05             3<br>4                      07.07 and 07.05             4 |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | Multiplexer transparency mechanism<br>0    Basic option |
| **<subset>** | The way in which the multiplexer controls channel is set up<br>0    UIH frames used only |

| <port_speed> | Transmission rate<br>1   9 600 bits/t<br>2   19 200 bits/t<br>3   38 400 bits/t<br>4   57 600 bits/t<br>5   115200bit/s<br>6   230 400 bits/t<br>7   460 800 bits/t<br>    Proprietary values, available if MUX NEW PORT SPEED FTR is activated |
|---|---|
| <N1> | Maximum frame size<br>1-255      Default: 127 |
| <T1> | Acknowledgement timer in units of ten milliseconds<br>1-254Default:10 (100 ms) |
| <N2> | Maximum number of re-transmissions<br>0-100Default:3 |
| <T2> | Response timer for the multiplexer control channel in units of ten milliseconds<br>2-255Default:30 |
| <T3> | Wake up response timers in seconds<br>1-255Default:10 |
| <k> | Window size, for Advanced operation with Error Recovery options<br>1-7          Default:2 |

## 15.51 **AT+VTD    Tone Duration**

| Write Command<br><br>**AT+VTD=\<n>** | Response<br>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.<br>**OK** |
|---|---|
| Test Command<br><br>**AT+VTD=?** | Response<br><br>**+VTD: (**list of supported **\<n>**s**)**<br><br>**OK** |
| **Read Command**<br><br>**AT+VTD?** | Response<br><br>**+VTD: \<n>**<br><br>**OK** |
| Reference<br>GSM 07.07 [13] | Note |

| Parameters | Description |
|---|---|
| **\<n>** | 1-255    Duration of the tone in 1/10 seconds |

## 15.52 **AT+CPOWD    Power Off**

This command is used to power off.

| Write Command | Response |
|---|---|
| **AT+CPOWD=<n>** | **OK**<br><br>**NORMAL POWER DOWN**<br><br>Or<br><br>**OK** |
| Test Command<br><br>**AT+CPOWD=?** | Response<br><br>**+CPOWD: (0-1)**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **n** | 0   Power off urgently (Will not send out NORMAL POWER DOWN)<br>1   Normal power off    (Will send out NORMAL POWER DOWN) |

Example:

| Commands | Response |
|---|---|
| **AT+CPOWD=1** | **OK**<br><br>**NORMAL POWER DOWN** |
| **AT+CPOWD=0** | **OK** |

# 16  HTTP AT Commands

## 16.1 AT+HTTPINIT    Initialize HTTP Service

The command is used to init http services

| Test Command | Response |
|---|---|
| **AT+HTTPINIT=?** | **OK** |
| Execution Command | Response |
| **AT+HTTPINIT** | **OK/ERROR** |
| Reference | Note |
|  | HTTPINIT should first be executed to initialize the HTTP service. |

## 16.2 AT+HTTPTERM    Terminate HTTP Service

The command is used to Terminate HTTP Service

| Test Command | Response |
|---|---|
| **AT+HTTPTERM=?** | **OK** |
| Execution command | Response |
| **AT+HTTPTERM** | **OK/ERROR** |

## 16.3 **AT+HTTPPARA**   **Set HTTP Parameters Value**

Set HTTP parameters Value.

| Test Command | Response |
|---|---|
| **AT+HTTPPARA=?** | **+HTTPPARA:**<br>**"HTTPParamTag","HTTPParamValue"**<br>**OK** |
| Read Command | Response |
| **AT+HTTPPARA?** | **+HTTPPARA:**<br>**<HTTPParamTag>,<HTTPParamValue>**<br>**OK** |
| Write Command | Response |
| **AT+HTTPPARA=<HTTPParamT ag>,<HTTPParamValue>** | **OK/ERROR** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<HTTPParamTag>** | HTTP Parameter |
| "CID" | (Mandatory Parameter) Bearer profile identifier |
| "URL" | (Mandatory Parameter) HTTP client URL<br>"http://'server'/'path':'tcpPort' "<br>"server": FQDN or IP-address<br>"path": path of file or directory<br>"tcpPort": default value is 80.<br>Refer to "IETF-RFC 2616". |
| "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.<br>Default value is "MobileTek MODULE". |
| "PROIP" | The IP address of HTTP proxy server |
| "PROPORT" | The port of HTTP proxy server |

| "REDIR" | This flag controls the redirection mechanism of the L206C 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). |
|---|---|
| "BREAK" | Parameter for HTTP method "GET", used for resuming broken transfer. |
| "BREAKEND" | Parameter for HTTP method "GET", used for resuming broken transfer. which is used together with "BREAK", <br> If the value of "BREAKEND" is bigger than "BREAK", the transfer scope is from "BREAK" to "BREAKEND". <br> If the value of "BREAKEND" is smaller than "BREAK", the transfer scope is from "BREAK" to the end of the file. |
| "TIMEOUT" | If both "BREAKEND" and "BREAK" are 0, the resume broken transfer function is disabled. <br> HTTP session timeout value, scope: 30-1000 second. <br> Default value is 120 seconds. <br> HTTP Parameter value. Type and supported content depend on related <HTTPParamTag>. |
| "CONTENT" | Used to set the "Content-Type" field in HTTP header. |
| "USERDATA" | User data |
| **<HTTPParamValue>** | HTTP Parameter value. Type and supported content depend on related <HTTPParamTag>. |
| Reference | Note <br> Not all the HTTP Server supports "BREAK" and "BREAKEND" parameters |

Example:

| Commands | Response |
|---|---|
| **AT+SAPBR=3,1,"APN","CMNET"** | **OK/ERROR** |
| **AT+SAPBR=1,1** | **OK/ERROR** |
| **AT+HTTPINIT** | **OK/ERROR** |
| **AT+HTTPPARA="URL","www.baidu.com"** | **OK/ERROR** |

| AT+HTTPPARA="PROIP","10.0.0.172" | OK/ERROR |
|---|---|
| AT+HTTPPARA="CID",1 | OK/ERROR |
| AT+HTTPPARA="PROPORT",80 | OK/ERROR |

## 16.4 **AT+HTTPDATA    Input HTTP Data**

The command is used to Input HTTP Data

| Test Command<br><br>**AT+HTTPDATA=?** | Response<br><br>**+HTTPDATA: (**list of supported **<size>**s**),(**list of supported **<time>**s**)<br>**OK** |
|---|---|
| Write Command<br><br>**AT+HTTPDATA=<size>,<time>** | Response<br><br>**DOWNLOAD**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<size>** | Size in bytes of the data to POST.<br>1-319488 (bytes)<br>0    means delete all the content. |
| **<time>** | 1000-120000 (millisecond) Maximum time in milliseconds to input data. |

Example:

| Commands | Response |
|---|---|
| **AT+HTTPDATA** | **AT+HTTPDATA=100,10000**<br>**DOWNLOAD**<br><br><br>**.......**<br><br>**OK** |

## 16.5 **AT+HTTPSCONT**   **Save HTTP Application Context**

Save HTTP Application Context

| Read Command | Response |
|---|---|
| **AT**+**HTTPSCONT?** | TA returns HTTP Application Context, which consists of the following<br>AT Command parameters.<br>**+HTTPSCONT:<mode>**<br>**CID:<value>**<br>**URL: <value>**<br>**UA: <value>**<br>**PROIP: <value>**<br>**PROPORT: <value>**<br>**REDIR: <value>**<br>**BREAK: <value>**<br>**BREAKEND: <value>**<br>**USERDATA: <value>**<br><br>**OK** |
| Execution Command | Response |
| **AT**+**HTTPSCONT** | **OK/ERROR** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Saved, the value from NVRAM<br>1    Unsaved, the value from RAM |
| **others** | Please refer to instruction at+httppara |

Example:

| Commands | Response |
|---|---|
| **AT+HTTPSCONT?** | **+HTTPSCONT:1**<br>**CID:1**<br>**URL:http://www.sim.com**<br>**UA:aaaaa**<br>**PROIP:0.0.0.0**<br>**PROPORT:80**<br>**REDIR:0**<br>**BREAK:0**<br>**BREAKEND:0**<br>**USERDATA:** |
| **AT+HTTPSCONT** | **OK/ERROR** |

## 16.6 **AT+HTTPSTATUS   Read HTTP Status**

Read HTTP Status.

| Test Command<br>**AT+HTTPSTATUS=?** | Response<br>**OK** |
|---|---|
| Read Command<br>**AT+HTTPSTATUS?** | Response<br>**+HTTPSTATUS:**<br>**<mode>,<status>,<finish>,<remain>**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | GET<br>POST<br>HEAD |
| **<status>** | 0   idle<br>1   receiving<br>2   sending |
| **<finish>** | The amount of data which have been transmitted |
| **<remain>** | The amount of data remaining to be sent or received |

Example:

| Commands | Response |
|---|---|
| AT+HTTPSTATUS? | +HTTPSTATUS: GET,0,0,0 |

## 16.7 **AT+HTTPACTION    Sending HTTP request**

The command is used to send HTTP request.

| Test Command<br>**AT+HTTPACTION=?** | Response<br>**+HTTPACTION: (0-2)**<br>**OK** |
|---|---|
| Write Command<br>**AT+HTTPACTION=\<Method>** | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err>**<br><br>Unsolicited Result Code<br>**+HTTPACTION:**<br>**\<Method>,\<StatusCode>,\<DataLen>** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<Method>** | HTTP method specification:<br>0    GET<br>1    POST<br>2    HEAD |
| **\<StatusCode>** | HTTP Status Code responded by remote server, it identifier refer to HTTP1.1(RFC2616)<br>100    Continue<br>101    Switching Protocols<br>200    OK<br>201    Created<br>202    Accepted<br>203    Non-Authoritative Information<br>204    No Content<br>205    Reset Content<br>206    Partial Content<br>208    Unknown<br>300    Multiple Choices<br>301    Moved Permanently<br>302    Found<br>303    See Other |

| | 304 | Not Modified |
|---|---|---|
| | 305 | Use Proxy |
| | 307 | Temporary Redirect |
| | 400 | Bad Request |
| | 401 | Unauthorized |
| | 402 | Payment Required |
| | 403 | Forbidden |
| | 404 | Not Found |
| | 405 | Method Not Allowed |
| | 406 | Not Acceptable |
| | 407 | Proxy Authentication Required |
| | 408 | Request Time-out |
| | 409 | Conflict |
| | 410 | Gone |
| | 411 | Length Required |
| | 412 | Precondition Failed |
| | 413 | Request Entity Too Large |
| | 414 | Request-URI Too Large |
| | 500 | Internal Server Error |
| | 501 | Not Implemented |
| | 502 | Bad Gateway |
| | 503 | Service Unavailable |
| | 504 | Gateway Time-out |
| | 505 | HTTP Version not supported |
| | 600 | Not HTTP PDU |
| | 601 | Network Error |
| | 602 | No memory |
| | 603 | DNS Error |
| | 604 | Stack Busy |
| < DataLen> | the length of data got | |

Example:

| Commands | Response |
|---|---|
| **AT+HTTPPARA="URL","www.baudu.com"**<br>**//send HTTP GET request** | AT+HTTPACTION=0<br>**OK**<br>+HTTPACTION: 0,200,1000 |

## 16.8 **AT+HTTPREAD   Read the HTTP Server Response**

The command is used to Read the HTTP Server Response

| Test Command | Response |
|---|---|
| **AT+HTTPREAD=?** | **+HTTPREAD: (**list of supported **<start_address>**s**),(**list of supported**< byte_size>**s**)** <br> **OK** |
| Write Command <br><br> **AT+HTTPREAD=<start_address> ,<byte_size>** | Response <br><br> **+HTTPREAD: <date_len>** <br> **<data>** <br> **OK** <br> Read data when AT+HTTPACTION=0 or AT+HTTPDATA is executed. <br> If<byte_size> is bigger than the data size received, module will only return actual data size. |
| Execution Command <br><br> **AT+HTTPREAD** | Response <br><br> **+HTTPREAD:<date_len>** <br> **<data>** <br> **OK** <br> Read all data when AT+HTTPACTION=0 or AT+HTTPDATA is executed. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<data>** | Data from HTTP server or user input. |
| **<start_address>** | The starting point for data output. <br> 0-319488 (bytes) |
| **<byte_size>** | The length for data output. <br> 1-319488 (bytes) |
| **<data_len>** | The actual length for data output. |

Example:

| Commands | Response |
|---|---|
| **AT+HTTPPARA="URL","www.baidu.com"** <br> **//send HTTP GET request** | AT+HTTPACTION=0 <br> **OK** <br> +HTTPACTION: 0,200,1000 |
| **AT+HTTPREAD** | **+ HTTPREAD:1000** <br> **……（data output）** <br> **OK** |

## 16.9 **HTTP AT command response code definition**

| | |
|---|---|
| 20 | EFS write error |
| 149 | PDP not active |
| 160 | DNS resolve failed |
| 188 | Not find the file |

# 17 AUDIO AT Commands

## 17.1 AT+ZAUDREC   Audio function

The command is used to audio function.

| Write Command | Response |
|---|---|
| **AT+ZAUDREC=<Mode>[,<Filename>]** | **OK/ERROR** |
| Read Command | Response |
| **AT+ZAUDREC?** | **+ZAUDREC:<Files_number>,<File_name1>,<len1> ,<File_name2>,<len2>**<br>**OK** |
| Test Command | Response |
| **AT+ZAUDREC=?** | **+ZAUDREC: (0-6)**<br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **mode** | 0    Start record<br>1    stop record<br>2    Play record<br>3    Stop play record<br>4    Delete record<br>5    Start play record in call<br>6    Stop record in call |
| **filename** | Record file name, if you not write suffix,the suffix is wav,if mode equal 0,default name is "REC.wav".the maxlength is 30 bytes. |
| **File_num** | File number(can record at most 6 files) |
| **len** | File size |

Example:

| Commands | Response |
|---|---|
| **AT+zaudrec = 0 [, "rec"]** | **OK** |
| **AT+zaudrec = 1** | **OK** |
| **AT+zaudrec = 2 , "rec"** | **OK** |
| **AT+zaudrec = 3** | **OK** |
| **AT+zaudrec = 4, "rec"** | **OK** |
| **AT+zaudrec = 5, "rec"** | **OK** |
| **AT+zaudrec = 6** | **OK** |
| **AT+zaudrec?** | **+zaudrec: 1, rec.wav, 66332** |

## 17.2 **AT+CMEDPLAY   Play Audio File**

This Command is used to play audio file.

| Write Command<br>**AT+CMEDPLAY=\<mode>** | Response<br>if\<mode>=0,2,3, response：<br>**OK**<br><br>if\<mode>=1, start playing<br>**AT+CMEDPLAY=1,\<filepath>,\<channel>,\<volume>**<br><br>**OK**<br><br>Unsolicited result code<br>**+CMEDPLAY: 0** // play over<br><br>If error is related to MS functionality, response：<br>**+CME ERROR: \<err>** |
| --- | --- |
| Test Command<br>**AT+CMEDPLAY=?** | Response<br>**+CMEDPLAY: (0-3)**<br><br>**OK** |
| Read Command<br>**AT+CMEDPLAY?** | Response<br>**+CMEDPLAY: \<state>**<br><br>**OK** |
| Reference | Note<br>< **mode**> 2 and 3 are not supported when playing audio file in call or establishing a call. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **< mode>** | command operation mode<br>0   Stop playing<br>1   Start playing<br>2   Pause playing<br>3   Resume playing |
| **<filepath>** | Audio file path and name |
| **<channel>** | Audio play channel<br>0   Main channel<br>1   Aux channel |
| **<volume>** | Audio play volume,0-100 |
| **<state>** | Audio playing state<br>0   Idle<br>1   Playing<br>2   Paused |

## 17.3 **AT+CMEDIAVOL    Control the Volume when Playing Audio File**

Control the volume when playing audio file.

