# QUECTEL

# U10

## Quectel Cellular Engine

## AT Commands Set

U10_ATC_V1.0
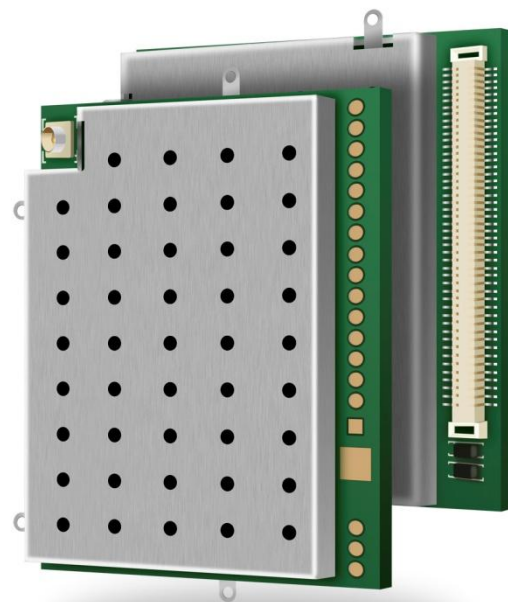
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# 0. Revision history

| Revision | Date | Author | Description |
|----------|------|--------|-------------|
| 1.0 | 2012-02-08 | Amon WU | Initial |

# 1. Introduction

## 1.1. Scope of the document

This document presents the AT Commands Set for Quectel cellular engine U10.

## 1.2. Conventions and abbreviations

In this document, the WCDMA engines are referred to as the following terms:
- ME (Mobile Equipment)
- MS (Mobile Station)
- TA (Terminal Adapter)
- DCE (Data Communication Equipment)
- Facsimile DCE(FAX modem, FAX board)

In application, controlling device controls the WCDMA engine by sending AT Command via serial interface. The controlling devices are referred to as the following terms:
- TE (Terminal Equipment)
- DTE (Data Terminal Equipment)

## 1.3. AT Command syntax

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

The AT Commands Set implemented by U10 is a combination of 3GPP TS27.005, 3GPP TS27.007 and ITU-T recommendation V.25ter and the AT Commands developed by Quectel.

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

● **Basic syntax**

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

● **S parameter syntax**

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

● **Extended syntax**

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

**Table 1: Types of AT Commands and responses**

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

### 1.3.1. Combining AT Commands on the same command line

You can enter several AT Commands on the same line. In this case, you do not need to type the "**AT**" or "**at**" prefix before every command. Instead, you only need type "**AT**" or "**at**" at the beginning of the command line. Please note that a semicolon is used as command delimiter.

The command line buffer can accept a maximum of 256 characters. If the input characters exceeded the maximum then no command will be executed and TA will return "**ERROR**".

### 1.3.2. Entering successive AT Commands on separate lines

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

## 1.4. Supported character sets

The U10 AT Command interface defaults to the **IRA** character set. The U10 supports the following character sets:

- GSM format
- UCS2
- HEX

- IRA
- PCCP437
- 8859_1

The character set can be configured and interrogated using the "**AT+CSCS**" command (TS27.007). The character set is defined in TS27.005. The character set affects transmission and reception of SMS and SMS Cell Broadcast Messages, the entry and display of phone book entries text field and SIM Application Toolkit alpha strings.

## 1.5. Flow control

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

### 1.5.1. Hardware flow control (RTS/CTS flow control)

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

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

## 1.6. Unsolicited Result Code

A URC is a report message sent from the ME to the TE. An unsolicited result code can either be delivered automatically when an event occurs, to reflect change in system state or as a result of a query the ME received before, often due to occurrences of errors in executing the queries. However, a URC is not issued as a direct response to an executed AT command. AT commands have their own implementations to validate inputs such as "**OK**" or "**ERROR**".

Typical URCs may be information about incoming calls, received SMS, changing temperature, status of the battery etc. A summary of URCs is listed in Appendix A.

When sending a URC, the ME activates its Ring Interrupt (Logic "l"), i.e. the line goes active low for a few milliseconds. If an event which delivers a URC coincides with the execution of an AT command, the URC will be output after command execution has completed.

## 2. AT Commands according to V.25TER

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

### 2.1. Overview of AT Commands according to V.25TER

| Command | Description |
|---|---|
| A/ | Re-issues last AT Command given |
| ATA | Answer AN incoming call |
| ATD | Mobile Originated call to dial A number |
| ATD><N> | Originate call to phone number in current memory |
| ATDL | Redial last telephone number used |
| ATE | Set Command echo mode |
| ATH | Disconnect existing connection |
| ATI | Display product identification information |
| ATL | Set monitor speaker loudness |
| ATM | Set monitor speaker mode |
| +++ | Switch form data mode to command mode |
| ATO | Switch from command mode to data mode |
| ATP | Select pulse dialing |
| ATQ | Set result code presentation mode |
| ATS0 | Set number of rings before automatically answering the call |
| ATS3 | Set command line termination character |
| ATS4 | Set response formatting character |
| ATS5 | Set command line editing character |
| ATS6 | Set pause before blind dialling |
| ATS7 | Set number of seconds to wait for connection completion |
| ATS8 | Set number of seconds to wait FOR comma dial modifier |
| ATS10 | Set disconnect delay after indicating the absence of data carrier |
| ATT | Select tone dialing |
| ATV | TA response format |
| ATX | Set connect result code format and monitor call progress |
| ATZ | Set all current parameters to user defined profile |
| AT&C | Set DCD function mode |
| AT&D | Set DTR function mode |
| AT&F | Set all current parameters to manufacturer defaults |
| AT&V | Display current configuration |
| AT&W | Store current parameter to user defined profile |
| AT+DR | V.42bis data compression reporting control |

| AT+DS | V.42bis data compression control |
|-------|----------------------------------|
| AT+GCAP | Request complete TA capabilities list |
| AT+GMI | Request manufacture identification |
| AT+GMM | Request TA model identification |
| AT+GMR | Request TA revision identification of software release |
| AT+GOI | Request global object identification |
| AT+GSN | Request International mobile equipment identity (IMEI) |
| AT+ICF | Set TE-TA control character framing |
| AT+IFC | Set TE-TA local data flow control |
| AT+IPR | Set TE-TA fixed local rate |

## 2.2. Detailed description of AT Commands according to V.25TER

### 2.2.1.   A/ Re-issues the last command given

| A/    Re-issues the last command given | |
|----------------------------------------|--------------------------------------|
| Execution Command **A/** | Response |
| | Re-issues the previous command |
| | *Note: It does not have to end with terminating character.* |
| | Parameter |
| Reference V.25ter | |

### 2.2.2.   ATA Answer an incoming call

| ATA    Answer an incoming call | |
|--------------------------------|--------------------------------------|
| Execution Command **ATA** | Response |
| | TA sends off-hook to the remote station. |
| | *Note* |
| | ● *Any additional commands on the same command line are ignored.* |
| | ● *This command may be aborted generally by receiving a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.* |

| | Response in case of data call, if successfully connected |
|---|---|
| | **CONNECT<text>** TA switches to data mode. |
| | Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 |
| | When TA returns to command mode after call release |
| | **OK** |
| | |
| | Response in case of voice call, if successfully connected |
| | **OK** |
| | |
| | Response if no connection |
| | **NO CARRIER** |
| | |
| | Parameter |
| Reference | *Note:* |
| V.25ter | *See also* ***ATX***. |

### 2.2.3.  ATD Mobile originated call to dial a number

| **ATD    Mobile originated call to dial a number** | |
|---|---|
| Execution Command **ATD<n>[<mgsm ][;]** | Response<br>This command can be used to set up outgoing voice, data or FAX calls. It also serves to control supplementary services.<br><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.*<br><br>If no dial tone and (parameter setting **ATX2** or **ATX4**)<br>**NO DIALTONE**<br><br>If busy and (parameter setting **ATX3** or **ATX4**)<br>**BUSY**<br><br>If a connection cannot be established<br>**NO CARRIER**<br><br>If connection successful and non-voice call.<br>**CONNECT<text>** TA switches to data mode.<br>*Note: <text> can be output only if <value> >0 in ATX command.*<br><br>When TA returns to command mode after call release |

| | **OK** |
| | If connection successful and voice call: |
| | **OK** |
| Parameter | |
| **\<n\>** | String of dialing digits and optionally V.25ter modifiers dialing digits: |
| | **0-9, * , #, +, A, B, C** |
| | Following V.25ter modifiers are ignored: |
| | **,(comma), T, P, !, W, @** |
| **Emergency call:** | |
| **\<n\>** | Standardized emergency number 112 (no SIM needed) |
| **\<mgsm\>** | String of **GSM** modifiers: |
| | **I** Actives **CLIR** (Disables presentation of own number to called party) |
| | **i** Deactivates **CLIR** (Enable presentation of own number to called party) |
| | **G** Activates closed user group invocation for this call only |
| | **g** Deactivates closed user group invocation for this call only |
| | **\<;\>** Only required to set up voice call , return to command state |
| Reference | *Note:* |
| V.25ter | ● *Parameter "I" and "i" only if no \*# code is within the dial string.* |
| | ● *\<n\> is default value for last number that can be dialed by ATDL.* |
| | ● *\*# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";".* |
| | ● *See **ATX** command for setting result code and call monitoring paramete*rs. |
| | Responses returned after dialing with **ATD** |
| | ● For voice call two different responses mode can be determined. **TA** returns "**OK**" immediately either after dialing was completed or after the call was established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, which causes the **TA** returns "**OK**" immediately after dialing was completed, otherwise **TA** will returns "**OK**", "**BUSY**", "**NO DIAL TONE**", "**NO CARRIER**". |
| | Using **ATD** during an active voice call: |
| | ● When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold. |
| | ● The current states of all calls can be easily checked at any time by |

using the **AT+CLCC** command.

### 2.2.4. ATD><n> Originate call to phone number in current memory

| ATD><n>   Originate call to phone number in current memory | |
|---|---|
| Execution Command **ATD><n> [;]** | Response<br>This command can be used to dial a phone number from current phone book memory.<br><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.*<br><br>If error is related to **ME** functionality<br>**+CME ERROR: <err>**<br><br>If no dial tone and (parameter setting **ATX2** or **ATX4**)<br>**NO DIALTONE**<br><br>If busy and (parameter setting **ATX3** or **ATX4**)<br>**BUSY**<br><br>If a connection cannot be established<br>**NO CARRIER**<br><br>If connection successful and non-voice call.<br>**CONNECT<text> TA** switches to data mode.<br>*Note: <text> can be output only if <value> >0 in ATX command.*<br><br>When TA returns to command mode after call release<br>**OK**<br>If successfully connected and voice call<br>**OK** |
| | Parameter<br>**<n>**          Integer type memory location should be in the range of locations available in the memory used<br>**<;>**          Only required to set up voice call, return to command state |
| Reference V.25ter | *Note*<br>● *Parameter "I" and "i" only if no *# code is within the dial string.*<br>● *\*#codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";".*<br>● *See **ATX** command for setting result code and call monitoring* |

| | *Parameters.* |
|---|---|

### 2.2.5. ATDL Redial last telephone number used

| ATDL Redial last used telephone number | |
|---|---|
| Execution<br>Command<br>**ATDL** | Response<br>This command redials the last voice and data call number.<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.<br><br>If error is related to **ME** functionality<br>**+CME ERROR: <err>**<br><br>If no dial tone and (parameter setting **ATX2** or **ATX4**)<br>**NO DIALTONE**<br><br>If busy and (parameter setting **ATX3** or **ATX4**)<br>**BUSY**<br><br>If a connection cannot be established<br>**NO CARRIER**<br><br>If connection successful and non-voice call.<br>**CONNECT<text> TA** switches to data mode.<br><br>*Note: <text> can be output only if <value> >0 in ATX command.*<br><br>When **TA** returns to command mode after call release<br>**OK**<br>If successfully connected and voice call<br>**OK** |
| Reference<br>V.25ter | *Note:*<br>*See ATX command for setting result code and call monitoring parameters.* |

### 2.2.6. ATE Set command echo mode

| ATE Set command echo mode | |
|---|---|
| Execution<br>Command | Response<br>This setting determines whether or not the TA echoes characters received |

| ATE\<value\> | from TE during command state. |  |  |
|---|---|---|---|
| | **OK** | | |
| | Parameter | | |
| | **\<value\>** | 0 | Echo mode off |
| | | 1 | Echo mode on |
| Reference | | | |
| V.25ter | | | |

### 2.2.7. ATH Disconnect existing connection

| ATH Disconnect existing connection | |  |  |
|---|---|---|---|
| Execution | Response | | |
| Command | Disconnect existing call by local TE from command line and terminate call | | |
| **ATH[n]** | **OK** | | |
| | | | |
| | *Note: OK is issued after circuit 109(DCD) is turned off, if it was previously* | | |
| | *on.* | | |
| | Parameter | | |
| | **\<n\>** | 0 | Disconnect from line and terminate call |
| Reference | | | |
| V.25ter | | | |

### 2.2.8. ATI Display product identification information

| ATI Display product identification information | |
|---|---|
| Execution | Response |
| Command | TA issues product information text |
| **ATI** | |
| | Example: |
| | **Quectel_Ltd** |
| | **Quectel_U10** |
| | **Revision: U10R01A01M1024** |
| | |
| | **OK** |
| Reference | |
| V.25ter | |

**2.2.9. ATL Set monitor speaker loudness**

| ATL Set monitor speaker loudness | | | |
|---|---|---|---|
| Execution Command **ATL\<value\>** | Response **OK** | | |
| | Parameter | | |
| | **\<value\>** | 0 | Low speaker volume |
| | | 1 | Low speaker volume |
| | | 2 | Medium speaker volume |
| | | 3 | High speaker volume |
| Reference V.25ter | *Note:* *The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.* | | |

**2.2.10. ATM Set monitor speaker mode**

| ATM    Set Monitor Speaker Mode | | | |
|---|---|---|---|
| Execution Command **ATM\<value\>** | Response **OK** | | |
| | Parameter | | |
| | **\<value\>** | 0 | Speaker is always off |
| | | 1 | Speaker is on until TA inform TE that carrier has been detected |
| | | 2 | Speaker is always on when TA is off-hook |
| Reference V.25ter | *Note:* *The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.* | | |

**2.2.11. +++ Switch from data mode to command mode**

| +++ Switch from data mode to command mode | |
|---|---|
| Execution Command +++ | Response This command is only available during TA is in data mode, such as, a CSD call, a GPRS connection and a transparent TCPIP connection. 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 with the remote server or, accordingly, the GPRS connection. |

| | OK |
|---|---|
| | To prevent the "+++" escape sequence from being misinterpreted as data, the following sequence should be complied with:<br>1. No characters entered for T1 time (0.5 seconds).<br>2. "+++" characters entered with no characters in between. For CSD call or PPP online mode, the interval between two "+" MUST should be less than 1 second and for a transparent TCPIP connection, the interval MUST should be less than 20 ms.<br>3. No characters entered for T1 time (0.5 seconds).<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 or PPP online mode: Enter ATO.* |

### 2.2.12. ATO Switch from command mode to data mode

| ATO Switch from command mode to data mode | |
|---|---|
| Execution<br>Command<br>**ATO[n]** | Response<br>TA resumes the connection and switches back from command mode to data mode.<br>If connection is not successfully resumed<br>**NO CARRIER**<br>else<br>TA returns to data mode from command mode **CONNECT <text>**<br>*Note: <text> only if parameter setting X>0.* |
| | Parameter<br>**<n>**　　　0　　　Switch from Command mode to data mode |
| Reference<br>V.25ter | |

### 2.2.13. ATP Select pulse dialing

| ATP　Select pulse dialing | |
|---|---|
| Execution<br>Command<br>**ATP** | Response<br>**OK** |
| | Parameter |
| Reference<br>V.25ter | *Note:*<br>*No effect in WCDMA/GSM.* |

**2.2.14. ATQ Set result code presentation mode**

| ATQ | Set result code presentation mode | |
|---|---|---|
| Execution Command **ATQ\<n\>** | Response This parameter setting determines whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting. | |
| | If **\<n\>**=0: **OK** If **\<n\>**=1: (none) | |
| | Parameter | |
| | **\<n\>** | 0    TA transmits result code <br> 1    Result codes are suppressed and not transmitted |
| Reference V.25ter | | |

**2.2.15. ATS0 Set number of rings before automatically answering the call**

| ATS0 | Set number of rings before automatically answering the call | |
|---|---|---|
| Read Command **ATS0?** | Response **\<n\>** **OK** | |
| Write Command **ATS0=\<n\>** | Response This parameter setting determines the number of rings before auto-answer. **OK** | |
| | Parameter | |
| | **\<n\>** | 0    Automatic answering is disabled <br> 1-255    Enable automatic answering on the ring number specified |
| Reference V.25ter | *Note:* *If \<n\> is set too high, the calling party may hang up before the call can be answered automatically.* | |

**2.2.16. ATS3 Set command line termination character**

| ATS3 | Set command line termination character |
|---|---|
| Read Command | Response |

| ATS3? | **<n>** |
| --- | --- |
| | **OK** |
| Write Command | Response |
| **ATS3=<n>** | This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output. |
| | **OK** |
| | Parameter |
| | **<n>**          0-<u>13</u>-127     Command line termination character |
| Reference | *Note:* |
| V.25ter | *Default 13 = CR.* |

### 2.2.17. ATS4 Set response formatting character

| ATS4    Set response formatting character | |
| --- | --- |
| Read Command | Response |
| **ATS4?** | **<n>** |
| | **OK** |
| Write Command | Response |
| **ATS4=<n>** | This parameter setting determines the character generated by the TA for result code and information text. |
| | **OK** |
| | Parameter |
| | **<n>**          0-<u>10</u>-127     Response formatting character |
| Reference | *Note:* |
| V.25ter | *Default 10 = LF.* |

### 2.2.18. ATS5 Set command line editing character

| ATS5    Set command line editing character | |
| --- | --- |
| Read Command | Response |
| **ATS5?** | **<n>** |
| | **OK** |
| Write Command | Response |
| **ATS5=<n>** | This parameter setting determines the character recognized by TA as a request to delete the immediately preceding character from the command line |

| | OK |
|---|---|
| | Parameter |
| | **<n>**      0-<u>8</u>-127      Response formatting character |
| Reference | *Note:* |
| V.25ter | *Default 8 = Backspace.* |

### 2.2.19. ATS6 Set pause before blind dialing

| ATS6    Set pause before blind dialing | |
|---|---|
| Read Command<br>**ATS6?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS6=<n>** | Response<br>**OK** |
| | Parameter<br>**<n>**      0-<u>2</u>-10      Number of seconds to wait before blind dialing |
| Reference<br>V.25ter | *Note:*<br>*No effect in WCDMA.* |

### 2.2.20. ATS7 Set number of seconds to wait for connection completion

| ATS7    Set number of seconds to wait for connection completion | |
|---|---|
| Read Command<br>**ATS7?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS7=<n>** | 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** |
| | Parameter<br>**<n>**      1-<u>60</u>-255      Number of seconds to wait for connection completion |
| Reference<br>V.25ter | *Note:*<br>● *If called party has specified a high value for ATS0=<n>, 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.* |

**2.2.21. ATS8 Set number of seconds to wait for comma dial modifier**

| ATS8 Set number of seconds to wait for comma dial modifier | |
|---|---|
| Read Command<br>**ATS8?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS8=<n>** | Response<br>**OK** |
| | Parameter<br>**<n>** 0        No pause when comma encountered in dial string<br>      1-255      Number of seconds to wait |
| Reference<br>V.25ter | *Note:*<br>*No effect in WCDMA* |

**2.2.22. ATS10 Set disconnect delay after indicating the absence of data carrier**

| ATS10 Set disconnect delay after indicating the absence of data carrier | |
|---|---|
| Read Command<br>**ATS10?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS10=<n>** | 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 disconnection, the TA remains connected.<br>**OK** |
| | Parameter<br>**<n>**     1-<u>15</u>-254     Number of delay in 100 ms |
| Reference<br>V.25ter | |

**2.2.23. ATT Select tone dialing**

| ATT Select tone dialing | |
|---|---|
| Execution<br>Command<br>**ATT** | Response<br>**OK** |
| | Parameter |
| Reference | *Note:* |

| V.25ter | *No effect in WCDMA.* |
|---|---|

### 2.2.24. ATV TA response format

| ATV   TA response format | |
|---|---|
| Execution<br>Command<br>**ATV<value>** | Response<br>This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.<br>　　When **<value>**=0<br>**0**<br>　　When **<value>**=1<br>**OK** |
| | Parameter<br>**<value>**　0　Information response: **<text><CR><LF>**<br>　　　　　　　Short result code format: **<numeric code><CR>**<br>　　　　　1　Information response: **<CR><LF><text><CR><LF>**<br>　　　　　　　Long result code format: **<CR><LF><verbose code><CR><LF>**<br>The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table. |
| Reference<br>V.25ter | |

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

| CONNECT <text> | Manufacturer-specific | Same as **CONNECT**, but includes manufacturer-specific text that may specify DTE speed, line speed, error control, data compression, or other status |
|---|---|---|

### 2.2.25. ATX Set CONNECT result code format and monitor call progress

| ATX    Set CONNECT result code format and monitor call progress | |
|---|---|
| Execution Command **ATX<value>** | Response This parameter setting determines whether or not the TA detected the presence of dial tone and busy signal and whether or not TA transmits particular result codes **OK** |
| | Parameter<br>**<value>** 0    **CONNECT** result code only returned, dial tone and busy detection are both disabled<br>          1    **CONNECT<text>** result code only returned, dial tone and busy detection are both disabled<br>          2    **CONNECT<text>** result code returned, dial tone detection is enabled, busy detection is disabled<br>          3    **CONNECT<text>** result code returned, dial tone detection is disabled, busy detection is enabled<br>          4    **CONNECT<text>** result code returned, dial tone and busy detection are both enabled |
| Reference V.25ter | |

### 2.2.26. ATZ Set all current parameters to user defined profile

| ATZ    Set all current parameters to user defined profile | |
|---|---|
| Execution Command **ATZ[<value>]** | Response TA sets all current parameters to the user defined profile. **OK** |
| | Parameter<br>**<value>**        0    Reset to profile number 0 |
| Reference V.25ter | *Note:*<br>● *The user defined profile is stored in non volatile memory.*<br>● *If the user profile is invalid, it will default to the factory default profile.*<br>● *Any additional commands on the same command line are ignored.* |

### 2.2.27. AT&C Set DCD function mode

| AT&C    Set DCD function mode | | | |
|---|---|---|---|
| Execution Command **AT&C[<value>]** | Response This parameter determines how the state of circuit 109(DCD) relates to the detection of received line signal from the distant end. **OK** | | |
| | Parameter | | |
| | **<value>** | 0 | DCD line is always ON |
| | | 1 | DCD line is ON only in the presence of data carrier |
| Reference V.25ter | | | |

### 2.2.28. AT&D Set DTR function mode

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

### 2.2.29. AT&F Set all current parameters to manufacturer defaults

| AT&F    Set all current parameters to manufacturer defaults | | |
|---|---|---|
| Execution Command **AT&F[<value>]** | Response TA sets all current parameters to the manufacturer defined profile. **OK** | |
| | Parameter | |
| | **<value>** | 0 | Set all TA parameters to manufacturer defaults |
| Reference | | |

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| V.25ter | |
|---------|---|

### 2.2.30. AT&V Display current configuration

| AT&V   Display current configuration | |
|---|---|
| Execution<br>Command<br>**AT&V[<n>]** | Response<br>TA returns the current parameter setting<br><current configurations text><br>**OK** |
| | Parameter<br>**<n>**        0      Profile number |
| Reference<br>V.25ter | |

### 2.2.31. AT&W Store current parameter to user defined profile

| AT&W   Store current parameter to user defined profile | |
|---|---|
| Execution<br>Command<br>**AT&W[<n>]** | Response<br>TA stores the current parameter setting in the user defined profile<br>**OK** |
| | Parameter<br>**<n>**        0      Profile number to store to |
| Reference<br>V.25ter | *Note:*<br>*The user defined profile is stored in non volatile memory.* |

### 2.2.32. AT+DR V.42bis data compression reporting control

| AT+DR   V.42bis data compression reporting control | |
|---|---|
| Test Command<br>**AT+DR=?** | Response<br>**+DR:** (list of supported <**value**>s)<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+DR?** | Response<br>**+DR: <value>**<br><br>**OK** |

| | Parameter |
|---|---|
| | See Write Command. |
| Write Command<br>**AT+DR=[<value<br>>]** | Response<br>This parameter setting determines whether or not intermediate result code of the current data compressing is reported by TA to TE after a connection is established.<br>**OK** |
| | Parameter<br>**<value>**      0          Reporting disabled |
| Reference<br>V.25ter | |

### 2.2.33. AT+DS V.42bis data compression control

| AT+DS V.42bis data compression control | |
|---|---|
| Test Command<br>**AT+DS=?** | Response<br>**+DS:** (list of supported **<p0>**s), (list of supported **<n>**s), (list of supported **<p1>**s), (list of supported **<p2>**s)<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+DS?** | Response<br>**+DS: <p0>,<n>,<p1>,<p2>**<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+DS=[<p0>,[<<br>n>,[<p1>,[<p2>]]<br>]]** | Response<br>This parameter setting determines the possible data compression mode by TA at the compression negotiation with the remote TA after a call set up.<br>**OK** |
| | Parameters |
| | **<p0>**      0          NONE |
| | **<n>**      0          Allow negotiation of p0 down |
| |               1          Do not allow negotiation of p0 - disconnect on difference |
| | **<p1>**      512-4096      Dictionary size |
| | **<p2>**      6-250      Maximum string size (Default is 6) |
| Reference<br>V.25ter | *Note:*<br>●   *This command is only for data call.*<br>●   *WCDMA/GSM transmits the data transparently. The remote TA may* |

| | *support this compression.* |
| --- | --- |
| | ● *This command must be used in conjunction with command AT+CRLP to enable compression (+CRLP=X,X,X,X,1,X).* |

### 2.2.34. AT+GCAP Request complete TA capabilities list

| AT+GCAP Request complete TA capabilities list | |
| --- | --- |
| Test Command<br>**AT+GCAP=?** | Response<br>**OK** |
| | Parameter |
| Execution<br>Command<br>**AT+GCAP** | Response<br>TA reports a list of additional capabilities.<br>**+GCAP:** <**name**>s<br><br>**OK** |
| | Parameters<br><**name**>        +CGSM        GSM function is supported<br>                +FCLASS       FAX function is supported |
| Reference<br>V.25ter | |

### 2.2.35. AT+GMI Request manufacture identification

| AT+GMI Request manufacture identification | |
| --- | --- |
| Test Command<br>**AT+GMI=?** | Response<br>**OK** |
| | Parameter |
| Execution<br>Command<br>**AT+GMI** | TA reports one or more lines of information text which permit the user to identify the manufacturer.<br>**Quectel_Ltd**<br>**Quectel_U10**<br>**Revision: MTK 1112**<br><br>**OK** |
| | Parameter |
| Reference<br>V.25ter | |

### 2.2.36. AT+GMM Request TA model identification

| AT+GMM Request TA model identification | |
|---|---|
| Test Command<br>**AT+GMM=?** | Response<br>**OK** |
| | Parameter |
| Execution<br>Command<br>**AT+GMM** | TA returns product model identification text.<br>**\<model\>**<br><br>**OK** |
| | Parameter<br>**\<model\>**　　　Product model identification text |
| Reference<br>V.25ter | *Note:*<br>*For example in U10 wireless module, string " Quectel_U10" is displayed.* |

### 2.2.37. AT+GMR Request TA revision identification of software release

| AT+GMR Request TA revision identification of software release | |
|---|---|
| Test Command<br>**AT+GMR=?** | Response<br>**OK** |
| | Parameter |
| Execution<br>Command<br>**AT+GMR** | TA reports one or more lines of information text which permit the user to identify the revision of software release.<br>**Revision:** \<**revision**\><br><br>**OK** |
| | Parameter<br>**\<revision\>**　　　Revision of software release. |
| Reference<br>V.25ter | *Note:*<br>*For example in U10 wireless module, string " U10AR01A01M1024" is displayed.* |

### 2.2.38. AT+GOI Request global object identification

| AT+GOI Request global object identification | |
|---|---|
| Test Command<br>**AT+GOI=?** | Response<br>**OK** |

| | Parameter |
|---|---|
| Execution Command **AT+GOI** | Response TA reports one or more lines of information text which permit the user to identify the device, based on the ISO system for registering unique object identifiers. **<Object Id>** OK |
| | Parameter **<Object Id>** Identifier of device type See X.208, 209 for the format of **<Object Id>.** |
| Reference V.25ter | *Note:* *For example in U10 wireless module, string "U10" is displayed.* |

### 2.2.39. AT+GSN Request International Mobile Equipment Identity (IMEI)

| **AT+GSN Request International Mobile Equipment Identity (IMEI)** | |
|---|---|
| Test Command **AT+GSN=?** | Response OK |
| | Parameter |
| Execution Command **AT+GSN** | Response TA reports the IMEI (International Mobile Equipment Identity) number in information text which permit the user to identify the individual ME device. **<sn>** OK |
| | Parameter **<sn>** IMEI of the telephone |
| Reference V.25ter | *Note:* *The serial number (IMEI) is varied with the individual ME device.* |

### 2.2.40. AT+ICF Set TE-TA control character framing

| **AT+ICF   Set TE-TA control character framing** | |
|---|---|
| Test Command **AT+ICF=?** | Response **+ICF:** (list of supported <**format**>s), (list of supported <**parity**>s) |

| | OK |
| --- | --- |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+ICF?** | Response<br>**+ICF: <format>,<parity>**<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+ICF=[<format>,[<parity>]]** | Response<br>This parameter setting determines the serial interface character framing format and parity received by TA from TE.<br>**OK** |
| | Parameters |
| | **<format>**    1      8 data 0 parity 2 stop |
| |             2      8 data 1 parity 1 stop |
| |             <u>3</u>      8 data 0 parity 1 stop |
| |             4      7 data 0 parity 2 stop |
| |             5      7 data 1 parity 1 stop |
| |             6      7 data 0 parity 1 stop |
| | **<parity>**    0      Odd |
| |             1      Even |
| |             2      Mark (1) |
| |             <u>3</u>      Space (0) |
| Reference<br>V.25ter | *Note:*<br>●   *The command is applied for command state.*<br>●   *The <parity> field is ignored if the < format > field specifies no parity.* |

### 2.2.41. AT+IFC Set TE-TA local data flow control

| **AT+IFC    Set TE-TA local data flow control** | |
| --- | --- |
| Test Command<br>**AT+IFC=?** | Response<br>**+IFC:** (list of supported **<dce_by_dte>**s), (list of supported **<dte_by_dce>**s)<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+IFC?** | Response<br>**+IFC: <dce_by_dte>,<dte_by_dce>**<br><br>**OK** |

| | |
|---|---|
| | Parameter<br>See Write Command. |
| Write Command<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** |
| | Parameters<br>**<dce_by_dte>**  Specifies the method that will be used by TE when receiving data from TA<br>    <u>0</u>    None<br>    1    XON/XOFF, do not pass characters on to data stack<br>    2    RTS flow control<br>    3    XON/XOFF, pass characters on to data stack<br>**<dte_by_dce>**  Specifies the method that will be used by TA when receiving data from TE<br>    <u>0</u>    None<br>    1    XON/XOFF<br>    2    CTS flow control |
| Reference<br>V.25ter | *Note:*<br>*This flow control is applied for data mode.* |

### 2.2.42. AT+IPR Set TE-TA fixed local rate

| AT+IPR    Set TE-TA fixed local rate | |
|---|---|
| Test Command<br>**AT+IPR=?** | Response<br>**+IPR:** (list of supported auto detectable <**rate**>s),(list of supported fixed-only<**rate**>s)<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+IPR?** | Response<br>**+IPR: <rate>**<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+IPR=<rate>** | Response<br>This parameter setting determines the data rate of the TA on the serial interface. After the delivery of any result code associated with the current command line, the rate of command takes effect. |

| | OK |
|---|---|
| | Parameter |
| | **<rate>** Baud rate per second |
| | <u>0</u> (Autobauding) |
| | 75 |
| | 150 |
| | 300 |
| | 600 |
| | 1200 |
| | 2400 |
| | 4800 |
| | 9600 |
| | 14400 |
| | 19200 |
| | 28800 |
| | 38400 |
| | 57600 |
| | 115200 |
| | 230400 |
| | 460800 |
| | 921600 |
| Reference<br>V.25ter | *Note:*<br>● *The default configuration of **AT+IPR** is autobauding enabled (**AT+IPR=0**).*<br>● *If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel WCDMA module) are configured to the same rate. If autobauding is enabled, the TA could automatically recognize the baud rate currently used by the TE after receiving "**AT**" or "**at**" string.*<br>● *The value of **AT+IPR** cannot be restored with **AT&F** and **ATZ**, but it is still storable with **AT&W** and visible in **AT&V**.*<br>● *A selected baud rate takes effect after the write commands are executed and acknowledged by "**OK**".* |

### 2.2.42.1. Autobauding

To take advantage of autobauding mode specific, attention must be paid to the following requirements:

- Autobauding synchronization between TE and TA
  - Ensure that TE and TA are correctly synchronized and the baud rate used by the TE is detected by the TA. To allow the baud rate to be synchronized simply use an "**AT**" or "**at**" string. This is necessary after customer activates autobauding or when customer starts up

the module with autobauding enabled.
- It is recommended to wait for 2 to 3 seconds before sending the first "**AT**" or "**at**" string after the module is started up with autobauding enabled. Otherwise undefined characters might be returned.
- Restriction on autobauding operation
  - The serial interface shall be used with 8 data bits, no parity and 1 stop bit (factory setting).
  - The command "**A/**" can't be used.
  - Only the string "**AT**" or "**at**" can be detected (either "AT" or "**at**").
  - URCs that may be issued before the TA detects a new baud rate by receiving the first AT character, and they will be sent at the previously detected baud rate.
  - If TE's baud rate is changed after TA has recognized the earlier baud rate, loss of synchronization between TE and TA would be encountered and an "**AT**" or "**at**" string must be re-sent by TE to regain synchronization on baud rate. To avoid undefined characters during baud rate resynchronization and the possible malfunction of resynchronization, it is not recommended to switch TE's baud rate when autobauding is enabled. Especially, this operation is forbidden in data mode.
- Autobauding and baud rate after restarting.
  - In the autobauding mode, the detected baud rate is not saved. Therefore, resynchronization is required after restarting the module.
  - Unless the baud rate is determined, an incoming CSD call can't be accepted. This must be taken into account when autobauding and auto-answer mode (**ATS0 $\neq$ 0**) are enabled at the same time, especially if SIM PIN 1 authentication is done automatically and the setting **ATS0 $\neq$ 0** is stored to the user profile with **AT&W**.
  - Until the baud rate is synchronized, URCs after restarting will not be output when autobauding is enabled.
- Autobauding and Windows modem
  - The baud rate used by Windows modem can be detected while setting up a dial-up GPRS/CSD connection. However, some Windows modem drivers switch TE's baud rate to default value automatically after the GPRS call is terminated. In order to prevent no response to the Windows modem when it happens, it is not recommended to establish the dial-up GPRS/CSD connection in autobauding mode.
  - Based on the same considerations, it is also not recommended to establish the FAX connection in autobauding mode for PC FAX application, such as WinFax.

*NOTE:*

*To assure reliable communication and avoid any problem caused by undetermined baud rate between DCE and DTE, it is strongly recommended to configure a fixed baud rate and save it instead of using autobauding after start-up.*

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# 3. AT Commands according to TS27.007

## 3.1. Overview of AT Commands according to 3GPP TS27.007

| Command | Description |
|---------|-------------|
| AT+CACM | Accumulated call meter (ACM) reset or query |
| AT+CAMM | Accumulated call meter maximum (ACM MAX) set or query |
| AT+CAOC | Advice of charge |
| AT+CBST | Select bearer service type |
| AT+CCFC | Call forwarding number and condition control |
| AT+CCUG | Closed user group control |
| AT+CCWA | Call waiting control |
| AT+CEER | Extended error report |
| AT+CGMI | Request manufacture identification |
| AT+CGMM | Request model identification |
| AT+CGMR | Request TA revision of software release |
| AT+CGSN | Request product serial number identification (identical with +GSN) |
| AT+CSCS | Select TE character set |
| AT+CSTA | Select type of address |
| AT+CHLD | Call hold and multiparty |
| AT+CIMI | Request international mobile subscriber identity (IMSI) |
| AT+CLCC | List current calls of ME |
| AT+CLCK | Facility lock |
| AT+CLIP | Calling line identification presentation |
| AT+CLIR | Calling line identification restriction |
| AT+CMEE | Report mobile equipment error |
| AT+COLP | Connected line identification presentation |
| AT+COPS | Operator selection |
| AT+CPAS | Mobile equipment activity status |
| AT+CPBF | Find phonebook entries |
| AT+CPBR | Read current phonebook entries |
| AT+CPBS | Select phonebook memory storage |
| AT+CPBW | Write phonebook entry |
| AT+CPIN | Enter pin |
| AT+CPWD | Change password |
| AT+CR | Service reporting control |
| AT+CRC | Set cellular result codes for incoming call indication |
| AT+CREG | Network registration |
| AT+CRLP | Select radio link protocol Parameter |
| AT+CRSM | Restricted SIM access |

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| AT+CSQ | Signal quality report |
|---|---|
| AT+VTD | Tone duration |
| AT+VTS | DTMF and tone generation |
| AT+CNUM | Subscriber number |
| AT+CPOL | Preferred operator list |
| AT+COPN | Read operator names |
| AT+CFUN | Set phone functionality |
| AT+CCLK | Clock |
| AT+CSIM | Generic SIM access |
| AT+CALM | Alert sound mode |
| AT+CRSL | Ringer sound level |
| AT+CLVL | Loud speaker volume level |
| AT+CMUT | Mute control |
| AT+CPUC | Price per unit and currency table |
| AT+CCWE | Call meter maximum event |
| AT+CBC | Battery charge |
| AT+CUSD | Unstructured supplementary service data |
| AT+CSSN | Supplementary service notification |
| AT+CSNS | Signal number scheme |
| AT+CMOD | Configure alternating mode calls |

## 3.2. Detailed descriptions of AT Commands according to 3GPP TS27.007

### 3.2.1. AT+CACM Accumulated Call Meter (ACM) reset or query

| AT+CACM    Accumulated Call Meter(ACM) reset or query | |
|---|---|
| Test Command<br>**AT+CACM=?** | Response<br>**OK**<br>Parameter |
| Read Command<br>**AT+CACM?** | Response<br>TA returns the current value of ACM.<br>**+CACM: <acm>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br>Parameter<br>**<acm>**　　　String type; three bytes of the current ACM value in hexa-decimal format (e.g. "00001E" indicates decimal value 30) |

| | |
|---|---|
| | 000000 - FFFFFF |
| Write Command<br>**AT+CACM=[<passwd>]** | Parameter |
| | **<passwd>**　　　　String type:<br>　　　　　　　　　　SIM PIN2 |
| | Response |
| | TA resets the advice of charge related Accumulated Call Meter (ACM) value in SIM file EF (ACM). ACM contains the total number of home units for both the current and preceding calls.<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Reference<br>3GPP TS27.007 | |

### 3.2.2.　AT+CAMM Accumulated Call Meter maximum (ACM max) set or query

| AT+CAMM　Accumulated Call Meter maximum (ACM max) set or query | |
|---|---|
| Test Command<br>**AT+CAMM=?** | Response<br>**OK**<br>Parameter |
| Read Command<br>**AT+ CAMM?** | Response<br>TA returns the current value of ACM max.<br>**+CAMM: <acmmax>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br><br>Parameters<br>See Write Command. |
| Write Command<br>**AT+CAMM=[<acmmax>[,<passwd>]]** | Response<br>TA sets the advice of charge related Accumulated Call Meter maximum value in SIM file EF (ACM max). ACM max contains the maximum number of home units allowed to be consumed by the subscriber.<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br>Parameters |
| | **<acmmax>**　　　　String type; three bytes of the max. ACM value in<br>　　　　　　　　　　hex-decimal format (e.g. "00001E" indicates decimal<br>　　　　　　　　　　value 30)<br>　　　　000000 |

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| | | Disable ACM max feature |
|---|---|---|
| | 000001-FFFFFF | |
| | **<passwd>** | String type |
| | | SIM PIN2 |
| Reference<br>3GPP TS27.007 | | |

### 3.2.3. AT+CAOC Advice of charge

| **AT+CAOC    Advice of charge** | |
|---|---|
| Test Command<br>**AT+CAOC=?** | Response<br>+**CAOC**: (list of supported <**mode**>s)<br><br>**OK**<br>Parameters<br>See Write Command. |
| Read Command<br>**AT+CAOC?** | Response<br>+**CAOC: <mode>**<br><br>**OK**<br>Parameters<br>see Write Command |
| Write Command<br>**AT+CAOC=<mo<br>de>** | Response<br>TA sets the advice of charge supplementary service function mode.<br>If error is related to ME functionality:<br>+**CME ERROR: <err>**<br>If <mode>=0, TA returns the current call meter value<br>+**CAOC: <ccm>**<br><br>**OK**<br>If **<mode>**=1, TA deactivates the unsolicited reporting of CCM value<br>**OK**<br>If **<mode>**=2. TA activates the unsolicited reporting of CCM value<br>**OK**<br>Parameters<br>**<mode>**    0    Query CCM value<br>             <u>1</u>    Deactivate the unsolicited reporting of CCM value<br>             2    Activate the unsolicited reporting of CCM value<br>**<ccm>**    String type; three bytes of the current CCM value in<br>             hex-decimal format (e.g. "00001E" indicates decimal value<br>             30); bytes are similarly coded as ACM max value in the<br>             SIM |

| | | 000000-FFFFFF |
|---|---|---|
| Reference<br>3GPP TS27.007 | | |

### 3.2.4. AT+CBST Select bearer service type

| AT+CBST    Select bearer service type | |
|---|---|
| Test    Command<br>**AT+CBST=?** | Response<br>+**CBST:** (list of supported **<speed>**s) ,(list of supported **<name>**s) ,(list of supported **<ce>**s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read    Command<br>**AT+CBST?** | Response<br>+**CBST: <speed>,<name>,<ce>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CBST=[<speed>]<br>[,<name>[,<ce>]]<br>]** | Response<br>TA selects the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated.<br>**OK**<br><br>Parameters<br>**<speed>** 0    Autobauding<br>          4    2400 bps(V.22bis)<br>          5    2400 bps(V.26ter)<br>          6    4800 bps(V.32)<br>          7    9600 bps(V.32)<br>          12    9600 bps(V.34)<br>          14    14400 bps(V.34)<br>          68    2400 bps(V.110 or X.31 flag stuffing)<br>          70    4800 bps(V.110 or X.31 flag stuffing)<br>          71    9600 bps(V.110 or X.31 flag stuffing)<br>          75    14400 bps(V.110 or X.31 flag stuffing)<br>          134    64000 bps（multimedia）<br>**<name>** 0    Data circuit asynchronous (UDIor 3.1kHzModem）<br>          1    Data circuit synchronous (UDIor 3.1kHzModem）<br>          4    Data circuit asynchronous(RDI)<br>**<ce>**    0    Transparent |

| | | |
|---|---|---|
| | 1 | Non-transparent |
| Reference<br>3GPP TS27.007 | *Note:*<br>*3GPP TS22.002 (GSM 02.02): lists the allowed combinations of the sub parameters.* | |

### 3.2.5. AT+CCFC Call forwarding number and conditions control

| AT+CCFC Call forwarding number and conditions control | |
|---|---|
| Test Command<br>**AT+CCFC=?** | Response<br>**+CCFC:** (list of supported **<reads>**)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CCFC =**<br>**<reads>, <mode>**<br>**[, <number> [,**<br>**<type> [,<class>**<br>**[, <subaddr>**<br>**[,<satype>**<br>**[,time]]]]]]** | Response<br>TA controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.<br>Only ,**<reads>** and **<mode>** should be entered with mode (0-2,4)<br>If **<mode>**<>2 and command successful<br>**OK**<br>If **<mode>**=2 and command successful (only in connection with **<reads>** 0 –3)<br>For registered call forwarding numbers:<br>**+CCFC: <status>, <class1>[, <number>, <type>**<br>**[,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: ....]**<br><br>**OK**<br>If no call forwarding numbers are registered (and therefore all classes are inactive):<br>**+CCFC: <status>, <class>**<br><br>**OK**<br>where **<status>**=0 and **<class>**=15<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameters<br>**<reads>**    0   Unconditional<br>            1   Mobile busy<br>            2   No reply<br>            3   Not reachable<br>            4   All call forwarding (0-3)<br>            5   All conditional call forwarding (1-3) |

| | | | |
|---|---|---|---|
| | **\<mode\>** | 0 | Disable |
| | | 1 | Enable |
| | | 2 | Query status |
| | | 3 | Registration |
| | | 4 | Erasure |
| | **\<number\>** | Phone number in string type of forwarding address in format specified by **\<type\>** | |
| | **\<type\>** | Type of address in integer format; default value is 145 when dialing string includes international access code character "+", otherwise 129 | |
| | **\<subaddr\>** | String type sub-address of format specified by **\<satype\>** | |
| | **\<satype\>** | Type of sub-address in integer | |
| | **\<class\>** | 1 | Voice |
| | | 2 | Data |
| | | 4 | FAX |
| | | 7 | All telephony except SMS |
| | | 8 | Short message service |
| | | 16 | Data circuit sync |
| | | 32 | Data circuit async |
| | **\<time\>** | 1…30 | When "no reply" (**\<reads\>**=no reply) is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value is 20 |
| | **\<status\>** | 0 | Not active |
| | | 1 | Active |
| Reference 3GPP TS27.007 | | | |

### 3.2.6. AT+CCUG Closed user group control

| AT+CCUG   Closed user group control | |
|---|---|
| Read Command **AT+CCUG?** | Response **+CCUG: \<n\>,\<index\>,\<info\>** <br><br> **OK** <br> If error is related to ME functionality: <br> **+CME ERROR: \<err\>** |
| | Parameter <br> See Write Command. |
| Write Command **AT+CCUG=[\<n\>]** **[,\<index\>[,\<info** | TA sets the closed user group supplementary service parameters as a default adjustment for all following calls. <br> **OK** <br> If error is related to ME functionality: |

| >]]] | +CME ERROR: <err> | | |
|------|------|------|------|
| | Parameters | | |
| | **<n>** | 0 | Disable CUG |
| | | 1 | Enable CUG |
| | **<index>** | 0...9 | CUG index |
| | | 10 | No index (preferred CUG taken from subscriber data) |
| | **<info>** | 0 | Bo information |
| | | 1 | Suppress OA (Outgoing Access) |
| | | 2 | Suppress preferential CUG |
| | | 3 | Suppress OA and preferential CUG |
| Reference | | | |
| 3GPP TS27.007 | | | |

### 3.2.7. AT+CCWA Call waiting control

| AT+CCWA    Call waiting control | |
|------|------|
| Read Command<br>**AT+CCWA?** | Response<br>**+CCWA: <n>**<br><br>**OK** |
| Test Command<br>**AT+CCWA=?** | Response<br>**+CCWA:** (list of supported **<n>**s)<br><br>**OK** |
| Write Command<br>**AT+CCWA=[<n>]**<br>**[,<mode>[,<class>]]]** | Response<br>TA controls the call waiting supplementary service. Activation, deactivation and status query are supported.<br>If **<mode><>**2 and command successful<br>**OK**<br>If **<mode>**=2 and command successful<br>**+CCWA:<status>,<class1>[<CR><LF>+CCWA:<status>,<class2>[...]]**<br><br>**OK**<br><br>*Note: <status>=0 should be returned only if service is not active for any <class> i.e. +CCWA: 0, 7 will be returned in this case.*<br>*When <mode>=2, all active call waiting classes will be reported. In this mode, the command is enabled by pressing any key.*<br>(IS IT NOTE)<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

| | Parameters |
|---|---|
| | **\<n\>**     0     Disable presentation of an unsolicited result code |
| |              1     Enable presentation of an unsolicited result code |
| | **\<mode\>** When **\<mode\>** parameter is not given, network is not interrogated |
| |              0     Disable |
| |              1     Enable |
| |              2     Query status |
| | **\<class\>**   A sum of integers, each integer represents a class of information |
| |              1     Voice (telephony) |
| |              2     Data (bearer service) |
| |              4     FAX(facsimile) |
| |              16   Data circuit sync |
| |              32   Data circuit async |
| | **\<status\>** 0     Disable |
| |              1     Enable |
| | Unsolicited result code |
| | When the presentation call waiting at the TA is enabled (and call waiting is enabled) and a terminating call set up has attempted during an established call, an unsolicited result code is returned: |
| | **+CCWA: \<number\>,\<type\>,\<class\>[,\<alpha\>]** |
| | Parameters |
| | **\<number\>**       Phone number in string type of calling address in format specified by \<**type**\> |
| | **\<type\>**           Type of address octet in integer format |
| |                          129 Unknown type (IDSN format number) |
| |                          145 International number type (ISDN format ) |
| | **\<alpha\>**         Optional string type alphanumeric representation of **\<number\>** corresponding to the entry found in phone book |
| Reference<br>3GPP TS27.007 | |

### 3.2.8. AT+CEER Extended error report

| AT+CEER    Extended error report | |
|---|---|
| Test Command<br>**AT+CEER=?** | Response<br>**OK** |
| Execution<br>Command<br>**AT+CEER** | Response<br>TA returns an extended report of the reason for the last call release.<br>**+CEER: \<locationID\>,\<cause\>**<br><br>**OK** |

| | Parameter | |
|---|---|---|
| | **<locationID>** | Location ID as number code. Location IDs are listed in Section 8.3.1. Each ID is related with anther table that contains a list of <cause>s |
| | <**cause**> | Reason for last call release as number code. The number codes are listed in several tables, sorted by different categories. The tables can be found proceeding from the Location ID given in Section 8.3.2 |
| Reference<br>3GPP TS27.007 | | |

### 3.2.9. AT+CGMI Request manufacturer identification

| AT+CGMI    Request manufacturer identification | |
|---|---|
| Test Command<br>**AT+CGMI=?** | Response<br>**OK** |
| Execution<br>Command<br>**AT+CGMI** | Response<br>TA returns manufacturer identification text.<br>**Quectel_Ltd**<br>**Quectel_U10**<br>**Revision: MTK 1112**<br><br>**OK**<br>Parameter |
| Reference<br>3GPP TS27.007 | |

### 3.2.10. AT+CGMM Request model identification

| AT+CGMM    Request model identification | |
|---|---|
| Test Command<br>**AT+CGMM=?** | Response<br>**OK** |
| Execution<br>Command<br>**AT+CGMM** | Response<br>TA returns product model identification text.<br>**<model>**<br><br>**OK**<br>Parameter |

| | <model> Product model identification text |
|---|---|
| Reference 3GPP TS27.007 | *Note:* *For example in U10 wireless module, string " Quectel_U10" is displayed.* |

### 3.2.11. AT+CGMR Request TA revision identification of software release

| AT+CGMR Request TA revision identification of software release | |
|---|---|
| Test Command **AT+CGMR=?** | Response **OK** |
| Execution Command **AT+CGMR** | Response TA returns product software version identification text. **Revision: <revision>** **OK** Parameter **<revision>** Product software version identification text |
| Reference 3GPP TS27.007 | *Note:* *For example in U10 wireless module, string " U10R01A01M1024" is displayed.* |

### 3.2.12. AT+CGSN Request product serial number identification (Identical with +GSN)

| AT+CGSN Request product serial number identification (Identical with +GSN) | |
|---|---|
| Test Command **AT+CGSN=?** | Response **OK** |
| Execution Command **AT+CGSN** | Response **<sn>** **OK** Parameter See **+GSN**. |
| Reference 3GPP TS27.007 | |

### 3.2.13. AT+CSCS Select TE character set

| AT+CSCS Select TE character set | |
|---|---|
| Test Command **AT+CSCS=?** | Response **+CSCS:** (list of supported <**chset**>s) |

| | |
|---|---|
| | **OK** |
| | Parameters |
| | **<chset>**      "GSM"      GSM default alphabet |
| |                 "HEX"      Character strings consist only of hexadecimal numbers from 00 to FF |
| |                 "IRA"      International reference alphabet |
| |                 "PCCP437"      PC character set Code |
| |                 "UCS2"      UCS2 alphabet |
| |                 "8859-1"      ISO 8859 Latin 1 character set |
| Read Command<br>**AT+CSCS?** | Response<br>**+CSCS: <chset>**<br><br>**OK**<br>Parameter<br>See Test Command. |
| Write Command<br>**AT+CSCS=<chset>** | Response<br>Set character set **<chset>** which is used by the TE. The TA can then convert character strings correctly between the TE and ME character sets.<br>Parameter<br>See Test Command. |
| Reference<br>3GPP TS27.007 | |

### 3.2.14. AT+CSTA Select type of address

| AT+CSTA    Select type of address | |
|---|---|
| Test Command<br>**AT+CSTA=?** | Response<br>**+CSTA: (129,145, 161,)**<br><br>**OK** |
| Read Command<br>**AT+CSTA?** | Response<br>**+CSTA: <type>**<br><br>**OK**<br>Parameter<br>**< type >** Current address type setting. |
| Reference<br>3GPP TS27.007 | *Note:*<br>●    *The ATD command overrides this setting when a number is dialed.*<br>●    *129 Unknown type (IDSN format number)*<br>●    *161 National number type (IDSN format)*<br>●    *145 International number type (ISDN format )* |

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### 3.2.15. AT+CHLD Call hold and multiparty

| AT+CHLD   Call hold and multiparty | |
|---|---|
| Test Command<br>**AT+CHLD=?** | Response<br>**+CHLD:** (list of supported **<n>**s)<br><br>**OK** |
| Write Command<br>**AT+CHLD=[<n>]** | Response<br>TA controls the supplementary services call hold, multiparty and explicit call transfer. Calls can be put on hold, recovered, released, added to conversation and transferred.<br>*Note:*<br>*These supplementary services are only applicable to teleservice 11 (Speech: Telephony).*<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameter<br>**<n>**   0   Terminate all held calls or UDUB (User Determined User Busy) for a waiting call. If a call is waiting, terminate the waiting call. Otherwise, terminate all held calls (if any).<br>        1   Terminate all active calls (if any) and accept the other call (waiting call or held call). It cannot terminate active call if there is only one call.<br>      1X  Terminate the specific call number X (X= 1-7)( active, waiting or held)<br>       2   Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call<br>      2X  Place all active calls except call X (X= 1-7) on hold<br>       3   Add the held call to the active calls |
| Reference | |

### 3.2.16. AT+CIMI Request International Mobile Subscriber Identity (IMSI)

| AT+CIMI   Request International Mobile Subscriber Identity(IMSI) | |
|---|---|
| Test Command<br>**AT+CIMI=?** | Response<br>**OK**<br>Parameter |
| Execution<br>Command | Response<br>TA returns <IMSI>for identifying the individual SIM which is attached to |

| AT+CIMI | ME. |
| --- | --- |
| | **\<IMSI\>** |
| | |
| | **OK** |
| | If error is related to ME functionality: |
| | **+CME ERROR: \<err\>** |
| | Parameter |
| | **\<IMSI\>** International Mobile Subscriber Identity (string without double quotes) |
| Reference 3GPP TS27.007 | |