| Write Command | Response |
|---|---|
| **AT+CMEDIAVOL=<level>** | **OK**<br><br>**ERROR** |
| Test Command | Response |
| **AT+CMEDIAVOL=?** | **+CMEDIAVOL: (0-100)**<br><br>**OK** |
| Reference | Note<br>The command takes effect only when playing audio file. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<level>** | 0-100    Integer type value with manufacturer specific range<br>(smallest value represents the lowest sound level). |

## 17.4 **AT+CREC   Record Operation**

Record Operation

| Write Command | Response |
|---|---|
| **AT+CREC=<mode>,[<id>]** | **OK** |
| | **1)  mode=1,start record** |
| | **AT+CREC=1,<id>,<form>,[<time>][,<location>],[<quality>],[<inputpath>]** |
| | **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, record file information** |
| | **AT+CREC=7, [<id>]** |
| | **+CREC: 7,<id>,<len>,<form>** |
| | **OK** |
| | **8) mode=8,query free space for recording** |
| | **AT+CREC=8** |
| | **+CREC: 8,<len>** |
| | **OK** |
| **Test Command** | **Response** |
| **AT+CREC=?** | **+CREC: (1-n),(1-10)** |
| | **OK** |

| Read Command | Response |
|---|---|
| **AT+CREC?** | **+CREC: <status>**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<n>** | number of operation support, if SD card is supported, the number will be 9, or will be 8 |
| **<mode>** | 1   start record<br>2   stop record<br>3   delete record<br>4   play record<br>5   stop play record<br>6   get record data in hex format, the max length is 32K in bytes<br>7   list record files information<br>8   query free space in bytes |
| **<id>** | file ID number, <1-10> |
| **<form>** | 0   AMR<br>1   WAV |
| **<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>** | 0   main channel<br>1   aux channel |
| **<level>** | 0-100, play volume |
| **<repeat>** | 0   play once<br>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 reorder file.<br>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>** | 0   system FAT<br>1   SD card(temporary does not support) |
| **<inputpath>** | 0   MIC1<br>1   MIC2 |

| **<quality>** | 0 low |
|---|---|
| | 1 medium |
| | 2 high |
| | 3 best |
| **<status>** | 0 idle state |
| | 1 recording state |
| | 2 playing state |

## 17.5 **AT+CRECORD   Record and Send Data to UART**

| Test Command | Response |
|---|---|
| **AT+CRECORD=?** | **+ CRECORD: (0,1)**<br>**OK** |
| Write Command<br><br>**AT+ CRECORD =<mode>**<br>**[,<interval>][,<crcmode>]** | Response<br><br>**OK**<br><br>Or<br>**+ CRECORD:<data>**<br>Or<br>**ERROR** |
| Reference | Note<br>● 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.<br>● AMR 4.75K is supported only<br>● AMR file head "#*AMR\n" is not outputed |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   stop record<br>1   start record |
| **<interval>** | 1-50   UART output interval, default value is 50,units 20ms |
| **<crcmode>** | Data form<br><u>0</u>   UART data is audio data<br>1   0x7E is added to the head, 0x7E is converted to 0x7D 0x5E, 0x7D is converted to 0x7D 0x5D.<br>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 |
| **<data>** | UART data output in specified form, which is decide by **<crcmode>** |

# 18  FTP AT Commands

## 18.1 AT+FTPPORT    Set FTP Control Port

The command is used to set ftp control port.

| Write Command | Response |
|---|---|
| **AT+FTPPORT=<value>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command<br><br>**AT+FTPPORT?** | Response<br><br>**+FTPPORT: <value>**<br>**OK** |
| Test Command<br><br>**AT+FTPPORT=?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | The value of FTP Control port, from 1 to 65535. Default value is 21 |

Example:

| Commands | Response |
|---|---|
| **AT+FTPPORT=21** | **OK** |

## 18.2 **AT+FTPMODE    Set Active or Passive FTP Mode**

The command is used to set ftp mode active or passive.

| Write Command | Response |
|---|---|
| **AT+FTPMODE =\<value\>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err\>** |
| Read Command<br><br>**AT+ FTPMODE?** | Response<br><br>**+ FTPMODE: \<value\>**<br>**OK** |
| Test Command<br><br>**AT+FTPMODE=?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<value\>** | 0    Active FTP mode<br>1    Passive FTP mode |

Example:

| Commands | Response |
|---|---|
| **AT+FTPMODE=1** | **OK** |

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

The command is used to set the Type of Data to Be Transferred

| Write Command | Response |
|---|---|
| **AT+ FTPTYPE=<value>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command | Response |
| **AT+ FTPTYPE?** | **+ FTPTYPE: <value>**<br>**OK** |
| Test Command | Response |
| **AT+ FTPTYPE=?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | "A"   For FTP ASCII sessions<br>"I"    For FTP Binary sessions |

Example:

| Commands | Response |
|---|---|
| **AT+FTPTYPE ="A"** | **OK** |

## 18.4 **AT+FTPPUTOPT    Set FTP Put Type**

The command is used to set FTP Put Type

| Write Command | Response |
|---|---|
| AT+FTPPUTOPT =<value> | **OK** |
| | If error is related to ME functionality: |
| | **+CME ERROR: <err>** |
| Read Command | Response |
| AT+ FTPPUTOPT? | **+FTPPUTOPT: <value>** |
| | **OK** |
| Test Command | Response |
| AT+ FTPPUTOPT=? | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | "APPE"    For appending file |
| | "STOU"    For storing unique file |
| | "STOR"    For storing file |
| | Default is "STOR" |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPPUTOPT ="STOU"** | **OK** |

## 18.5 **AT+FTPCID** **Set FTP Bearer Profile Identifier**

The command is used to Set FTP Bearer Profile Identifier

| Write Command | Response |
|---|---|
| **AT+ FTPCID =<value>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command | Response |
| **AT+ FTPCID?** | **+ FTPCID: <value>**<br>**OK** |
| Test Command | Response |
| **AT+ FTPCID=?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | Bearer profile identifier refer to AT+SAPBR |

Example:

| Commands | Response |
|---|---|
| **AT+FTPCID =1** | **OK** |

## 18.6 **AT+FTPREST    Set Resume Broken Download**

The command is used to set Resume Broken Download

| Write Command | Response |
|---|---|
| **AT+ FTPREST =<value>** | **OK** <br> If error is related to ME functionality: <br> **+CME ERROR: <err>** |
| Read Command <br><br> **AT+ FTPREST?** | Response <br><br> **+ FTPREST: <value>** <br> **OK** |
| Test Command <br><br> **AT+ FTPREST=?** | Response <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | Broken point to be resumed <br> from 0 to 4294967295. (byte) |

Example:

| Commands | Response |
|---|---|
| **AT+FTPREST =100** | **OK** |

## 18.7 **AT+FTPSERV    Set FTP Server Address**

The command is used to set FTP Server Address

| Write Command | Response |
|---|---|
| **AT+FTPSERV =\<value\>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err\>** |
| Read Command<br><br>**AT+FTPSERV?** | Response<br><br>**+ FTPSERV: \<value\>**<br>**OK** |
| Test Command<br><br>**AT+FTPSERV =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<value\>** | 32-bit number in dotted-decimal notation<br>(i.e.xxx.xxx.xxx.xxx) or alphanumeric ASCII text string up<br>to 49 characters if DNS is available |

Example:

| Commands | Response |
|---|---|
| **AT+FTPSERV="182.150.28.206"** | **OK** |

## 18.8 **AT+FTPUN    Set FTP User Name**

The command is used to set FTP User Name

| Write Command | Response |
|---|---|
| **AT+ FTPUN =<value>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command<br><br>**AT+ FTPUN?** | Response<br><br>**+ FTPUN: <value>**<br>**OK** |
| Test Command<br><br>**AT+ FTPUN=?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | Alphanumeric ASCII text string up to 49 characters |

**Example:**

| Commands | Response |
|---|---|
| **AT+ FTPUN ="cd_ftp"** | **OK** |

## 18.9 **AT+FTPPW    Set FTP Password**

The command is used to Set FTP Password

| Write Command | Response |
|---|---|
| **AT+ FTPPW =\<value\>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err\>** |
| Read Command<br><br>**AT+ FTPPW?** | Response<br><br>**+ FTPPW: \<value\>**<br>**OK** |
| Test Command<br><br>**AT+ FTPPW =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<value\>** | Alphanumeric ASCII text string up to 49 characters |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPPW ="cd_ftp"** | **OK** |

## 18.10 **AT+FTPGETNAME   Set Download File Name**

The command is used to Set Download File Name.

| Write Command | Response |
|---|---|
| **AT+FTPGETNAME=<value>** | **OK**<br>If error is related to ME functionality:<br>+**CME ERROR: <err>** |
| Read Command | Response |
| **AT+ FTPGETNAME?** | **+ FTPGETNAME: <value>**<br>**OK** |
| Test Command | Response |
| **AT+ FTPGETNAME =?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | Alphanumeric ASCII text string up to 99 characters |

Example:

| Commands | Response |
|---|---|
| **AT+FTPGETNAME="test.txt"** | **OK** |

## 18.11 AT+FTPGETPATH   Set Download File Path

The command is used to Set Download File Path

| Write Command | Response |
|---|---|
| AT+FTPGETPATH=<value> | OK<br>If error is related to ME functionality:<br>+CME ERROR: <err> |
| Read Command | Response |
| AT+ FTPGETPATH? | + FTPGETPATH: <value><br>OK |
| Test Command | Response |
| AT+ FTPGETPATH =? | OK |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <value> | Alphanumeric ASCII text string up to 255 characters |

Example:

| Commands | Response |
|---|---|
| AT+ FTPGETPATH ="/" | OK |

## 18.12 **AT+FTPPUTNAME**   **Set Upload File Name**

The command is used to set Upload File Name

| Write Command | Response |
|---|---|
| **AT+FTPPUTNAME=\<value>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err>** |
| Read Command<br><br>**AT+ FTPPUTNAME?** | Response<br><br>**+ FTPPUTNAME: \<value>**<br>**OK** |
| Test Command<br><br>**AT+ FTPPUTNAME=?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<value>** | Alphanumeric ASCII text string up to 99 characters |

Example:

| Commands | Response |
|---|---|
| **AT+FTPPUTNAME="deng.txt"** | **OK** |

## 18.13 **AT+FTPPUTPATH** **Set Upload File Path**

The command is used to set Upload File Path

| Write Command | Response |
|---|---|
| **AT+FTPPUTPATH=<value>** | **OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command<br><br>**AT+ FTPPUTPATH?** | Response<br><br>**+ FTPPUTPATH: <value>**<br>**OK** |
| Test Command<br><br>**AT+ FTPPUTPATH =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<value>** | Alphanumeric ASCII text string up to 255 characters |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPPUTPATH ="/"** | **OK** |

## 18.14 **AT+FTPGET   Download File**

The command is used to download File

| Write Command | Response |
|---|---|
| **AT+FTPGET=\<mode>[,\<reqlengt h>]** | If mode is 1 and it is a successful FTP get session:<br>**OK**<br>**+FTPGET:1,1**<br>If data transfer finished:<br>**+FTPGET:1,0**<br>If mode is 1 and it is a failed FTP get session:<br>**OK**<br>**+FTPGET:1,\<error>**<br>If mode is 2: **+FTPGET:2,\<cnflength>**<br>**012345678…**<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err>** |
| Test Command<br><br>**AT+ FTPGET =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<mode>** | 1   For opening FTP get session<br>2   For reading FTP download data. |
| **\<reqlength>** | Requested number of data bytes (1-1460)to be read |
| **\<cnflength>** | Confirmed number of data bytes to be read, which may be less than \<length>. 0 indicates that no data can be read |
| **\<error>** | 61   Net error<br>62   DNS error<br>63   Connect error<br>64   Timeout<br>65   Server error<br>66   Operation not allow<br>70   Replay error<br>71   User error<br>72   Password error<br>73   Type error |

| | |
|---|---|
| | 74   Rest error |
| | 75   Passive error |
| | 76   Active error |
| | 77   Operate error |
| | 78   Upload error |
| | 79   Download error |
| | 86   Manual quit |
| **Timeout** | **75 seconds** |
| **Notify** | 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. |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPGET =1** | **OK**<br>**+FTPGET:1,1** |
| **AT+FTPGET=2,1024** | **+FTPGET: 2,50**<br>**012345678901234567890123456789012345678901234**<br>        **6789**<br>**OK**<br><br>**+FTPGET:1,0** |
| **AT+FTPGET=2,1024** | **+FTPGET: 2,1024**<br>**012345678901234567890123456789012345678901234**<br>        **67890…..1234**<br>**OK**<br>**+FTPGET:1,1** |
| **AT+FTPGET=2,1024** | **+FTPGET: 2,1024**<br>**012345678901234567890123456789012345678901234**<br>        **67890…..1234**<br>**OK**<br>**+FTPGET:1,0** |

## 18.15 **AT+FTPPUT**    Set Upload File

The command is used to set Upload File

| Write Command | Response |
|---|---|
| **AT+FTPPUT=\<mode>[,\<reqlength>]** | If mode is 1 and it is a successful FTP get session: **OK** **+FTPPUT:1,1,\<maxlength>** If mode is 1 and it is a failed FTP get session: **OK** **+FTPPUT:1,\<error>** If mode is 2 and \<reqlength> is not 0 **+FTPPUT:2,\<cnflength>** **…… //Input data** **OK** If mode is 2 and \<reqlength> is 0, it will respond OK, and FTP session will be closed **OK** If data transfer finished. **+FTPPUT:1,0** If error is related to ME functionality: **+CME ERROR: \<err>** |
| Test Command **AT+ FTPPUT =?** | Response **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<mode>** | 1   For opening FTP put session 2   For writing FTP upload data. |
| **\<reqlength>** | Requested number of data bytes(0-\<maxlength>) to be transmitted |
| **\<cnflength>** | Confirmed number of data bytes to be transmitted |
| **\<maxlength>** | The max. length of data can be sent at a time. It depends on the network status |
| **\<error>** | See "AT+FTPGET" |

| Timeout | 75 seconds |
|---|---|
| Notify | When "+FTPPUT:1,1,<maxlength>" is shown, then use "AT+FTPPUT=2,<reqlength>" to write data.<br>If you want finish input, should end with AT+FTPPUT=2,0 |

**Example:**

| Commands | Response |
|---|---|
| **AT+ FTPPUT =1** | **OK**<br>**+FTPPUT:1,1,1360** |
| **AT+ FTPPUT=2,1024**<br>**+FTPPUT: 2,1024**<br>**.....(input data)**<br>**(must up to 1024)**<br>**OK** | **+FTPPUT: 1,1,1360** |
| **AT+ FTPPUT=2,100**<br>**+FTPPUT: 2,100**<br>**.....(input data)**<br>**(must up to 100)**<br>**OK** | **+FTPPUT: 1,1,1360** |
| **AT+FTPPUT=2,0** | **OK**<br>**+FTPPUT: 1,0** |

## 18.16 **AT+FTPSCONT   Save FTP Application Context**

The command is used to save FTP Application Context

| Write Command | Response |
|---|---|
| **AT+ FTPSCONT** | TA saves FTP Application Context which consist of following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically. **OK** |
| Read Command | Response |
| **AT+ FTPSCONT?** | **+FTPSCONT:<mode>**<br>**+FTPSERV: <value>**<br>**+FTPPORT: <value>**<br>**+FTPUN: <value>**<br>**+FTPPW: <value>**<br>**+FTPCID: <value>**<br>**+FTPMODE: <value>**<br>**+FTPTYPE: <value>**<br>**+FTPPUTOPT: <value>**<br>**+FTPREST: <value>**<br>**+FTPGETNAME: <value>**<br>**+FTPGETPATH: <value>**<br>**+FTPPUTNAME: <value>**<br>**+FTPPUTPATH: <value>**<br>**+FTPTIMEOUT: <value>**<br>**OK** |
| Test Command | Response |
| **AT+ FTPSCONT=?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0 Saved, the value from NVRAM<br>1 Unsaved, the value from RAM |
| **Notify** | UE saves FTP Application Context which consist of following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically. |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPSCONT?** | **+FTPSCONT:<0>**<br>**+FTPSERV: <182.150.28.206>**<br>**+FTPPORT:<2100>**<br>**+FTPUN: <cd_ftp>**<br>**+FTPPW:<cd_ftp>**<br>**+FTPCID: <1>**<br>**+FTPMODE:<1>**<br>**+FTPTYPE:<I>**<br>**+FTPPUTOPT:<STOU>**<br>**+FTPREST:<0>**<br>**+FTPGETNAME:<deng1.txt>**<br>**+FTPGETPATH:</>**<br>**+FTPPUTNAME:<deng1.txt>**<br>**+FTPPUTPATH:</>**<br>**+FTPTIMEOUT: <75>**<br>**OK** |
| **AT+ FTPSCONT** | **OK** |