### 3.2.17. AT+CLCC List current calls of ME

| AT+CLCC   List current calls of ME | |
| --- | --- |
| Test Command **AT+CLCC=?** | Response **OK** Parameters |
| Execution Command **AT+CLCC** | Response TA returns a list of current calls of ME. *Note:* *If command succeeds but no calls are available, no information response is sent to TE.* **[+CLCC: \<id1\>,\<dir\>,\<stat\>,\<mode\>,\<mpty\>[, \<number\>,\<type\>[,""]]** **[\<CR\>\<LF\>+CLCC: \<id2\>,\<dir\>,\<stat\>,\<mode\>,\<mpty\>[, \<number\>,\<type\>[,""]]** **[...]]]** **OK** If error is related to ME functionality: **+CME ERROR: \<err\>** Parameters **\<id*x*\>** Integer type; call identification number as described in TS22.030(GSM02.30) sub clause 4.5.5.1; this number can be used in +CHLD Command operations **\<dir\>** 0 Mobile originated (MO) call 1 Mobile terminated (MT) call **\<stat\>** State of the call 0 Active 1 Held |

| | | 2 | Dialing (MO call) |
|---|---|---|---|
| | | 3 | Alerting (MO call) |
| | | 4 | Incoming (MT call) |
| | | 5 | Waiting (MT call) |
| | **<mode>** | Bearer/tele service: | |
| | | 0 | Voice |
| | | 1 | Data |
| | | 2 | FAX |
| | | 9 | Unknown |
| | **<mpty>** | 0 | Call is not one of multiparty (conference) call parties |
| | | 1 | Call is one of multiparty (conference) call parties |
| | **<number>** | Phone number in string type in format specified by **<type>** | |
| | **<type>** | Type of address of octet in integer format; | |
| | | 129 Unknown type(IDSN format number) | |
| | | 145 International number type(ISDN format ) | |
| Reference<br>3GPP TS27.007 | | | |

## 3.2.18. AT+CLCK Facility lock

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

| | | |
|---|---|---|
| **\<fac\>** | | |
| | "SC" | SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued) |
| | AO" | BAOC (Barr All Outgoing Calls) (refer to TS22.088(GSM02.88) clause 1) |
| | "OI" | BOIC (Barr Outgoing International Calls) (refer to TS22.088(GSM02.88) clause 1) |
| | "OX" | BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to TS22.088(GSM02.88) clause 1) |
| | "AI" | BAIC (Barr All Incoming Calls) (refer to TS22.088(GSM02.88) clause 2) |
| | "IR" | BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer toTS22.088(GSM02.88) clause 2) |
| | "AB" | All Barring services (refer to TS22.030(GSM02.30)) (applicable only for **\<mode\>**=0) |
| | "AG" | All out Going barring services (refer to TS22.030(GSM02.30)) (applicable only for **\<mode\>**=0) |
| | "AC" | All in Coming barring services (refer to TS22.030(GSM02.30)) (applicable only for **\<mode\>**=0) |
| | "PF" | Lock Phone to the very first SIM card |
| | "PN" | Network Personalization (refer to TS22.022(GSM02.22)) |
| | "PU" | Network subset Personalization (refer to TS22.022(GSM02.22)) |
| | "PP" | Service Provider Personalization (refer to TS22.022(GSM02.22)) |
| | "PC" | Corporate Personalization (refer to TS22.022(GSM02.22)) |
| **\<mode\>** | 0 | Unlock |
| | 1 | Lock |
| | <u>2</u> | Query status |
| **\<passwd\>** | Password | |
| **\<class\>** | 1 | Voice |
| | 2 | Data |
| | 4 | FAX |
| | 7 | All telephony except SMS (Default) |
| | 8 | Short message service |
| | 16 | Data circuit sync |
| | 32 | Data circuit async |
| **\<status\>** | 0 | Off |

| | 1 | On |
| --- | --- | --- |
| Reference<br>3GPP TS27.007 | | |

### 3.2.19. AT+CLIP Calling line identification presentation

| AT+CLIP | Calling line identification presentation |
| --- | --- |
| Read Command<br>**AT+CLIP?** | Response<br>**+CLIP: <n>, <m>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameters<br>See Write Command. |
| Test Command<br>**AT+CLIP=?** | Response<br>**+CLIP:** (list of supported <**n**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CLIP=[<n>]** | Response<br>TA enables or disables the presentation of the calling line identity (CLI) at the TE. It has no effect on the execution of the supplementary service CLIP in the network.<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameters<br><n>    0    Suppress unsolicited result codes<br>       1    Display unsolicited result codes<br><m>   0    CLIP not provisioned<br>       1    CLIP provisioned<br>       2    Unknown |
| | **Unsolicited result code**<br>When the presentation of the CLI at the TE is enabled (and calling subscriber allows), an unsolicited result code is returned after every RING (or +CRING: **<type>**) at a mobile terminating call.<br>**+CLIP: <number>, <type>,"",,<alphaId>,<CLI validity**><br><br>Parameters<br>**<number>**        Phone number in string type of calling address in format |

| | | specified by **<type>** |
|---|---|---|
| | **<type>** | Type of address octet in integer format; |
| | | 129 Unknown type (IDSN format number) |
| | | 145 International number type (ISDN format ) |
| | **<alphaId>** | String type alphanumeric representation of **<number>** |
| | | corresponding to the entry found in phone book |
| | **<CLI validity>** | 0    CLI valid |
| | | 1    CLI has been withheld by the originator |
| | | 2    CLI is not available due to interworking problems or |
| | | limitations of originating network |
| Reference | | |
| 3GPP TS27.007 | | |

### 3.2.20. AT+CLIR Calling line identification restriction

| AT+CLIR    Calling line identification restriction | |
|---|---|
| Read Command<br>**AT+CLIR?** | Response<br>**+CLIR: <n>, <m>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameters<br>See Write Command. |
| Test Command<br>**AT+CLIR=?** | Response<br>**+CLIR:** (list of supported **<n>**s)<br><br>**OK** |
| Write Command<br>**AT+CLIR=[<n>]** | Response<br>TA restricts or enables the presentation of the calling line identity (CLI) to the called party when originating a call.<br>The command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite Command.<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameters<br>**<n>** (Parameter sets the adjustment for outgoing calls):<br>    0    presentation indicator is used according to the subscription of the |

| | | CLIR service |
|---|---|---|
| | 1 | CLIR invocation |
| | 2 | CLIR suppression |
| **<m>**(Parameter shows the subscriber CLIR service status in the network): | | |
| | 0 | CLIR not provisioned |
| | 1 | CLIR provisioned in permanent mode |
| | 2 | Unknown (e.g. no network, etc.) |
| | 3 | CLIR temporary mode presentation restricted |
| | 4 | CLIR temporary mode presentation allowed |
| Reference <br> 3GPP TS27.007 | | |

### 3.2.21. AT+CMEE Report mobile equipment error

| AT+CMEE Report mobile equipment error | |
|---|---|
| Test Command <br> **AT+CMEE=?** | Response <br> **+CMEE:** (list of supported **<n>**s) <br><br> **OK** |
| | Parameters <br> See Write Command. |
| Read Command <br> **AT+CMEE?** | Response <br> **+CMEE: <n>** <br><br> **OK** |
| | Parameters <br> See Write Command. |
| Write Command <br> **AT+CMEE=[<n>]** | Response <br> TA disables or enables the use of result code **+CME ERROR: <err>** as an indication of an error related to the functionality of the ME. <br> **OK** |
| | Parameters <br> **<n>** 0    Disable result code <br>     <u>1</u>    Enable result code and use numeric values <br>     2    Enable result code and use verbose values |
| Reference <br> 3GPP TS27.007 | |

### 3.2.22. AT+COLP Connected line identification presentation

| AT+COLP Connected line identification presentation | |
|---|---|
| Read Command<br>**AT+COLP?** | Response<br>**+COLP: <n>,<m>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameters<br>See Write Command |
| Test Command<br>**AT+COLP=?** | Response<br>**+COLP:** (list of supported <**n**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+COLP=[<n>]** | Response<br>TA enables or disables the presentation of the COL (Connected Line) at the TE for a mobile originating a call. It has no effect on the execution of the supplementary service COLR in the network.<br>Intermediate result code is returned from TA to TE before any +CR or V.25ter responses.<br>**OK** |
| | Parameters<br>**<n>** (Parameter sets/shows the result code presentation status in the TA):<br>    <u>0</u>   Disable<br>    1   Enable<br>**<m>**(Parameter shows the subscriber COLP service status in the network):<br>    0   COLP not provisioned<br>    1   COLP provisioned<br>    2   Unknown (e.g. no network, etc.) |
| | Intermediate result code<br>When enabled (and called subscriber allows), an intermediate result code is returned before any +CR or V.25ter responses:<br>**+COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]]** |
| | Parameters<br>**<number>**    Phone number in string type, format specified by **<type>**<br>        **<type>**    Type of address octet in integer format<br>                129 Unknown type(IDSN format number)<br>                145 International number type(ISDN format )<br>**<subaddr>**    String type sub-address of format specified by **<satype>**<br>**<satype>**    Type of sub-address octet in integer format (refer to |

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| | | TS24.008(GSM04.08) sub clause 10.5.4.8) |
|---|---|---|
| | **<alpha>** | Optional string type alphanumeric representation of **<number>** , corresponding to the entry found in phone book |
| Reference 3GPP TS27.007 | | |

### 3.2.23. AT+COPS Operator selection

| AT+COPS Operator selection | |
|---|---|
| Test Command **AT+COPS=?** | Response TA returns a list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM and other networks. **+COPS:** (list of supported<**stat**>, long alphanumeric <**oper**>, short alphanumeric <**oper**>, numeric <**oper**>**[,<Act>]**)s [,,(list of supported <**mode**>s),(list of supported <**format**>s)] **OK** If error is related to ME functionality: **+CME ERROR: <err>** |
| | Parameters See Write Command. |
| Read Command **AT+COPS?** | Response TA returns the current mode and the currently selected operator. If no operator is selected, <**format**> and <**oper**> are omitted. **+COPS: <mode>[, <format>[, <oper>]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>** |
| | Parameters See Write Command. |
| Write Command **AT+COPS = <mode>[,<format>[,<oper>[,<Act>]]]** | Response TA forces an attempt to select and register the GSM/WCDMA network operator. If the selected operator is not available, no other operator shall be selected (except **<mode>**=4). The format of selected operator name shall apply to further read commands (+**COPS?**). **OK** If error is related to ME functionality: **+CME ERROR: <err>** |

| | Parameters | | |
|---|---|---|---|
| | **<stat>** | 0 | Unknown |
| | | 1 | Operator available |
| | | 2 | Operator current |
| | | 3 | Operator forbidden |
| | **<oper>** | Operator in format as per **<mode>** | |
| | **<mode>** | 0 | Automatic mode; **<oper>** field is ignored |
| | | 1 | Manual operator selection; **<oper>** field shall be present |
| | | 2 | Manual deregister from network |
| | | 3 | Set only **<format>** (for read Command +**COPS?**) – not shown in Read Command response |
| | | 4 | Manual/automatic selected; if manual selection fails, automatic mode (**<mode>**=0) is entered |
| | **<format>** | 0 | Long format alphanumeric **<oper>**;can be up to 16 characters long |
| | | 1 | Short format alphanumeric **<oper>** |
| | | 2 | Numeric **<oper>**; GSM Location Area Identification number |
| | **<Act>** | 0 | GSM |
| | | 2 | UTRAN |
| Reference 3GPP TS27.007 | *Note*： *U10 does not support mode=2 or mode=4.* | | |

### 3.2.24. AT+CPAS Mobile equipment activity status

| **AT+CPAS Mobile equipment activity status** | |
|---|---|
| Test Command **AT+CPAS=?** | Response +**CPAS:** (list of supported <**pas**>s) <br><br> **OK** |
| | Parameter See Execution Command. |
| Execution Command **AT+CPAS** | Response TA returns the activity status of ME. +**CPAS: <pas>** <br><br> **OK** If error is related to ME functionality: +**CME ERROR: <err>** |
| | Parameter **<pas>** 0 Ready |

| | 2 | Unknown (ME is not guaranteed to respond to instructions) |
| | 3 | Ringing |
| | 4 | Call in progress or call hold |
| Reference<br>3GPP TS27.007 | | |

## 3.2.25. AT+CPBF Find phonebook entries

| AT+CPBF Find phonebook entries | |
|---|---|
| Test Command<br>**AT+CPBF=?** | Response<br>**+CPBF:** maximum length of field <**nlength**>,maximum length of field <**tlength**><br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CPBF=[<fin dtext>]** | Response<br>TA returns phone book entries (from the current phone book memory storage selected with **+CPBS**) which contain alphanumeric string <**findtext**>.<br>**[+CPBF: <index1>, <number>,<type>, <text>[[...]**<br>**<CR><LF>+CBPF: <index2>,<number>,<type>,<text>]**<br><br>**OK** |
| | Parameters<br><**findtext**>　　String type field of maximum length <**tlength**> in current TE character set specified by +**CSCS**.<br><**index1**>　　Integer type values in the range of location numbers of phone book memory<br><**index2**>　　Integer type values in the range of location numbers of phone book memory<br><**number**>　　Phone number in string type of format <**type**><br>　　　　　　<**type**>　　Type of address octet in integer format:<br>　　　　　　　　　129 Unknown type(IDSN format number)<br>　　　　　　　　　145 International number type(ISDN format )<br><**text**>　　String type field of maximum length <**tlength**> in current TE character set specified by +**CSCS**.<br><**nlength**>　　Integer type value indicating the maximum length of field <**number**><br><**tlength**>　　Integer type value indicating the maximum length of field <**text**> |

| Reference | |
|---|---|
| 3GPP TS27.007 | |

### 3.2.26. AT+CPBR Read current phonebook entries

| AT+CPBR Read current phonebook entries | |
|---|---|
| Test Command<br>**AT+CPBR=?** | Response<br>TA returns location range supported by the current storage as a compound value and the maximum lengths of **<number>** and **<text>** fields.<br>+**CPBR:** (list of supported <**index**>s), <**nlength**>, <**tlength**><br><br>**OK** |
| | Parameters<br>**<index>** Location number<br>**<nlength>** Maximum length of phone number<br>**<tlength>** Maximum length of name for number |
| Write Command<br>**AT+CPBR=**<br>**<index1>**<br>**[, <index2>]** | Response<br>TA returns phone book entries in location number range **<index1>...**<br>**<index2>** from the current phone book memory storage selected with<br>+**CPBS**. If **<index2>** is left out, only location **<index1>** is returned.<br>+**CPBR:<index1>,<number>,<type>,<text>[<CR><LF>+CPBR: .....+C<br>PBR: <index2>, <number>, <type>, <text>]**<br><br>**OK** |
| | Parameters<br>**<index1>** The first phone book record to read<br>**<index2>** The last phonebook record to read<br>**<number>** Phone number<br>**<type>** Type of number<br>**<text>** Text name for phone number in current TE character set specified by +**CSCS** |
| Reference<br>3GPP TS27.007 | |

### 3.2.27. AT+CPBS Select phonebook memory storage

| AT+CPBS Select phonebook memory storage | |
|---|---|
| Test Command<br>**AT+CPBS=?** | Response<br>+**CPBS:** (list of supported <**storage**>s) |

| | OK |
|---|---|
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CPBS?** | Response<br>**+CPBS: <storage>[,<used>,<total>]**<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CPBS=<stor age>** | Response<br>TA selects current phone book memory storage, which is used by other phone book commands.<br>**OK** |
| | Parameters<br>**<storage>**   "MC"    ME missed (unanswered) calls list<br>                "RC"    ME received calls list<br>                "DC"    ME dialed calls list(+**CPBW** may not be applicable<br>                                 or this storage)(same as LD)<br>                "LA"    Last Number All list (LND/LNM/LNR)<br>                "ME"    ME phonebook<br>                "BN"    SIM barred dialed number<br>                "SD"    SIM service dial number<br>                "VM"    SIM voice mailbox<br>                "FD"    SIM fix dialing-phone book<br>                "LD"    SIM last-dialing-phone book<br>                "ON"    SIM (or ME) own numbers (MSISDNs) list<br>                "SM"    SIM phonebook<br>**<used>**    Integer type value indicating the total number of used locations in selected memory<br>**<total>**    Integer type value indicating the total number of locations in selected memory |
| Reference<br>3GPP TS27.007 | |

### 3.2.28. AT+CPBW Write phonebook entry

| **AT+CPBW**    **Write phonebook entry** | |
|---|---|
| Test Command<br>**AT+CPBW=?** | Response<br>TA returns location range supported by the current storage, the maximum length of **<number>** field, supported number formats of the storage, and the maximum length of **<text>** field.<br>+**CPBW:** (The range of supported <**index**>s)**,** <**nlength**>, (list of supported |

| | |
|---|---|
| | <type>s), <tlength>  <br><br>**OK** |
| | Parameters  <br>See Write Command. |
| Write Command  <br>**AT+CPBW=**  <br>**<index1>**  <br>**[, <number>,**  <br>**[<type>,**  <br>**[<text>]]]** | Response  <br>TA writes phone book entry in location number **<index>** in the current phone book memory storage selected with +**CPBS**. Entry fields written are phone number **<number>** (in the format **<type>**) and text **<text>** associated with the number. If those fields are omitted, phone book entry is deleted. If **<index>** is left out, but **<number>** is given, entry is written to the first free location in the phone book.  <br>**OK** |
| | Parameters  <br><nlength>    Maximum length of phone number  <br><tlength>    Maximum length of text for number  <br><index>    Location number  <br><number>    Phone number  <br><type>    Type of number  <br>              129 Unknown type(IDSN format number)  <br>              145 International number type(ISDN format )  <br><text>    Text for phone number in current TE character set specified by +**CSCS**  <br>Note:    The following characters in **<text>** must be entered via the escape sequence: <table><tr><td>**GSM char**</td><td>**Seq.**</td><td>**Seq.(hex)**</td><td>**Note**</td></tr><tr><td>\</td><td>\5C</td><td>5C 35 43</td><td>(backslash)</td></tr><tr><td>"</td><td>\22</td><td>5C 32 32</td><td>(string delimiter)</td></tr><tr><td>BSP</td><td>\08</td><td>5C 30 38</td><td>(backspace)</td></tr><tr><td>NULL</td><td>\00</td><td>5C 30 30</td><td>(GSM null)</td></tr></table>    '0' (GSM null) may cause problems for application layer software when reading string lengths |
| Reference  <br>3GPP TS27.007 | |

### 3.2.29. AT+CPIN Enter PIN

| AT+CPIN    Enter PIN | |
|---|---|
| Test Command  <br>**AT+CPIN=?** | Response  <br>**OK**  <br>Parameter  <br>See Write Command. |

| Read Command | Response |
|---|---|
| **AT+CPIN?** | TA returns an alphanumeric string indicating whether or not some password is required. |
| | **+CPIN: <code>** |
| | |
| | **OK** |
| | Parameter |
| | READY      No further entry needed |
| | SIM PIN      ME is waiting for SIM PIN |
| | SIM PUK      ME is waiting for SIM PUK |
| | PH_SIM PIN      ME is waiting for phone to SIM card (antitheft) |
| | PH_SIM PUK      ME is waiting for SIM PUK (antitheft) |
| | SIM PIN2      PIN2, e.g. it is possible to edit the FDN book only if preceding command was acknowledged with **+CME ERROR:17** |
| | SIM PUK2      Possible only if preceding command was acknowledged with error **+CME ERROR: 18** |
| Write Command | Response |
| **AT+CPIN=<pin> [, <new pin>]** | TA stores 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 and an error message, **+CME ERROR**, is returned to TE. |
| | If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, **<new pin>**, is used to replace the old pin in the SIM. |
| | **OK** |
| | Parameters |
| | **<pin>**      String type; password |
| | **<new pin>**      String type; If the PIN required is SIM PUK or SIMPUK2: new password |
| Reference | |
| 3GPP TS27.007 | |

### 3.2.30. AT+CPWD Change password

| **AT+CPWD**     **Change password** | |
|---|---|
| Test Command | Response |
| **AT+CPWD=?** | TA returns a list of pairs which present the available facilities and the maximum length of their password. |
| | **+CPWD:** (list of supported <**fac**>s, <**pwdlength**>s) |
| | |

| | | |
|---|---|---|
| | **OK** | |
| | Parameters | |
| | **<fac>** | See Write Command, without "FD" |
| | **<pwdlength>** | Integer. max, length of password |
| Write Command | Response | |
| **AT+CPWD** = | TA sets a new password for the facility lock function. | |
| **<fac>,** | | |
| **<oldpwd>,** | **OK** | |
| **<newpwd>** | Parameters | |
| | **<fac>** | |
| | "SC" | SIM (lock SIM card) (SIM asks password in ME power-up and when this lock Command issued) |
| | "AO" | BAOC (Barr All Outgoing Calls) (refer to TS22.088(GSM02.88) clause 1) |
| | "OI" | BOIC (Barr Outgoing International Calls) (refer to TS22.088(GSM02.88) clause 1) |
| | "OX" | BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to TS22.088(GSM02.88) clause 1) |
| | "AI" | BAIC (Barr All Incoming Calls) (refer to TS22.088(GSM02.88) clause 2) |
| | "IR" | BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to TS22.088(GSM02.88) clause 2) |
| | "AB" | All Barring services (refer to TS22.030(GSM02.30)) (applicable only for **<mode>**=0) |
| | "AG" | All outgoing barring services (refer to TS22.030(GSM02.30)) (applicable only for **<mode>**=0) |
| | "AC" | All incoming barring services (refer to TS22.030(GSM02.30)) (applicable only for **<mode>**=0) |
| | "FD" | SIM fixed dialing memory feature |
| | "P2" | SIM PIN2 |
| | **<oldpwd>** | Password specified for the facility from the user interface or with command. |
| | **<newpwd>** | New password |
| | | |

## 3.2.31. AT+CR Service reporting control

| AT+CR   Service reporting control | |
|---|---|
| Test Command | Response |
| **AT+CR=?** | **+CR:** (list of supported <**mode**>s) |
| | |
| | **OK** |

| | Parameter |
|---|---|
| | See Write Command. |
| Read Command<br>**AT+CR?** | Response<br>**+CR: \<mode>**<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CR=[\<mode>]** | Response<br>TA controls whether or not intermediate result code **+CR: \<serv>** is returned from the TA to the TE when a call is set up.<br>**OK**<br>Parameter<br>**\<mode>** 0 Disable<br> 1 Enable |
| | Intermediate result code<br>If it is enabled, an intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. **CONNECT**) is transmitted.<br>**+CR:\<serv>**<br>Parameter<br>**\<serv>** ASYNC Asynchronous transparent<br> SYNC Synchronous transparent<br> REL ASYNC Asynchronous non-transparent<br> REL SYNC Synchronous non-transparent |
| Reference<br>3GPP TS27.007 | |

### 3.2.32. AT+CRC Set cellular result codes for incoming call indication

| AT+CRC Set cellular result codes for incoming call indication | |
|---|---|
| Test Command<br>**AT+CRC=?** | Response<br>**+CRC:** (list of supported \<**mode**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CRC?** | Response<br>**+CRC: \<mode>** |

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| | OK |
|---|---|
| | Parameter |
| | See Write Command. |
| Write Command<br>**AT+CRC=[<mode>]** | Response<br>TA controls whether or not the extended format of incoming call indication is used.<br>OK<br>Parameter<br>**<mode>**     0     Disable extended format<br>             1     Enable extended format |
| | Unsolicited result code<br>When it is enabled, an incoming call is indicated to the TE with unsolicited result code +**CRING: <type>** instead of the normal **RING**.<br>Parameter<br>**<type>**    ASYNC            Asynchronous transparent<br>           SYNC             Synchronous transparent<br>           REL ASYNC      Asynchronous non-transparent<br>           REL SYNC        Synchronous non-transparent<br>           FAX              Facsimile<br>           VOICE           Voice |
| Reference<br>3GPP TS27.007 | |

### 3.2.33. AT+CREG Network registration

| **AT+CREG**    **Network registration** | |
|---|---|
| Test Command<br>**AT+CREG=?** | Response<br>+**CREG:** (list of supported <**n**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CREG?** | Response<br>TA returns the status of result code presentation and an integer <**stat**> which shows whether the network has currently indicated the registration of the ME. Location information elements <**lac**> and <**ci**> are returned only when <**n**>=2 and ME is registered in the network.<br>+**CREG: <n>,<stat>[,<lac>,<ci>[,Act]]**<br><br>**OK**<br>If error is related to ME functionality: |

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| | +CME ERROR: <err> |
|---|---|
| Write Command<br>**AT+CREG=<n>** | Response<br>TA controls the presentation of an unsolicited result code +**CREG: <stat>** when <**n**>=1 and there is a change in the ME network registration status.<br>**OK** |
| | Parameters<br>**<n>**    0   Disable network registration unsolicited result code<br>            1   Enable network registration unsolicited result code **+CREG: <stat>**<br>            2   Enable network registration unsolicited result code with location information<br>**<stat>**   0   Not registered, ME is not currently searching a new operator to register to<br>            1   Registered, home network<br>            2   Not registered, but ME is currently searching a new operator to register to<br>            3   Registration denied<br>            4   Unknown<br>            5   Registered, roaming<br>**<lac>**   String type; two byte location area code in hexadecimal format<br>**< ci >**   String type; two byte cell ID in hexadecimal format<br>**<Act>**   0     GSM<br>            2     UTRAN<br>            3     GSM w/EGPRS<br>            4     UTRAN w/HSDPA<br>             5     UTRAN w/HSUPA<br>             6     UTRAN w/HSDPA and HSUPA |
| | Unsolicited result code<br>If <**n**>=1 and there is a change in the ME network registration status<br>**+CREG: <stat>**<br>If <**n**>=2 and there is a change in the ME network registration status or a change of the network cell:<br>**+CREG: <stat>[,<lac>,<ci>[,Act]]**<br>Parameters<br>See Write Command. |
| Reference<br>3GPP TS27.007 | |

### 3.2.34. AT+CRLP Select radio link protocol parameter

| AT+CRLP Select radio link protocol parameter | |
|---|---|
| Test Command<br>**AT+CRLP=?** | Response<br>TA returns values supported. RLP (Radio Link Protocol) versions 0 and 1 share the same parameter set. TA returns only one line for this set (where **\<ver*x*\>** is not present).<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 \<**ver1**\>s), (list of supported \<**T4**\>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CRLP?** | Response<br>TA returns current settings for RLP version. RLP versions 0 and 1 share the same parameter set. TA returns only one line for this set (where \<verx\> is not present).<br>**+CRLP: \<iws\>,\<mws\>,\<T1\>,\<N2\>,\<ver1\>,\<T4\>**<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CRLP=[\<iws\>[,\<mws\>[,\<T1\>[,\<N2\>[,\<ver\>[,\<T4\>]]]]]]** | Response<br>TA sets radio link protocol (RLP) parameters used when non-transparent data calls are set up.<br>**OK** |
| | Parameters<br>\<iws\> 0-61 Interworking window size (IWF to MS)<br>\<mws\> 0-61 Mobile window size(MS to IWF)<br>\<T1\> 39-255 Acknowledgment timer T1 in a unit of 10ms<br>\<N2\> 1-255 Retransmission attempts N2<br>\<verx\> RLP RLP version number in integer format. When version indication is not present it shall equal 0.<br>\<T4\> 3-255 Re-sequencing period in integer format, in a unit of 10 ms |
| Reference<br>3GPP TS27.007 | |

### 3.2.35. AT+CRSM Restricted SIM access

| AT+CRSM Restricted SIM access | |
|---|---|
| Test Command<br>**AT+CRSM=?** | Response<br>**OK** |
| Write Command<br>**AT+CRSM=<Command>[,<fileId>[,<P1>,<P2>,<P3>[,<data>]]]** | Response<br>**+CRSM: <sw1>, <sw2> [,<response>]**<br><br>**OK / ERROR / +CME ERROR: <err>**<br>Parameters<br>**<command>** 176 READ BINARY<br>                      178 READ RECORD<br>                      192 GET RESPONSE<br>                      214 UPDATE BINARY<br>                      220 UPDATE RECORD<br>                      242 STATUS<br>           All other values are reserved; refer to TS51.011(GSM11.11).<br>**<fileId>** Integer type; this is the identifier for an elementary data file on SIM. Mandatory for every Command except STATUS<br>**<P1>,<P2>,<P3>**<br>           Integer type; parameters passed on by the ME to the SIM. These parameters are mandatory for every command, except .GET RESPONSE and STATUS. The values are described in TS51.011(GSM11.11)<br>**<data>** Information which shall be written to the SIM (hexadecimal character format)<br>**<sw1>, <sw2>**<br>           Integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on successful or failed execution of the command.<br>**<response>** Response of a successful completion of the command previously issued (hexadecimal character format). STATUS and GET RESPONSE return data, which gives information about the current elementary data field. This information includes the type of file and its size (refer to TS51.011 (GSM11.11)). After READ BINARY or READ RECORD command the requested data will be returned. The parameter is not returned after a successful UPDATE BINARY or UPDATE RECORD command. |
| Reference<br>3GPP TS27.007<br>3GPP TS51.011 | |

### 3.2.36. AT+CSQ Signal quality report

| AT+CSQ   Signal quality report | |
|---|---|
| Test Command<br>**AT**+**CSQ=?** | Response<br>+**CSQ:** (list of supported <**rssi**>s),(list of supported <**ber**>s)<br><br>**OK** |
| Execution<br>Command<br>**AT**+**CSQ** | Response<br>+**CSQ: <rssi>,<ber>**<br><br>**OK**<br>+**CME ERROR: <err>**<br>Execution Command returns received signal strength indication **<rssi>** and channel bit error rate **<ber>** from the ME. Test Command returns values supported by the TA. |
| | Parameters<br>**<rssi>**<br>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<br>**<ber>**　(in percent):<br>0...7　　As RXQUAL values in the table in TS45.008<br>　　　　(GSM05.08) subclause 8.2.4.<br>99　　　Not known or not detectable |
| Reference<br>3GPP TS27.007 | |

### 3.2.37. AT+VTD Tone duration

| AT+VTD Tone duration | |
|---|---|
| Test Command<br>**AT**+**VTD=?** | Response<br>+**VTD**: (list of supported <**n**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT**+**VTD?** | Response<br>+**VTD: <n>** |

| | OK |
|---|---|
| | Parameter<br>See Write Command. |
| Write Command<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** |
| | Parameter<br>**<n>**　　　1-255　　　Duration of the tone in 1/10 seconds |
| Reference<br>3GPP TS27.007 | |

### 3.2.38. AT+VTS DTMF and tone generation

| **AT+VTS　DTMF and tone generation** | |
|---|---|
| Test Command<br>**AT+VTS=?** | Response<br>+**VTS:** (list of supported <**dtmf**>s), ,(list of supported <**duration**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |

| Write Command | Response |
|---|---|
| **AT+VTS=<dtmf-string>** | This command allows the transmission of DTMF tones and arbitrary tones in voice mode. These tones may be used (for example) when announcing the start of a recording period. |
| | *Note: D is used only for dialing.* |
| | **OK** |
| | If error is related to ME functionality: |
| | **+CME ERROR: <err>** |
| | Parameters |
| | **<dtmf-string>**      It has a max length of 20 characters, must be entered between double quotes (" ") and consists of combinations of the following separated by commas. But a single character does not require quotes. |
| | 1) **<dtmf>**      A single ASCII characters in the set 0-9, #,\*, A-D. This is interpreted as a sequence of DTMF tones whose duration is set by the **+VTD** command. |
| | 2) **{<dtmf>, <duration>}**      This is interpreted as a DTMF tone whose duration is determined by **<duration>**. |
| | **<duration>**      Duration of the tone in 1/10 seconds range :1-255 |
| Reference 3GPP TS27.007 | |

### 3.2.39. AT+CNUM Subscriber number

| **AT+CNUM**      **Subscriber number** | |
|---|---|
| Test Command **AT+CNUM=?** | Response **OK** |
| Execution Command **AT+CNUM** | Response **+CNUM:** **[<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]]** **[<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service> [,<itc>]]** **[...]]** <br><br>**OK** **+CME ERROR: <err>** |
| | Parameters **<alphax>**      Optional alphanumeric string associated with **<numberx>**; |

| | used character set should be the one selected with command. Select TE character set +**CSCS** |
|---|---|
| **\<number*x*\>** | Phone number in string type of format specified by **\<type*x*\>** |
| **\<type*x*\>** | Type of address octet in integer format (refer to TS24.008(GSM04.08) sub clause 10.5.4.7) |
| **\<speed\>** | As defined by the +**CBST** command |
| **\<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 |
| **\<itc\>** | (Information transfer capability) |
| | 0    3.1 kHz |
| | 1    UDI |
| Reference<br>3GPP TS27.007 | |

## 3.2.40. AT+CPOL Preferred operator list

| **AT+CPOL**    **Preferred operator list** | |
|---|---|
| Test Command<br>**AT+CPOL=?** | Response<br>+**CPOL:** (list of supported \<**index**\>s),(list of supported \<**format**\>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CPOL?** | Response<br>+**CPOL:**<br>**\<index1\>,\<format\>,\<oper1\>[,\<GSM_Act1\>,\<GSM_compact_Act1\>,\<UTRAN_Act1\>]**<br>**[\<CR\>\<LF\>+CPOL:**<br>**\<index2\>,\<format\>,\<oper2\>[,\<GSM_Act2\>,\<GSM_compact_Act2\>,\<UTRAN_Act2\>]**<br>**[…]]**<br><br>**OK**<br>+**CME ERROR: \<err\>** |
| | Parameters<br>See Write Command. |

| Write Command | Response |
| --- | --- |
| **AT+CPOL=<index>[,<format>[,<oper>[<GSM_Act1>,<GSM_compact_Act1>,<UTRAN_Act1>]]]** | **+CME ERROR: <err>** |
| | Parameters |
| | **<indexn>**    I    Integer type: order number of operator in SIM preferred operator list |
| | **<format>**    0    Long format alphanumeric **<oper>** |
| |               1    Short format alphanumeric **<oper>** |
| |               2    Numeric **<oper>** |
| | **<opern>**    String type: **<format>** indicates either alphanumeric or numeric format is used (see +**COPS** command) |
| | **<GSM_Actn>**    GSM access Technology |
| |               0    Access Technology not selected |
| |               1    Access Technology selected |
| | **<GSM_compact_Actn>**    GSM compact access Technology |
| |               0    Access Technology not selected |
| |               1    Access Technology selected |
| | **<UTRAN_Actn>**    UTRAN access Technology |
| |               0    Access Technology not selected |
| |               1    Access Technology selected |
| Reference<br>3GPP TS27.007 | *Note:*<br>*Some SIM cards do not support Write command.* |

### 3.2.41. AT+COPN Read operator names

| AT+COPN    Read operator names | |
| --- | --- |
| Test Command<br>**AT+COPN=?** | Response<br>**OK** |
| Execution<br>Command<br>**AT+COPN** | Response<br>**+COPN: <numeric1>,<alpha1 >**<br>**[<CR><LF>+COPN: <numeric2>,<alpha2>**<br>**[…]]**<br><br>**OK**<br>**+CME ERROR: <err>** |
| | Parameters<br>**<numericn>**    String type: operator in numeric format (see +**COPS**)<br>**<alphan>**    String type: operator in long alphanumeric format (see +**COPS**) |
| Reference<br>3GPP TS27.007 | |

### 3.2.42. AT+CFUN Set phone functionality

| AT+CFUN Set phone functionality | |
|---|---|
| Test Command<br>**AT+CFUN=?** | Response<br>**+CFUN:** (list of supported <**fun**>s), (list of supported <**rst**>s)<br><br>**OK**<br>**+CME ERROR: <err>** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CFUN?** | Response<br>**+CFUN: <fun>**<br><br>**OK**<br>**+CME ERROR: <err>** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CFUN=<fun<br>>，[<rst>]** | Response<br>**OK**<br>**+CME ERROR: <err>** |
| | Parameters<br>**<fun>**   0   Minimum functionality<br>          1   Full functionality (Default)<br>          4   Disable phone in both transmitting and receiving RF<br>              circuits<br> **<rst>**   0    Do not reset the ME before setting it to <fun> power<br>               level. This is default when <**rst**> is not given<br>          1    Reset the ME before setting it to <**fun**> power level |
| Reference<br>3GPP TS27.007 | |

### 3.2.43. AT+CCLK Clock

| AT+CCLK Clock | |
|---|---|
| Test Command<br>**AT+CCLK=?** | Response<br>**OK** |
| | Parameters |
| Read Command<br>**AT+CCLK?** | Response<br>**+CCLK: <time>** |

| | | | |
|---|---|---|---|
| | **OK**<br>**+CME ERROR: <err>** | | |
| | Parameter<br>See Write Command. | | |
| Write Command<br>**AT+CCLK=<time>** | Response<br>**OK**<br>**+CME ERROR: <err>** | | |
| | Parameter | | |
| | **<time>** | String type value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits),month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -48...+48). E.g. May 6th, 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08" | |
| Reference<br>3GPP TS27.007 | | | |

### 3.2.44. AT+CSIM Generic SIM access

| **AT+CSIM** | **Generic SIM access** | | |
|---|---|---|---|
| Test Command<br>**AT+CSIM=?** | Response<br>**OK** | | |
| | Parameter | | |
| Write Command<br>**AT+CSIM=<ope ration>,<file_ind ex>,<offset>,<rec ord_id>,<length> ,<data>** | Response<br>**+CSIM: <command>,<response>**<br><br>**OK**<br>**ERROR** | | |
| | Parameters | | |
| | **<operation>** | 0 | Read operation |
| | | 1 | Write operation |
| | **<file_index>** | Integer type: SIM elementary file ID | |
| | **<offset>** | Integer type: offset for reading and writing SIM | |
| | **<length>** | Integer type: length of parameter | |
| | **<data>** | String type: hex format: parameter is sent or received from the ME to the SIM | |
| Reference<br>3GPP TS27.007 | | | |

### 3.2.45. AT+CALM Alert sound mode

| AT+CALM Alert sound mode | |
|---|---|
| Test Command<br>**AT+CALM=?** | Response<br>**+CALM:** (list of supported <**mode**>s)<br><br>**OK**<br>**+CME ERROR:** <err> |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+CALM?** | Response<br>**+CALM: <mode>**<br><br>**OK**<br>**+CME ERROR: <err>** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+CALM=<mo<br>de>** | Response<br>**OK**<br>**+CME ERROR: <err>** |
| | Parameter<br>**<mode>**    <u>0</u>      Normal mode<br>                1      Silent mode (all sounds from ME are prevented) |
| Reference<br>3GPP TS27.007 | |

### 3.2.46. AT+CRSL Ringer sound level

| AT+CRSL Ringer sound level | |
|---|---|
| Test Command<br>**AT+CRSL=?** | Response<br>**+CRSL:** (list of supported <**level**>s)<br><br>**OK**<br>**+CME ERROR:** <err> |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+CRSL?** | Response<br>**+CRSL: <level>**<br><br>**OK**<br>**+CME ERROR: <err>** |

| | Parameter |
| --- | --- |
| | See Write Command. |
| Write Command<br>**AT+CRSL=\<leve l>** | Response<br>**+CME ERROR: \<err>** |
| | Parameter<br>**\<level>** Integer type value(0-100) with manufacturer specific range (Smallest value represents the lowest sound level) |
| Reference<br>3GPP TS27.007 | |

### 3.2.47. AT+CLVL Loud speaker volume level

| AT+CLVL   Loud speaker volume level | |
| --- | --- |
| Test Command<br>**AT+CLVL=?** | Response<br>**+CLVL:** (list of supported \<**level**>s)<br><br>**OK**<br>**+CME ERROR: \<err>** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+CLVL?** | Response<br>**+CLVL: \<level>**<br><br>**OK**<br>**+CME ERROR: \<err>** |
| | Parameter<br>See Write Command |
| Write Command<br>**AT+CLVL=\<leve l>** | Response<br>**+CME ERROR: \<err>** |
| | Parameter<br>**\<level>** Integer type value(0-100) with manufacturer specific range (Smallest value represents the lowest sound level) |
| Reference<br>3GPP TS27.007 | |

### 3.2.48. AT+CMUT Mute control

| AT+CMUT   Mute control | |
| --- | --- |
| Test Command<br>**AT+CMUT=?** | Response<br>**+CMUT:** (list of supported \<**n**>s) |

| | OK |
| --- | --- |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+CMUT?** | Response<br>**+CMUT: \<n>**<br><br>**OK**<br>**+CME ERROR: \<err>** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+CMUT=\<n>** | Response<br>**+CME ERROR: \<err>** |
| | Parameter<br>**\<n>**   <u>0</u>     Mute off<br>          1     Mute on |
| Reference<br>3GPP TS27.007 | |

### 3.2.49. AT+CPUC Price per unit and currency table

| AT+CPUC    Price per unit and currency table | |
| --- | --- |
| Test Command<br>**AT+CPUC=?** | Response<br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CPUC?** | Response<br>**+CPUC: \<currency>,\<ppu>**<br><br>**OK**<br>**+CME ERROR: \<err>** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CPUC=\<cur rency>,\<ppu>[,\< passwd>]** | Response<br>**+CME ERROR: \<err>** |
| | Parameters |
| | **\<currency>**          String type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command select TE character set +**CSCS** |
| | **\<ppu>**                 String type; price per unit; dot is used as a decimal Separator (e.g. "2.66") |

| | <passwd> | String type; SIM PIN2 |
|---|---|---|
| Reference<br>3GPP TS27.007 | | |

### 3.2.50. AT+CCWE Call meter maximum event

| AT+CCWE    Call meter maximum event | |
|---|---|
| Test Command<br>**AT+CCWE=?** | Response<br>+**CCWE:** (list of supported <**mode**>s)<br><br>**OK**<br>+**CME ERROR: <err>** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+CCWE?** | Response<br>+**CCWE: <mode>**<br><br>**OK**<br>+**CME ERROR: <err>** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+CCWE=[<mode>]** | Response<br>**OK**<br>+**CME ERROR: <err>** |
| | Parameter<br><**mode**>    <u>0</u>    Disable call meter warning event<br>            1    Enable call meter warning event |
| | Unsolicited result codes supported:<br>+**CCWV**    Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code +**CCWV** will be sent, if enabled by this command. The warning is issued approximately when 5 seconds call time remains. It is also issued when starting a call if less than 5s call time remains. |
| Reference<br>3GPP TS27.007 | |

### 3.2.51. AT+CBC Battery charge

| AT+CBC Battery charge | |
|---|---|
| Test Command<br>**AT+CBC=?** | Response<br>**+CBC:** (list of supported < **bcs** >s),(list of supported < **bcl** >s),(**voltage**)<br><br>**OK** |
| | Parameters<br>See Execution Command. |
| Execution<br>Command<br>**AT+CBC** | Response<br>**+CBC: < bcs >, < bcl >,<voltage>**<br><br>**OK**<br>**+CME ERROR: <err>** |
| | Parameters<br>**<bcs>**     Charge status<br>         0     ME is not charging<br>         1     ME is charging<br>         2     Charging has finished<br>**<bcl>**          Battery connection level<br>    1...100     battery has 1-100 percent of capacity remaining<br>    vent<br>**<voltage>**       Battery voltage(mV) |
| Reference<br>3GPP TS27.007 | *Note:*<br>*This command is supported when hardware is dependent and only used*<br>*when battery is set to vibrator.* |

### 3.2.52. AT+CUSD Unstructured supplementary service data

| AT+ CUSD Unstructured supplementary service data | |
|---|---|
| Test Command<br>**AT+CUSD=?** | Response<br>**+CUSD:** (**<n>**s)<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+CUSD?** | Response<br>**+CUSD: <n>**<br><br>**OK** |

| | Parameter |
|---|---|
| | See Write Command. |
| Write Command<br>**AT+CUSD=[<n>**<br>**[,<str>[,<dcs>]]** | Response<br>**OK**<br>**ERROR** |
| | Parameters<br>**<n>** A numeric parameter which indicates control of the<br>unstructured supplementary service data<br>    0    Disable the result code presentation in the TA<br>    1    Enable the result code presentation in the TA<br>    2    Cancel session (not applicable to read command response)<br>**<str>** String type USSD-string<br>**<dcs>** Cell Broadcast Data Coding Scheme in integer format (default 0) |
| Reference<br>3GPP TS23.038 | |

### 3.2.53. AT+CSSN Supplementary services notification

| AT+CSSN    Notification for Supplementary services | |
|---|---|
| Test Command<br>**AT+CSSN=?** | Response<br>**+CSSN:** (list of supported <**n**>s), (list of supported <**m**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CSSN?** | Response<br>**+CSSN: <n>,<m>**<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CSSN=[<n>[**<br>**,<m>]]** | Response<br>**OK**<br>**ERROR** |
| | Parameters<br>**<n>** A numeric parameter which indicates whether to show the<br>**+CSSI:<code1>[,<index>]** result code presentation status<br>after a mobile originated call is set up<br>    0    Disable<br>    1    Enable<br>**<m>** A numeric parameter which indicates whether to show the<br>**+CSSU:<code2>** result code presentation status during a |

| | | | mobile terminated call setup or during a call, or when a forward check supplementary service notification is received. |
| | | | |
| | | 0 | Disable |
| | | 1 | Enable |
| | **<code1>** | 0 | Unconditional call forwarding is active |
| | | 1 | Some of the conditional call forwarding are active |
| | | 2 | Call has been forwarded |
| | | 3 | Call is waiting |
| | | 4 | This is a CUG call (also **<index>** present) |
| | | 5 | Outgoing calls are barred |
| | | 6 | Incoming calls are barred |
| | | 7 | CLIR suppression rejected |
| | **<index>** | Closed user group index | |
| | **<code2>** | 0 | This is a forwarded call |
| Reference | | | |

### 3.2.54. AT+CSNS Single numbering scheme

| AT+CSNS Single numbering scheme | |
|---|---|
| Test Command<br>**AT+CSNS =?** | Response<br>**+CSNS:** (list of supported <**mode**>s)<br><br>**OK** |
| | Parameter |
| Read    Command<br>**AT+CSNS?** | Response<br>**+CSNS: <mode>**<br><br>**OK** |
| | Parameter |
| Write Command<br>**AT+CSNS=[<mo<br>de>]** | Response<br>**OK**<br>**ERROR** |
| | Parameter<br>**<mode>**<br>    <u>0</u>   Voice<br>    1   Alternating voice/FAX, voice first<br>    2   FAX<br>    3   Alternating voice/data, voice first<br>    4   Data<br>    5   Alternating voice/FAX, FAX first |

| | 6 | Alternating voice/data, data first |
| | 7 | Voice followed by data |
| Reference | | |

### 3.2.55. AT+CMOD Configure alternating mode calls

| AT+CMOD | Configure alternating mode calls | | |
|---|---|---|---|
| Test Command <br> **AT+CMOD =?** | Response <br> **+CMOD:** (0-3) <br><br> **OK** | | |
| | Parameter | | |
| Write Command <br> **AT+CMOD=[<m ode>]** | Response <br> **OK** <br> **ERROR** | | |
| | Parameter <br> **<mode>** | 0 | Single mode |
| | | 1 | Alternating voice/FAX |
| | | 2 | Alternating voice/data |
| | | 3 | Voice followed by data |
| Reference | | | |

# 4. AT Commands according to TS27.005

The TS27.007 (GSM07.05) commands aim to perform SMS and CBS related operations. Quectel wireless modules support both text and PDU modes.

## 4.1. Overview of AT Commands according to 3GPP TS27.005

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

## 4.2. Detailed descriptions of AT Commands according to 3GPP TS27.005

### 4.2.1.  AT+CMGD Delete SMS message

| AT+CMGD   Delete SMS Message | |
|---------------------------------|---|
| Read Command<br>**AT+CMGD=?** | Response<br>**+CMGD**：(Range of SMS on SIM card can be deleted)<br><br>**OK** |
| Write Command<br>**AT+CMGD=\<index>** | Response<br>TA deletes message from preferred message storage **\<mem1>** location **\<index>**.<br>**OK** |

| | ERROR |
|---|---|
| | If error is related to ME functionality: |
| | **+CMS ERROR:\<err>** |
| | Parameter |
| | **\<index>** Integer type; value in the range of location numbers |
| | supported by the associated memory |
| Reference | |
| 3GPP TS27.005 | |

### 4.2.2. AT+CMGF Select SMS message format

| **AT+CMGF    Select SMS message format** | |
|---|---|
| Read Command | Response |
| **AT+CMGF?** | **+CMGF: \<mode>** |
| | |
| | **OK** |
| | Parameter |
| | See Write Command. |
| Test Command | Response |
| **AT+CMGF=?** | **+CMGF:** (list of supported \<**mode**>s) |
| | |
| | **OK** |
| Write Command | Response |
| **AT+CMGF=[\<m** | TA sets parameter to denote which kind of I/O format of messages is used. |
| **ode>]** | **OK** |
| | Parameter |
| | **\<mode>** <u>0</u> PDU mode |
| | 1 Text mode |
| Reference | |
| 3GPP TS27.005 | |

### 4.2.3. AT+CMGL List SMS messages from preferred store

| **AT+CMGL    List SMS messages from preferred store** | |
|---|---|
| Test Command | Response |
| **AT+CMGL=?** | **+CMGL:** (list of supported \<**stat**>s) |
| | |
| | **OK** |
| | Parameters |
| | See Write Command. |

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| Write Command<br>**AT+CMGL=\<sta t>[,\<mode>]** | Parameters |
|---|---|
| | 1) If text mode: |
| | **\<stat>** "REC UNREAD" Received unread messages |
| | "REC READ" Received read messages |
| | "STO UNSENT" Stored unsent messages |
| | "STO SENT" Stored sent messages |
| | "ALL" All messages |
| | **\<mode>** 0 Normal(default) |
| | 1 Do not change status of the specified SMS record |
| | 2) If PDU mode: |
| | **\<stat>** 0 Received unread messages |
| | 1 Received read messages |
| | 2 Stored unsent messages |
| | 3 Stored sent messages |
| | 4 All messages |
| | **\<mode>** 0 Normal(default) |
| | 1 Do not change status of the specified SMS record |

Response
TA returns messages with status value **\<stat>** from message storage **\<mem1>** to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'.

1) If text mode (**+CMGF=1**) and Command successful:
for SMS-SUBMITs and/or SMS-DELIVERs:
**+CMGL:**
**\<index>,\<stat>,\<oa/da>,[\<alpha>],[\<scts>][,\<tooa/toda>,\<length>]\<CR>\<LF>\<data>[\<CR>\<LF>**
**+CMGL:**
**\<index>,\<stat>,\<da/oa>,[\<alpha>],[\<scts>][,\<tooa/toda>,\<length>]\<CR>\<LF>\<data>[...]]**
for SMS-STATUS-REPORTs:
**+CMGL:**
**\<index>,\<stat>,\<fo>,\<mr>,[\<ra>],[\<tora>],\<scts>,\<dt>,\<st>[\<CR>\<LF>**
**+CMGL:**
**\<index>,\<stat>,\<fo>,\<mr>,[\<ra>],[\<tora>],\<scts>,\<dt>,\<st>[...]]**
for SMS-COMMANDs:
**+CMGL: \<index>,\<stat>,\<fo>,\<ct>[\<CR>\<LF>**
**+CMGL: \<index>,\<stat>,\<fo>,\<ct>[...]]**
for CBM storage:
**+CMGL:\<index>,\<stat>,\<sn>,\<mid>,\<page>,\<pages>\<CR>\<LF>\<data>[\<CR>\<LF>**
**+CMGL:**
**\<index>,\<stat>,\<sn>,\<mid>,\<page>,\<pages>\<CR>\<LF>\<data>[...]]**

**OK**

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

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

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

**OK**

3)If error is related to ME functionality:

**+CMS ERROR: <err>**

Parameters

| | |
|---|---|
| **<alpha>** | String type alphanumeric representation of **<da>** or **<oa>** corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; the character set to be used should be the one selected   by   the command **+CSCS** (see definition of this command in TS 07.07) |
| **<da>** | TS23.040(GSM03.40)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 to command **+CSCS** in TS 07.07); type of address given by **<toda>** |
| **<data>** | In the case of SMS: TS23.040(GSM03.40) TP-User-Data in text mode responses; format: |
| | - if **<dcs>** indicates that TS23.038(GSM03.38) default alphabet is used and **<fo>** indicates that TS23.040(GSM03.40) TPUser-Data-Header-Indication is not set: |
| | - if TE character set other than "HEX" (refer to Command Select TE character set **+CSCS** in TS07.07):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A |
| | - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55)) |
| | - if **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, or **<fo>** indicates that TS23.040(GSM03.40) 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: TS23.041(GSM03.41) CBM Content of Message in text mode responses; format: |

| | | |
|---|---|---|
| | | - if **<dcs>** indicates that TS23.038(GSM03.38) default alphabet is used: |
| | | - if TE character set other than "HEX" (refer to Command **+CSCS** in TS07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A |
| | | - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number |
| | | - if **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number |
| | **<length>** | Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) |
| | **<index>** | Integer type; value in the range of location numbers supported by the associated memory |
| | **<oa>** | TS23.040(GSM03.40)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 to command **+CSCS** in TS 07.07); type of address given by **<tooa>** |
| | **<pdu>** | In the case of SMS: TS24.011(GSM04.11) SC address followed by TS23.040(GSM03.40) 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: TS23.041 (GSM03.41) TPDU in hexadecimal format. |
| | **<scts>** | TS23.040(GSM03.40)  TP-Service-Center-Time-Stamp  in time-string format (refer to **<dt>**) |
| | **<toda>** | TS24.011(GSM04.11)TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default is 145, otherwise default is 129) |
| | **<tooa>** | TS24.011(GSM04.11)TP-Originating-Address Type-of-Address octet in integer format (refer to **<toda>**) |
| Reference 3GPP TS27.00 | | |