## 18.17 **AT+FTPDELE    Delete Specified File in FTP Server**

The command is used to delete Specified File in FTP Server

| Execution Command | Response |
|---|---|
| **AT+ FTPDELE** | Response<br><br>Response<br>If succeed:<br>**OK**<br>**+FTPDELE:1,0**<br>If failed:<br>**OK**<br>**+FTPDELE:1,<error>**<br>If error is related to ME functionality:<br>+**CME ERROR: <err>** |
| Test Command<br><br>**AT+ FTPDELE=?** | Response<br><br>**OK** |

Parameters are defined below:

| Notify | The file to be deleted is specified by the "AT+FTPGETNAME" and "AT+FTPGETPATH" commands. |
|---|---|
| **timeout** | 75 seconds |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPDELE** | **OK**<br>+**FTPDELE: 1,0** |

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

The command is used to get the Size of Specified File in FTP Server

| Execution Command | Response |
| --- | --- |
| **AT+FTPSIZE** | If succeed:<br>**OK**<br>**+FTPSIZE:1,0,<size>**<br>If failed:<br>**OK**<br>**+FTPSIZE:1,<error>,<0>**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Test Command<br><br>**AT+FTPSIZE =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<error>** | See "AT+FTPGET" |
| **<size>** | The file size. Unit: byte<br>The file is specified by the "AT+FTPGETNAME" and "AT+FTPGETPATH" commands. |

Example:

| Commands | Response |
| --- | --- |
| AT+ **FTPSIZE** | **OK**<br>**+FTPSIZE: 1,0,300** |

## 18.19 **AT+FTPSTATE   Get the FTP State**

The command is used to get the FTP State

| Execution Command | Response |
|---|---|
| **AT+ FTPSTATE** | **+FTPSTATE: <state>**<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Test Command<br><br>**AT+ FTPSTATE =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<state>** | 0   idle<br>1   in the FTP session, including FTPGET, FTPPUT,<br>    FTPDELE and FTPSIZE operation. |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPSTATE** | **+FTPSTATE: 0**<br>**OK** |

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

The command is used to make Directory on the Remote Machine

| Execution Command | Response |
|---|---|
| **AT+ FTPMKD** | **OK**<br>If success:<br>**OK**<br>**+FTPMKD: 1,0**<br>If failed:<br>**OK**<br>**+FTPMKD: 1,<error>** |
| Test Command | Response |
| **AT+ FTPMKD=?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<error>** | **See "AT+FTPGET"**<br>The created folder is specified by the<br> "AT+FTPGETPATH" command. |
| **Timeout** | **75 seconds** |

Example:

| Commands | Response |
|---|---|
| **AT+ FTPMKD** | **OK**<br>**+FTPMKD: 1,0** |

## 18.21 **AT+FTPRMD    Remove Directory on the Remote Machine**

**The** command is used to remove Directory on the Remote Machine

| Execution Command | Response |
|---|---|
| **AT+FTPRMD** | If success: <br> **OK** <br> **+FTPRMD: 1,0** <br> If failed: <br> **OK** <br> **+FTPRMD: 1,<error>** <br> If error is related to ME functionality: <br> **+CME ERROR: <err>** |
| Test Command <br><br> **AT+FTPRMD=?** | Response <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<error>** | **See "AT+FTPGET"** <br> The removed folder is specified by the <br> "AT+FTPGETPATH" command. |
| **Timeout** | **75 seconds** |

Example:

| Commands | Response |
|---|---|
| **AT+FTPRMD** | **OK** <br> **+FTPRMD: 1,0** |

## 18.22 AT+FTPLIST    List Contents of Directory on the Remote

Machine

The command is used to list contents of directory on the remote machine

| Write Command | Response |
|---|---|
| **AT+FTPLIST=\<mode>[,\<reqlength>]** | If mode is 1 and it is a successful FTP get session: **OK** **+FTPLIST: 1,1** If data transfer is finished: **+FTPLIST: 1,0** If mode is 1 and it is a failed FTP get session: **OK** **+FTPLIST: 1,\<error>** If mode is 2: **+FTPLIST: 2,\<cnflength>** **012345678…** **OK** If error is related to ME functionality: **+CME ERROR: \<err>** |
| Test Command **AT+ FTPLIST=?** | Response **OK** |
| Reference | Note When "+FTPLIST: 1,1" is shown, "AT+FTPLIST=2,\<reqlength>" can be used to read data. If the module still has unread data, "+FTPLIST: 1,1"will be shown again in a certain time. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<mode>** | 1    For opening FTP get file list session 2    For reading FTP file list |
| **\<reqlength>** | Requested number of data bytes (1-1460) to be read |
| **\<cnflength>** | Confirmed number of data bytes to be read, which may be less than \<reqlength>. 0 indicates that no data can be read. |

| <error> | See "AT+FTPGET" |
|---------|-----------------|

Example:

| Commands | Response |
|----------|----------|
| **AT+FTPLIST =1** | **OK**<br><br>**+ FTPLIST:1,1** |
| **AT+ FTPLIST=2,1024** | **+FTPLIST: 2,50**<br>**2016/08/25   19:20      \<DIR\>            .**<br>**2016/08/25   19:20      \<DIR\>            ..**<br>**2015/11/04   16:39      \<DIR\>            .android**<br>**2016/09/06   18:37              1,164 .bash_history**<br>**2015/10/28   15:39      \<DIR\>            .config**<br>**2016/01/12   18:06               360 .gitconfig**<br>**2016/07/25                                 17:11**<br>**                 \<DIR\>          .oracle_jre_usage**<br>**2016/07/27   17:23      \<DIR\>            .ssh**<br>**2016/07/07   13:32      \<DIR\>            .VirtualBox**<br>**2015/12/16   16:16              4,425 aaa**<br>**2016/03/10   15:36             16,740 aaa.txt**<br>**2016/03/16   16:21             10,425 aaaaaffdf.txt**<br>**2016/04/26   19:07      \<DIR\>            AppData**<br>**2016/03/18   10:21             12,065 bing.txt**<br><br>**OK**<br><br>**+FTPLIST:1,0** |

## 18.23 AT+FTPGETTOFS   Download File and Save in File System

The command is used to download File and Save in File System

| Write Command | Response |
|---|---|
| **AT+FTPGETTOFS=\<loc\>,\<filename\>[,\<num\>,\<time\>]** | If it is a successful FTP get session:<br>**OK**<br>If data transfer finished.<br>**+FTPGETTOFS: 0,\<totalLength\>**<br>If it is a failed FTP get session:<br>**OK**<br>**+FTPGETTOFS: \<error\>**<br>If error is related to ME functionality:<br>**+CME ERROR: \<err\>** |
| Read Command<br>**AT+ FTPGETTOFS?** | Response<br>**+FTPGETTOFS:**<br>**\<status\>[,\<receivedLength\>,\<writeLength\>]** |
| Test Command<br><br>**AT+ FTPGETTOFS=?** | Response<br><br>**OK** |

**Parameters are defined below:**

| Parameters | Description |
|---|---|
| **\<status\>** | 0   not in the process<br>1   during the process |
| **\<loc\>** | 0   saved in ROM<br>1   saved in SD card |
| **\<filename\>** | Alphanumeric ASCII text string up to 64 characters |
| **\<num\>** | Number of automatic reconnect times, from 0 to 255.<br>Default value is 3. |
| **\<time\>** | wait time before module start automatic reconnect, from 0 to 60<br>seconds. Default value is 5 seconds.(when waiting reconnect, will not allow to other upload or download at commands) |
| **\<totalLength\>** | The total length of data bytes have been saved |
| **\<Notify\>** | File will be overwritten if you start this function twice with a same filename. All local file will save in path Z:\FTP_DOWNLOADE |

| <receivedLength> | the data length received from FTP |
|---|---|
| <writeLength> | the data length saved in File System |
| <error> | 85   An error related with file system. Other errors please see FTPGET |

Example:

| Commands | Response |
|---|---|
| at+ftpgettofs=0,"aa.txt" | OK<br>+FTPGETTOFS: 0,174125 |

## 18.24 AT+FTPPUTFRMFS   Upload File from File System.

The command is used to upload File from File System.

| Write Command | Response |
|---|---|
| AT+FTPPUTFRMFS=<filepath>[,<num>,<time>] | If it is a successful FTP put session:<br>**OK**<br>If data transfer finished.<br>**+FTPPUTFRMFS: 0,<totalLength>**<br>If it is a failed FTP put session:<br>**OK**<br>**+FTPPUTFRMFS: <error>**<br>If error is related to ME functionality:<br>+**CME ERROR: <err>** |
| Read Command<br>**AT+ FTPPUTFRMFS?** | Response<br>**+FTPPUTFRMFS: <status>[,<putLength>]**<br><br>**OK** |
| Test Command<br><br>**AT+ FTPPUTFRMFS =?** | Response<br><br>**OK** |

**Parameters are defined below:**

| Parameters | Description |
|---|---|
| **<filepath>** | file path. Alphanumeric ASCII text string up to 128 characters |
| **<status>** | 0   not in the process<br>1   during the process |
| **<putLength>** | the data length uploaded from File System |
| **<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 60seconds.Default value is 5 seconds. (when waiting reconnect, will not allow to other upload or download at commands) |
| **<totalLength>** | the data length uploaded from File System |
| **<error>** | 85   An error related with file system. Other errors please see FTPGET |

Example:

| Commands | Response |
|---|---|
| **AT+FTPPUTFRMFS="Z:\FTP_DO WNLOADE\DDD.txt"** | **OK**<br><br>**+FTPPUTFRMFS: 0,102** |

## 18.25 **AT+FTPEXTGET   Extend Download File.**

The command is used to extend Download File.

| Write Command | Response |
|---|---|
| **1)if mode is 0 or 1**<br>**AT+FTPEXTGET=<mode>**<br><br>**2)if mode is 2**<br>**AT+FTPEXTGET=<mode>,<filename>**<br><br>**3)if mode is 3**<br>**AT+FTPEXTGET=<mode>,<read Position>,<readLength >** | If mode is 0<br>OK<br>If it is a successful FTP get session in mode 1:<br>OK<br>If data transfer finished in mode 1<br>+FTPEXTGET: 1,0<br>If it is a failed FTP get session in mode 1:<br>OK<br>+FTPEXTGET: 1,<error><br>If mode is 2:<br>+FTPEXTGET: 2,<totalLength><br>OK<br>If mode is 3:<br>+FTPEXTGET: 3,<outputLength><br>If error is related to ME functionality:<br>+**CME ERROR: <err>** |
| Read Command<br>**AT+FTPEXTGET?** | Response<br>**+ FTPEXTGET: <status>[,< receivedLength>]**<br>**OK** |
| Test Command<br><br>**AT+FTPEXTGET =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   use default FTPGET method<br>1   start extend FTPGET method<br>2   save download data to file system<br>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 |
| **<totalLength>** | The total length of data bytes have been download |
| **<outputLength>** | total length will be output from serial port |
| **<status>** | whether run FTPEXTGET or not<br>0  not run FTPEXTGET<br>1  run FTPEXTGET |
| **<receivedLength>** | length module has received from FTP server |
| **timeout** | 75 seconds |
| Notify | Can not use this function when set FTPEXTPUT mode 1 |
| <error> | 85  An error related with file system. Other errors please see FTPGET |

Example:

| Commands | Response |
|---|---|
| **AT+FTPEXTGET=1** | **OK**<br>**+FTPEXTGET: 1,0** |
| **AT+FTPEXTGET?** | **+FTPEXTGET: 1,1123**<br>**OK** |
| **AT+FTPEXTGET=2,"addf.txt"** | **+FTPEXTGET: 2,3222**<br>**OK** |
| **AT+FTPEXTGET=3,0,3222** | **…… (output data)**<br>**+FTPEXTGET: 3,3222**<br>**OK** |
| **AT+FTPEXTGET=0** | **OK** |

## 18.26 AT+FTPEXTPUT    Extend Upload File.

The command is used to Extend Upload File.

| Write Command | Response |
|---|---|
| **AT+FTPEXTPUT=<mode>[,<pos>,<len>,<timeout>]** | If mode is 0 or 1<br>**OK**<br>If mode is 2<br>**+FTPEXTPUT: <pos>,<len>**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command<br>**AT+FTPEXTPUT?** | Response<br><br>**+FTPEXTPUT: <mode>,<len>**<br><br>**OK** |
| Test Command<br><br>**AT+FTPEXTPUT =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0   use default FTPPUT method<br>1   use extend FTPPUT method<br>2   download data which need to PUT to RAM |
| **<pos>** | data offset address 0-100k |
| **<len>** | data length 0-100k |
| **<timeout>** | timeout value of serial port 1000ms-1000000ms |
| Notify | When extend FTPPUT mode is activated, input data then execute "AT+FTPPUT=1" to transmit, after session is complete, if successful, it returns "+FTPPUT: 1,0", otherwise it returns "+FTPPUT: 1,<error>",<error> see "AT+FTPGET".<br><br>Can not use this function when set FTPFILEPUT and FTPEXTGET mode 1 |

Example:

| Commands | Response |
|---|---|
| **AT+FTPEXTPUT=1** | **OK** |
| **AT+FTPEXTPUT=2,0,1024,1 00000** | **+FTPEXTPUT: 0,1024** |
| **..............(input data must up to 1024)** | **OK** |
| **AT+FTPPUT=1** | **OK** **+FTPPUT: 1,0** |
| **AT+FTPEXTPUT=0** | **OK** |

## 18.27 **AT+FTPFILEPUT    Load File in RAM from File System then Upload**

The command is used to Load File in RAM from File System then Upload with FTPPUT.

| Write Command | Response |
|---|---|
| **AT+FTPFILEPUT=<mode>[,filename]** | If success: <br> **OK** <br> If error is related to ME functionality: <br> **+CME ERROR: <err>** |
| Test Command <br><br> **AT+FTPFILEPUT =?** | Response <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0 not use FTPFILEPUT method <br> 1 use FTPFILEPUT method |
| **<filename>** | File name to write data in mode 1. Alphanumeric ASCII text string up to 64 characters. |
| **Notify** | Can not use this function when set FTPEXTPUT and FTPEXTGET mode 1 |
| **<error>** | 85   An error related with file system. Other errors please see FTPGET |

Example:

| Commands | Response |
|---|---|
| **AT+FTPFILEPUT=1," Z:\FTP_DOWNLOADE\DDD.txt"** | **OK** |
| **AT+FTPPUT=1** | **OK** |
| | **+FTPPUT: 1,0** |
| **AT+FTPFILEPUT=0** | **OK** |

## 18.28 **AT+FTPQUIT    Quit Current FTP Session**

The command is used to quit Current FTP Session

| Execution Command | Response |
|---|---|
| **AT+ FTPQUIT** | If success: **OK** If error is related to ME functionality: **+CME ERROR: <err>** |
| Test Command **AT+ FTPQUIT=?** | Response **OK** |

Example:

| Commands | Response |
|---|---|
| **AT+FTPGET=1** **OK** **AT+ FTPQUIT** | **OK** **+FTPGET: 1,86** |
| **AT+FTPPUT=1** **OK** **AT+ FTPQUIT** | **OK** **+FTPPUT: 1,86** |

## 18.29 AT+SAPBR　Set the info about ftp and active PDP context

The command is used to set the info about ftp and active ftp PDP context

| Write Command | Response |
|---|---|
| AT+SAPBR=<cmd_type>, <cid>[,<ConParamTag>,< ConParamValue>] | **OK**<br>**If<cmd_type> = 2**<br>**+SAPBR: <cid>,<Status>,<IP_Addr>**<br>**OK**<br>**If <cmd_type>=4**<br>**+SAPBR:**<br>**<ConParamTag>,<ConParamValue>**<br>**OK** |
| Read Command<br>**AT+ SAPBR?** | Response<br>**OK** |
| Test Command<br><br>**AT+ SAPBR =?** | Response<br>**+SAPBR:(0-4),(1-3), "ConParamTag","ConParamValue"**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<cmd_type>** | 0　Close bearer<br>1　Open bearer<br>2　Query bearer<br>3　Set bearer parameters<br>4　Get bearer parameters |
| **<cid>** | Bearer profile identifier |
| **<Status>** | 0　Bearer is connecting<br>1　Bearer is connected<br>2　Bearer is closing<br>3　Bearer is closed |
| **<ConParamTag>** | "CONTYPE" Type of Internet connection. Value refer to |

| <ConParamValue_ConType> | "APN" Access point name string: maximum 64 characters<br>"USER" User name string: maximum 32 characters<br>"PWD" Password string: maximum 32 characters<br>"PHONENUM" Phone number for CSD call<br>"RATE" CSD connection rate. For value refer to <ConParamValue_Rate> |
|---|---|
| <ConParamValue_Rate> | 0   2400<br>1   4800<br>2   9600<br>3   14400 |
| <ConParamValue> | Bearer parameter value |
| <ConParamValue_ConType> | "CSD"     Circuit-switched data call.<br>"GPRS"    GPRS connection. |
| <IP_Addr> | The IP address of bearer |

Example:

| Commands | Response |
|---|---|
| at+sapbr=3,1,"apn","cmnet" | OK |
| at+sapbr=1,1 | OK |

# 19 TTS AT Command

These commands are supported only on L206D project.