### 4.2.4. AT+CMGR Read SMS message

| AT+CMGR | Read SMS message |
|---|---|
| Test Command<br>**AT+CMGR=?** | Response<br>**OK** |
| Write Command<br>**AT+CMGR=<in<br>dex>[,<mode>]** | Parameters<br><br>**<index>**      Integer type; value in the range of location numbers<br>         supported by the associated memory<br><**mode**>     0    Normal<br>         1    Do Not change status of the specified SMS record |
| | Response<br>TA returns SMS message with location value **<index>** from message storage **<mem1>** to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'.<br>1) If text mode (**+CMGF=1**) and command is executed successfully:<br>for SMS-DELIVER:<br>**+CMGR:**<br>**<stat>,<oa>,[<alpha>],<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<*<br>*length>]*<CR><LF><data>**<br>for SMS-SUBMIT:<br>**+CMGR:**<br>**<stat>,<da>,[<alpha>]*[,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,*<br>*<length>]*<CR><LF><data>**<br>for SMS-STATUS-REPORTs:<br>**+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>**<br>for SMS-COMMANDs:<br>**+CMGR:**<br>**<stat>,<fo>,<ct>*[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><c*<br>*data>]***<br>for CBM storage:<br>**+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>**<br>2) If PDU mode (+CMGF=0) and Command successful:<br>**+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>**<br><br>**OK**<br>3) If error is related to ME functionality:<br>**+CMS ERROR: <err>**<br>Parameters<br><br>**<alpha>**     String type alphanumeric representation of **<da>** or **<oa>**<br>         corresponding to the entry found in MT phonebook;<br>         implementation of this feature is manufacturer specific<br>**<da>**        TS23.040(GSM03.40) TP-Destination-Address<br>         Address-Value field in string format; BCD numbers (or |

| | GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **&lt;toda&gt;** |
|---|---|
| **&lt;data&gt;** | In the case of SMS: TS23.040(GSM03.40) TP-User-Data in text mode responses; format: |
| | - if **&lt;dcs&gt;** indicates that TS23.038(GSM03.38) default alphabet is used and **&lt;fo&gt;** indicates that TS23.040(GSM03.40) TPUser-Data-Header-Indication is not set: |
| | - if TE character set other than "HEX" (refer to command select TE character set **+CSCS** in TS 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A |
| | - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55)) |
| | - if **&lt;dcs&gt;** indicates that 8-bit or UCS2 data coding scheme is used, or **&lt;fo&gt;** indicates that TS23.040(GSM03.40) 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: TS23.041(GSM03.41) CBM Content of Message in text mode responses; format: |
| | - if **&lt;dcs&gt;** indicates that TS23.038(GSM03.38) default alphabet is used: |
| | - if TE character set other than "HEX" (refer command **+CSCS** in TS07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A |
| | - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number |
| | - if **&lt;dcs&gt;** 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 |
| **&lt;dcs&gt;** | Depending on the command or result code: TS23.038(GSM03.38) SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format |
| **&lt;fo&gt;** | Depending on the command or result code: first octet of TS23.040(GSM03.40) SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format |

| | **\<length\>** | Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **\<data\>** (or **\<cdata\>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) |
| --- | --- | --- |
| | **\<mid\>** | TS23.041(GSM03.41) CBM Message Identifier in integer format |
| | **\<oa\>** | TS23.040(GSM03.40)TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **\<tooa\>** |
| | **\<pdu\>** | In the case of SMS: TS24.011(GSM04.11) SC address followed by TS23.040(GSM03.40) 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: TS23.041(GSM03.41) TPDU in hexadecimal format. |
| | **\<pid\>** | TS23.040(GSM03.40) TP-Protocol-Identifier in integer format (default is 0) |
| | **\<sca\>** | TS24.011(GSM04.11) RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **\<tosca\>** |
| | **\<scts\>** | TS23.040(GSM03.40) TP-Service-Centre-Time-Stamp in time-string format (refer to **\<dt\>**) |
| | **\<stat\>** | 0   "REC UNREAD"  Received unread messages<br>1   "REC READ"    Received read messages<br>2   "STO UNSENT"  Stored unsent messages<br>3   "STO SENT"    Stored sent messages<br>4   "ALL"      All messages |
| | **\<toda\>** | TS24.011(GSM04.11)TP-Destination-Address Type-of-Address octet in integer format (when first character of **\<da\>** is + (IRA 43) default value is 145, otherwise default is 129) |
| | **\<tooa\>** | TS24.011(GSM04.11)TP-Originating-Address Type-of-Address octet in integer format (default refer to **\<toda\>**) |
| | **\<tosca\>** | TS24.011(GSM04.11) RP SC address Type-of-Address octet in integer format (default refer to **\<toda\>**) |
| | **\<vp\>** | Depending on SMS-SUBMIT **\<fo\>** setting: |

| | | TS23.040(GSM03.40) TP-Validity-Period either in integer format (default 167) or in time-string format (refer to **<dt>**) |
|---|---|---|
| Reference 3GPP TS27.005 | | |

### 4.2.5. AT+CMGS Send SMS message

| AT+CMGS Send SMS message | |
|---|---|
| Test Command **AT+CMGS=?** | Response **OK** |
| Write Command 1) If text mode (+**CMGF=1**): +**CMGS=<da>[, <toda>]**<CR> **text is entered** <ctrl-Z/ESC> ESC quits without sending | Parameters |
| | **<da>** TS23.040(GSM03.40) TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +**CSCS** in TS 07.07); type of address given by **<toda>** |
| | **<toda>** TS24.011(GSM04.11) 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) |
| 2) If PDU mode (+**CMGF=0**): +**CMGS=<length ><CR>** **PDU is given** <ctrl-Z/ESC> | **<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) |
| | Response TA sends message from a TE to the network (SMS-SUBMIT). Message reference value **<mr>** is returned to the TE on successful message delivery. Optionally (when +**CSMS <service>** value is 1 and network supports) **<scts>** is returned. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(+**CMGF=1**) and sending successful: **+CMGS: <mr>** **OK** 2) If PDU mode(+**CMGF=0**) and sending successful: **+CMGS: <mr>** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>** |

| | Parameter |
| --- | --- |
| | **<mr>** TS23.040(GSM03.40) TP-Message-Reference in integer format |
| Reference<br>3GPP TS27.005 | |

### 4.2.6. AT+CMGW Write SMS message to memory

| AT+CMGW Write SMS message to memory | |
| --- | --- |
| Test Command<br>**AT+CMGW=?** | Response<br>**OK** |
| Write Command<br>1) If text mode (+CMGF=1):<br>**AT+CMGW=<oa/da>[,<tooa/toda>[,<stat>]]**<br><CR> **text is entered**<br><ctrl-Z/ESC><br><ESC> quits without sending | Response<br>TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage **<mem2>**. Memory location **<index>** of the stored message is returned. By default message status will be set to 'stored unsent', but parameter **<stat>** also allows other status values to be given.<br><br>If writing is successful:<br>**+CMGW: <index>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| 2) If PDU mode (+CMGF=0):<br>**AT+CMGW=<length>[,<stat>]<CR>**<br>**PDU is given**<br><ctrl-Z/ESC> | Parameters<br>**<oa>** TS23.040(GSM03.40)TP-Originating-Address<br>Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07);type of address given by **<tooa>**<br>**<da>** TS23.040(GSM03.40)TP-Destination-Address<br>Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>**<br>**<tooa>** TS24.011(GSM04.11)TP-Originating-Address<br>Type-of-Address octet in integer format (default refer **<toda>**)<br>**<toda>** TS24.011(GSM04.11)TP-Destination-Address<br>Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default is 145, otherwise default is 129)<br>129 Unknown type(IDSN format number)<br>145 International number type(ISDN format ) |

| | <length> | Integer type value indicating in the text mode (+**CMGF=1**) the length of the message body <**data**>  (or <**cdata**>) in characters; or in PDU mode (+**CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) |
|---|---|---|
| | <**pdu**> | In the case of SMS: TS24.011(GSM04.11) SC address followed by TS23.040(GSM03.40) 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: TS23.041 (GSM03.41) TPDU in hexadecimal format. |
| | <**index**> | Index of message in selected storage <**mem2**> |
| Reference 3GPP TS27.005 | | |

### 4.2.7. AT+CMSS Send SMS message from storage

| AT+CMSS    Send SMS message from storage | |
|---|---|
| Test Command<br>**AT**+**CMSS=?** | Response<br>**OK** |
| Write Command<br>**AT**+**CMSS=<ind<br>ex>[,<da>[,<toda<br>>]]** | Response<br>TA sends message with location value <**index**> from message storage <**mem2**> to the network (SMS-SUBMIT). If new recipient address <**da**> is given, it shall be used instead of the one stored with the message. Reference value <**mr**> is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code.<br>1) If text mode(+**CMGF=1**) and sending successful:<br>+**CMSS: <mr> [,<scts>]**<br><br>**OK**<br>2) If PDU mode(+**CMGF=0**) and sending successful;<br>+**CMSS: <mr> [,<ackpdu>]**<br><br>**OK**<br>3) If error is related to ME functionality:<br>+**CMS ERROR: <err>** |
| | Parameters |
| | <**index**>      Integer type; value in the range of location numbers supported by the associated memory |

| | | |
|---|---|---|
| | **<da>** | TS23.040(GSM03.40)TP-Destination-Address |
| | | Address-Value field in string format; BCD numbers (or |
| | | GSM default alphabet characters) are converted to characters |
| | | of the currently selected TE character set (specified by |
| | | +**CSCS** in TS 07.07); type of address given by **<toda>** |
| | **<toda>** | TS24.011(GSM04.11)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>** | TS23.040(GSM03.40) TP-Message-Reference in integer |
| | | format |
| Reference 3GPP TS27.005 | | |

### 4.2.8. AT+CMGC Send SMS command

| AT+CMGC  Send SMS command | | |
|---|---|---|
| Test Command **AT+CMGC=?** | Response **OK** | |
| Write Command 1) If text mode (+**CMGF=1**): **AT+CMGC=<fo >[,<ct><pid>,<m n>,<da>,<toda>] <CR>** text is entered <ctrl-Z/ESC> ESC quits without sending | Parameters **<fo>** **<ct>** **<pid>** **<mn>** **<da>** | First octet of TS23.040(GSM03.40) SMS-COMMAND (default 2) in integer format TS23.040(GSM03.40) TP-Command-Type in integer format (default 0) TS23.040(GSM03.40) TP-Protocol-Identifier in integer format (default 0) TS23.040(GSM03.40) TP-Message-Number in integer format TS23.040(GSM03.40) TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +**CSCS** in TS 07.07); type of address given by **<toda>** |
| 2) If PDU mode (+**CMGF=0**): **AT+CMGC=**<len gth><CR> **PDU is given** <ctrl-Z/ESC> | **<toda>** **<length>** | TS24.011(GSM04.11) 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) 145 International number type(ISDN format ) Integer type value indicating 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) |

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| | Response |
|---|---|
| | TA transmits SMS command message from a TE to the network (SMS-COMMAND). Message reference value **\<mr>** is returned to the TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code. |
| | 1) If text mode(+**CMGF=1**) and sending successful: |
| | **+CMGC: \<mr> [,\<scts>]** |
| | |
| | **OK** |
| | 2) If PDU mode(+**CMGF=0**) and sending successful: |
| | **+CMGC: \<mr> [,\<ackpdu>]** |
| | |
| | **OK** |
| | 3) If error is related to ME functionality: |
| | **+CMS ERROR: \<err>** |
| | Parameters |
| | **\<mr>**          TS23.040(GSM03.40) TP-Message-Reference in integer format |
| Reference | |
| 3GPP TS27.005 | |

### 4.2.9. AT+CNMI New SMS message indications

| AT+CNMI    New SMS message indications | |
|---|---|
| Test Command<br>**AT+CNMI=?** | Response<br>**+CNMI:** (list of supported \<**mode**>s),(list of supported \<**mt**>s),(list of supported \<**bm**>s),(list of supported \<**ds**>s),(list of supported \<**bfr**>s)<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Read Command<br>**AT+CNMI?** | Response<br>**+CNMI: \<mode>,\<mt>,\<bm>,\<ds>,\<bfr>**<br><br>**OK** |
| | Parameters<br>See Write Command. |
| Write Command<br>**AT+CNMI=[\<m<br>ode>[,\<mt>[,\<b<br>m><br>[,\<ds>[,\<bfr>]]]]]** | Response<br>TA selects the procedure on how the received new messages from the network are indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in TS23.038 (GSM03.38). |

| | **OK** |
| | If error is related to ME functionality: |
| | **ERROR** |
| | Parameters |
| | **<mode>** 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications. |
| | 1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE. |
| | 2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE. |
| | 3 Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode. |
| | **<mt>** (The rules for storing received SMS depend on its data coding scheme (refer to TS23.038(GSM03.38)), preferred memory storage (**+CPMS**) setting and this value): |
| | 0 No SMS-DELIVER indications are routed to the TE. |
| | 1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: **+CMTI: <mem>,<index>** |
| | 2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code: **+CMT: [<alpha>],<length><CR><LF><pdu>** (PDU mode enabled) or **+CMT: <oa>, [<alpha>],<scts>** *[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data> (text mode enabled; about parameters in italics, refer to Command Show Text Mode Parameters **+CSDH**). Class 2 messages result in indication as defined in **<mt>**=1. |
| | 3 Class 3 SMS-DELIVERs are routed directly to TE by using unsolicited result codes defined in **<mt>**=2. Messages of other classes result in indication as defined in **<mt>**=1. |
| | **<bm>** (The rules for storing received CBMs depend on its data coding scheme (refer to TS23.038(GSM03.38)), the setting of Select CBM Types (**+CSCB**) and this value): |
| | 0 No CBM indications are routed to the TE. |
| | 2 New CBMs are routed directly to the TE by 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). |
| | 3 | Class 3 CBMs are routed directly to TE by 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 by 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 in this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes). |
| | Unsolicited result code | |
| | +CMTI: <mem>,<index>   Indicate the new message has been received | |
| | +CMT: [<alpha>],<length><CR><LF><pdu> Short message is output directly | |
| | +CBM: <length><CR><LF><pdu>   Cell broadcast message is output directly | |
| Reference 3GPP TS27.005 | | |

### 4.2.10. AT+CPMS Preferred SMS message storage

| AT+CPMS    Preferred SMS message storage | |
|---|---|
| Read Command<br>AT+CPMS? | Response<br>+CPMS:<br><mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3><br><br>OK<br>If error is related to ME functionality:<br>ERROR |
| | Parameters<br>See Write Command. |
| Test Command<br>AT+CPMS=? | Response<br>+CPMS: (list of supported <mem1>s),(list of supported <mem2>s) ,(list of supported <mem3>s) |

| | OK |
|---|---|
| | Parameters |
| | See Write Command. |
| Write Command<br>**AT+CPMS=**<br>**[<mem1>**<br>**,<mem2>**<br>**,<mem3>]** | Response<br>TA selects memory storages **<mem1>**, **<mem2>** and **<mem3>** to be used for reading, writing, etc.<br>**+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>**<br><br>**OK**<br>If error is related to ME functionality:<br>**ERROR** |
| | Parameters |
| | **<mem1>**      Messages to be read and deleted from this memory storage |
| | "SM"      SIM message storage |
| | "ME"      Mobile Equipment message storage |
| | "MT"      Sum of "SM" and "ME" storages |
| | **<mem2>**      Messages will be written and sent to this memory storage |
| | "SM"      SIM message storage |
| | "ME"      Mobile Equipment message storage |
| | "MT"      Sum of "SM" and "ME" storages |
| | **<mem3>**      Received messages will be placed in this memory storage if<br>             routing to PC is not set ("**+CNMI**") |
| | "SM"      SIM message storage |
| | "ME"      Mobile Equipment message storage |
| | "MT"      Sum of "SM" and "ME" storages |
| | **<usedx>**      Integer type; Number of messages currently in **<memx>** |
| | **<totalx>**      Integer type; Number of messages storable in **<memx>** |
| Reference<br>3GPP TS27.005 | |

### 4.2.11. AT+CRES Restore SMS settings

| **AT+CRES    Restore SMS settings** | |
|---|---|
| Test Command<br>**AT+CRES=?** | Response<br>**+CRES:** (list of supported <**profile**>s)<br><br>**OK** |
| Write Command<br>**AT+CRES=[<pr**<br>**ofile>]** | Response<br>TA restores SMS 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. SIM SMS parameters) and therefore cannot be restored.<br>**OK**<br>If error is related to ME functionality:<br>**ERROR** |
|---|---|
| | Parameter<br>**\<profile>**0-3   Manufacturer specific profile number where settings are to be stored |
| Reference<br>3GPP TS27.005 | |

### 4.2.12. AT+CSAS Save SMS settings

| AT+CSAS   Save SMS settings | |
|---|---|
| Test Command<br>**AT+CSAS=?** | Response<br>**+CSAS:** (list of supported \<**profile**>s)<br><br>**OK** |
| Write Command<br>**AT+CSAS=[\<pro file>]** | Response<br>TA saves active message service settings to non-volatile 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 saved. Certain settings may not be supported by the storage (e.g. SIM SMS parameters) and therefore cannot be saved<br>**OK**<br>If error is related to ME functionality:<br>**ERROR** |
| | Parameter<br>**\<profile>**     0-3   Manufacturer specific profile number where settings are to be stored |
| Reference<br>3GPP TS27.005 | |

### 4.2.13. AT+CSCA SMS service center address

| AT+CSCA   SMS service center address | |
|---|---|
| Read Command<br>**AT+CSCA?** | Response<br>**+CSCA: \<sca>,\<tosca>** |

| | OK |
| --- | --- |
| | Parameters |
| | See Write Command. |
| Test Command **AT+CSCA=?** | Response **OK** |
| Write Command **AT+CSCA = <sca>[,<tosca>]** | Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by sending and writing commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into **<pdu>** parameter equals zero. *Note:* *The Command writes the parameters in NON-VOLATILE memory.* **OK** If error is related to ME functionality: **+CME ERROR: <err>** |
| | Parameters **<sca>** TS24.011(GSM04.11) RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<tosca>** **< tosca>** Service center address format TS24.011(GSM04.11) RP SC Type-of-Address octet in integer format (Default refer to **<toda>**) |
| Reference 3GPP TS27.005 | |

### 4.2.14. AT+CSCB Select cell broadcast SMS messages

| AT+CSCB    Select cell broadcast SMS messages | |
| --- | --- |
| Read Command **AT+CSCB?** | Response **+CSCB: <mode>,<mids>,<dcss>** **OK** |
| | Parameters See Write Command. |
| Test Command **AT+CSCB=?** | Response **+CSCB:** (list of supported <**mode**>s) **OK** |
| | Parameters See Write Command. |

| Write Command **AT+CSCB=** **<mode>[,mids>[,** **<dcss>]]** | Response |
| --- | --- |
| | TA selects which types of CBMs are to be received by the ME. |
| | *Note:* |
| | *The Command writes the parameters in NON-VOLATILE memory.* |
| | **OK** |
| | If error is related to ME functionality: |
| | **+CMS ERROR: <err>** |
| | Parameters |
| | **<mode>**    0    Message types specified in **<mids>** and **<dcss>** are accepted |
| |             1    Message types specified in **<mids>** and **<dcss>** are not accepted |
| | **<mids>**      String type; all different possible combinations of CBM message identifiers (refer to **<mid>**) (default is empty string); e.g. "0,1,5,320-478,922". |
| | **<dcss>**      String type; all different possible combinations of CBM data coding schemes (refer to    **<dcs>**) (default is empty string); e.g. "0-3,5" |
| Reference 3GPP TS27.005 | |

### 4.2.15. AT+CSDH Show SMS text mode parameters

| AT+CSDH    Show SMS text mode parameters | |
| --- | --- |
| Read Command **AT+CSDH?** | Response **+CSDH: <show>** |
| | **OK** |
| | Parameters See Write Command. |
| Test Command **AT+CSDH=?** | Response **+CSDH:** (list of supported <**show**>s) |
| | **OK** |
| | Parameter See Write Command. |
| Write Command **AT+CSDH=[<show>]** | Response TA determines whether detailed header information is shown in text mode result codes. |
| | **OK** |
| | Parameter |

| | |
|---|---|
| | **\<show\>** 0    Do not show header values defined in commands +**CSCA** and +**CSMP** (**\<sca\>**, **\<tosca\>**, **\<fo\>**, **\<vp\>**, **\<pid\>** and **\<dcs\>**) nor **\<length\>**, **\<toda\>** or **\<tooa\>** in +**CMT**, +**CMGL**, +**CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode <br> 1    Show the values in result codes |
| Reference <br> 3GPP TS27.005 | |

### 4.2.16. AT+CSMP Set SMS text mode parameters

| AT+CSMP    Set SMS text mode parameters | |
|---|---|
| Read Command <br> **AT+CSMP?** | Response <br> +**CSMP: \<fo\>,\<vp\>,\<pid\>,\<dcs\>** <br><br> **OK** |
| | Parameters <br> See Write Command. |
| 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** |
| | Parameters <br> See Write Command. |
| Write Command <br> **AT+CSMP=[\<fo >[\<vp\>[,pid\>[,\<d cs\>]]]]** | 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:* <br> *The Command writes the parameters in NON-VOLATILE memory.* <br> *OK* |
| | Parameters <br> **\<fo\>**        Depending on the Command or result code: first octet of <br> TS23.040(GSM03.40) SMS-DELIVER, SMS-SUBMIT <br> (default is 17), SMS-STATUS-REPORT, or <br> SMS-COMMAND (default is 2) in integer format. SMS <br> status report is supported under text mode if **\<fo\>** is set to 49 <br> **\<vp\>**        Depending on SMS-SUBMIT **\<fo\>** setting: <br> TS23.040(GSM03.40) TP-Validity-Period either in integer |

| | | format (default 167) or in time-string format (refer to **<dt>**) |
|---|---|---|
| | **<pid>** | TS23.040(GSM03.40) TP-Protocol-Identifier in integer format (default is 0) |
| | **<dcs>** | TS23.038(GSM03.38) SMS Data Coding Scheme in Integer format |
| Reference 3GPP TS27.005 | | |

### 4.2.17. AT+CSMS Select message service

| AT+CSMS Select message service | |
|---|---|
| Read Command **AT+CSMS?** | Response **+CSMS: <service>,<mt>,<mo>,<bm>** <br><br> **OK** |
| | Parameters See Write Command. |
| Test Command **AT+CSMS=?** | Response **+CSMS:** (list of supported <**service**>s) <br><br> **OK** |
| | Parameters See Write Command. |
| Write Command **AT+CSMS= <service>** | Response **+CSMS: <mt>,<mo>,<bm>** <br><br> **OK** If error is related to ME functionality: **+CMS ERROR: <err>** |
| | Parameters |
| | **<service>**    0    TS23.040 and TS23.041 (the syntax of SMS AT commands is compatible with TS07.05 Phase 2) |
| |          1    TS23.040 and TS23.041 (the syntax of SMS AT commands is compatible with TS07.05 Phase 2+) |
| | **<mt>**    Mobile Terminated Messages: |
| |          0    Type not supported |
| |          1    Type supported |
| | **<mo>**    Mobile Originated Messages: |
| |          0    Type not supported |
| |          1    Type supported |
| | **<bm>**    Broadcast Type Messages: |
| |          0    Type not supported |

| | 1 | Type supported |
|---|---|---|

# 5. AT Commands for PS support

## 5.1. Overview of AT Commands for PS support

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

## 5.2. Detailed descriptions of AT Commands for PS support

### 5.2.1. AT+CGATT Attach to/detach from PS service

| AT+CGATT    Attach to/detach from PS service | |
|---|---|
| Test Command<br>**AT+CGATT=?** | Response<br>**+CGATT:** (list of supported <**state**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+CGATT?** | Response<br>**+CGATT: <state>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CGATT=<st<br>ate>** | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br>Parameter: |

| | | |
|---|---|---|
| | **<state>** | Indicates the state of PS attachment |
| | | 0    Detached |
| | | 1    Attached |
| | | Other values are reserved and will result in an **ERROR** response to the Write Command |
| Reference 3GPP TS27.007 | | |

### 5.2.2.  AT+CGDCONT Define PDP context

| AT+CGDCONT | Define PDP context |
|---|---|
| Test Command **AT+CGDCONT =?** | Response **+CGDCONT:** (range of supported <**cid**>s), <**PDP_type**>, <**APN**>, <**PDP_addr**>, (list of supported <**data_comp**>s), (list of supported <**head_comp**>s)<br><br>**OK**<br>Parameters<br>See Write Command. |
| Read Command **AT+CGDCONT ?** | Response **+CGDCONT:** <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp> <**CR**><**LF**>+**CGDCONT:** <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp> …<br><br>**OK**<br>Parameters<br>See Write Command. |
| Write Command **AT+CGDCONT =<cid>[,<PDP_ty pe>,[APN>[,<PD P_addr>[,<d_co mp>[,<h_comp>] ]]]]** | Response **OK** **ERROR** Parameters |
| | **<cid>**          (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command. |
| | **<PDP_type>**   (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol X25 ITU-T/CCITT X.25 layer 3 IP Internet Protocol (IETF STD |

| | | |
|---|---|---|
| | | 5) OSPIH Internet Hosted Octet Stream Protocol PPP Point to Point Protocol (IETF STD 51) |
| | **\<APN>** | (Access Point Name) a string parameter that is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested. |
| | **\<PDP_addr>** | A string parameter identifies the MT in the address space applicable to the PDP. 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. The allocated address may be read using the **+CGPADDR** command. |
| | **\<d_comp>** | A numeric parameter that controls PDP data compression<br>0 off (default if value is omitted)<br>Other values are reserved |
| | **\<h_comp>** | A numeric parameter that controls PDP header compression<br>0 off (default if value is omitted)<br>Other values are reserved |
| Reference<br>3GPP TS27.007 | | |

### 5.2.3. AT+CGQMIN Quality of service profile (Minimum acceptable)

| AT+CGQMIN | Quality of service profile (Minimum acceptable) |
|---|---|
| Test Command<br>**AT+CGQMIN=?** | Response<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>**OK**<br>Parameters<br>See Write Command. |
| Read Command<br>**AT+CGQMIN?** | Response<br>**+CGQMIN: \<cid>,\<precedence>,\<delay>,\<reliability>,\<peak>,\<mean>**<br>**\<CR>\<LF>+CGQMIN:**<br>**\<cid>,\<precedence>,\<delay>,\<reliability>,\<peak>,\<mean>**<br>**…**<br><br>**OK**<br>Parameters<br>See Write Command. |
| Write Command<br>**AT+CGQMIN=<** | Response<br>**OK** |

| cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]] | If error is related to ME functionality: |
|---|---|
| | +CME ERROR: <err> |
| | Parameters |
| | <cid>    A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) |
| | The following parameter are defined in TS23.060(GSM03.60) |
| | <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 |
| Reference 3GPP TS27.007 | |

### 5.2.4. AT+CGQREQ Quality of service profile (Requested)

| AT+CGQREQ | Quality of service profile (Requested) |
|---|---|
| Test Command AT+CGQREQ=? | Response +CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s), (list of supported <peak>s), (list of supported <mean>s) <br><br>OK <br>Parameters <br>See Write Command. |
| Read Command AT+CGQREQ? | Response +CGQREQ: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean> <CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak >,<mean> … <br><br>OK <br>Parameters <br>See Write Command. |
| Write Command AT+CGQREQ= <cid>[,<precedence>[,<delay>[,<reliability>[,<pea | Response OK If error is related to ME functionality: +CME ERROR: <err> Parameters |

| k>[,<mean>]]]]] | <cid> | A numeric parameter which specifies a particular PDP context definition (see +**CGDCONT** command) |
| | | |
| | The following parameter are defined in TS23.060(GSM03.60) | |
| | <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 |
| Reference<br>3GPP TS27.007 | | |

### 5.2.5. AT+CGACT PDP context activate or deactivate

| AT+CGACT   Activate or deactivate PDP context | |
| --- | --- |
| Test Command<br>**AT+CGACT=?** | Response<br>+**CGACT:** (list of supported <**state**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+CGACT?** | Response<br>+**CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid><state>…]**<br><br>**OK** |
| Write Command<br>**AT+CGACT=<st ate>,<cid>** | Response<br>**OK**<br>**NO CARRIER**<br>If error is related to ME functionality:<br>+**CME ERROR: <err>**<br>Parameters<br><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 Write Command.<br><cid>           A numeric parameter which specifies a particular PDP context definition (see +**CGDCONT** command) |
| Reference<br>3GPP TS27.007 | *Note:*<br>*If context is deactivated successfully, **NO CARRIER** is returned.* |

### 5.2.6. AT+CGDATA Enter data state

| AT+CGDATA | Enter data state |
|---|---|
| Test Command<br>**AT+CGDATA=?** | Response<br>**+CGDATA:** list of supported <**L2P**>s<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CGDATA=<**<br>**L2P>[,<cid>[,<ci**<br>**d>[,…]]]** | Response<br>**OK**<br>**NO CARRIER**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br>Parameters<br>**<L2P>**      A string parameter that indicates the layer 2 protocol to be<br>            used between the TE and MT:<br>            PPP – Point to Point protocol for a PDP such as IP<br>            Other values are not supported and will result in an<br>            **ERROR** response to the execution command<br>**<cid>**      A numeric parameter which specifies a particular PDP<br>            context definition (see **+CGDCONT** command) |
| Reference<br>3GPP TS27.007 | |

### 5.2.7. AT+CGPADDR Show PDP address

| AT+CGPADDR | Show PDP address |
|---|---|
| Test Command<br>**AT+CGPADDR=**<br>**?** | Response<br>**+CGPADDR:** (list of defined <**cid**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CGPADDR=**<br>**<cid>** | Response<br>**+CGPADDR: <cid>,<PDP_addr>**<br><br>**OK**<br>**ERROR**<br>Parameters<br>**<cid>**          A  numeric  parameter  which  specifies  a  particular  PDP |

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| | | |
|---|---|---|
| | | context definition (see **+CGDCONT** command) |
| | **<PDP_addr>** | 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** command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to **<cid>**. **<PDP_ address>** is omitted if none is available |
| Reference<br>3GPP TS27.007 | *Note:*<br>*This command dictates the behavior of PPP in the ME but not that of any other GPRS-enabled foreground layer, e.g. browser.* | |

### 5.2.8. AT+CGCLASS GPRS mobile station class(GPRS only)

| AT+CGCLASS | GPRS mobile station class |
|---|---|
| Test Command<br>**AT+CGCLASS=?** | Response<br>**+CGCLASS:** (list of supported <**class**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+CGCLASS?** | Response<br>**+CGCLASS: <class>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CGCLASS=<class>** | Response<br>**OK**<br>**ERROR**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br><br>Parameter<br>**<class>**      A string parameter which indicates the GPRS mobile class<br>                     ( Functionality in descending order )<br>                 "B"              Class B<br>                 "CG"            Class C in GPRS only mode<br>                 "CC"            Class C in circuit switched only mode |
| Reference<br>3GPP TS27.007 | |

**5.2.9. AT+CGEREP Control unsolicited PS event reporting**

| AT+CGEREP | Control unsolicited PS event reporting |
|---|---|
| Test Command<br>**AT+CGEREP=?** | Response<br>**+CGEREP:** (list of supported <**mode**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+CGEREP?** | Response<br>**+CGEREP: <mode>**<br><br>**OK**<br><br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CGEREP=<<br>mode>** | Response<br>**OK**<br>**ERROR**<br>Parameter<br><**mode**>   0   Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE.<br>           1   Discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE<br><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 CLASS <class>**<br><br>Parameters<br>**<PDP_type>**   Packet Data Protocol type (see **+CGDCONT** command)<br>**<PDP_addr>**  Packet Data Protocol address (see **+CGDCONT** command)<br>**<cid>**          Context ID (see **+CGDCONT** command)<br>**<class>**        GPRS mobile class (see **+CGCLASS** command) |
| Reference<br>3GPP TS27.007 | |

### 5.2.10. AT+CGREG Network registration status

| AT+CGREG | Network registration status |
|---|---|
| Test Command<br>**AT+CGREG=?** | Response<br>**+CGREG:** (list of supported <**n**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+CGREG?** | Response<br>**+CGREG: <n>,<stat>[,<lac>,<ci>[,Act]]**<br><br>**OK**<br>**+CME ERROR: <err>**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CGREG=[<**<br>**n>]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br>Parameter<br>Parameters |

| | | |
|---|---|---|
| **<n>** | <u>0</u> | Disable network registration unsolicited result code |
| | 1 | Enable network registration unsolicited result code<br>**+CGREG: <stat>** |
| | 2 | Enable network registration unsolicited result code<br>with location information |
| **<stat>** | 0 | Not registered, ME is not currently searching a new<br>operator to register to |
| | 1 | Registered, home network |
| | 2 | Not registered, but ME is currently searching a new<br>operator to register to |
| | 3 | Registration denied |
| | 4 | Unknown |
| | 5 | Registered, roaming |
| **<lac>** | | String type; two byte location area code in hexadecimal<br>format |
| **< ci >** | | String type; two byte cell ID in hexadecimal format |
| **<Act>** | 0 | GSM |
| | 2 | UTRAN |
| | 3 | GSM w/EGPRS |
| | 4 | UTRAN w/HSDPA |
| | 5 | UTRAN w/HSUPA |

| | 6 UTRAN w/HSDPA and HSUPA |
|---|---|
| Reference | *Note:* |
| 3GPP TS27.007 | *For parameter state, option 0 and 1 are supported only.* |

### 5.2.11. AT+CGSMS Select service for MO SMS messages

| AT+CGSMS Select service for MO SMS messages | |
|---|---|
| Test Command<br>**AT+CGSMS=?** | Response<br>**+CGSMS:** (list of currently available <**service**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+CGSMS?** | Response<br>**+CGSMS: <service>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+CGSMS=[<service>]** | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br>Parameter<br>**<service>** A numeric parameter which indicates the service or service<br>preference to be used<br>0 Packet Domain<br>1 Circuit switched<br>2 Packet Domain preferred (use circuit switched if<br>GPRS not available)<br>3 Circuit switched preferred (use Packet Domain if<br>circuit switched not available) |
| Reference<br>3GPP TS27.007 | *Note:*<br>*The circuit switched service route is the default method.* |

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## 6. AT Commands special for Quectel

### 6.1. Overview

| Command | Description |
|---|---|
| AT+QPOWD | Power off |
| AT+QMIC | Change the microphone gain level |
| AT+QADC | Read ADC |
| AT+QAUDCH | Swap the audio channels |
| AT+QEADC | Read ADC2 |
| AT+QSCLK | Configure chow clock |
| AT+QCCID | Show ICCID |
| AT+QMGDA | Delete all SMS |
| AT+QEXTUNSOL | Enable/disable propriety unsolicited indications |
| AT+QNSTATUS | Query GSM network status |
| AT+QRAT | Radio Access Technology Mode and GPRS/EDGE Status |
| AT+QPBSE | Frequency Band select |
| AT+QSRT | Select ring tone |

### 6.2. Detailed descriptions of Commands

#### 6.2.1.   AT+QPOWD Power off

| AT+QPOWD Power off | |
|---|---|
| Write Command | Response |
| **AT+QPOWD** = | Parameter |
| **<n>** | **<n>**        0        Urgent Power off ( Do not send out URC "**NORMAL    POWER DOWN**") |
| | 1        Normal power off (Send out URC "**NORMAL    POWER DOWN**") |
| Reference | |

#### 6.2.2.   AT+QMIC Change the microphone gain level

| AT+QMIC    Change the microphone gain level | |
|---|---|
| Test Command | Response |
| **AT+QMIC=?** | **+QMIC:** (list of    supported <**channel**>s）, (list of    supported |

| | <gainlevel>s) <br><br>**OK** |
|---|---|
| | Parameters <br> See Write Command. |
| Read Command <br> **AT+QMIC?** | Response <br> **+ QMIC: < gainlevel(Normal_Mic) >, <gainlevel(Headset_Mic)> , <gainlevel(Loudspeaker_Mic)>** <br><br> **OK** |
| | Parameters <br> See Write Command. |
| Write Command <br> **AT+QMIC=** <br> **<channel>,<** <br> **gainlevel>** | Response : <br> **OK** <br> **ERROR** |
| | Parameters <br> **<channel>**    0    Normal microphone <br>              1    Headset microphone <br>              2    Loudspeaker microphone <br> **<gainlevel>**    Range is 0 - 15 |
| Reference | |

### 6.2.3. AT+QADC Read ADC1

| **AT+QADC**    **Read ADC** | |
|---|---|
| Test Command <br> **AT+QADC=?** | Response : <br> **+QADC:** (list of supported **<status>**s), (list of supported **<value>**s) <br><br> **OK** |
| | Parameters <br> See Read Command. |
| Read Command <br> **AT+ QADC?** | Response <br> **+QADC: <status>,<value>** <br><br> **OK** |
| | Parameters <br> **<status>**    0    Fail <br>              1    Success <br> **<value>**    Range is 0 - 2800 |

#### 6.2.4. AT+QAUDCH Swap the audio channels

| AT+QAUDCH | Swap the audio channels |
|---|---|
| Test Command<br>**AT+QAUDCH=<br>?** | Response<br>**+QAUDCH: (0 = NORMAL_AUDIO, 1 = HEADSET_AUDIO, 2 =<br>LOUDSPEAKER_AUDIO, 3 = AUTO)**<br>**OK** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+QAUDCH?** | Response<br>**+QAUDCH: <n>**<br><br>**OK** |
| | Parameter<br>See Write Command |
| Write Command<br>**AT+QAUDCH=[<br><n>]** | Response<br>**OK**<br>**+CME ERROR: <err>** |
| | Parameter<br>**<n>**       0    Normal audio channel(default)<br>             1    Headset audio channel<br>             2    Loudspeaker audio<br>             3    Auto |
| Reference | |

#### 6.2.5. AT+QEADC Read ADC2

| AT+QEADC | Read ADC2 |
|---|---|
| Test Command<br>**AT+QEADC=?** | Response :<br>**+QEADC:** (list of supported <**status**>s), (list of supported <**value**>s)<br><br>**OK** |
| | Parameters<br>See Read Command. |
| Read Command<br>**AT+ QEADC?** | Response<br>**+QEADC: <status>,<value>**<br><br>**OK** |

| | Parameters |
|---|---|
| | **<status>**     0     Fail |
| |                  1     Success |
| | **<value>**     Range is 0 - 2800 |

### 6.2.6. AT+QSCLK Configure slow clock

| AT+ QSCLK    Configure slow clock | |
|---|---|
| Test Command<br>**AT+QSCLK=?** | Response<br>**+QSCLK: (0,1)**<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Read Command<br>**AT+QSCLK?** | Response<br>**+QSCLK: <n>**<br><br>**OK** |
| | Parameter<br>See Write Command |
| Write Command<br>**AT+QSCLK**<br>**=<n>** | Response<br>**OK**<br>**ERROR** |
| | Parameter<br>**<n>**        0     Disable slow clock<br>                  1     Enable slow clock |
| Reference | |

### 6.2.7. AT+QCCID Show ICCID

| AT+QCCID    Show ICCID | |
|---|---|
| Test Command<br>**AT+QCCID =?** | Response<br>**OK** |
| Execution<br>Command<br>**AT+ QCCID** | Response<br>**ccid data** [ex. 898600810906F8048812]<br><br>**OK** |
| | Parameter |

| Reference | |
|-----------|--|

### 6.2.8. AT+QMGDA Delete all SMS

| AT+QMGDA   Delete all SMS | |
|---|---|
| Test Command<br>**AT+QMGDA=?** | Response<br>**+QMGDA:** (listed of supported <**type**>s)<br><br>**OK**<br>**+CMS ERROR: <err>** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+QMGDA=<t**<br>**ype>** | Response<br>**OK**<br>**ERROR**<br>**+CMS ERROR: <err>** |
| | Parameter<br>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>1) 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 |
| Reference | |

### 6.2.9. AT+QEXTUNSOL Enable/disable proprietary unsolicited indications

| AT+QEXTUNSOL   Enable/disable proprietary unsolicited indications | |
|---|---|
| Test Command<br>**AT+QEXTUNS**<br>**OL =?** | Response<br>**+QEXTUNSOL:**(list of supported <**exunsol**>s)<br><br>**OK** |

| | Parameters |
| --- | --- |
| | See Write Command. |
| Write Command<br>**AT+QEXTUNS**<br>**OL=\<exunsol\> ,\<**<br>**mode\>** | Response<br>**OK**<br>**ERROR** |
| | Parameters |
| | **\<exunsol\>**     String type. Values currently reserved by the present document |
| |         "SQ"    Signal Quality Report. Displays signal strength and channel bit error rate (similar to **AT**+**CSQ**) in form **+CSQN: \<rssi\>, \<ber\>**when values change. |
| |         "UR"    Unsolicited result code. Produces an unsolicited indication following particular call state<br>transitions. Multiple notifications may occur for the same transition **+QGURC: \<event\>**. Where **\<event\>** describes the current call state:<br>**\<event\>:**<br>0 Terminated active call, at least one held call remaining<br>1 Attempt to make an Mobile Originated call<br>2 Mobile Originated Call has failed for some reason<br>3 Mobile Originated call is ringing<br>4 Mobile Terminated call is queued (Call waiting)<br>5 Mobile Originated Call now connected<br>6 Mobile Originated or Mobile Terminated call has disconnected<br>7 Mobile Originated or Mobile Terminated call hung up.<br>8 Mobile Originated call to non-emergency number in emergency mode<br>9 No answer for mobile Originated call<br>10 Remote number busy for Mobile Originated call |
| | **\<mode\>**     0     Disable<br>             1     Enable<br>             2     Query |
| Reference | |

### 6.2.10. AT+QNSTATUS Query WCDMA/GSM network status

| **AT+QNSTATUS** | **Query GSM network status** |
| --- | --- |
| Test Command | Response |

| AT+QNSTATUS =? | OK |
| --- | --- |
| Execution Command **AT+QNSTATUS** | Response **+QNSTATUS: <status>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** |
| | Parameter <**status**>    255      Not ready to retrieve network status 0      Work in normal state 1      No available cell 2      Only limited service is available |
| Reference | |

### 6.2.11. AT+QRAT Radio Access Technology Mode and GPRS/EDGE Status

| **AT+QRAT**    **Set and get Radio Access Technology Mode and GPRS/EDGE Status** | |
| --- | --- |
| Test Command **AT+QRAT=?** | Response **+QRAT: (0,2,255),(0,1),(0-2,255)** **OK** |
| | Parameter See Write Command |
| Read Command **AT+QRAT?** | Response **+QRAT: <current RAT>,<GPRS status>,<RAT mode>** **OK** |
| | Parameter See Write Command. |
| Write Command **AT+QRAT=<RAT mode>** | Response **OK/ERROR** If error is related to ME functionality: **+CME ERROR: <err>** |
| | Parameter **<current RAT>**    RAT of current PLMN 0      GSM 2      UMTS 255      Unknown **<GPRS status>**    0      GPRS 1      EDGE |

| | <RAT mode> | RAT mode setting of MS |
|---|---|---|
| | | 0      GSM only |
| | | 1      WCDMA only |
| | | 2      Auto |
| | | 255    Unknown |
| Reference | | |

### 6.2.12.  AT+QPBSE Frequency Band select

| AT+QPBSE    Frequency Band select | |
|---|---|
| Test Command<br>**AT+QPBSE =?** | Response<br>**+QPBSE: <gsm _band>,<umts_band>**<br><br>**OK** |
| | Parameter<br>See Write Command |
| Read Command<br>**AT+QPBSE?** | Response<br>**+QPBSE: <gsm _band>,<umts_band>**<br><br>**OK** |
| | Parameter<br>See Write Command. |
| Write Command<br>**AT+QPBSE =<br><gsm<br>_band>,<umts_b<br>and>** | Response<br>**OK/ERROR**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameter<br>**<gsm_band>**      Bit 1      EGSM900<br>                 Bit 3      DCS1800<br>                 Bit 4      PCS1900<br>                 Bit 7      GSM850<br>                 0xFF       Auto select, select all<br>                 supported frequency band<br>**<umts_band>**     bit 0      UMTS BAND I:<br>         WCDMA-IMT-2000<br>                 Bit 1      UMTS BAND II：WCDMA-PCS-1900<br>                 Bit 2      UMTS BAND III：WCDMA-DCS-1800<br>                 Bit 3      UMTS BAND IV：WCDMA-AWS-1700<br>                 bit 4      UMTS BAND V：WCDMA-CLR-850<br>                 Bit 5      UMTS BAND VI：WCDMA-800<br>                 Bit 6      UMTS BAND VII：WCDMA- IMT-E-2600 |

QUECTEL

| | |
|---|---|
| | Bit 7     UMTS BAND VIII：WCDMA-GSM-900<br>bit 8     UMTS BAND IX：WCDMA-1800<br>Bit 9     UMTS BAND X：WCDMA-1700<br>0xFFFF     Auto select, select all<br>supported frequency band |
| Reference | *Notes:*<br>● *This command is not allowed to set each band mode, GSM or UMTS,*<br>  *as 0. Said AT+QPBSE=<gsm_band>,0or*<br>  *AT+QPBSE=0,<umts_band>*<br>● *If the band mode is not supported, this command will just ignore the*<br>  *setting*<br>● *User should reboot the module to let the setting become effective*<br>● *If we get 0 in the certain field using AT+QPBSE=?, it means that this*<br>  *field is not supported.*<br><br>*Examples:*<br>*Set Auto Band*<br>***AT+QPBSE=255, 65535***<br>***OK***<br>*Set EURO Band* （*GSM-900/DCS-1800/ WCDMA-IMT-2000*）<br>***AT+QPBSE=10, 1***<br>***OK*** |

### 6.2.13. AT+QSRT Select ring tone

| AT+QSRT    Select ring tone | |
|---|---|
| Test Command<br>**AT+QSRT=?** | Response<br>**+QSRT: (1-10)**<br><br>**OK** |
| Read Command<br>**AT+QSRT?** | Response<br>**+QSRT: <tone>**<br><br>**OK** |
| Write Command<br>**AT+QSRT=<tone>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| | Parameter<br><**tone**>     1…10    Id of the selected ring tone |
| Reference | |

## 7. AT Commands for TCPIP application toolkit

### 7.1. Overview

| Command | Description |
| --- | --- |
| AT+QIOPEN | Start up TCP or UDP connection |
| AT+QISEND | Send data through TCP or UDP connection |
| AT+QICLOSE | Close TCP or UDP connection |
| AT+QIDEACT | Deactivate GPRS/CSD PDP context |
| AT+QILPORT | Set local port |
| AT+QIREGAPP | Start TCPIP task and set APN, user name, password |
| AT+QIACT | Bring up wireless connection with GPRS or CSD |
| AT+QILOCIP | Get local IP address |
| AT+QISTAT | Query current connection status |
| AT+QIDNSCFG | Configure domain name server |
| AT+QIDNSGIP | Query the IP address of given domain name |
| AT+QIDNSIP | Connect with IP address or domain name sever |
| AT+QIHEAD | Add an IP header when receiving data |
| AT+QIAUTOS | Set auto sending timer |
| AT+QIPROMPT | Set prompt of '>' when sending data |
| AT+QISERVER | Configure as server |
| AT+QICSGP | Select CSD Or GPRS as the bearer |
| AT+QISRVC | Choose connection |
| AT+QISHOWRA | Set Whether to display the address of sender |
| AT+QISCON | Save TCPIP Application context |
| AT+QIMODE | Select TCPIP transferring mode |
| AT+QITCFG | Configure transparent transferring mode |
| AT+QISHOWPT | Control whether to show the Protocol type |
| AT+QIMUX | Control whether to enable multiple TCPIP session |
| AT+QISHOWLA | Control whether to display local IP address |
| AT+QIFGCNT | Select a context as foreground context |
| AT+QISACK | Query the data information for sending |
| AT+QINDI | Set the method to handle received TCP/IP data |
| AT+QIRD | Retrieve the received TCP/IP data |
| AT+QISDE | Control whether to allow echo data for QISEND |
| AT+QPING | Ping a remote server |
| AT+QNTP | Synchronize the local time via NTP |

## 7.2. Detailed descriptions of Commands

### 7.2.1. AT+QIOPEN   Start up TCP or UDP connection

| AT+QIOPEN    Start up TCP or UDP connection | |
| --- | --- |
| Test Command<br>**AT+QIOPEN=?** | Response<br>**+QIOPEN:** (list of supported <**mode**>),**(IP address range)**,**(port range)**<br><CR><LF>**+QIOPEN:** (list of supported <**mode**>),**(domain name)**,**(port range)**<br><br>**OK**<br>Parameters<br>See Write Command |
| Write Command<br>**AT+QIOPEN=[<index>,]<mode>,<IP address>/<domain name>,<port>** | Response<br>If format is right, respond<br>**OK**<br>Otherwise respond<br>**ERROR**<br>And then if connection is successful, respond<br>**[<index>,] CONNECT OK**<br>Otherwise respond<br>**[<index>,] CONNECT FAIL**<br>Parameters<br><table><tr><td><**index**></td><td>A numeric indicates which socket opens the connection. This parameter is necessary only if **AT+QIMUX** was set as 1 (refer to **AT+QIMUX**). When **AT+QIMUX** was set as 0, the parameter MUST be omitted.</td></tr><tr><td><**mode**></td><td>A string parameter which indicates the connection type<br>**"TCP"**   Establish a TCP connection<br>**"UDP"**   Establish a UDP connection</td></tr><tr><td><**IP address**></td><td>A string parameter that gives the address of the remote server in dotted decimal style.</td></tr><tr><td><**port**></td><td>The port of the remote server</td></tr><tr><td><**domain name**></td><td>A string parameter which represents the domain name address of the remote server.</td></tr></table> |
| Reference | *Note:*<br>● *This command is allowed to establish a TCP/UDP connection only when the state is IP INITIAL or IP STATUS or IP CLOSE. So it is necessary to process "**AT+QIDEACT**" or "**AT+QICLOSE**" before establishing a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS or IP CLOSE.* |

| | • If **AT+QIMUX** was set as 0 and the current state is CONNECT OK which means the connection channel is used, it will reply "**ALREADY CONNECT**" after issuing the Write command. |
|---|---|

### 7.2.2. AT+QISEND Send data through TCP or UDP connection

| AT+QISEND Send data through TCP or UDP connection | |
|---|---|
| Test Command<br>**AT+QISEND=?** | Response<br>**+QISEND=** <**length**><br><br>**OK** |
| Execution Command<br>**AT+QISEND** response"> ", then type data to send, tap CTRL+Z to send, tap ESC to cancel the operation | Response<br>This command is used to send changeable length data.<br>If connection is not established or disconnected:<br>**ERROR**<br>If sending succeeds:<br>**SEND OK**<br>If sending fails:<br>**SEND FAIL**<br><br>*Note:*<br>• *This command is used 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.*<br>• *The maximum length of the data to input at a time is 1460.*<br>• *This command is invalid when QIMUX is 1 (refer to **AT+QIMUX**).* |
| Write Command<br>**AT+QISEND=[<**index>,]<length>** | Response<br>This command is used to send fixed length data or send data on the given socket (defined by **<index>**).<br>If connection is not established or disconnected:<br>**ERROR**<br>If sending succeeds:<br>**SEND OK**<br>If sending fails:<br>**SEND FAIL**<br><br>Parameter<br>**<index>** The index of the socket for sending data. This parameter is necessary only if **AT+QIMUX** was set as 1 (refer to **AT+QIMUX**). When **AT+QIMUX** was set as 0, the parameter MUST be omitted<br>**<length>** A numeric parameter which indicates the length of sending |

| | data, it MUST be less than 1460. |
|---|---|
| Reference | *Note:*<br>● *There are at most 1460 bytes that can be sent each time.*<br>● *Only send data at the status of established connection, otherwise respond* **ERROR**.<br>● **SEND OK** means the data have been put into the send window to send rather than it has received the ACK message for the data from the remote node. To check whether the data has been sent to the remote note, it is necessary to execute the command **AT+QISACK** to query. |

### 7.2.3. AT+QICLOSE Close TCP or UDP connection

| AT+QICLOSE | Close TCP or UDP connection |
|---|---|
| Test Command<br>**AT+QICLOSE=?** | Response<br>**OK** |
| Execution Command<br>**AT+QICLOSE** | Response<br>If close succeeds:<br>**CLOSE OK**<br>If close fails:<br>**ERROR**<br>*Note:*<br>● *If QISRVC is 1 (please refer to **AT+QISRVC**) and QIMUX is 0 (please refer to **AT+QIMUX**), this command will close the connection in which the module is used as a client.*<br>● *If QISRVC is 1 and QIMUX is 1, it will return **ERROR**.*<br>● *If QISRVC is 2 and QIMUX equals 0 and the module is used as a server and some clients have been connected in it, this command will close the connection between the module and the remote client.*<br>● *If QISRVC is 2 and QIMUX is 0 and the module is in listening state without any client, this command will cause the module quit the listening state.*<br>● *If QISRVC is 2 and QIMUX is 1 and the module is used as a server, this command will close all the income connection and cause the module quit the listening state.* |
| Write Command<br>**AT+QICLOSE=<index>** | Response<br>If close succeeds:<br>**<index>, CLOSE OK**<br>If close fails:<br>**ERROR**<br>*Note:*<br>● *This command is valid only if QIMUX is 1* |

| | |
|---|---|
| | ● If QISRVC is 1 and QIMUX is 1, this command will close the corresponding connection according to <index> and the module is used as a client in the connection. |
| | ● If QISRVC is 2 and QIMUX is 1, this command will close the incoming connection according to <index>. |
| Reference | *Note:* *If QISRVC is 1 and QIMUX is 0,* **AT+QICLOSE** *only close connection when the status is* **CONNECTING** *or* **CONNECT OK**, *otherwise respond* **ERROR***. After closing the connection, the status is* **IP CLOSE***.* |

### 7.2.4. AT+QIDEACT Deactivate GPRS/CSD PDP context

| AT+QIDEACT | Deactivate GPRS/CSD PDP context |
|---|---|
| Test Command **AT+QIDEACT= ?** | Response **OK** |
| Execution Command **AT+QIDEACT** | Response If close succeeds: **DEACT OK** If close fails: **ERROR** *Note:* *Except at the status of IP INITIAL, you can deactivate GPRS/CSD and PDP context by* **AT+QIDEACT***. After closing the connection, the status becomes to IP INITIAL.* |
| Reference | |

### 7.2.5. AT+QILPORT Set local port

| AT+QILPORT | Set local port |
|---|---|
| Test Command **AT+QILPORT= ?** | Response **+QILPORT:** (list of supported <**port**>s) **OK** Parameter See Write Command. |
| Read Command **AT+QILPORT?** | Response <mode>: <port> |

| | <CR><LF><mode>: <port> |
| --- | --- |
| | **OK** |
| | Parameter |
| | See Write Command. |
| Write Command<br>**AT+QILPORT=<br><mode>,<port>** | Response<br>**OK**<br>**ERROR**<br>Parameters |
| | **<mode>** A string parameter which indicates the connection type |
| | "TCP" TCP local port |
| | "UDP" UDP local port |
| | **<port>** 0-65535 A numeric parameter which indicates the local port |
| Reference | *Note:* |
| | *This command is used to set the port for listening.* |

### 7.2.6. AT+QIREGAPP Start TCPIP task and set APN, user name and password

| AT+QIREGAPP | Start TCPIP task and set APN, user name and password |
| --- | --- |
| Test Command<br>**AT+QIREGAPP<br>=?** | Response<br>**+QIREGAPP: "APN","USER","PWD"**<br><br>**OK** |
| Read Command<br>**AT+QIREGAPP<br>?** | Response<br>**+QIREGAPP: <apn>,<user name>,<password>**<br><br>**OK**<br>Parameters<br>See Write Command. |
| Write Command<br>**AT+QIREGAPP<br>=<apn>,<user<br>name>,<<br>password>[,<rat<br>e>]** | Response<br>**OK**<br>**ERROR**<br>Parameters<br>**<apn>** A string parameter which indicates the GPRS access point name or the call number of CSD<br>**<user name>**A string parameter which indicates the GPRS/CSD user name<br>**<password>** A string parameter which indicates the GPRS/CSD password<br>**<rate>** The speed of data transmit for CSD |
| Execution<br>Command<br>**AT+QIREGAPP** | Response<br>**OK**<br>**ERROR** |
| Reference | *Note:* |

| | ⚫ *The Write command and Execution command of this command is valid only at the status of IP INITIAL. After operating this command, the status will become to IP START.* |
| --- | --- |
| | ⚫ *The value of QICSGP (please refer to **AT+QICSGP**) defines what kind of bearer (GPRS or CSD) the parameters are used for.* |

### 7.2.7. AT+QIACT Bring up wireless connection with GPRS or CSD

| AT+QIACT    Bring up wireless connection with GPRS or CSD | |
| --- | --- |
| Execution Command<br>**AT+QIACT** | Response<br>**OK**<br>**ERROR** |
| Reference | *Note:*<br>***AT+QIACT** only activates GPRS/CSD context at the status of IP START. After operating this command, the status will become to IP CONFIG. If TA accepts the activated operation, the status will become to IP IND; after GPRS/CSD context is activated successfully, the status will become to IP GPRSACT, respond **OK**, otherwise respond **ERROR**.* |

### 7.2.8. AT+QILOCIP Get local IP address

| AT+QILOCIP    Get local IP address | |
| --- | --- |
| Read Command<br>**AT+QILOCIP?** | Response<br>**OK** |
| Execution Command<br>**AT+QILOCIP** | Response<br>**<IP address>**<br>**ERROR**<br><br>Parameter<br>**<IP address>**    A string parameter which indicates the IP address assigned from GPRS or CSD network |
| Reference | *Note:*<br>*Only at the following status: IP GPRSACT, IP STATUS, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE can get local IP address by* ***AT+QILOCIP***, *otherwise respond ERROR. And if the status before executing the command is IP GPRSACT, the status will become to IP STATUS after the command is enabled.* |