## 19.1 AT+CTTS TTS Operation

The command is used to broadcast text.

| Write Command | Response |
|---|---|
| **AT+CTTS=<mode>[,<test>]** | **If<mode>=0,reponse**<br>**OK**<br>**If<mode>=1or2,response:**<br>**OK**<br>**+CTTS:0 //speech player over**<br>**If error is related to MS functionality, response:**<br>**+CME ERROR:<err>** |
| Reference | Note<br>Call setup will stop the current tts play<br>TTS can play in call, but call release will stop the tts play<br>TTS play is not allowed when alert or ring<br>**The feature is supported by L206D only.** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    stop broadcast speech<br>1    Start to play synthetic speech,<text> is in UCS2 coding forma<br>2    Start to play synthetic speech,<text> is in ASCII coding format<br>Chinese text is in GBK coding format |
| **<text>** | The text which is synchto speech to be played, maximum data length is 956 Bytes |

## 19.2  **AT+CTTSPARAM**  Set Parameters of the TTS Playing

Set Parameters of the TTS Playing.

| Write Command | Response |
|---|---|
| **AT+CTTSPARAM=<volume>, <mode>,<pitch>,<speed>[,<channel>]** | **OK**<br>**If error is related to MS functionality, response：**<br>**+CME ERROR: <err>** |
| Read Command<br>**AT+CTTSPARAM?** | Response<br>**+CTTSPARAM:**<br>**<volume>,<mode>,<pitch>,<speed>,<channel>**<br>**OK** |
| Test Command<br>**AT+CTTSPARAM=?** | Response<br>**+CTTSPARAM: (0-100),(0-3),(1-100),(1-100),(0,1)**<br>**OK** |
| Reference | Note<br>   TTS play channel setting take no effect in call. TTS play channel depend on CHFA when in call.<br>   The default value of parameter **<channel>**is different among L206 series module.<br>**The feature is supported by L206D only** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<volume>** | TTS playing volume, the range is 0-100,the default is 50 |
| **<mode>** | 0   auto read digit, and read digit based on number rule first<br>1   auto read digit, and read digit based on telegram rule first<br>2   read digit based on telegram rule<br>3   read digit based on number rule |
| **<pitch>** | TTS playing pitch, the range is 1-100,the default is 50. |
| **<speed>** | TTS playing speed, the range is 1-100,the default is 50 |
| **<channel>** | 0   main channel<br>1   aux channel<br>Parameter Saving |

# 20  LBS AT Command

## 20.1  AT+CIPGSMLOC    GSM Location and Time

Get GSM location and time.

| Write Command<br><br>AT+ CIPGSMLOC=\<type\>,\<cid\> | Response<br>If \<type\>=1:<br>**+CIPGSMLOC:\<locationcode\>[,\<longitude\>,\<latitude\>,\<date\>,\<time\>]**<br><br>**OK**<br><br>If \<type\>=2:<br>**+CIPGSMLOC:\<locationcode\>[,\<date\>,\<time\>]**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR:\<err\>** |
|---|---|
| Test Command<br>**AT+CIPGSMLOC=?** | Response<br>**+CIPGSMLOC: (1,2),(1-3)**<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\< type\>** | 1   View the longitude, latitude and time<br>2   View time |
| **\<cid\>** | network parameters, refer to AT+SAPBR |
| **\<locationcode\>** | 0   Success<br>If the operation failed, the location code is not 0, such as:<br>404   Not Found<br>408   Request Time-out<br>601   Network Error<br>602   No memory<br>603   DNS Error<br>604   Stack Busy<br>65535   Other Error |

| **<longitude>** | Current longitude in degrees |
| --- | --- |
| **<latitude>** | Current latitude in degrees |
| **<date>** | Format is YYYY/MM/DD, the time zone is GMT E.g.2016/01/26 |
| **<time>** | Format is hh/mm/ss, the time zone is GMT. E.g. 09:10:46 |

# 21 AT Commands for PING Support

Before executing this command, PDP context must be activated by executing AT+CSTT and AT+CIICR. One socket shall be remained, which used by this command and DNS query.

| AT Command | Description |
|---|---|
| **AT+CIPPING** | Ping request |

## 21.1 AT+CIPPING   PING Request

This command is used to check local network status and whetherthe remote host can be arrived.

| Test Command<br>**AT+CIPPING=?** | Response<br>**+CIPPING: (list of supported <retryNum>s),(list of supported <dataLen>s),(list of supported <timeout>s),(list of supported <ttl>s)**<br>**OK** |
|---|---|
| Write Command<br>**AT+CIPPING=<IPaddr>[,<retryNum>[,<dataLen>[,<timeout>[,<ttl>]]]]** | Response<br>**+CIPPING:<replyId>,<lp Address>,<replyTime>,<ttl>[<CR><LF>**<br>**+CIPPING:<replyId>,<lp Address>,<replyTime>,<ttl> [...]]**<br>**OK**<br>or<br>**ERROR**<br>or<br>**+CME ERROR: <err>** |
| Read Command<br>**AT+CIPPING?** | Response<br>**+CIPPING: <retryNum>,<dataLen>,<timeout>,<ttl>**<br>**OK** |
| Reference | Note<br>□ Before sending PING Request the GPRS context must be activated.<br>□ When the Echo Request timeout expires (no reply received on time), the response will contains <replyTime> setting to 600 and <ttl> setting to 255.<br>□ 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. |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<IPaddr>** | Address of the remote host, string type. This parameter can be either:<br>- IP address in the format:"xxx.xxx.xxx.xxx"<br>- Host name solved by a DNS query |
| **<retryNum>** | The number of Ping Echo Requset to send<br>1-100    Default: 4 |
| **<dataLen>** | The length of Ping Echo Request data<br>0-1024 Default: 32 |
| **<timeout>** | The timeout, in units of 100 ms, waiting for a single Echo Reply<br>1-600    Default: 100(10 seconds) |
| **<ttl>** | Time to live<br>1-255    Default: 64 |
| **<replyId>** | Echo Reply number |
| **<IP Address>** | IP Address of the remote host |
| **<replyTime>** | Time, in units of 100 ms, required to receive the response |

## 22  Email AT Command

The pop3 commands (but AT+POP3OUT and AT+POP3READ) can not be executed when the AT+SMTPSEND command is sending.

Note: The support of these commands depends on firmware version.

## 22.1 **AT+EMAILCID**   **Set Email Bearer Profile Identifier**

The command is used to set Email bearer profile identifier

| Test Command<br>**AT+EMAILCID=?** | Response<br>**+EMAILCID: (range of supported <cid>s)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+EMAILCID?** | Response<br>**+EMAILCID: <cid>**<br><br>**OK** |
| Write Command<br>**AT+EMAILCID=<c**<br>**id>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**ERROR** |
| Reference | Note<br>Please use AT+SAPBR to activate the PDP <cid> firstly |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<cid>** | Bearer profile identifier refer to AT+SAPBR. Range:1-3 |

**Example 1**

| Command | Result |
|---|---|
| **AT+EMAILCID=2** | OK |
| **AT+EMAILCID?** | +EMAILCID: 2<br>OK |
| **AT+EMAILCID=?** | +EMAILCID: (1-3)<br>OK |

## 22.2 **AT+EMAILTO    Set Timeout Value of SMTP/POP3 Server**

## **Response**

The command is used to set timeout value of SMTP/POP3 server response

---

| Test Command<br>AT+EMAILTO=? | Response<br>+EMAILTO: (range of supported <timeout>s)<br><br>OK |
|---|---|
| Read Command<br>AT+ EMAILTO? | Response<br>+EMAILTO: < timeout><br><br>OK |
| Write Command<br>AT+EMAILTO=<timeout> | Response<br>OK<br>If error is related to ME functionality:<br>ERROR |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| < timeout > | The timeout value of SMTP/POP3 server response, in 1 second unit.<br>Range 10-120,Default: 30(seconds) |

**Example 1**

| Command | Result |
|---|---|
| AT+EMAILTO=40 | OK |
| AT+EMAILTO? | +EMAILTO: 40<br>OK |
| AT+EMAILTO=? | +EMAILTO: (10-120)<br>OK |

## 22.3 **AT+SMTPSRV** **Set SMTP Server Address and Port**

The command is used to set SMTP server address and port

| Test Command<br>AT+SMTPSRV=? | Response<br>+SMTPSRV: <smtpServerLength>,(range of supported <smtpPort>s)<br><br>OK |
|---|---|

| Read Command | Response |
|---|---|
| **AT+SMTPSRV?** | **+SMTPSRV: <smtpServer>,<smtpPort>** |
| | **OK** |
| Write Command | Response |
| **AT+SMTPSRV = <smtpServer>** | **OK** |
| **[,<smtpPort>]** | If error is related to ME functionality: |
| | **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **< smtpServer>** | SMTP server address, string type. This parameter can be either: <br> - IP address in the format: xxx.xxx.xxx.xxx <br> - Host name to be solved with a DNS query |
| **<smtpPort>** | The SMTP port <br> Range 1-65535,Default: 25 |
| **<smtpServerLength>** | The max length of <smtpServer> |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPSRV="smtp.126.com",25** | OK |
| **AT+SMTPSRV?** | +SMTPSRV: "smtp.126.com",25 <br> OK |
| **AT+SMTPSRV=?** | +SMTPSRV: 64,(1-65535) <br> OK |

## 22.4 **AT+SMTPAUTH   Set User Name and Password for SMTP Authentication**

The command is used to set user name and password for SMTP authentication

| Test Command<br>**AT+SMTPAUTH=?** | Response<br>**+SMTPAUTH: (range of supported\<authType\>s),**<br>**\<userNameLength\>,\<passwordLength\>**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+SMTPAUTH?** | Response<br>**+SMTPAUTH: \<authType\>,\<username\>,**<br>**\<password\>**<br><br>**OK** |
| Write Command<br>**AT+SMTPAUTH=\<authType\>**<br>**[,\<userName\>,\<password\>]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<authType\>** | The type of SMTP authentication<br>0    SMTP server does not request authentication.<br>\<username\> and \<password\> must not be given.<br>1    SMTP server requests authentication.<br>\<username\> and \<password\> must be given |
| **\<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\>. |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPAUTH=1,"user name","user pwd"** | **OK** |
| **AT+SMTPAUTH?** | **+SMTPAUTH: 0,"user name","user pwd"**<br>**OK** |
| **AT+SMTPAUTH=?** | **+SMTPAUTH: (0-1),64,64**<br>**OK** |

## 22.5 **AT+SMTPFROM   Set Sender Address and Name**

The command is used to set sender address and name

| Test Command<br>**AT+SMTPFROM=?** | Response<br>**+SMTPFROM: <senderAddressLength>,<br><senderNameLength>**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+SMTPFROM?** | Response<br>**+SMTPFROM: <senderAddress>,<senderName>**<br><br>**OK** |
| Write Command<br>**AT+SMTPFROM=<senderAddress>**<br>**[,<senderName>]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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> |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPFROM="emailaddr @xx.com","senderName"** | OK |
| **AT+SMTPFROM?** | +SMTPFROM: "emailaddr@xx.com","senderName"<br>OK |
| **AT+SMTPFROM=?** | +SMTPFROM: 48,24<br>OK |

## 22.6 **AT+SMTPRCPT    Set    the    Email    Recipient(TO/CC/BCC)**

## **Address and Name**

The command is used to set the Email recipient(TO/CC/BCC) address and name

| Test Command<br>**AT+SMTPRCPT =?** | Response<br>**+SMTPRCPT: (range of supported <rcptType>s),**<br>**(range of supported<index>s),**<br>**<rcptAddressLength>,<rcptNameLength>**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+SMTPRCPT?** | Response<br>**[+SMTPRCPT: <rcptType>,<index>,**<br>**<rcptAddress>,<rcptName>**<br>**[<CR><LF>+SMTPRCPT: <rcptType>,**<br>**<index>,<rcptAddress>,**<br>**<rcptName>[…]]]**<br>**OK** |
| Write Command<br>**AT+SMTPRCPT=<rcptType>**<br>**[,<index>[,<rcptAddress>**<br>**[,<rcptName>]]]** | Response<br>**OK**<br>**OR**<br>**+SMTPRCPT: < code>**<br><br>**ERROR**<br>If error is related to ME functionality:<br>**ERROR** |
| Reference | Note<br>1.If only <rcptType> is given,it will delete all items of<br><rcptType><br>2.If only <rcptType> and <index> are given,it will delete the<br><index> item of <rcptType>. |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<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 Range:1-5 |
| **<rcptAddress>** | The Email recipient address. |
| **<rcptName>** | The Email recipient name. |
| **<rcptAddressLength>** | The max length of <rcptAddress>. |
| **<rcptNameLength>** | The max length of <rcptName>. |

**Example 1**

| Command | Result |
| --- | --- |
| **AT+SMTPRCPT=0,1,"toAddr @xx.com","TO_name"** | **OK** |
| **AT+SMTPRCPT?** | **+SMTPRCPT: 0,1,"toAddr@xx.com","TO_name"** **OK** |
| **AT+SMTPRCPT=?** | **+SMTPRCPT: (0-2),(0-4),48,24** **OK** |

## 22.7 **AT+SMTPSUB    Set the Email Subject**

The command is used to set the Email subject

| Test Command | Response |
|---|---|
| **AT+SMTPSUB=?** | **+SMTPSUB: <subjectLength>** <br><br> **OK** |
| Read Command <br> **AT+SMTPSUB?** | Response <br> **+SMTPSUB: <subject>** <br><br> **OK** |
| Write Command <br> **AT+SMTPSUB=<subject>** | Response <br> **OK** <br> If error is related to ME functionality: <br> **ERROR** |
| Reference | Note <br> If the Email charset is not ASCII,<subject> must be <br> in hexadecimal format |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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>. |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPSUB="test"** | **OK** |
| **AT+SMTPSUB?** | **+SMTPSUB: "test"** <br> **OK** |
| **AT+SMTPSUB=?** | **+SMTPSUB: 512** <br> **OK** |

## 22.8 **AT+SMTPBODY** **Set the Email Body**

The command is used to set the Email body

| Test Command | Response |
|---|---|
| **AT+SMTPBODY=?** | **+SMTPBODY: <bodyLength>** <br><br> **OK** |
| Write Command <br> **AT+SMTPBODY=<length>** <br> then type data as Email body.When body's length equal length, command is over. | Response <br> **DOWNLOAD** <br> **OK** <br> If error is related to ME functionality: <br> **ERROR** |
| Read Command <br> **AT+ SMTPBODY?** | Response <br> **+ SMTPBODY: <body>** <br><br> **OK** |
| Reference | Note <br> 1.If the Email charset is not ASCII, the body of Email must be in hexadecimal format. <br> 2.After urc string "DOWNLOAD", User can input email's body! <br> 3. For L206C,the value of **<bodyLength>** is 4096. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<length>** | The length of Email body.    (Up to **<bodyLength>**) |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPBODY=12** | **DOWNLOAD** <br> **body content** <br> **OK** |
| **AT+SMTPBODY=?** | **+SMTPBODY: 4096** <br> **OK** |

## 22.9 **AT+SMTPFILE   Set the Email Attachment**

The command is used to set the Email attachment

| Test Command<br>**AT+SMTPFILE=?** | Response<br>**+SMTPFILE: (range of <fileType>s),<br><fileNameLength>,(range of<encodeType>s)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+SMTPFILE?** | Response<br>**+SMTPFILE: <fileType>,<fileName>,<br><encodeType>**<br><br>**OK** |
| Write Command<br>**AT+SMTPFILE=<fileType><br>[,<fileName>,<encodeType>]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR** |
| Reference | Note<br>1.If a txt file (<fileType>=1) is attached,<br><encodeType> must be 0.<br>2.If a binary file (<fileType>=2) is attached,<br><encodeType> must be 1. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<fileType>** | The type of the Email attachment.<br>0   no attachment<br>1   attach a txt file<br>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<br>0   "7bit" means data all represented as short<br>lines of US-ASCII data<br>1   "base64" designed to represent arbitrary<br>sequences of octets in a form that need<br>not be humanly readable |
| **Example 1** | |
| Command | Result |

| AT+SMTPFILE=1,"test.txt",0 | OK |
|---|---|
| AT+SMTPFILE? | +SMTPFILE: 1,"test.txt",0<br>OK |
| AT+SMTPFILE=? | +SMTPFILE: (0-2),100,(0-1)<br>OK |

## 22.10 **AT+SMTPSEND** **Send the Email**

The command is used to send the Email

| Test Command | Response |
|---|---|
| **AT+SMTPSEND=?** | **OK** |

| Execution Command | Response |
|---|---|
| **AT+SMTPSEND** | **OK** |
| | If error is related to ME functionality: |
| | **ERROR** |
| | If send successfully or not, return: |
| | **+SMTPSEND: <code>** |

| Reference | Note |
|---|---|
| | |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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. |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPSEND** | **OK** |
| | **+SMTPSEND: 1** |
| **AT+SMTPSEND=?** | **OK** |

## 22.11 **AT+SMTPFT Transfer the Email Attachment**

The command is used to transfer the Email attachment

| Test Command | Response |
|---|---|
| **AT+SMTPFT=?** | **OK** |
| Write Command<br><br>**AT+SMTPFT=<reqLength>** | Response<br><br>When the URC below is reported, the attachment can be transferred:<br>**+SMTPFT: 1,<maxLength>**<br>If <reqLength> is not 0 and send data successfully:<br>**...... //Input data**<br>**+SMTPFT: 2,<cnfLength>**<br><br>**OK**<br>If <reqLength> is not 0 and send data unsuccessfully**:**<br>**...... //Input data**<br>**+SMTPFT: 2,<cnfLength>**<br><br>**ERROR**<br>If <reqLength> is 0,it indicates that transferring the attachment have finished:<br>**OK**<br>If error is related to ME functionality:<br>**ERROR**<br>If some error occur:<br>**+SMTPSEND: <code>** |
| Reference | Note<br><reqLength> can not be greater than <maxLength>.<br>When "+SMTPFT: 1,<maxLength>" is reported, then use AT+SMTPFT=<reqLength> to send data. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<reqLength\>** | Requested number of data bytes(0-\<maxLength\>) to be transmitted |
| **\<cnfLength\>** | Confirmed number of data bytes to be transmitted |
| **\<maxLength\>** | The max length of data can be sent at a time. It depends on the network status. |
| **\<code\>** | See AT+SMTPSEND |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPFT=4** | **Test    //Input data**<br>**OK** |
| **AT+SMTPFT=?** | **OK** |

## 22.12  **AT+SMTPCS    Set the Email Charset**

The command is used to set the Email charset

| Test Command | Response |
|---|---|
| **AT+SMTPCS=?** | **+SMTPCS: <charsetLength>**<br><br>**OK** |
| Read Command | Response |
| **AT+SMTPCS?** | **+SMTPCS: <charset>**<br><br>**OK** |
| Write Command | Response |
| **AT+SMTPCS=<charset>** | **OK**<br>If error is related to ME functionality:<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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").<br>The default charset is ASCII. |
| **<charsetLength>** | The max length of <charset>. |

**Example 1**

| Command | Result |
|---|---|
| **AT+SMTPCS="gb2312"** | OK |
| **AT+SMTPCS?** | +SMTPCS: "gb2312"<br>OK |
| **AT+SMTPCS=?** | +SMTPCS: 20<br>OK |

## 22.13  **AT+POP3SRV    Set POP3 Server and Account**

The command is used to set POP3 server and account

| Test Command<br>**AT+POP3SRV=?** | Response<br>**+POP3SRV: <pop3ServerLength>,<br><userNameLength>,<password-Length>,<br>(range of supported <pop3Port>s)**<br><br>**OK** |
|---|---|
| Read Command<br>**AT+POP3SRV?** | Response<br>**+POP3SRV: <pop3Server>,<userName>,<br><password>,<pop3Port>**<br><br>**OK** |
| Write Command<br>**AT+POP3SRV=<pop3Server>,<br><userName>,<password>[,<p<br>op3Port>]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<pop3Server>** | POP3 server address, string type. This parameter can be either:<br>- IP address in the format: xxx.xxx.xxx.xxx<br>- 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.<br>Range:1-65535, Default: 110 |
| **<pop3ServerLength>** | The max length of <pop3Server>. |
| **<userNameLength>** | The max length of <userName>. |
| **<passwordLength>** | The max length of <password>. |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3SRV="pop3.126.com","userName","userPWD",110** | **OK** |
| **AT+POP3SRV?** | **+POP3SRV: "pop3.126.com","userName","userPWD",110** <br> **OK** |
| **AT+POP3SRV=?** | **+POP3SRV: 64,64,64,(1-65535)** <br> **OK** |

## 22.14 **AT+POP3IN** **Log in POP3 Server**

The command is used to log in POP3 server

| Test Command | Response |
|---|---|
| **AT+POP3IN=?** | **OK** |

| Execution Command | Response |
|---|---|
| **AT+POP3IN** | **OK** |
| | If error is related to ME functionality: |
| | **ERROR** |
| | If logging in POP3 server or not, return: |
| | **+POP3IN: <code>** |

| Reference | Note |
|---|---|
| | |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<code>** | The result of logging in POP3 server |
| | 1     Log in POP3 server successfully |
| | 61    Network error |
| | 62    DNS resolve error |
| | 63    POP3 tcp connection error |
| | 64    Timeout of POP3 server response |
| | 65    POP3 server response error |
| | 66    POP3 server rejects to log in |
| | 67    Incorrect user name |
| | 68    Incorrect user name or password |
| | 69    Timeout of read data |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3IN** | OK |
| | +POP3IN: 1 |
| **AT+POP3IN=?** | OK |

## 22.15 **AT+POP3NUM Get Email Number and Total Size**

The command is used to get Email number and total size

| Test Command | Response |
|---|---|
| **AT+POP3NUM=?** | **OK** |

| Execution Command | Response |
|---|---|
| **AT+POP3NUM** | **OK** |
| | If error is related to ME functionality: |
| | **ERROR** |
| | If POP3 server issues a positive response: |
| | **+POP3NUM: 1,<totalNumber>,<totalSize>** |
| | If POP3 server issues a negative response: |
| | **+POP3NUM: 0** |
| | If some error occur: |
| | **+POP3OUT: <code>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<totalNumber>** | The Email number on the POP3 server, decimal format. |
| **<totalSize>** | The total size of all Email 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 |
| | |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3NUM** | OK |
| | +POP3NUM: 1,2,4095 |
| **AT+POP3NUM=?** | OK |

## 22.16 **AT+POP3LIST    Get the Specific Email Size**

The command is used to get the specific Email size

| Test Command<br>**AT+POP3LIST=?** | Response<br>**+POP3LIST: (range of supported <msgNumber>s)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+POP3LIST=<msgNumber>** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR**<br>If POP3 server issues a positive response:<br>**+POP3LIST: 1,<msgNumber>,<size>**<br>If POP3 server issues a negative response:<br>**+POP3LIST: 0**<br>If some error occur:<br>**+POP3OUT: <code>** |
| Reference | Note<br>You'd better get the total size of all email by the<br>  AT+ POP3NUM firstly. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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<br>1    Normally log out POP3 server<br>61   Network error<br>62   DNS resolve error<br>63   POP3 tcp connection error<br>64   Timeout of POP3 server response |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3LIST=1** | OK<br>+POP3LIST: 1,1,2053 |
| **AT+POP3LIST=?** | +POP3LIST: (1-65535)<br>OK |

## 22.17 **AT+POP3UIDL   Get the Specific Email Unique-id**

The command is used to get the specific Email unique-id

| Test Command<br>**AT+POP3UIDL=?** | Response<br>**+POP3UIDL: (range of supported <msgNumber>s)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+POP3UIDL=<msgNumber>** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR**<br>If POP3 server issues a positive response:<br>**+POP3UIDL: 1,<msgNumber>,<uid>**<br>If POP3 server issues a negative response:<br>**+POP3UIDL: 0**<br>If some error occur:<br>**+POP3OUT: <code>** |
| Reference | Note<br>You'd better get the total size of all email by the<br>  AT+ POP3NUM firstly. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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<br>1   Normally log out POP3 server<br>61   Network error<br>62   DNS resolve error<br>63   POP3 tcp connection error<br>64   Timeout of POP3 server response |

**Example 1**

| Command | Result |
|---|---|

| AT+POP3UIDL=1 | OK<br>+POP3UIDL: 1,1,1tbigQl0oFc1n7Vm-gAAsM |
|---|---|
| AT+POP3UIDL=? | +POP3UIDL: (1-65535)<br>OK |

## 22.18  AT+POP3CMD   Get Multi-line Response

The command is used to get multi-line response

| Test Command<br>AT+POP3CMD=? | Response<br>**+POP3CMD: (range of supported <cmdType>s),**<br>**(range of supported<msgNumber>s),**<br>**(range of supported <lineNumber>s)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+POP3CMD=<cmdType>**<br>**[,<msgNumber>[,lineNumber]]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR**<br>If POP3 server issues a positive response:<br>**+POP3CMD: 1**<br>If POP3 server issues a negative response:<br>**+POP3CMD: 0**<br>If some error occur:<br>**+POP3OUT: <code>** |
| Reference | Note<br>1. You'd better get the total size of all email by the<br>   AT+ POP3NUM firstly.<br>2.After sending these POP3 commands and POP3<br>server issuing a positive response, you can get the<br>response by AT+POP3READ. |

Parameters are defined below:

| Parameters | Description |
|---|---|
|  |  |

| **<cmdType>** | The values that supported POP3 user command |
|---|---|
| | 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 "uniqueid 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 singledot. <msgNumber> and <lineNumber> must not be given. |
| | 3 Top command |
| | 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 themessage'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. <msgNumber> and <lineNumber> must be given. |
| | 4 Retrieve command |
| | 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. <msgNumber> must be given, <lineNumber> must not be given. |
|---|---|
| **<msgNumber>** | The message number of Email. |
| **<lineNumber>** | The number of lines of the message body. |
| **<code>** | The result of logging out POP3 server<br>1    Normally log out POP3 server<br>61   Network error<br>62   DNS resolve error<br>63   POP3 tcp connection error<br>64   Timeout of POP3 server response |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3CMD=1** | OK<br>+POP3CMD: 1<br><br>+POP3READ: 3,31 |
| **AT+POP3CMD=2** | OK<br>+POP3CMD: 1<br><br>+POP3READ: 3,67 |
| **AT+POP3CMD=3,1,20** | OK<br>+POP3CMD: 1<br><br>+POP3READ: 3,17 |
| **AT+POP3CMD=4,1** | OK<br>+POP3CMD: 1<br><br>+POP3READ: 3,17 |
| **AT+POP3CMD=?** | +POP3CMD: (1-4),(1-65535),(0-65535)<br>OK |

## 22.19 AT+POP3READ    Read Multi-line Response

The command is used to read multi-line response

| Test Command<br>**AT+POP3READ=?** | Response<br>**+POP3READ: (range of supported <reqLength>s)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+POP3READ=< reqLength>** | Response<br>**OK**<br>If the data of response not to be read completely:<br>**+POP3READ: 1,<cnfLength>**<br>If the data of response to be read completely:<br>**+POP3READ: 2,<cnfLength>**<br>If some data need to be read,the URC below is reported:<br>**+POP3READ: 3,<dataLength>**<br>If error is related to ME functionality:<br>**ERROR**<br>If some error occur:<br>**+POP3OUT: <code>** |
| Reference | Note<br>1.Other AT commands (but AT+POP3OUT) can not be executed until the data of response are read completely.<br>2.If <confLength> is less than <reqLength>, you should wait for a URC "+POP3READ: 3,<dataLength>" reported. Then you may continue to read data by AT+POP3READ.<br>3.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 read, the module will quit the POP3 process. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<reqLength>** | Requested number of data bytes (1-1460) to be read |
| **<cnfLength>** | Confirmed number of data bytes to be read, which may be less than <reqLength>. 0 indicates that no data can be read.. |
| **<dataLength>** | Received number of data bytes. |
| **<code>** | The result of logging out POP3 server<br>1    Normally log out POP3 server<br>61   Network error<br>62   DNS resolve error<br>63   POP3 tcp connection error<br>64   Timeout of POP3 server response<br>69   Read data timeout |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3READ=190** | OK<br>+OK 2053 octets<br>Received: from m97135.mail.qiye.163.com (unknown [220.181.97.135])<br>   by mx2 (Coremail) with SMTP id IMmowABX3NGpY5V YdHnUDg--.48406S2;<br>   Sat, 04 Feb 2017 13:16:25 +0800 (CST) |
| **AT+POP3READ=?** | +POP3READ: (1-1460)<br>OK |

## 22.20  AT+POP3DEL   Mark the Specific Email to Delete

The command is used to mark the specific Email to delete

| Test Command | Response |
|---|---|
| **AT+POP3DEL=?** | **+POP3DEL: (range of supported <msgNumber>s)**<br><br>**OK** |
| Write Command<br><br>**AT+POP3DEL=<msgNumber>** | Response<br><br>**OK**<br>If error is related to ME functionality:<br>**ERROR**<br>If POP3 server issues a positive response:<br>**+POP3DEL: 1**<br>If POP3 server issues a negative response:<br>**+POP3DEL: 0**<br>If some error occur:<br>**+POP3OUT: <code>** |
| Reference | Note<br>1. You'd better get the total size of all email by the<br>  AT+ POP3NUM firstly.<br>2.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. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<msgNumber>** | The message number of Email. |
| **<code>** | The result of logging out POP3 server<br>1     Normally log out POP3 server<br>61    Network error<br>62    DNS resolve error<br>63    POP3 tcp connection error<br>64    Timeout of POP3 server response |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3DEL=1** | OK<br>+POP3DEL: 1 |
| **AT+POP3DEL=?** | +POP3DEL: (1-65535)<br>OK |