**7.2.9. AT+QISTAT Query current connection status**

| AT+QISTAT | Query current connection status |
|---|---|
| Test Command<br>**AT+QISTAT=?** | Response<br>**OK** |
| Execution<br>Command<br>**AT+QISTAT** | Response<br>**OK**<br><br>**STATE**: **\<state\>**<br><br>Or<br>**List of (+QISTAT: \<index\>, \<mode\>, \<addr\>, \<port\>\<CR\>\<LF\>)**<br><br>**OK**<br><br>Parameter<br>**\<state\>**      A string parameter to indicate the status of the connection.<br>         "IP INITIAL"      The TCPIP stack is in idle state.<br>         "IP START"      The TCPIP stack has been registered.<br>         "IP CONFIG"      It has been start-up to activate<br>                                 GPRS/CSD context.<br>         "IP IND"      It is activating GPRS/CSD context.<br>         "IP GPRSACT"      GPRS/CSD context has been activated<br>                                   successfully.<br>         "IP STATUS"      The local IP address has been gotten by<br>                                   the command **AT+QILOCIP**.<br>         "TCP CONNECTING"<br>                                   It is trying to establish a TCP connection.<br>         "UDP CONNECTING"<br>                                   It is trying to establish a UDP connection.<br>         "IP CLOSE"      The TCP/UDP connection has been<br>                                   closed.<br>         "CONNECT OK"      The TCP/UDP connection has been<br>                                   established successfully.<br>         "PDP DEACT"      GPRS/CSD context was deactivated<br>                                   because of unknown reason.<br><br>         If **ATV** was set to 0 by the command **ATV0**, the TCPIP<br>         stack gives the following numeric to indicate the former<br>         status.<br>         0      "IP INITIAL"<br>         1      "IP START"<br>         2      "IP CONFIG" |

| | |
|---|---|
| | 3     "IP IND" |
| | 4     "IP GPRSACT" |
| | 5     "IP STATUS" |
| | 6     "TCP CONNECTING" or "UDP CONNECTING" |
| | 7     "IP CLOSE" |
| | 8     "CONNECT OK" |
| | 9     "PDP DEACT" |
| **\<index\>** | The index of the connection, the range is (0-5) |
| **\<mode\>** | The type of the connection |
| | "TCP"     TCP connection |
| | "UDP"     UDP connection |
| **\<addr\>** | The IP address of the remote |
| **\<port\>** | The port of the remote |
| | *Note:* <br> *The former style of response displays when **QIMUX=0**, and the later style of response displays when **QIMUX=1**.* |
| Reference | |

## 7.2.10. AT+QIDNSCFG Configure domain name server

| AT+QIDNSCFG | Configure domain name server |
|---|---|
| Test Command <br> **AT+QIDNSCFG =?** | Response <br> **OK** |
| Read command <br> **AT+QIDNSCFG ?** | Response <br> **PrimaryDns: \<pri_dns\>** <br> **SecondaryDns: \<sec_dns\>** <br><br> **OK** |
| Write Command <br> **AT+QIDNSCFG =\<pri_dns\>[,\<sec _dns\>]** | Response <br> **OK** <br> **ERROR** <br> Parameters <br> **\<pri_dns\>**     A string parameter which indicates the IP address of the primary domain name server <br> **\<sec_dns\>**     A string parameter which indicates the IP address of the secondary domain name server |
| *Reference* | *Note:* <br> *Because TA will negotiate to get the DNS server from GPRS/CSD network automatically when activating GPRS/CSD context, it is STRONGLY suggested to configure the DNS server at the status of IP GPRSACT, IP* |

| | STATUS, CONNECT OK and IP CLOSE if it is necessary. |
|---|---|

### 7.2.11. AT+QIDNSGIP Query the IP address of given domain name

| AT+QIDNSGIP | Query the IP address of given domain name | |
|---|---|---|
| Test Command<br>AT+QIDNSGIP=<br>? | Response<br>**OK** | |
| Write Command<br>**AT+QIDNSGIP=**<br>**<domain name>** | Response<br>**OK**<br>or<br>**ERROR**<br>If succeeds, return:<br>**<IP address>**<br>If fails, return:<br>**ERROR: <err>**<br>**STATE: <state>**<br><br>Parameters | |
| | **<domain name>** | A string parameter which indicates the domain name |
| | **<IP address>** | A string parameter which indicates the IP address corresponding to the domain name |
| | **<err>** | A numeric parameter which indicates the error code |
| | 1 | DNS not Authorization |
| | 2 | Invalid parameter |
| | 3 | Network error |
| | 4 | No server |
| | 5 | Time out |
| | 6 | No configuration |
| | 7 | No memory |
| | 8 | Unknown error |
| | **<state>** | Please refer to **AT+QISTAT** |
| Reference | | |

### 7.2.12. AT+QIDNSIP Connect with IP address or domain name server

| AT+QIDNSIP | Connect with IP address or domain name server |
|---|---|
| Test Command | Response |

| AT+QIDNSIP=? | +QIDNSIP: (list of supported <mode>s) |
|---|---|
| | **OK** |
| | Parameter |
| | See Write Command. |
| Read Command | Response |
| **AT+QIDNSIP?** | **+QIDNSIP: <mode>** |
| | **OK** |
| | Parameter |
| | See Write Command. |
| Write Command | Response |
| **AT+QIDNSIP=<** | **OK** |
| **mode>** | **ERROR** |
| | Parameter |
| | <mode>      A numeric parameter indicates which kind of server format is used when establishing the connection: IP address server or domain name server |
| |     <u>0</u>   The address of the remote server is a dotted decimal IP address |
| |     1   The address of the remote server is a domain name |
| Reference | |

### 7.2.13. AT+QIHEAD Add an IP header when receiving data

| AT+QIHEAD    Add an IP header when receiving data | |
|---|---|
| Test Command | Response |
| **AT+QIHEAD=?** | **+QIHEAD:** (list of supported <mode>s) |
| | **OK** |
| | Parameter |
| | See Write Command. |
| Read Command | Response |
| **AT+QIHEAD?** | **+QIHEAD: <mode>** |
| | **OK** |
| | Parameter |
| | See Write Command. |
| Write Command | Response |
| **AT+QIHEAD=<** | **OK** |
| **mode>** | **ERROR** |
| | Parameter |

| | <mode> | A numeric parameter which indicates whether add an IP header before received data or not. |
|---|---|---|
| | | 0     DO Not add IP header |
| | | 1     Add a header before the received data, and the format is "**IPD(data length):**" |
| Reference | | |

### 7.2.14. AT+QIAUTOS Set auto sending timer

| AT+QIAUTOS | Set auto sending timer | |
|---|---|---|
| Test Command<br>**AT+QIAUTOS=<br>?** | Response<br>**+QIAUTOS:** (list of supported <**mode**>s)<br><br>**OK**<br>Parameter<br>See Write Command. | |
| Read Command<br>**AT+QIAUTOS?** | Response<br>**+QIAUTOS: <mode>**<br><br>**OK** | |
| Write Command<br>**AT+QIAUTOS=<br><mode>,<time>** | Response<br>**OK**<br>**ERROR**<br>Parameters | |
| | <mode> | A numeric parameter which indicates whether or not to set timer when sending data |
| | | 0     DO Not set timer for data sending |
| | | 1     Set timer for data sending |
| | <time> | A numeric parameter which indicates a time in seconds. After the time expires since **AT+QISEND**, the input data will be sent automatically. |
| Reference | | |

### 7.2.15. AT+QIPROMPT Set prompt of '>' when sending data

| AT+QIPROMPT | Set prompt of '>' when sending data |
|---|---|
| Test Command<br>**AT+QIPROMPT<br>=?** | Response<br>**+QIPROMPT:** (<**send prompt**>s)<br><br>**OK** |

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| | Parameter |
| --- | --- |
| | See Write Command. |
| Read Command<br>**AT+QIPROMPT<br>?** | Response<br>**+QIPROMPT: \<send prompt\>**<br><br>**OK**<br>Parameter<br>See Write Command |
| Write Command<br>**AT+QIPROMPT<br>=\<send<br>prompt\>** | Response<br>**OK**<br>**ERROR**<br>Parameter |
| | **\<send prompt\>**     A numeric parameter which indicates whether or not to echo prompt ">" after issuing **AT+QISEND** Command |
| |      0    No prompt ">" and show "SEND OK" when sending successes. |
| |      1    Echo prompt ">" and show "SEND OK" when sending successes. |
| |      2    No prompt and not show "SEND OK" when sending successes. |
| Reference | |

### 7.2.16. AT+QISERVER Configure as server

| **AT+QISERVER** | **Configure as server** |
| --- | --- |
| Read Command<br>**AT+QISERVER<br>?** | Response<br>**+QISERVER: \<mode\>, \<num\>**<br><br>**OK**<br>Parameter |
| | **\<mode\>**    0       NOT configured as server |
| |             1       Configured as server |
| | **\<num\>**    The number of clients that have been connected in. The range is 1~5. |
| Execution<br>Command<br>**AT+QISERVER** | Response<br>**OK**<br>**ERROR** |
| | If configured as server successfully, return:<br>**SERVER OK** |
| | If configured as server unsuccessfully, return:<br>**CONNECT FAIL** |

| | Note: |
| --- | --- |
| | *This command configures the module as a TCP server and the maximum allowed client is 1.* |
| Write Command | Response |
| **AT+QISERVER** | **OK** |
| **=<type>[,<max>]** | **ERROR** |
| | If configured as server successes, return: |
| | **SERVER OK** |
| | If configured as server fails, return: |
| | **CONNECT FAIL** |
| | Parameter |
| | **<type>**　　　A numeric indicates the type of the server |
| | 　　　　　　　0　　　TCP server |
| | 　　　　　　　1　　　UDP server |
| | **<max>**　　　The maximum number of clients allowed to connect in. The default value is 1. The range is 1-5. |
| | |
| | *Note:* |
| | *The parameter <max> is excluded when QIMUX is 0.* |
| Reference | |

### 7.2.17. AT+QICSGP Select CSD or GPRS as the bearer

| AT+QICSGP　　Select CSD or GPRS as the bearer | |
| --- | --- |
| Test Command | Response |
| **AT+QICSGP=?** | **+QICSGP:0-CSD,DIALNUMBER,USER** |
| | **NAME,PASSWORD,RATE(0,3)** |
| | **+QICSGP: 1-GPRS,APN,USER NAME,PASSWORD** |
| | |
| | **OK** |
| | Parameters |
| | See Write Command. |
| Read Command | Response |
| **AT+QICSGP?** | **+QICSGP: <mode>** |
| | |
| | **OK** |
| | Parameter |
| | See Write Command. |
| Write Command | Response |
| **AT+QICSGP=<** | **OK** |
| **mode>,[(<apn>,<** | **ERROR** |
| **user name >,** | Parameters |

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| <password>)/ (<dial number>,<user name>,<password>,<rate>)] | <mode> | A numeric parameter which indicates the bearer type |
|---|---|---|
| | | 0   Set CSD as the bearer for TCPIP connection |
| | | <u>1</u>   Set GPRS as the bearer for TCPIP connection |
| | GPRS parameters: | |
| | <apn> | A string parameter which indicates the access point name |
| | <user name> | A string parameter which indicates the user name |
| | <password> | A string parameter which indicates the password |
| | CSD parameters: | |
| | <dial number> | A string parameter which indicates the CSD dial numbers |
| | <user name> | A string parameter which indicates the CSD user name |
| | <password> | A string parameter which indicates the CSD password |
| | <rate> | A numeric parameter which indicates the CSD connection rate |
| | | 0   2400 |
| | | 1   4800 |
| | | <u>2</u>   9600 |
| | | 3   14400 |
| Reference | | |

### 7.2.18. AT+QISRVC Choose connection

| AT+QISRVC   Choose connection | |
|---|---|
| Test Command<br>**AT+QISRVC=?** | Response<br>**+QISRVC**: (list of supported <**connection**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+QISRVC?** | Response<br>**+QISRVC: <connection>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+QISRVC=<connection>** | Response<br>**OK**<br>**ERROR**<br>Parameter |

| | |
|---|---|
| | **\<connection\>** A numeric parameter which indicates the chosen connection |
| |     1    Choose the connection in which MS is used as a client. |
| |     2    Choose the connection in which MS is used as a server. |
| | *Note:* |
| | *That there could be two connections at one time: one connection is that MS connects with a remote server as a client; the other connection is that MS accepts a remote client as a server. Using this Command to specify which connection data will be sent through.* |
| Reference | |

### 7.2.19. AT+QISHOWRA Set whether to display the address of sender

| AT+QISHOWRA    Set whether to display the address of sender | |
|---|---|
| Test Command<br>**AT+QISHOWRA=?** | Response<br>**+QISHOWRA:** (list of supported \<**mode**\>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+QISHOWRA?** | Response<br>**+QISHOWRA**: **\<mode\>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+QISHOWRA=\<mode\>** | Response<br>**OK**<br>**ERROR**<br>Parameter<br>**\<mode\>**      A numeric parameter which indicates whether to show the address (including IP address in dotted decimal style and port of the remote end) before the received data or not.<br>    0    DO NOT show the address. Default.<br>    1    Show the address, the format to show the address is like: **RECV FROM:\<IP ADDRESS\>:\<PORT\>** |
| Reference | |

### 7.2.20. AT+QISCON Save TCPIP application context

| AT+QISCON    Save TCPIP application context |
|---|

| Read Command | Response |
|---|---|
| **AT+QISCON?** | TA returns TCPIP application context, which consists of the following AT command parameters. |
| | **SHOW APPTCPIP CONTEXT** |
| | **+QIDNSIP:\<mode>** |
| | **+QIPROMPT:\< sendprompt>** |
| | **+QIHEAD:\<iphead>** |
| | **+QISHOWRA:\<srip>** |
| | **+QICSGP:\<csgp>** |
| | **Gprs Config APN:\<apn>** |
| | **Gprs Config UserId:\<gusr>** |
| | **Gprs Config Password:\<gpwd>** |
| | **Gprs Config inactivityTimeout:\<timeout>** |
| | **CSD Dial Number:\<cnum>** |
| | **CSD Config UserId:\<cusr>** |
| | **CSD Config Password:\<cpwd>** |
| | **CSD Config rate:\<crate>** |
| | **App Tcpip Mode:\<mode>** |
| | **In Transparent Transfer Mode** |
| | **Number of Retry:\<nmRetry>** |
| | **Wait Time:\<waitTm>** |
| | **Send Size:\<sendSz>** |
| | **esc:\<esc>** |
| | |
| | **OK** |
| | Parameters |
| | **\<mode>**      See **AT+QIDNSIP** |
| | **\<sendprompt>**   See **AT+QIPROMPT** |
| | **\<iphead>**      See **AT+QIHEAD** |
| | **\<srip>**        See **AT+QISHOWRA** |
| | **\<csgp>**       See **AT+QICSGP** |
| | **\<apn>**        See **AT+QICSGP** |
| | **\<gusr>**       See **AT+QICSGP** |
| | **\<gpwd>**      See **AT+QICSGP** |
| | **\<timeout>**     See **AT+QICSGP** |
| | **\<cnum>**      See **AT+QICSGP** |
| | **\<cusr>**       See **AT+QICSGP** |
| | **\<cpwd>**      See **AT+QICSGP** |
| | **\<crate>**      See **AT+QICSGP** |
| | |
| | The following four parameters are only for transparent transfer mode. |
| | **\<nmRetry>**   See **AT+QITCFG** |
| | **\<waitTm>**    See **AT+QITCFG** |
| | **\<sendSz>**    See **AT+QITCFG** |

| | <esc> | See **AT+QITCFG** |
|---|---|---|
| Execution<br>Command<br>**AT+QISCON** | Response<br>TA saves TCPIP Application Context which consist of the following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically:<br>　　　　　　**AT+QIDNSIP,　AT+QIPROMPT,　AT+QIHEAD,**<br>　　　　　　**AT+QISHOWRA, AT+QICSGP, AT+QITCFG**<br><br>**OK** | |
| | Parameter | |
| Reference | *Note:*<br>*The execution command only save the corresponding parameters of the foreground context (refer to **AT+QIFGCNT**).* | |

### 7.2.21. AT+QIMODE Select TCPIP transfer mode

| **AT+QIMODE** | **Select TCPIP transfer mode** | | |
|---|---|---|---|
| Test Command<br>**AT+QIMODE=?** | Response<br>**+QIMODE:(0-NORMAL MODE,1-TRANSPARENT MODE)**<br><br>**OK** | | |
| Read Command<br>**AT+QIMODE?** | Response<br>**+QIMODE: <mode>**<br><br>**OK**<br>Parameter<br>See Write Command. | | |
| Write Command<br>**AT+QIMODE=<**<br>**mode>** | Response<br>**OK**<br>**ERROR**<br>Parameter | | |
| | **<mode>** | 0 | Normal mode. In this mode, the data should be sent by the command **AT+QISEND** |
| | | 1 | Transparent mode. In this mode, UART will enter data mode after TCP/UDP connection has been established. In data mode, all input data from UART will be sent to the remote end. +++ can help to switch data mode to command mode. And then ATO can help to switch command mode to data mode. |
| Reference | | | |

**7.2.22. AT+QITCFG Configure transparent transfer mode**

| AT+QITCFG | Configure transparent transfer mode |
|---|---|
| Test Command<br>**AT+QITCFG=?** | Response<br>**+QITCFG: (NmRetry:3-8),(WaitTm:2-10),(SendSz:256-1024),(esc:0,1)**<br><br>**OK** |
| Read Command<br>**AT+QITCFG?** | Response<br>**+QITCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>**<br><br>**OK**<br>Parameters<br>See Write Command. |
| Write Command<br>**AT+QITCFG=<**<br>**NmRetry>,<Wai**<br>**tTm>,<SendSz>,**<br>**<esc>** | Response<br>**OK**<br>**ERROR**<br>Parameters<br>  **<NmRetry>**    Number of times to retry to send an IP packet.<br>  **<WaitTm>**     Number of 100ms intervals to wait for serial input before<br>            sending the packet.<br>  **<SendSz>**     Size in bytes of data block to be received from serial port<br>            before sending.<br>  **<esc>**        Whether turn on the escape sequence or not, default is<br>            TRUE. |
| Reference | *Note:*<br>*<**WaitTm**> and <**SendSz**> are two conditions to send data packet. Firstly, if the length of the input data from UART is greater than or equal to <**SendSz**>, the TCPIP stack will send the data by length <**SendSz**> to the remote. Secondly, if the length of the input data from UART is less than <**SendSz**>, and the idle time keeps beyond the time defined by <**WaitTm**>. The TCPIP stack will send all the data in the buffer to the remote.* |

**7.2.23. AT+QISHOWPT Control whether to show the protocol type**

| AT+QISHOWPT | Control whether to show the protocol type |
|---|---|
| Test Command<br>**AT+QISHOWP**<br>**T=?** | Response<br>**+QISHOWPT: (0-1)**<br><br>**OK** |

| Read Command | Response |
|---|---|
| **AT+QISHOWP T?** | **+QISHOWPT: <mode>** |
| | |
| | **OK** |
| | Parameters |
| | See Write Command. |
| Write Command | Response |
| **AT+QISHOWP T=<mode>** | **OK** |
| | **ERROR** |
| | Parameters |
| | **<mode>** |
| | <u>0</u>     DO NOT show the transport protocol type at the end of header of the received TCP/UDP data |
| | 1     Show the transport protocol type at the end of header of the received TCP/UDP data as the following format. IPD(data length)(TCP/UDP): |
| Reference | *Note:* |
| | *This command is invalid if QIHEAD was set as 0 by the command AT+QIHEAD=0* |

### 7.2.24. AT+QIMUX Control whether to enable multiple TCPIP session

| AT+QIMUX Control whether to enable multiple TCPIP session | |
|---|---|
| Test Command | Response |
| **AT+QIMUX=?** | **+QIMUX: (0,1)** |
| | |
| | **OK** |
| Read Command | Response |
| **AT+QIMUX?** | **+QIMUX: <mode>** |
| | |
| | **OK** |
| | Parameters |
| | See Write Command. |
| Write Command | Response |
| **AT+QIMUX=<m ode>** | **OK** |
| | **ERROR** |
| | Parameters |
| | **<mode>** |
| | <u>0</u>     DO NOT enable multiple TCPIP session at the same time. |
| | 1     Enable multiple TCPIP session at the same time. |
| Reference | |

### 7.2.25. AT+QISHOWLA Control whether to display local IP address

| AT+QISHOWLA | Control whether to display local IP address |
|---|---|
| Test Command<br>**AT+QISHOWLA=?** | Response<br>**+QISHOWLA:** (list of supported <**mode**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command<br>**AT+QISHOWLA?** | Response<br>**+QISHOWLA**: <**mode**><br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+QISHOWLA=<mode>** | Response<br>**OK**<br>**ERROR**<br>Parameter<br>**<mode>**        A numeric parameter indicates whether to show the destination address before the received data or not.<br>    0        DO NOT show the destination address<br>    1        Show the destination address:<br>            **TO:<IP ADDRESS>**<br>*Note:*<br>*Because U10 supports to activate two GPRS contexts at the same time, i.e. U10 could get two local IP addresses, it is necessary to point out the destination of the received data when two GPRS contexts have been activated at the same time.* |
| Reference | |

### 7.2.26. AT+QIFGCNT Select a context as foreground context

| AT+QIFGCNT | Select a context as foreground context |
|---|---|
| Test Command<br>**AT+QIFGCNT=?** | Response<br>**+QIFGCNT:** (list of supported <**id**>s)<br><br>**OK**<br>Parameter<br>See Write Command. |
| Read Command | Response |

| AT+QIFGCNT? | +QIFGCNT: <id>,<channel> |
|---|---|
| | |
| | OK |
| | Parameter |
| | See Write Command. |
| Write Command | Response |
| AT+QIFGCNT= | OK |
| <id> | ERROR |
| | |
| | Parameter |
| | <id> A numeric indicates which context will be set as foreground context. The range is 0-1 |
| | <channel> A numeric indicates which channel is controlling the context <id> |
| | 0 USB Modem |
| | 1-3 Reserved |
| | 4 USB Application |
| | 5 UART1 |
| | 255 The context is not controlled by any channel |
| Reference | |

## 7.2.27. AT+QISACK Query the data information for sending

| AT+QISACK | Query the data information for sending |
|---|---|
| Test Command | Response |
| AT+QISACK=? | OK |
| Execution Command | Response |
| | +QISACK: <sent>, <acked>, <nAcked> |
| AT+QISACK | |
| | OK |
| | Parameter |
| | See Write Command. |
| Write Command | Response |
| AT+QISACK=< | +QISACK: <sent>, <acked>, <nAcked> |
| n> | |
| | OK |
| | Parameter |
| | <n> The index for querying the connection |
| | <sent> A numeric indicates the total length of the data that has been sent through the session. |
| | <acked> A numeric indicates the total length of the data that has been acknowledged by the remote. |

| | | <nAcked> | A numeric indicates the total length of the data that has been sent but not acknowledged by the remote. |
| | | *Note:* | |
| | | *This command is invalid when QIMUX was set as 0 by the command.* | |
| | | *AT+QIMUX=0.* | |
| Reference | | *Note:* | |
| | | *This command could be affected by the command **AT+QISRVC**. If the QISRVC was set as 1, this command is used to query the information of sending data during the session in which U10 serves as a client. If the QISRVC was set as 2, this command is used to query the data information of sending during the session in which U10 serves as a server.* | |

### 7.2.28. AT+QINDI Set the method to handle received TCP/IP data

| AT+QINDI Set the method to handle received TCP/IP data | |
| --- | --- |
| Test Command<br>**AT+QINDI=?** | Response<br>**+QINDI: (0,1)**<br><br>**OK** |
| Read Command<br>**AT+QINDI?** | Response<br>**+QINDI: <m>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+QINDI=<m>** | Response<br>**OK**<br>Parameter<br>**<m>**      A numeric indicates how the mode handles the received data.<br>     **0**    Output the received data through UART directly. In the case, it probably includes header at the beginning of a received data packet. Please refer to the commands **AT+QIHEAD**, **AT+QISHOWRA**, **AT+QISHOWPT**, **AT+QISHOWLA**.<br>     **1**    Output a notification statement "**+QIRDI: <id>,<sc>,<sid>**" through UART. This statement will be displayed only one time until all the received data from the connection (defined by **<id>,<sc>,<sid>**) has been retrieved by the command **AT+QIRD**.<br>**<id>**      A numeric points out which context the connection for the received data is based on. Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. The range is 0-1. |

| | <sc> | A numeric points out the role of U10 in the connection for the received data. |
|---|---|---|
| | | **1** The module serves as the client of the connection. |
| | | **2** The module serves as the server of the connection. |
| | <sid> | A numeric indicates the index of the connection for the received data. The range is 0-5. When QIMUX was set as 0 by the command **AT+QIMUX=0**, this parameter will be always 0. |
| Reference | | |

### 7.2.29. AT+QIRD Retrieve the received TCP/IP data

| AT+QINDI | Retrieve the received TCP/IP data |
|---|---|
| Test Command<br>**AT+QIRD=?** | Response<br>**+QIRD: (0,1),(1,2),(0-5),(1-1500)**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+QIRD=<id>,<br><sc>,<sid>,<len>** | Response<br>**[+QIRD: <ipAddr>:<port>,<type>,<length><CR><LF><data>]**<br>**OK**<br>Or<br>**ERROR**<br>Parameter |
| | <id> | A numeric points out which context the connection for the received data is based on. Please refer to the parameter <id> in the command **AT+QIFGCNT**. The range is 0-1. |
| | <sc> | A numeric points out the role of U10 in the connection for the received data. |
| | | **1** The module serves as the client of the connection. |
| | | **2** The module serves as the server of the connection. |
| | <sid> | A numeric indicates the index of the connection for the received data. The range is 0-5. When QIMUX was set as 0 by the command **AT+QIMUX=0**, this parameter will be always 0. |
| | <len> | The maximum length of data to be retrieved. The range is 1-1500. |
| | <ipAddr> | The address of the remote end. It is a dotted-decimal IP. |
| | <port> | The port of the remote end |
| | <type> | An alpha string without quotation marks indicates the transport protocol type. |

| | | **TCP** the transport protocol is TCP. |
|---|---|---|
| | | **UDP** the transport protocol is UDP. |
| | **<length>** | The real length of the retrieved data. |
| | **<data>** | The retrieved data. |
| Reference | *Note:* | |
| | ● | *<id>, <sc> and <sid> are the same as the parameters in the statement "+QIRDI: <id>,<sc>,<sid>".* |
| | ● | *If it replies only **OK** for the Write command, it means no received data in the buffer of the connection.* |

### 7.2.30. AT+QISDE Control whether to allow echo data for QISEND

| AT+QISDE    Control whether or not to allow echo data for QISEND | |
|---|---|
| Test Command<br>**AT+QISDE=?** | Response<br>**+QISDE: (0,1)**<br><br>**OK** |
| Read Command<br>**AT+QISDE?** | Response<br>**+QISDE**: **<m>**<br><br>**OK**<br>Parameter<br>See Write Command. |
| Write Command<br>**AT+QISDE=<m>** | Response<br>**OK**<br>Parameter<br><br>**<m>**   A numeric indicates whether to allow echo data for **AT+QISEND**.<br>    <u>0</u>    Do NOT echo the data<br>    1    Echo the data |
| Reference | |