## 22.21 **AT+POP3RSET    Unmark the Emails that Be Marked as Deleted**

The command is used to unmark the Emails that be marked as deleted

| Test Command<br>**AT+POP3RSET=?** | Response<br>**OK** |
|---|---|
| ExecutionCommand<br>**AT+POP3RSET** | Response<br>**OK**<br>If error is related to ME functionality:<br>**ERROR**<br>If POP3 server issues a positive response:<br>**+POP3RSET: 1**<br>If POP3 server issues a negative response:<br>**+POP3RSET: 0**<br>If some error occur:<br>**+POP3OUT: <code>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<code>** | The result of logging out POP3 server<br>1   Normally log out POP3 server<br>61  Network error<br>62  DNS resolve error<br>63  POP3 tcp connection error<br>64  Timeout of POP3 server response |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3RSET** | OK<br>+POP3RSET: 1 |
| **AT+POP3RSET=?** | OK |

## 22.22 **AT+POP3OUT Log Out POP3 Server**

The command is used to log out POP3 server

| Test Command | Response |
|---|---|
| **AT+POP3OUT=?** | **OK** |

| Write Command | Response |
|---|---|
| **AT+POP3OUT** | **OK** |
| | If error is related to ME functionality: |
| | **ERROR** |
| | If the process is completed, return: |
| | **+POP3OUT: <code>** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<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 |
| | 69   Read data timeout |

**Example 1**

| Command | Result |
|---|---|
| **AT+POP3OUT** | OK<br>+POP3OUT: 1 |
| **AT+POP3OUT=?** | OK |

## 22.23 Email AT Command Response Code Definition

Codes are defined below:

| Code | Description |
|------|-------------|
| 1 | Email operation succeeded. |
| 2 | System busy. |
| 30 | Parameter isn't set or set error |
| 31 | Memory error |
| 32 | Recipient repeats |
| 50 | POP3 server lifetime is incorrect |
| 60 | PDP is not actived |
| 61 | Network error. |
| 62 | DNS resolve error |
| 63 | TCP connection error |
| 64 | Timeout of server response |
| 65 | Email server response error |
| 421 | The IP send behavior is abnormal and the connection is temporarily disabled. Please check if there is a user sending a virus or spam. |
| 450 | The sender instruction exception error or the number of email exceeds limits or other reasons for bounce. |
| 451 | Requested mail action not taken: too much fail authentication or other reasons for bounce. |
| 500 | Error: bad syntaxU |
| 550 | Sender email address illegal or other reasons for bounce. |
| 552 | Illegal Attachment or requested mail action aborted: exceeded mailsize limit |
| 553 | Requested action not taken or authentication is required. |
| 554 | The sending message contains unlicensed information or is recognized by the system as spam. Please check if there is a user to send a virus or spam or other reasons for bounce. |

# 23 File System AT command

Overview of file system AT Commands:

| AT Command | Description |
| --- | --- |
| **AT+FSCREATE** | Create a File |
| **AT+FSWRITE** | Write data to file |
| **AT+FSWRITEHEX** | Write HEX data to file |
| **AT+FSREAD** | Read File content |
| **AT+FSREADHEX** | Read File content in HEX format |
| **AT+FSFLSIZE** | Get File size |
| **AT+FSMKDIR** | Create directory |
| **AT+FSRMDIR** | Remove directory |
| **AT+FSLS** | List File or directory |
| **AT+FSDEL** | Delete a File |
| **AT+FSMEM** | get disk space information |
| **AT+FSPLAY** | play Audio file in call (AMR format) |
| **AT+FSSTOP** | stop Audio file in call (AMR format) |
| **AT+FSDRIVE** | Get Drive |
| **AT+FSRENAME** | Rename File |

Note: The support of these commands depends on firmware version.

## 23.1 **AT+FSCREATE    Create a File**

This command is used to create a File.

| Test Command | Response |
|---|---|
| **AT+FSCREATE=?** | **OK**<br><br>Or<br><br>**ERROR** |
| Write Command<br><br>**AT+FSCREATE=<file>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<file>** | A String without double quotes. The string length of <file> should be less than or equal to 64 bytes. |

Example：

| Commands | Response |
|---|---|
| **AT+FSCREATE=file.txt** | **OK** |
| **AT+FSCREATE=/ni/file.txt** | **OK** |

## 23.2 **AT+FSWRITE   Write data to file**

This command is used to write data to file.

| Test Command | Response |
|---|---|
| **AT+FSWRITE=?** | **OK** <br><br> Or <br><br> **ERROR** |
| Write Command <br><br> **AT+FSWRITE=<file>,<mode>,<size>,< inputtime>** | Response <br><br> **OK** <br><br> Or <br><br> **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<file>** | A String without double quotes. The string    length of <file> should be less than or equal to 64 bytes. |
| **<mode>** | 0      write data at the beginning of the file <br> 1      write data at the end of the file |
| **<size>** | 1-10240    Size of data to be written |
| **<inputtime>** | 1-65535    User should write file in the <inputtime> period,otherwise the operation of writing to the file fails.Unit is seconds. |

Example：

| Commands | Response |
|---|---|
| **AT+FSWRITE=file.txt,1,512,10** | **>** |
| **(input data)** | **OK** |

## 23.3 **AT+FSWRITEHEX    Write HEX data to file**

This command is used to write HEX data to file.

| Test Command | Response |
|---|---|
| **AT+FSWRITEHEX=?** | **OK** |
| | Or |
| | **ERROR** |
| Write Command | Response |
| **AT+FSWRITEHEX=<file>,<mode>,<size>** | **OK** |
| | Or |
| | **ERROR** |
| Reference | Note |
| | |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<file>** | A String without double quotes. The string length of <file> should be less than or equal to 64 bytes. |
| **<mode>** | 0       Write to the start of the file<br>1       Append to the end of the file (support this only until now) |
| **<size>** | 1-1024      Size of HEX data to be written (double size of write bin data) |

Example：

| Commands | Response |
|---|---|
| **AT+FSWRITEHEX=USER/1.amr,1,4** | **>** |
| **(input HEX data, For example: 3132)** | **OK** |

## 23.4 **AT+FSREAD** **Read File content**

This command is used to read File content.

| Test Command | Response |
|---|---|
| **AT+FSREAD=?** | **OK** <br><br> Or <br><br> **ERROR** |
| Write Command <br><br> **AT+FSREAD=<file>,<mode>,<size>,< offset>** | Response <br><br> **<data>** <br> **OK** <br><br> Or <br><br> **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<file>** | A String without double quotes. The string length of <file> should be less than or equal to 64 bytes. |
| **<offset>** | offset from the file beginning,<offset> should less than file size. |
| **<size>** | 1-10240   Size of data to be read |
| **<mode>** | 0   read data at the beginning of the file <br> 1   read data at the <offset> of the file |
| **<data>** | The data which is read will be putted out by UART port |

For example：

| Commands | Response |
|---|---|
| **AT+FSREAD=1.txt,0,5,1** | **……(data)** <br> **OK** |

## 23.5 AT+FSREADHEX   Read File content in HEX format

This command is used to read File content in HEX format.

| Test Command | Response |
|---|---|
| **AT+FSREADHEX=?** | **OK**<br><br>Or<br><br>**ERROR** |
| Write Command<br><br>**AT+FSREADHEX=<file>,<offset>,<size>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<file>** | A String without double quotes. The string   length of <file> should be less than or equal to 64 bytes. |
| **<offset>** | offset from the file beginning,<offset> should less than file size. |
| **<size>** | 1-1024    Size of data to be read |

For example：

| Commands | Response |
|---|---|
| **AT+FSREADHEX=1.txt,0,5** | **3131333435**<br>**OK** |

## 23.6 **AT+FSFLSIZE   Get File size**

This command is used to get file size.

| Test Command | Response |
|---|---|
| **AT+FSFLSIZE=?** | **OK**<br><br>Or<br><br>**ERROR** |
| Write Command<br><br>**AT+FSFLSIZE=<file>** | Response<br><br>**+FSFLSIZE: <size>**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<file>** | A String without double quotes. The string    length of <file> should be less than or equal to 64 bytes. |
| **<size>** | File size. |

Example :

| Commands | Response |
|---|---|
| **AT+FSFLSIZE =/test.txt** | **+FSFLSIZE: 10**<br><br>**OK** |

## 23.7 **AT+FSMKDIR** **Create directory**

This command is used to create directory.

| Test Command | Response |
|---|---|
| **AT+FSMKDIR=?** | **OK** |
| | Or |
| | **ERROR** |
| Write Command | Response |
| **AT+FSMKDIR=<dir>** | **OK** |
| | Or |
| | **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<dir>** | A String without double quotes. The string length of <file> should be less than or equal to 64 bytes. |

Example：

| Commands | Response |
|---|---|
| **AT+FSMKDIR=USER** | **OK** |

## 23.8 **AT+FSRMDIR    Remove directory**

This command is used to remove directory.

| Test Command | Response |
|---|---|
| **AT+FSRMDIR=?** | **OK** <br><br> Or <br><br> **ERROR** |
| Write Command <br><br> **AT+FSRMDIR=\<dir\>** | Response <br><br> **OK** <br><br> Or <br><br> **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<dir\>** | A String without double quotes. The string    length of \<dir\> should be less than or equal to 64 bytes.    (Note: this directory must be empty.) |

Example：

| Commands | Response |
|---|---|
| **AT+FSRMDIR=USER** | **OK** |

## 23.9 **AT+FSLS** **List File or directory**

This command is used to list file or directory.

| Test Command | Response |
|---|---|
| **AT+FSLS=?** | **OK**<br><br>Or<br><br>**ERROR** |
| Write Command<br><br>**AT+FSLS=\<directory\>** | Response<br><br>**\<file or directory\>**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<directory\>** | A String without double quotes. The string    length of \<file\> should be less than or equal to 64 bytes. |
| **\<file or directory\>** | A String without double quotes. |

For example：

| Commands | Response |
|---|---|
| **AT+FSLS=\\** | **@pbapc**<br>**@pbap**<br>**file.txt**<br>**NVRAM**<br>**USER**<br><br>**OK** |

| AT+FSLS=USER/ | .<br>..<br>file1.txt<br>file2.txt<br>file3.txt<br><br>OK |
|---|---|

## 23.10 **AT+FSDEL** **Delete a File**

This command is used to delete a File.

| Test Command | Response |
|---|---|
| **AT+FSDEL=?** | **OK** <br><br> Or <br><br> **ERROR** |
| Write Command <br><br> **AT+FSDEL=\<file>** | Response <br><br> **OK** <br><br> Or <br><br> **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<file>** | A String without double quotes. The string   length of \<file> should be less than or equal to 64 bytes. |

Example：

| Commands | Response |
|---|---|
| **AT+FSDEL=file.txt** | **OK** |

## 23.11 **AT+FSMEM Get Disk Free Space Information**

This command is used to get disk space information.

| Test Command | Response |
|---|---|
| **AT+FSMEM=?** | **OK**<br><br>Or<br><br>**ERROR** |
| Execution Command<br><br>**AT+FSMEM** | Response<br><br>**+FSMEM: <localdrive>:<size>bytes**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<localdrive>** | Local drive. |
| **<size>** | The free space of local storage |

Example:

| Commands | Response |
|---|---|
| **AT+FSMEM** | **+FSMEM: C:337408bytes**<br><br>**OK** |

---

## 23.12  **AT+FSDRIVE   Get Drive**

This command is used to Get Drive.

| Test Command | Response |
|---|---|
| **AT+FSDRIVE=?** | **+FSDRIVE: (0-1)** **OK** |
| Write Command **AT+FSDRIVE=<mode>** | Response **+FSDRIVE:<drive>** **OK** Or **ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<mode>** | 0    Local drive  1    SD card drive(Not support) |
| **<drive>** | A-G |

## 23.13  **AT+FSRENAME    Rename File**

This command is used to Rename File.

| Test Command | Response |
|---|---|
| **AT+FSRENAME=?** | **OK**<br><br>Or<br><br>**ERROR** |
| Write Command<br><br>**AT+FSRENAME=<oldfilena me>,<newfilename>** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<oldfilename>** | Old name of specified file .A String without double quotes. The string length of <file> should be less than or equal to 64 bytes. |
| **<newfilename>** | New name of specified file .A String without double quotes. The string length of <file> should be less than or equal to 64 bytes. |

Example：

| Commands | Response |
|---|---|
| **AT+FSRENAME=file.txt,1.txt** | **OK** |

---

## 23.14 **AT+FSPLAY** **Play Audio file in call (AMR format)**

This command is used to play Audio file in call (AMR format).

| Test Command<br><br>AT+FSPLAY=? | Response<br><br>+FSPLAY: "file path",(0-3)<br><br>OK |
|---|---|
| Read Command<br>AT+FSPLAY? | Response<br><br>+FSPLAY: \<file>,\<mode><br><br>OK |
| Active Command<br>AT+FSPLAY | Response<br><br>OK |
| Write Command<br><br>AT+FSPLAY=\<file>,\<mode> | Response<br><br>OK<br><br>Or<br><br>ERROR |
| Reference | Note<br>1. Use "AT+FSPLAY" active command will reset \<mode> to 0. |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<file>** | A String without double quotes. The string　length of <file> should be less than or equal to 64 bytes. |
| **<mode>** | 0　Play manually in call status. (only in call status will response OK)<br>1　Play in mobile terminal call status (MT).<br>2　Play in mobile original call status (MO).<br>3　Play in MT/MO calls both. |

Example:

| Commands | Response |
| --- | --- |
| **AT+FSPLAY=/22.amr,3** | **OK** |
| **AT+FSPLAY=22.amr,3** | **OK** |
| **AT+FSPLAY=Z:/12.amr,3** | **OK** |

## 23.15 **AT+FSSTOP    Stop Play Audio file in call (AMR format)**

This command is used to stop Audio file in call (AMR format).

| Test Command | Response |
|---|---|
| **AT+FSSTOP=?** | **OK** |
| Action Command<br>**AT+FSSTOP** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

# 24  Double UART AT Command

Overview of file system AT Commands:

| AT Command | Description |
| --- | --- |
| **AT+MDUART** | Enable/Disable AT UART port2 |

Note: The support of these commands depends on firmware version.

## 24.1 **AT+MDUART Enable/Disable AT UART port2**

This command is used to enable/disable AT UART port2.

| Write Command<br>**AT+MDUART=<mode>** | Response<br>**OK**<br><br>Or<br><br>**ERROR** |
|---|---|
| Read Command<br>**AT+MDUART?** | Response<br>**+MDUART: <mode>**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Test Command<br>**AT+MDUART=?** | Response<br>**+MDUART: (0-1)**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description | |
|---|---|---|
| < mode> | <u>1</u> | Enable UART port2 |
| | 0 | Disable UART port2 |

Parameter Definition:

<id>: The TCP connection id.

<on/off>: 1: on; 0: off

Example:

AT+CIPSSL=1,1

OK

## 25.2 AT+CIPSSLVM    Set the verification mode of TCP SSL connection

The command is used to set the verification mode of TCP SSL connection

| Write Command | Response |
|---|---|
| **AT+CIPSSLVM=<id>,<vm>** | **OK** |
| Read Command | Response |
| **AT+CIPSSLVM?** | **+CIPSSLVM:<id>,<vm>** |
| | **OK** |
| Test Command | Response |
| **AT+CIPSSLVM=?** | **OK** |

Parameter Definition:

<id>: The TCP connection id.

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<id>** | 1-5 socket index, related +ZIPOPEN |
| **<on/off>** | 0   turn off SSL function<br>1   turn on SSL function |

Example:

In muti-link mode, max support 2 SSL connect at the same time.

| AT+CIPMUX=1 | OK |
|---|---|
| AT+CIPSSL=0,1 | OK |
| AT+CIPSTART=0,"TCP","180.97.33.107","443" | OK<br><br>0, CONNECT OK |
| AT+CIPSEND=137 | ><br><br>……<br><br>0, SEND OK |
| AT+CIPCLOSE | 0, CLOSE OK |

In single link mode

| AT+CIPMUX=0 | OK |
|---|---|
| AT+CIPSSL=1 | OK |
| AT+CIPSTART="TCP","180.97.33.107","443" | OK<br><br>CONNECT OK |
| AT+CIPSEND=137 | ><br><br>……<br><br>SEND OK |
| AT+CIPCLOSE | CLOSE OK |

## 25.2  AT+CIPSSLVM   Set TCP SSL Verification Mode

The command is used to set the verification mode of TCP SSL connection

| Write Command | Response |
|---|---|
| **AT+ CIPSSLVM =<id>,<on/off>** | **OK** |
| Read Command | Response |
| **AT+ CIPSSLVM?** | **+ CIPSSLVM:<id>,<on/off>**<br>**OK** |
| Test Command | Response |
| **AT+ CIPSSLVM =?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<id>** | 0-5 socket index |
| **<on/off>** | 0    Verify none<br>1    Verify peer's certificate |

Example:

| Commands | Response |
|---|---|
| Put the server's CA cert into file system, path is Z:\CertCA\ | |
| In muti-link mode, max support 2 SSL connect at the same time. | |
| **AT+CIPMUX=1** | **OK** |
| **AT+CIPSSL=0,1** | **OK** |
| **AT+CIPSSLVM=0,1** | **OK** |
| **AT+CIPSTART=0,"TCP","180.97.33.107","443"** | **OK**<br><br>**0, CONNECT OK** |
| **AT+CIPSEND=137** | **>**<br><br>**......**<br><br>**0, SEND OK** |
| **AT+CIPCLOSE=0** | **0, CLOSE OK** |
| In single link mode | |
| **AT+CIPMUX=0** | **OK** |

| AT+CIPSSL=1 | OK |
|---|---|
| AT+CIPSSLVM=1 | OK |
| AT+CIPSTART="TCP","180.97.33.107","443" | OK<br><br>CONNECT OK |
| AT+CIPSEND=137 | ><br><br>……<br><br>SEND OK |
| AT+CIPCLOSE | CLOSE OK |

## 25.3 AT+HTTPSSL    Switch SSL on/off of HTTP

The command is used to switch SSL on/off of HTTP

| Write Command<br><br>AT+ HTTPSSL=<on/off> | Response<br><br>OK |
|---|---|
| Read Command<br><br>AT+HTTPPSSL? | Response<br><br>+HTTPSSL: <on/off><br>OK |
| Test Command<br><br>AT+HTTPSSL=? | Response<br><br>OK |
|  | Note:<br>The cetificates should put into follow directories:<br>Z:\CertCA\       CA, used to verify server's certficate<br>Z:\CertPub\   Client certificate, used in mutual authentication<br>Z:\CertKey\   Client private key, used in mutual authentication |
| Note | AT+HTTPINIT shoud be acted before this order |

Parameters are defined below:

| Parameters | Description |
|---|---|

| <on/off> | 0 turn off SSL function |
| | 1 turn on SSL function |

## 25.4 **AT+HTTPSSLVM    Set HTTP SSL Verification Mode**

The command is used to set the verification mode of HTTP SSL connection

| Write Command | Response |
|---|---|
| **AT+HTTPSSLVM=<on/off>** | **OK** |
| Read Command | Response |
| **AT+HTTPSSLVM?** | **+HTTPSSLVM: <on/off>** |
| | **OK** |
| Test Command | Response |
| **AT+HTTPSSLVM =?** | **OK** |
| Note | AT+HTTPINIT shoud be acted before this order |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<on/off>** | 0   Verify none |
| | 1   Verify peer's certificate |

## 25.5 **AT+MQTTSSL    Switch SSL on/off of MQTT**

The command is used to switch MQTT on/off of TCPIP

| Write Command | Response |
|---|---|
| **AT+MQTTSSL=<on/off>** | **OK** |
| Read Command | Response |
| **AT+MQTTSSL?** | **+MQTTSSL: <on/off>** |
| | **OK** |
| Test Command | Response |
| **AT+MQTTSSL=?** | **OK** |

| | Note: |
| --- | --- |
| | The cetificates should put into follow directories:<br>Z:\CertCA\      CA, used to verify server's certficate<br>Z:\CertPub\   Client certificate, used in mutual authentication<br>Z:\CertKey\   Client private key, used in mutual authentication |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<on/off>** | 0    turn off SSL function<br>1    turn on SSL function |

## 25.6  AT+MQTTSSLVM    Set MQTT SSL Verification Mode

The command is used to set the verification mode of MQTT SSL connection

| Write Command<br><br>**AT+ MQTTSSLVM =<on/off>** | Response<br><br>**OK** |
| --- | --- |
| Read Command<br><br>**AT+ MQTTSSLVM?** | Response<br><br>**+MQTTSSLVM: <on/off>**<br>**OK** |
| Test Command<br><br>**AT+ MQTTSSLVM =?** | Response<br><br>**OK** |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<on/off>** | 0    Verify none<br>1    Verify peer's certificate |

## 25.7  AT+EMAILSSL    Switch SSL on/off of EMAIL

The command is used to switch SSL on/off of EMAIL

| Write Command | Response |
|---|---|
| AT+ EMAILSSL=<on/off> | **OK** |
| Read Command | Response |
| AT+EMAILSSL? | **+MQTTSSL: <on/off>**<br>**OK** |
| Test Command | Response |
| AT+EMAILSSL=? | **OK** |
| | Note:<br>The cetificates should put into follow directories:<br>Z:\CertCA\     CA, used to verify server's certficate<br>Z:\CertPub\    Client certificate, used in mutual authentication<br>Z:\CertKey\    Client private key, used in mutual authentication |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<on/off>** | 0    turn off SSL function<br>1    use SSL function with encrypted port<br>2    use SSL function with normal port |

## 25.8  AT+EMAILSSLVM    Set EMAIL SSL Verification Mode

The command is used to set the verification mode of EMAIL SSL connection

| Write Command | Response |
|---|---|
| AT+ EMAILSSLVM =<on/off> | **OK** |
| Read Command | Response |
| AT+ EMAILSSLVM? | **+EMAILSSLVM: <on/off>**<br>**OK** |
| Test Command | Response |
| AT+ EMAILSSLVM =? | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<on/off>** | 0   Verify none<br>1   Verify peer's certificate |

## 25.9   **AT+FTPSSL   Switch SSL on/off of FTP**

The command is used to switch SSL on/off of FTP

| Write Command<br><br>**AT+ FTPSSL=<on/off>** | Response<br><br>**OK** |
|---|---|
| Read Command<br><br>**AT+FTPSSL?** | Response<br><br>**+MQTTSSL: <on/off>**<br>**OK** |
| Test Command<br><br>**AT+FTPSSL=?** | Response<br><br>**OK** |
|  | Note:<br>The cetificates should put into follow directories:<br>Z:\CertCA\       CA, used to verify server's certficate<br>Z:\CertPub\   Client certificate, used in mutual authentication<br>Z:\CertKey\   Client private key, used in mutual authentication |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<on/off>** | 0   turn off SSL function<br>1   use SSL function with encrypted port<br>2   use SSL function with normal port |

## 25.10   **AT+FTPSSLVM   Set FTP SSL Verification Mode**

The command is used to set the verification mode of FTP SSL connection

| Write Command<br><br>**AT+ FTPSSLVM =<on/off>** | Response<br><br>**OK** |
|---|---|

| Read Command | Response |
|---|---|
| **AT+ FTPSSLVM?** | **+FTPSSLVM: <on/off>**<br>**OK** |
| Test Command | Response |
| **AT+ FTPSSLVM =?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<on/off>** | 0   turn off SSL function<br><br>1   use SSL function with implicit mode<br><br>2   use SSL function with explicit mode |

## 25.11 AT+SSLVER   set protocol version.

The command is used to set protocol version, must rboot UE to make setting effect.

| Write Command | Response |
|---|---|
| **AT+SSLVER=<version>** | **OK**<br>**Or**<br>**Error** |
| Read Command<br><br>**AT+SSLVER?** | Response<br>**+ SSLVER: <version>**<br><br>**OK** |
| Test Command<br><br>**AT+SSLVER=?** | Response<br><br>**OK** |
| Note | After change this vaule, must reboot UE to make set effect |

Parameters are defined below:

| Parameters | Description |
|---|---|

| <version> | Interget type<br>0 version <= TLS1.2<br>1 version TLS1.3 |

## 25.12  AT+SSLALPNCFG    Set protocol name list used by next SSL connection

The command is used to set protocol name list used by next SSL connection when ALPN is excepted to be used.

| Write Command<br><br>**AT+SSLALPNCFG=<alpnNam e>,<protocolNameList>,<repor tMode>** | Response<br><br>**OK** |
| --- | --- |
| Read Command<br><br>**AT+SSLALPNCFG?** | Response<br>**If ALPN has been config:**<br>**+SSLALPNCFG:**<br>**<alpnName>,<protocolNameList>,<reportMode>**<br><br>**OK**<br><br>**else**<br><br>**+SSLALPNCFG: NULL**<br><br>**OK** |
| Test Command<br><br>**AT+SSLALPNCFG=?** | Response<br><br>**OK** |
| Note | The configuration is one-off, which only work on next ssl conenction, and will be clear once module attempted to establish a ssl connection. |

Parameters are defined below:

| Parameters | Description |
| --- | --- |
| **<alpnName>** | String type not exceed 32 bytes, used to mark a ALPN ssl connection |

| | |
|---|---|
| **\<protocolNameList\>** | List of protocol names to use. Comma delimited string is required. |
| **\<reportMode\>** | Control the Unsolicited result code report mode. <br> 0 auto <br> 1 manually |

## 25.13  AT+SSLALPNSRV   Get the protocol selected by server

The command is used to get protocol name selected by server.

| Read Command <br><br> **AT+SSLALPNSRV?** | Response <br> Return **OK** first <br><br> **If ALPN has been config:** <br> **+SSLALPNSRV: \<alpnName\>,\<protocolNameSelect\>** <br><br> **OK** <br><br> **if protocol unmatched** <br> **+SSLALPNSRV:   \<alpnName\>,NONE** <br><br> **If the connection used ALPN speicial by \<alpnName\> not connected yet** <br> **+SSLALPNSRV:   \<alpnName\>,UNCONNECTED** <br><br> **If ALPN has not been config:** <br> **+SSLALPNSRV: \<alpnName\>,NULL** <br><br> **OK** |
|---|---|
| Test Command <br><br> **AT+SSLALPNCFG=?** | Response <br><br> **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **\<alpnName\>** | String type not exceed 32 bytes, used to mark a ALPN ssl connection, refer to +SSLALPNCFG |
| **\<protocolNameSelect\>** | The protocol selected by server from client protocol name list |

## 25.14 Unsolicited result code: Notify the protocol set by server +SSLALPNSRV

The command is used to report the protocol set by server when ssl connection is being established

**Format**

| Parameters | Description |
|---|---|
| **+SSLALPNSRV: <alpnName>,<protocolNameSelect>** | Report the protocol set by server |
| **+SSLALPNSRV: <alpnName>,NONE** | Protocol is not matched, user can continue or disconnect this connection |

**Field**

| | |
|---|---|
| **<protocolNameSelect>** | The protocol selected by server from client protocol name list |

## 25.15 AT+SSLENCCERT  Encrypt the special certificate

The command is used to encrypt the special certificate.

| Read Command | Response |
|---|---|
| **AT+SSLENCCERT=<filePath>** | **If encrypt file successfully**<br>**OK**<br>**If file no in certficates directory or has been encrypted**<br>**ERROR** |
| Test Command | Response |
| **AT+SSLALPNCFG=?** | **OK** |

Parameters are defined below:

| Parameters | Description |
|---|---|
| **<filePath>** | String type not exceed 64 bytes, the citificate file's path attemp to encrypt. |

---

## 25.16 **AT+SSLERRCODE Get the error code after establish a ssl connection failed**

This command is used to get the error code after establish a ssl connection failed

| Read Command | Response |
|---|---|
| **AT+SSLERRCDOE?** | **+SSLERRCODE: <ERR>**<br>**OK** |
| Test Command | Response |
| **AT+SSLERRCDOE=?** | **OK** |

Parameters are defined below:

| **<ERR>** | Description |
|---|---|
| 300 | There is no error occur. |
| 301 | Unkonwn error type |
| 302 | Malloc memory failed |
| 303 | Network error |
| 304 | Load ca certificate failed |
| 305 | Load client certificate failed |
| 306 | Load client private key failed |
| 307 | Set ALPN failed |
| 308 | Certificate expired |
| 309 | No corresponding ca to verify server's certificate |
| 310 | Error occur when ssl handsharking |

# 26 MQTT AT Commands

Overview of MQTT AT Commands:

| AT Command | Description |
| --- | --- |
| AT+MCONFIG | Related Parameters Configuration for MQTT |
| AT+MIPSTART | Start TCP Connection |
| AT+MCONNECT | Client requests a connection to a Server |
| AT+MPUB | Publish message |
| AT+MSUB | Subscribe to topics |
| AT+MUNSUB | Unsubscribe from topics |
| AT+MDISCONNECT | Close MQTT connection |
| AT+MIPCLOSE | The client actively closes the connection |
| AT+MQTTMSGGET | Print the MQTT subscribe message received |
| AT+MQTTMSGSET | Set the MQTT subscriber news print mode |
| AT+MQTTCEER | Check the ERROR code of the ERROR in the previous MQTT related command |
| AT+MQTTSTATU | Query the MQTT connection status |
| AT+MQTTTMOUT | Set the heartbeat packet timeout |
| AT+MQTTSSL | MQTT Open or Close SSL |
| AT+MQTTPUB | Publish message(You can send in hexadecimal) |
| AT+MQTTSETHEX | Enable or disable hexadecimal delivery |

Note: The support of these commands depends on firmware version.

## 26.1 **AT+MCONFIG Related Parameters Configuration for MQTT**

This command is used to parameters configuration.

| Test Command<br>**AT+MCONFIG=?** | Response<br><br>**+MCONFIG:<"clientid">[,<"username">,<"password">[,(0-2),(0,1),<"will_topic">,<"will_message">]]**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+ MCONFIG=<clientid>[, <username>,<password >[,<will_qos>,<will_retai n>,<will_topic,<will_mes sage>]]** | Response<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Reference | Note<br>This command you should send before "AT+MIPSTART" cmmand. If the server is not a user name and password, please do not enter the user name and password, otherwise will logon failure.<br>Example 1:<br>**AT+MCONFIG="id"**<br>Example 2:<br>**AT+MCONFIG="id",,,0,0,"willtopic","willmessage"**<br>Example 3:<br>**AT+MCONFIG="id","admin","password"**<br>Example 4:<br>**AT+MCONFIG="id","admin","password",0,0,"willtopic","willmessage"** |

Parameters are defined below:

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

| <password> | This parameter is used to login server. The maximum length of 256 |
|---|---|
| <will_qos> | Quality of Service:<br>0   At most once delivery for will message<br>1   At least once delivery for will message<br>2   Exactly once delivery for will message |
| <will_retain> | Retain Flag:<br>0   the Server must store the will Message and its QoS.<br>1   the Server must not store the will message and must not remove or replace any existing retained message |
| <will_topic> | The topic of the will message. The maximum length of 256 |
| <will_message> | The will message content. The maximum length of 1024 |

## 26.2 **AT+MIPSTART   Start TCP Connection**

This command is used to Start TCP Connection.

| Test Command<br>**AT+MIPSTART=?** | Response<br><br>**+MIPSTART: "(0,255).(0,255).(0,255).(0,255)",(1-65535)**<br>**+MIPSTART: "DOMAIN NAME",(1-65535)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+**<br>**MIPSTART=<ipaddr>,**<br>**<port>** | Response<br>If format is right response<br>**OK**<br>otherwise response<br>If error is related to ME functionality:<br>**ERROR**<br>Response when connection exists<br>**ALREADY CONNECT**<br>Response when connection is successful<br>**CONNECT OK**<br>Otherwise<br>**STATE: <state>**<br>**CONNECT FAIL** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <ipaddr> | Server IP address. |
| <port> | Server port. |

## 26.3 **AT+MCONNECT    Client requests a connection to a Server**

This command is used to requests a connection to a Server.