### 7.2.31. AT+QPING Ping a remote server

| AT+QPING    Ping a remote server | |
|---|---|
| Test Command<br>**AT+QPING=?** | Response<br>**+QPING: "HOST",(1-255),(1-10)**<br><br>**OK**<br>Parameter |

| | See Write Command. |
|---|---|
| Write Command<br>**AT+QPING="\<h<br>ost>"[,[\<timeout<br>>][,\<pingnum]]** | Response<br>**OK**<br><br>**[+QPING: \<result>[,\<ipAddr>,\<bytes>,\<time>,\<ttl>]\<CR>\<LF>**<br>**…]\<CR>\<LF>**<br>**+QPING:\<finresult>[,\<sent>,\<rcvd>,\<lost>,\<min>,\<max>,\<avg>]**<br>Or<br>**ERROR**<br>Parameter |
| | **\<host>**      The host address in string style. It could be a domain name or a dotted decimal IP address. |
| | **\<timeout>**    A numeric gives the maximum time to wait for the response of each ping request. Unit: second. Range: 1-255. Default: 1. |
| | **\<pingnum>**   A numeric indicates the maximum time of ping request. Range: 1-10. Default: 4. |
| | **\<result>**     The result of each ping request.<br>    0    Received the ping response from the server. In the case, it is followed by "**,\<ipAddr>,\<bytes>,\<time>,\<ttl>**".<br>    1    Timeout for the ping request. In the case, no other information follows it. |
| | **\<ipAddr>**    The IP address of the remote server. It is a dotted decimal IP. |
| | **\<bytes>**     The length of sending each ping request. |
| | **\<time>**      The time expended to wait for the response for the ping request. Unit: ms |
| | **\<ttl>**       The value of time to live of the response packet for the ping request.. |
| | **\<finresult>**   The final result of the command.<br>    2    It is finished normally. It is successful to activate GPRS and find the host. In the case, it is followed by "**,\<sent>,\<rcvd>,\<lost>,\<min>,\<max>,\<avg>**"<br>    3    The TCP/IP stack is busy now. In the case, no other information follows it.<br>    4    DO Not find the host. In the case, no other information follows it.<br>    5    Failed to activate PDP context. In the case, no other information follows it. |
| | **\<sent>**      Total number of sending the ping requests. |
| | **\<rcvd>**      Total number of the ping requests that received the response. |
| | **\<lost>**      Total number of the ping requests that were timeout. |
| | **\<min>**      The minimum response time. Unit: ms |
| | **\<max>**      The maximum response time. Unit: ms |
| | **\<avg>**      The average response time. Unit: ms |

| Reference | |
|-----------|--|

### 7.2.32. AT+QNTP Synchronize the local time via NTP

| AT+QNTP | Synchronize the local time via NTP | |
|---------|-----------|---|
| Test Command<br>**AT+QNTP=?** | Response<br>**+QNTP: "SERVER",(1-65535)**<br><br>**OK**<br>Parameter<br>See Write Command. | |
| Read Command<br>**AT+QNTP?** | Response<br>**+QNTP: "\<server>",\<port>**<br><br>**OK**<br>Parameter<br>See Write Command. | |
| Execute<br>Command<br>**AT+QNTP** | Response<br>**OK**<br><br>**+QNTP: \<result>**<br>Parameter<br>See Write Command. | |
| Write Command<br>**AT+QNTP="\<server>"[,\<port>]** | Response<br>**OK**<br><br>**+QNTP: \<result>**<br>Or<br>**ERROR**<br>Parameter | |
| | **\<server>** | The address of the Time Server in string style. It could be a domain name or a dotted decimal IP address. |
| | **\<port>** | The port of the Time Server. |
| | **\<result>** | The result of time synchronization. |
| | 0 | Successfully synchronize the local time. |
| | 1 | Failed to synchronize the local time because of unknown reason. |
| | 2 | Failed to receive the response from the Time Server. |
| | 3 | The TCP/IP stack is busy now. |
| | 4 | DO NOT find the Time Server. |
| | 5 | Failed to activate PDP context. |
| Reference | *Note:* | |

| | *The factory Time Server is the National Time Service Centre of China whose address is "210.72.145.44" and port is 123.* |
|---|---|

QUECTEL

# 8. Appendix

## 8.1. Summary of CME ERROR Codes

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

**<err>** values are mostly used by common messaging commands. The following table lists most of general and GRPS related **ERROR** Codes. For some GSM protocol failure cause described in GSM specifications, the corresponding **ERROR** codes are not included.

| Code of <err> | Meaning |
|---|---|
| 0 | Phone failure |
| 1 | No connection to phone |
| 2 | Phone-adaptor link reserved |
| 3 | Operation not allowed |
| 4 | Operation not supported |
| 5 | PH-SIM PIN required |
| 6 | PH-FSIM PIN required |
| 7 | PH-FSIM PUK required |
| 10 | SIM not inserted |
| 11 | SIM PIN required |
| 12 | SIM PUK required |
| 13 | SIM failure |
| 14 | SIM busy |
| 15 | SIM wrong |
| 16 | Incorrect password |
| 17 | SIM PIN2 required |
| 18 | SIM PUK2 required |
| 20 | Memory full |
| 21 | Invalid index |
| 22 | Not found |
| 23 | Memory failure |
| 24 | Text string too long |
| 25 | Invalid characters in text string |
| 26 | Dial string too long |
| 27 | Invalid characters in dial string |
| 30 | No network service |

| 31 | Network timeout |
|---|---|
| 32 | Network not allowed - emergency 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 |
| 103 | Illegal MS |
| 106 | Illegal ME |
| 107 | GPRS services not allowed |
| 111 | PLMN not allowed |
| 112 | Location area not allowed |
| 113 | Roaming not allowed in this location area |
| 132 | Service option not supported |
| 133 | Requested service option not subscribed |
| 134 | Service option temporarily out of order |
| 148 | Unspecified GPRS error |
| 149 | PDP authentication failure |
| 150 | Invalid mobile class |
| 151 | Link NS SP person PIN required |
| 152 | Link NS SP person PUK required |
| 153 | Link SIM C person PIN required |
| 154 | Link SIM C person PUK required |
| 302 | Command conflict |
| 601 | Unrecognized command |
| 602 | Return error |
| 603 | Syntax error |
| 604 | Unspecified |
| 605 | Data transfer already |
| 606 | Action already |
| 607 | Not AT command |
| 608 | Multi command too long |
| 609 | Abort COPS |
| 610 | No call disconnect |
| 3513 | Unread records on SIM |
| 3515 | PS busy |
| 3516 | Couldn't read SMS parameters from SIM |
| 3517 | SM not ready |
| 3518 | Invalid parameter |

| 3738 | CSCS mode not found |
|------|---------------------|
| 3742 | CPOL operation format wrong |
| 3765 | Invalid input value |
| 3769 | Unable to get control |
| 3771 | Call setup in progress |
| 3772 | SIM powered down |
| 3773 | Invalid CFUN state |
| 3774 | Invalid ARFCN |
| 3775 | The pin is not in GPIO mode |

## 8.2. Summary of CMS ERROR Codes

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

**<err>** values are mostly used by common messaging commands:

| Code of <err> | Meaning |
|---------------|---------|
| 300 | ME failure |
| 301 | SMS ME reserved |
| 302 | Operation not allowed |
| 303 | Operation not supported |
| 304 | Invalid PDU mode |
| 305 | Invalid text mode |
| 310 | SIM not inserted |
| 311 | SIM pin necessary |
| 312 | PH SIM pin necessary |
| 313 | SIM failure |
| 314 | SIM busy |
| 315 | SIM wrong |
| 316 | SIM PUK required |
| 317 | SIM PIN2 required |
| 318 | SIM PUK2 required |
| 320 | Memory failure |
| 321 | Invalid memory index |
| 322 | Memory full |
| 330 | SMSC address unknown |
| 331 | No network |
| 332 | Network timeout |
| 500 | Unknown |

| 512 | SIM not ready |
|-----|---------------|
| 513 | Message length exceeds |
| 514 | Invalid request parameters |
| 515 | ME storage failure |
| 517 | Invalid service mode |
| 528 | More message to send state error |
| 529 | MO SMS is not allow |
| 530 | GPRS is suspended |
| 531 | ME storage full |
| 3513 | Unread records on SIM |
| 3515 | PS busy |
| 3516 | Couldn't read SMS parameters from SIM |
| 3517 | SM   not ready |
| 3518 | Invalid parameter |
| 3742 | Incorrect <oper> format |
| 3765 | Invalid input value |
| 3769 | Unable to get control of required module |
| 3771 | Call setup in progress |
| 3772 | SIM powered down |
| 3773 | Unable to operate in this cfun state |
| 3774 | Invalid arfcn in this band |
| 3775 | The pin is not in GPIO mode |
| 3776 | FOTA UA not exsit |
| 3777 | FOTA not inited |
| 3778 | FOTA receive error data |
| 3779 | FOTA write data fail |
| 3801 | Http timeout |
| 3802 | Http busy |
| 3803 | Http uart busy |
| 3804 | Http get no request |
| 3805 | Http network busy |
| 3806 | Http network open fail |
| 3807 | Http network no config |
| 3808 | Http network deactive |
| 3809 | Http network error |
| 3810 | Http url error |
| 3811 | Http empty url |
| 3812 | Http ip addr error |
| 3813 | Http dns error |
| 3814 | Http socket create error |
| 3815 | Http socket connect error |
| 3816 | Http socket read error |

| 3817 | Http socket write error |
|------|--------------------------|
| 3818 | Http socket close |
| 3819 | Http data encode error |
| 3820 | Http data decode error |
| 3821 | Http read timeout |
| 3822 | Http response fail |
| 3823 | Incoming call busy |
| 3824 | Voice call busy |
| 3825 | Input timeout |
| 3826 | Wait data timeout |
| 3827 | Wait http response timeout |
| 3901 | Timeout |
| 3902 | URL too long |
| 3903 | Invalid URL |
| 3904 | Unsupported proxy |
| 3905 | Invalid proxy address |
| 3906 | IP address error |
| 3907 | DNS error |
| 3908 | Parameter error |
| 3909 | TO addresses exceeded |
| 3910 | CC addresses exceeded |
| 3911 | BCC addresses exceeded |
| 3912 | Appended file capacity exceeded |
| 3913 | File name too long |
| 3914 | The number of files exceeded |
| 3915 | Non-existent address |
| 3916 | UFS storage full |
| 3917 | Drive full |
| 3918 | Drive error |
| 3919 | File not found |
| 3920 | Invalid file name |
| 3921 | File already existed |
| 3922 | Failed to create file |
| 3923 | Failed to write file |
| 3924 | Failed to open file |
| 3925 | Failed to read file |
| 3926 | MMS busy |
| 3927 | Sending MMS busy |
| 3928 | Sending MMS stopped |
| 3929 | Already stop to send |
| 3930 | Receiving MMS busy |
| 3931 | Receiving MMS stopped |

| 3932 | Already stop to receive |
|------|------------------------|
| 3933 | HTTP response failure |
| 3934 | Invalid MMS response |
| 3935 | MMS response error |
| 3936 | Invalid push message |
| 3937 | Already download |
| 3938 | Network busy |
| 3939 | Failed to open network |
| 3940 | Network no configured |
| 3941 | Network deactivated |
| 3942 | Network error |
| 3943 | Network shutdown |
| 3944 | UART busy |
| 3945 | UART escaped |
| 3946 | Failed to create socket |
| 3947 | Failed to connect socket |
| 3948 | Failed to read socket |
| 3949 | Failed to write socket |
| 3950 | Socket closed |
| 3951 | MMS length error |
| 3952 | Failed to encode MMS |
| 3953 | Failed to decode MMS |
| 3954 | Failed to decode HTTP |
| 3955 | Failed to decode push message |
| 3956 | HEX align error |
| 3957 | HEX character error |
| 3958 | String too long |
| 3959 | MMS full |
| 3960 | Non-existent MMS |
| 3961 | Invalid address |
| 3962 | voice call busy |
| 3963 | Alloc memory failed |
| 4000 | File exceed max length |
| 4001 | Open file fail |
| 4002 | Write file fail |
| 4003 | Get file size fail |
| 4004 | Read file fail |
| 4005 | List file fail |
| 4006 | Delete file fail |

## 8.3. Summary of cause for extended error report

### 8.3.1. Location ID for the extended error report

| ID | Description |
|---|---|
| 0 | No error (default) |
| 1 | Cause for protocol stack(PS) layer |
| 2 | Internal cause for Mobility Management(MM) layer |
| 3 | Cause for PPP/IP-Stack |

### 8.3.2. Cause for protocol stack (PS) layer

| Cause | Description |
|---|---|
| CM Cause | |
| 0 | Radio link fail |
| 1 | Unassigned number |
| 3 | No route to destination |
| 6 | Channel unacceptable |
| 8 | Operator determined barring |
| 10 | Call barred |
| 11 | Reserved |
| 16 | Normal call clearing |
| 17 | User busy |
| 18 | No user responding |
| 19 | User alerting, no answer |
| 21 | Call rejected |
| 22 | Number changed |
| 25 | Pre-emption |
| 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 | No circuit/channel available |
| 38 | Network out of order |
| 41 | Temporary failure |
| 42 | Switching equipment congestion |
| 43 | Access information discarded |
| 44 | Requested circuit/channel not available |

| 47 | 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 or greater than ACM maximum |
| 69 | Requested facility not implemented |
| 70 | Only restricted digital information bearer capability is available |
| 79 | Service or option not implemented, unspecified |
| 81 | Invalid transaction identifier value |
| 87 | User not member of CUG |
| 88 | Incompatible destination |
| 91 | Invalid transit network selection |
| 95 | Semantically incorrect message |
| 96 | Invalid mandatory information |
| 97 | Message type non-existent or not implemented |
| 98 | Message type not compatible with protocol state |
| 99 | Information element non-existent or not implemented |
| 100 | Conditional information element error |
| 101 | Message not compatible with protocol |
| 102 | Recovery on timer expiry |
| 111 | Protocol error, unspecified |
| 127 | Interworking, unspecified |
| SMS Cause | |
| 128 | Telematic interworking not supported |
| 129 | Short message Type 0 not supported |
| 130 | Cannot replace short message |
| 143 | Unspecified TP-PID error |
| 144 | Data coding scheme (alphabet) not supported |
| 145 | Message class not supported |
| 159 | Unspecified TP-DCS error |
| 160 | Command cannot be acted |
| 161 | Command unsupported |
| 175 | Unspecified TP-Command error |
| 176 | TPDU not supported |
| 192 | SC busy |
| 193 | No SC subscription |
| 194 | SC system failure |
| 195 | Invalid SME address |

| 196 | Destination SME barred |
|-----|------------------------|
| 197 | SM Rejected-Duplicate SM |
| 198 | TP-VPF not supported |
| 199 | TP-VP not supported |
| 208 | SIM SMS storage full |
| 209 | No SMS storage capability in SIM |
| 210 | Error in MS |
| 211 | Memory Capacity Exceeded |
| 212 | SIM Application Toolkit Busy |
| 213 | SIM data download error |
| 224 | CP retry exceed |
| 225 | RP trim timeout |
| 226 | SMS connection broken |
| 255 | Unspecified error cause |
| 304 | Invalid PDU mode parameter |
| 305 | Invalid TEXT mode parameter |
| 313 | SIM failure |
| 320 | Memory failure |
| 321 | Invalid memory index |
| 322 | Memory full |
| 330 | SMSC address unknown |
| 340 | No +CNMA acknowledgement expected |
| 500 | Unknown error |
| 512 | SMS no error |
| 513 | Message length exceeds maximum length |
| 514 | Invalid request parameters |
| 515 | ME storage failure |
| 516 | Invalid bearer service |
| 517 | Invalid service mode |
| 518 | Invalid storage type |
| 519 | Invalid message format |
| 520 | Too many MO concatenated messages |
| 521 | SMSAL not ready |
| 522 | SMSAL no more service |
| 523 | Not support TP-Status-Report & TP-Command in storage |
| 524 | Reserved MTI |
| 525 | No free entity in RL layer |
| 526 | The port number is already registered |
| 527 | There is no free entity for port number |
| 528 | More Message to Send state error |
| 529 | MO SMS is not allow |
| 530 | GPRS is suspended |

| 531 | ME storage full |
|-----|------------------|
| 532 | Doing SIM refresh |
| **CC Cause** | |
| 768 | Command not allowed |
| 769 | Illegal card ID |
| 770 | Call allocation fail |
| 771 | BC fill fail |
| 772 | Call RE EST |
| 773 | Illegal DTMF tone |
| 774 | Illegal BC |
| 775 | Modify actual mode |
| 776 | Data action fail |
| 777 | No response from network |
| 778 | Call accept not allowed |
| 896 | General cause |
| 897 | CSD call is aborted by user during call establishment or MT call abort MO call/USSD |
| 898 | CSD call is disconnected due to lower layer failure |
| **SS Cause** | |
| 1024 | Cause none |
| 1025 | Unknown subscriber |
| 1033 | Illegal subscriber |
| 1034 | Bearer service not provisioned |
| 1035 | Tele service not provisioned |
| 1036 | Illegal equipment |
| 1037 | Call barred |
| 1040 | Illegal SS operation |
| 1041 | SS error status |
| 1042 | SS not available |
| 1043 | SS subscription violation |
| 1044 | SS incompatibility |
| 1045 | Facility not supported |
| 1051 | Absent subscriber |
| 1053 | Short term denial |
| 1054 | Long term denial |
| 1058 | System failure |
| 1059 | Data missing |
| 1060 | Unexpected data value |
| 1061 | PW registration failure |
| 1062 | Negative PW check |
| 1067 | Number of PW attempts violation |
| 1078 | Position method failure |
| 1095 | Unknown alphabet |

| 1096 | USSD busy |
|---|---|
| 1145 | Rejected by user |
| 1146 | Rejected by network |
| 1147 | Deflection to served subscriber |
| 1148 | Special service code |
| 1149 | Invalid deflection to number |
| 1150 | Max number of MPTY participants exceeded |
| 1151 | Resources not available |
| 1152 | General problem, unrecognized component |
| 1153 | General problem, mistyped component |
| 1154 | General problem, badly structured component |
| 1155 | Invoke problem, duplicate invoked |
| 1156 | Invoke problem, unrecognized operation |
| 1157 | Invoke problem, mistyped parameter |
| 1158 | Invoke problem, resource limitation |
| 1159 | Invoke problem, initiating release |
| 1160 | Invoke problem, unrecognized linked ID |
| 1161 | Invoke problem, linked resource unexpected |
| 1162 | Invoke problem, unexpected linked operation |
| 1163 | Return result problem, RR unrecognized invoked |
| 1164 | Return result problem, RR, return result unexpected |
| 1165 | Return result problem, RR mistyped parameter |
| 1166 | Return error problem, RE, unrecognized invoked |
| 1167 | Return error problem, RE return error unexpected |
| 1168 | Return error problem, RE unrecognized error |
| 1169 | Return error problem, RE unexpected error |
| 1170 | Return error problem, RE mistyped parameter |
| MM Cause | |
| 2048 | Cause none |
| 2050 | IMSI unknown in HLR |
| 2051 | Illegal MS |
| 2052 | IMSI unknown in VLR |
| 2053 | IMEI not accepted |
| 2054 | Illegal ME |
| 2055 | GPRS not allowed |
| 2056 | None GPRS not allowed |
| 2057 | MS ID not derived by network |
| 2058 | Implicit detach |
| 2059 | PLMN not allowed |
| 2060 | Location area not allowed |
| 2061 | Roaming area not allowed |
| 2062 | GPRS not allowed in PLMN |

| 2063 | No suitable cells in LA |
|------|------------------------|
| 2064 | MSC temp not reachable |
| 2065 | Network failure |
| 2068 | MAC failure |
| 2069 | Sync failure |
| 2070 | Congestion |
| 2080 | Serve option not supported |
| 2081 | Request serve option not subscribed |
| 2082 | Serve option temp out of order |
| 2086 | Call cannot be identified |
| 2088 | No PDP context activated |
| 2096 | Retry upon entry into a new cell |
| 2111 | Retry upon entry into a new cell |
| 2143 | Semantically incorrect message |
| 2144 | Invalid MM info |
| 2145 | Message type non existent |
| 2146 | Message type incompatible with protocol state |
| 2147 | IE not implemented |
| 2148 | Conditional MM IE error |
| 2149 | Message not compatible with protocol state |
| 2159 | Protocol error unspecified |
| 2160 | Access barred |
| 2161 | Assignment reject |
| 2162 | Random access failure |
| 2163 | RR no service |
| 2164 | PLMN search reject emergency |
| 2165 | RR connection release |
| 2166 | Authentication failure |
| 2167 | IMSI detach |
| 2168 | Abort by network |
| 2169 | Connection timeout |
| 2170 | Enqueue fail |
| 2171 | Not updated |
| 2172 | State not allowed |
| 2173 | Emergency not allowed |
| 2174 | No service |
| 2175 | Access class barred |
| SIM Cause | |
| 2560 | Command success |
| 2561 | Command fail |
| 2562 | Fatal error |
| 2563 | No inserted |

| 2564 | CHV not init |
|------|--------------|
| 2565 | CHV verify error |
| 2566 | CHV block |
| 2567 | Access not allow |
| 2568 | SAT command busy |
| 2569 | DL error |
| 2570 | Memory problem |
| 2571 | Technical problem |
| 2572 | PUK unlock |
| **SM Cause** | |
| 3080 | Operator determined barring |
| 3097 | LLC SND failure |
| 3098 | Insufficient resource |
| 3099 | Unknown APN |
| 3100 | Unknown PDP address or type |
| 3101 | Authentication failure |
| 3102 | Activation reject GGSN |
| 3103 | Activation reject |
| 3104 | Unsupported service option |
| 3105 | Unsubscribed service option |
| 3106 | Out of order service option |
| 3108 | Regular deactivation |
| 3109 | QOS not accepted |
| 3110 | Network fail |
| 3111 | Reactivation required |
| 3112 | Unsupported network context activation |
| 3113 | Semantic error in TFT operation |
| 3114 | Syntactical error in TFT operation |
| 3115 | Unknown PDP context |
| 3116 | Semantic error in packet filter |
| 3117 | Syntax error in packet filter |
| 3118 | PDP context WO TFT already act |
| 3153 | Invalid TI |
| 3167 | Incorrect message |
| 3168 | Invalid MAND info |
| 3169 | Unimplemented message type |
| 3170 | Incompatible message type protocol state |
| 3171 | Unimplemented IE |
| 3172 | Conditional IE error |
| 3173 | Incompatible message protocol state |
| 3183 | Unspecified |
| 3184 | Startup failure |

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| ABM Cause | |
|------|------|
| 3273 | Success |
| 3274 | Invalid network account ID |
| 3275 | GPRS reactivate |
| 3276 | GPRS protocol rejection |
| 3277 | CSD reactivate |
| 3278 | CSD PPP negotiated failed |
| 3279 | CSD action failed |
| 3280 | CSD call setup failed |
| 3283 | Rejected |
| 3284 | Slot limited |
| 3285 | Abort |
| 3286 | None auto deactivation |
| **TCM Cause** | |
| 3372 | Invalid parameter |
| 3373 | NSAPI not in use |
| 3374 | ACL action not allowed |
| 3375 | ACL SIM file full |
| 3376 | ACL add entry failed |
| 3377 | ACL del entry failed |
| 3378 | ACL set entry failed |
| 3379 | ACL SIM read failed |
| 3380 | ACL SIM write failed |

### 8.3.3. Internal cause for MM layer

| Cause | Description |
|-------|-------------|
| 112 | Forbidden PLMN |
| 113 | Access class barred |
| 114 | No coverage |
| 115 | GPRS service not allowed |
| 116 | Timer expiry |
| 117 | SIM inserted |
| 118 | SIM removed |
| 119 | SIM absent |
| 120 | SIM invalid for PS |
| 121 | SIM invalid for CS |
| 122 | SIM invalid for PS and CS |
| 123 | Low layer fail |
| 124 | Connection in progress |

| 125 | Not updated |
|-----|-------------|
| 126 | Connection establish failure |
| 127 | Connection abort |
| 128 | Connection failure |
| 129 | Emergency not allowed |
| 130 | No GPRS coverage |
| 131 | Abnormal LU |
| 132 | Abnormal LU less then 4 times |
| 133 | Same LAI IMSI attaching |

### 8.3.4. Cause for PPP/IP-Stack

| Cause | Description |
|-------|-------------|
| 0 | No error |
| 1 | LCP fail |
| 2 | Authentication fail |
| 3 | IPCP fail |
| 4 | ESC detect |
| 5 | Plug out detect |
| 6 | PPP GPRS dialup already activated |
| 7 | PPP not activated by external modem yet |
| 8 | PPP already activated by external modem |
| 9 | PPP not activated by WAP over CSD yet |
| 10 | PPP already activated by WAP over CSD |
| 11 | PPP wrong CSD mode ID |
| 12 | PPP detect AT command during dialup |
| 13 | PPP detect escape during dialup |

## 8.4. Summary of URC

| Index | URC display | Meaning | Condition |
|-------|-------------|---------|-----------|
| 1 | +CMTI:<mem>,<index> | New message is received, and saved to memory | AT+CNMI=2,1 |
| 2 | +CMT:[<alpha>],<length><CR><LF><pdu> | New short message is received and output directly to TE(PDU mode) | AT+CNMI=2,2 |
| 3 | +CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><da | New short message is received and output directly to TE(Text mode) | AT+CNMI=2,2 |

| | ta> | | |
|---|---|---|---|
| 4 | +CBM:<length><CR> | New CBM is received and output directly(PDU mode) | AT+CNMI=2,2 |
| 5 | +CBM:<sn>,<mid>,<dcs>,<page>,<pages>,<CR>,<LF><data> | New CBM is received and output directly to TE(Text mode) | AT+CNMI=2,2 |
| 6 | +CDS:<length><CR><LF><pdu> | New CDS is received and output directly(PDU mode) | AT+CNMI=2,2 |
| 7 | +CDS:<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> | New CDS is received and output directly to TE(Text mode) | AT+CNMI=2,2 |
| 8 | +CGEV:NW DEACT<PDP_type>,<PDP_addr>[,<cid>] | WCDMA/GPRS network detach | AT+CGEREP=1 |
| 9 | +CGEV:ME DEACT<PDP_type>,<PDP_addr>[,<cid>] | WCDMA/GPRS ME detach | AT+CGEREP=1 |
| 10 | +CGEV:NW DETACH | WCDMA/GPRS network detach | AT+CGEREP=1 |
| 11 | +CGEV:ME DETACH | WCDMA/GPRS ME detach | AT+CGEREP=1 |
| 12 | +CGREG:1 | Network registered | AT+CGREG=1 |
| 13 | +CGREG:0 | Network unregistered | AT+CGREG=2 |
| 14 | +CGREG:1,<lac>,<ci>,<Act> | Network registered, with location code | AT+CGREG=2 |
| 15 | +CGREG:0,<lac>,<ci>,<Act> | Network unregistered, with location code | AT+CGREG=2 |
| 16 | +CSQN:<rssi>,<ber> | Signal quality change | AT+QEXTUNSOL="SQ",1 |
| 17 | +TSMSINFO:<CMS error info> | Additional SMS information | AT+QEXTUNSOL="SM",1 |
| 18 | RING | Indicates incoming call | n/a |
| 19 | UNDER_VOLTAGE POWER DOWN | Under voltage shutdown indication | n/a |
| 20 | UNDER_VOLTAGE WARNING | Under voltage warning | n/a |
| 21 | OVER_VOLTAGE POWER DOWN | Over voltage shutdown indication | n/a |
| 22 | OVER_VOLTAGE WARNING | Over voltage warning | n/a |
| 23 | UNDER_VOLTAGE POWER DOWN | Normal power down | n/a |
| 24 | +COLP:<number>,<type>[,<subaddr>,<satype>[CLI validity]], | The presentation of the COL(connected line) at the TE for a mobile originated call | AT+COLP=1 |
| 25 | +CLIP:<number>,<type>"",,<alphaID>,<CLI validity> | Mobile terminating call indication | AT+CLIP=1 |

| 26 | +CRING:<type> | An incoming call is indicated to the TE with unsolicited result code instead of the normal RING | AT+CRC=1 |
|----|---------------|---|----------|
| 27 | +CREG:<stat> | Indicate registration status of the ME | AT+CREG=1 |
| 28 | +CREG:<stat>[,<lac> ,<ci>[,<Act>]] | After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code | AT+CREG=2 |
| 29 | CCWV | Call meter warning, 5 seconds left before ACM | AT+CCWE=1 |
| 30 | +CCWA:<number>,<type>,<class>[,<alpha>] | Call waiting indication | AT+CCWA=1,1 |
| 31 | RDY | ME initialization is successful | n/a |
| 32 | +CFUN:1 | All function of the ME is available | n/a |
| 33 | +CPIN:<state> | SIM card pin state | n/a |
| 34 | INIT：1 | SMS initialization success | n/a |
| 35 | INIT：2 | PHB initialization success | n/a |