| Test Command<br>**AT+MCONNECT=?** | Response<br><br>**+MCONNECT:(0-1),(30-1800)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+ MCONNECT=<br><clean_session>,<keepa<br>live>** | Response<br><br>**OK**<br><br>**CONNACK OK**<br><br>**Or**<br><br>**OK**<br><br>**+MQTT:ERROR** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <clean_session> | This parameter specifies the handling of the Session state.<br>0   If CleanSession is set to 0, the Server must resume communications with the Client based on state from the current Session (as identified by the Client identifier). If there is no Session associated with the Client identifier the Server must create a new Session. The Client and Server MUST store the Session after the Client and Server are disconnected. After the disconnection of a Session that had CleanSession set to 0, the Server MUST store further QoS 1 and QoS 2 messages that match any subscriptions that the client had at the time of disconnection as part of the Session state. It may also store QoS 0 messages that meet the same criteria.<br>1   If CleanSession is set to 1, the Client and Server must discard any previous Session and start a new one. This Session lasts as long as the Network Connection. State data associated with this Session must not be reused in any subsequent Session. |
| <keepalive> | 30-1800    The Keep Alive is a time interval measured in seconds. |

## 26.4 **AT+MPUB   Publish message**

This command is used to publish message.

| Test Command<br>**AT+MPUB=?** | Response<br><br>**+MPUB:<"topic">,(0-2),(0-1),<"message">**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+**<br>**MPUB=<topic>,<qos>**<br>**,<retain>,<message>** | Response<br><br>If(qos=0)<br>**+MPUB:ID:<id>**<br><br>**OK**<br><br>If(qos=1)<br>**+MPUB:ID:<id>**<br><br>**OK**<br><br>**PUBACK,ID:<id>**<br><br>If(qos=2)<br>**+MPUB:ID:<id>**<br><br>**OK**<br><br>**PUBREC,ID:<id>**<br><br>**PUBCOMP,ID:<id>**<br><br>Or<br><br>**Error** |
| Reference | Note<br>This command is sent from a Client to a Server or from<br>Server to a Client to transport an Application Message. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <topic> | The topic of the Application message. The maximum length of 256 |
| <qos> | Quality of Service:<br>0   At most once delivery for Application message<br>1   At least once delivery for Application message<br>2   Exactly once delivery for Application message |
| <retain> | Retain Flag:<br>0   the Server must store the Application Message and its QoS.<br>1   the Server must not store the Application message and must not remove or replace any existing retained message. |
| <message> | The Application message content. The maximum length of 1360 |
| <id> | When the MQTT connection is connected, these ids are unique and can be used to compare the ids returned by the server ACK to determine if an ACK has been returned |

## 26.5 **AT+MSUB    Subscribe to topics**

This command is used to Subscribe to topics.

| Test Command<br>**AT+MSUB=?** | Response<br><br>**+MSUB:<"topic">,(0-2)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+ MSUB=<topic>,<qos>** | Response<br>**+MSUB:ID:<id>**<br><br>**OK**<br><br>**SUBACK,ID:<id>**<br><br>Or<br><br>**Error**<br><br>For single IP connection<br>If    AT+MSUB="111",0 is sent,while client publish on the 111 topic.<br>While AT+MQTTMSGSET=0:<br>**+MSUB: <topic>,<len> bytes,<message>**<br>The maximum data received in this mode is less than 4000 bytes, and the excess is discarded.<br><br>While AT+MQTTMSGSET=1:<br>**+MSUB:<store_addr>** |
| Reference | Note<br>This command is sent from the Client to the Server to create one or more Subscriptions. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <topic> | The topic of the Application message. The maximum length of 256 |
| <qos> | Quality of Service:<br>0   At most once delivery for Application message<br>1   At least once delivery for Application message<br>2   Exactly once delivery for Application message |

| <len> | The received message size. |
|---|---|
| <message> | Message content. |
| <store_addr> | 0-3 The location of the cache when messages are received ,The cache storage at most four message. |
| <id> | When the MQTT connection is connected, these ids are unique and can be used to compare the ids returned by the server ACK to determine if an ACK has been returned |

## 26.6 **AT+MUNSUB    Unsubscribe from topics**

This command is used to Unsubscribe from topics.

| Test Command<br>**AT+ MUNSUB=?** | Response<br><br>**+MUNSUB:<"topic">**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+ MUNSUB=<topic>** | Response<br>**+MUNSUB:ID:<id>**<br><br>**OK**<br><br>**UNSUBACK,ID:<id>**<br><br>Or<br><br>**Error** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <topic> | The topic of the will message. The maximum length of 256 |
| <id> | When the MQTT connection is connected, these ids are unique and can be used to compare the ids returned by the server ACK to determine if an ACK has been returned |

## 26.7 **AT+MDISCONNECT Close MQTT connection**

This command is used to close MQTT connection.

| Test Command<br>**AT+MDISCONNECT=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br>**AT+ MDISCONNECT** | Response<br><br>**OK**<br><br>Or<br><br>**Error** |
| Reference | Note |

## 26.8 **AT+MIPCLOSE The client actively close the connection**

This command is used to The client actively close the connection.

| Test Command<br>**AT+MIPCLOSE=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br>**AT+ MIPCLOSE** | Response<br><br>**CLOSE OK**<br><br>Or<br><br>**Error** |
| Reference | Note<br>This command is mainly used for the **AT + MCONNECT** connection MQTT failed closed after a TCP connection, under normal circumstances, please use the **AT+MDISCONNECT** |

## 26.9 **AT+MQTTMSGGET    Print the MQTT subscribe message**

### **received**

This command is used to Print the MQTT subscribe message received.

| Test Command<br>**AT+MQTTMSGGET=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br>**AT+ MQTTMSGGET** | Response<br><br>**[+MSUB: \<topic\>,\<len\> bytes,\<message\>]**<br>**[+MSUB: \<topic\>,\<len\> bytes,\<message\>]**<br>**[+MSUB: \<topic\>,\<len\> bytes,\<message\>]**<br>**[+MSUB: \<topic\>,\<len\> bytes,\<message\>]**<br><br>**OK**<br><br>This command will print in the cache the data received, the command print only once in the cache data, after the print data **\<statu\>** will become invalid. |
| Write Command<br>**AT+ MQTTMSGGET=\<n\>** | **+MSUB: \<topic\>,\<len\> bytes,\<message\>**<br><br>**OK**<br><br>Or<br><br>**+MQTTMSGGET:INVALID**<br><br>**OK**<br><br>Or<br><br>**ERROR** |
| Read Command<br>**AT+ MQTTMSGGET?** | Response<br><br>**+MQTTMSGGET:0,\<statu\>**<br>**+MQTTMSGGET:1,\<statu\>**<br>**+MQTTMSGGET:2,\<statu\>**<br>**+MQTTMSGGET:3,\<statu\>**<br><br>**OK** |

| Reference | Note |
|---|---|
| | When the AT + MQTTMSGSET = 1, need to use this command.The current buffer cache at most four received message. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <statu> | VALID      valid data, AT+ MQTTMSGGET can print this data<br>INVALID   invalid data |
| <topic> | The topic of the Application message. |
| <len> | The received message size. |
| <message> | Message content. |
| <n> | 0~3   The number of the MQTT message in the cache |

## 26.10 **AT+MQTTMSGSET Set the MQTT subscriber news print mode**

This command is used to Set the MQTT subscriber news print mode.

| Test Command<br>**AT+MQTTMSGSET=?** | Response<br><br>**+MQTTMSGSET:(0,1)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+<br>MQTTMSGSET=<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**Error** |
| Read Command<br>**AT+MQTTMSGSET?** | Response<br><br>**+MQTTMSGSET:<mode>**<br><br>**OK**<br><br>Or<br><br>**Error** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | 0　Automatically report mode, Take the initiative to print to a serial port on when messages are received, The maximum data received in this mode is less than 4000 bytes, and the excess is discarded.<br>1　The caching mode, When receiving the message is stored in the cache, you must use the AT + MQTTMSGGET read cache. The cache storage at most four message |

## 26.11  **AT+MQTTCEER    Check the ERROR code of the ERROR in the previous MQTT related command**

This command is used to Check the ERROR code of the ERROR in the previous MQTT related command.

| Test Command<br>**AT+MQTTCEER=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br>**AT+ MQTTCEER** | Response<br><br>**+MQTTCEER:<error_code>**<br><br>**OK** |
| Reference | Note<br>This command can query the ERROR code when the MQTT correlation command returns an ERROR. Only a few common error codes are listed in the table below. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <error_code> | 0    The initialization value<br>2    The MQTT protocol parses the error<br>3    MQTT related parameters are not initialized<br>4    No MQTT connection is established<br>5    The MQTT connection request is rejected<br>17   The sending queue is full.MQTT send QOS value is 1 or 2 will there be a send wait queue, if the server is not responding (such as: PUBACK), will increase the quantity in the queue, the maximum of ten<br>18   Send MQTT message failure<br>19   Error in parameter format<br>20   Sending data too fast<br>21   Does not register the network or does not activate the PDP<br>22   AT+MCONFIG is used after MQTT establishes the TCPIP connection |

## 26.12  AT+MQTTSTATU   Query the MQTT connection status

This command is used to Query the MQTT connection status.

| Test Command<br>**AT+MQTTSTATU=?** | Response<br><br>**OK** |
|---|---|
| Execution Command<br>**AT+ MQTTSTATU** | Response<br><br>**+MQTTSTATU:\<status>**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| \<statu> | 0   MQTT connection is not established<br>1   The MQTT connection is successful<br>2   The TCP connection is established but the MQTT connection is not<br>    established |

## 26.13 **AT+MQTTTMOUT   Set the heartbeat packet timeout**

This command is used to Set the heartbeat packet timeout.

| Test Command<br>**AT+MQTTTMOUT=?** | Response<br>**+ MQTTTMOUT: (5-1800)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+ MQTTTMOUT=\<time\>** | Response<br><br>**OK** |
| Read Command<br>**AT+ MQTTTMOUT?** | Response<br>**+ MQTTTMOUT: \<time\>**<br><br>**OK** |
| Reference | Note<br>If time passes, it will have **+MQTT:NOT RECEIVE PINGRESP** reported. |

Parameters are defined below:

| Parameters | Description |
|---|---|
| \<time\> | After the client sends PINGREQ, it receives the timeout of PINGRESP. Default value is 30s(unit:second). |

## 26.14  **AT+MQTTSSL   MQTT Open or Close SSL**

This command is used to MQTT Open or Close SSL.

| Test Command<br>**AT+MQTTSSL=?** | Response<br><br>**+MQTTSSL:  (0-1)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+ MQTTSSL=\<mode>** | Response<br><br>**OK**<br><br>Or<br><br>**Error** |
| Read Command<br>**AT+MQTTSSL?** | Response<br><br>**+MQTTSSL:  \<mode>**<br><br>**OK**<br><br>Or<br><br>**Error** |
| Reference | Note<br>This command must send before AT+MIPSTART command |

Parameters are defined below:

| Parameters | Description |
|---|---|
| \<mode> | <u>0</u>   Close MQTT SSL<br>1   Open MQTT SSL |

## 26.15  AT+MQTTPUB   Publish message (You can send in

### hexadecimal)

This command is used to publish message.

| Test Command<br>**AT+MQTTPUB=?** | Response<br><br>**+MQTTPUB:<"topic">,(0-2),(0-1),(1-1360)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+MQTTPUB=<topic>,<**<br>**qos>,<retain>,<length>** | Response<br><br>If(qos=0)<br>**+ MQTTPUB:ID:<id>**<br><br>**OK**<br><br>If(qos=1)<br>**+ MQTTPUB:ID:<id>**<br><br>**OK**<br><br>**PUBACK,ID:<id>**<br><br>If(qos=2)<br>**+ MQTTPUB:ID:<id>**<br><br>**OK**<br><br>**PUBREC,ID:<id>**<br><br>**PUBCOMP,ID:<id>**<br><br>Or<br><br>**Error** |
| Reference | Note<br>While AT+MQTTSETHEX=1 you can send data using<br>hexadecimal |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <topic> | The topic of the Application message. The maximum length of 256 |
| <qos> | Quality of Service:<br>0  At most once delivery for Application message<br>1  At least once delivery for Application message<br>2  Exactly once delivery for Application message |
| <retain> | Retain Flag:<br>0  the Server must store the Application Message and its QoS.<br>1  the Server must not store the Application message and must not remove or replace any existing retained message. |
| <length> | Want to send the length of the content. The maximum length of 1360 |
| <id> | When the MQTT connection is connected, these ids are unique and can be used to compare the ids returned by the server ACK to determine if an ACK has been returned |

## 26.16  AT+MQTTSETHEX   Enable or disable hexadecimal delivery

This command is used to Enable or disable hexadecimal delivery.

| Test Command<br>**AT+MQTTSETHEX=?** | Response<br>**+MQTTSETHEX:(0,1)**<br><br>**OK** |
|---|---|
| Write Command<br>**AT+MQTTSETHEX=<mode>** | Response<br><br>**OK** |
| Read Command<br>**AT+ MQTTSETHEX?** | Response<br>**+ MQTTSETHEX: <mode>**<br><br>**OK** |
| Reference | Note |

Parameters are defined below:

| Parameters | Description |
|---|---|
| <mode> | <u>0</u>    Do not use hexadecimal transmission<br>1    Use hexadecimal transmission |

## 26.17  URC: Pair indication +MQTT:MEM ERROR

This URC indicates that the cache for the MQTT receiving data reaches the upper limit when the module actively closes the MQTT connection.

| URC Information |
| --- |
| **+MQTT:MEM ERROR**<br><br>**CLOSE OK** |

## 26.18  URC: Pair indication +MQTT:NOT RECEIVE PUBREL

This URC indicates that when the proxy server sends QOS to the module the message that QOS is equal to 2, the message is not received by the server's PUBREL for four consecutive messages, and the four messages received are discarded

| URC Information |
| --- |
| **+MQTT:NOT RECEIVE PUBREL** |

## 26.19  URC: Pair indication +MQTT:NOT RECEIVE PINGRESP

This URC indicates If the module does not receive PINGRESP signal in **"AT+MQTTTMOUT"** time

| URC Information |
| --- |
| **+MQTT:NOT RECEIVE PINGRESP** |

Example:

| AT Command | Response |
| --- | --- |
| **AT+CGREG?** | **+CGREG: 0,1**<br><br>**OK** |
| **AT+CSTT="CMNET"** | **OK** |
| **AT+CIICR** | **OK** |

| AT+CIFSR | 10.162.214.230 |
|---|---|
| AT+MCONFIG="clientid" | OK |
| AT+MIPSTART=<br>"test.mosquitto.org","188<br>3" | OK<br><br>CONNECT OK |
| AT+MCONNECT=1,60 | OK<br><br>CONNACK OK |
| AT+MQTTMSGGET? | +MQTTMSGGET:0,INVALID<br>+MQTTMSGGET:1,INVALID<br>+MQTTMSGGET:2,INVALID<br>+MQTTMSGGET:3,INVALID<br>OK |
| AT+MSUB="mqtt/topic",0 | OK |
| AT+MPUB="mqtt/topic",0,<br>0,"message" | OK |
|  | +MSUB:0 |
| AT+MQTTMSGGET? | +MQTTMSGGET:0,VALID<br>+MQTTMSGGET:1,INVALID<br>+MQTTMSGGET:2,INVALID<br>+MQTTMSGGET:3,INVALID<br>OK |
| AT+MQTTMSGGET | +MSUB:"mqtt/topic",7 bytes,message<br>OK |
| AT+MQTTMSGGET? | +MQTTMSGGET:0,INVALID<br>+MQTTMSGGET:1,INVALID<br>+MQTTMSGGET:2,INVALID<br>+MQTTMSGGET:3,INVALID<br>OK |
| AT+MQTTMSGSET=0 | OK |

| AT+MPUB="mqtt/topic",0, 0,"message" | OK |
|---|---|
| | +MSUB:"mqtt/topic",7 bytes,message |
| AT+MDISCONNECT | OK |
| | CLOSED |