# MC60

# AT Commands Manual

**GSM/GPRS/GNSS Module Series**

Rev. MC60_AT_Commands_Manual_V1.1

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www.quectel.com

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**Quectel Wireless Solutions Co., Ltd.**
Office 501, Building 13, No.99, Tianzhou Road, Shanghai, China, 200233
Tel: +86 21 5108 6236
Email: info@quectel.com

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# About the Document

## History

| Revision | Date | Author | Description |
|---|---|---|---|
| 1.0 | 2016-07-08 | Hyman DING | Initial |
| 1.1 | 2016-08-17 | Hyman DING | Added AT+QDSIM command |

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# 1 Introduction

## 1.1. Scope of the Document

This document presents the AT Commands Set for Quectel cellular engine MC60.

## 1.2. 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 MC60 is a combination of GSM07.05, GSM07.07 and ITU-T recommendation V.25ter as well as 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 be operated in several modes, as following table:

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**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 GSM engine. |

### 1.2.1. 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 to type "**AT**" or "**at**" at the beginning of the command line. Please note that use a semicolon 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".

### 1.2.2. 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.

## 1.3. Supported Character Sets

The MC60 AT command interface defaults to the GSM character set. The MC60 supports the following character sets:

- GSM
- UCS2
- HEX
- IRA
- PCCP437
- 8859-1

The character set can be configured and interrogated using the "**AT+CSCS**" command (GSM 07.07). The character set is defined in GSM specification 07.05. The character set affects transmission and reception

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of SMS and SMS Cell Broadcast Messages, as well as the entry and display of phone book entries text field and SIM Application Toolkit alpha strings.

## 1.4. Flow Control

Flow control is very important for correct communication between the GSM engine and the DTE. In cases such as a data or fax call, the sending device is transferring data faster than the receiving side ready to accept. When the receiving buffer reaches its capacity, the receiving device should be able to cause the sending device to pause until it catches up.

There are basically two approaches to achieve data flow control: software flow control and hardware flow control. MC60 supports both two kinds of flow control.

In multiplex mode, it is recommended to use the hardware flow control.

The default flow control approach of MC60 is disabled.

### 1.4.1. Software Flow Control (XON/XOFF Flow Control)

Software flow control sends different characters to stop (XOFF, decimal 19) and resume (XON, decimal 17) data flow. It is quite useful in some applications that only use three wires on the serial interface.

The default flow control approach of MC60 is disabled. To enable software flow control in the DTE interface and within GSM engine, type the following AT command:

***AT+IFC=1, 1<CR>***

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

Ensure that all communication software packages (e.g. ProComm Plus, Hyper Terminal or WinFax Pro) use software flow control.

**NOTE**

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

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### 1.4.2. Hardware Flow Control (RTS/CTS Flow Control)

The default flow control approach of MC60 is disabled. To enable hardware flow control (RTS/CTS flow control) in the DTE interface and within GSM engine, type the following AT command:

***AT+IFC=2, 2<CR>***

This setting is stored volatile, for use after restart. **AT+IFC=2, 2<CR>** should be stored to the user profile with **AT&W<CR>**.

Hardware flow control achieves the data flow control by controlling the RTS/CTS line. When the data transfer is suspended, the CTS line is set inactive until the transfer from the receiving buffer has been 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 available on your application platform.

## 1.5. Unsolicited Result Codes

A URC is a report message sent from the ME to the TE. An unsolicited result code can be delivered automatically when an event occurs, reflect changes in system state, or act as the result of a query the ME received before. It is often delivered 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 ***Chapter 16.6***.

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 been completed.

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# 2 General Commands

## 2.1. ATI Display Product Identification Information

| ATI Display Product Identification Information | |
|---|---|
| Execution Command<br>ATI | Response<br>TA returns a product information text.<br>**Quectel_Ltd**<br>**<Object Id>**<br>**Revision: <revision>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | |
|---|---|
| **<Object Id>** | Identifier of device type |
| **<revision>** | Revision of software release |

### Example

```
ATI
Quectel_Ltd
Quectel_MC60
Revision: MC60CAR01A01

OK
```

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## 2.2. AT+GMI Request Manufacturer Identification

| AT+GMI Request Manufacturer Identification | |
|---|---|
| Test Command<br>**AT+GMI=?** | Response<br>**OK** |
| Execution Command<br>**AT+GMI** | Response<br>TA reports one or more lines of information text which permit the user to identify the manufacturer.<br>**Quectel_Ltd**<br>**<Object Id>**<br>**Revision: MTK 0828**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | |
|---|---|
| **<Object Id>** | Identifier of device type |

## 2.3. AT+GMM Request TA Model Identification

| AT+GMM Request TA Model Identification | |
|---|---|
| Test Command<br>**AT+GMM=?** | Response<br>**OK** |
| Execution Command<br>**AT+GMM** | Response<br>TA returns a product model identification text.<br>**<Object Id>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

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### Parameter

| | |
|---|---|
| **<Object Id>** | Identifier of device type |

## 2.4. 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** |
| Execution Command<br>**AT+GMR** | Response<br>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** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | |
|---|---|
| **<revision>** | Revision of software release |

### Example

```
AT+GMR
Revision: MC60CAR01A01

OK
```

## 2.5. AT+GOI Request Global Object Identification

| **AT+GOI Request Global Object Identification** | |
|---|---|
| Test Command<br>**AT+GOI=?** | Response<br>**OK** |
| Execution Command | Response |

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| | |
|---|---|
| **AT+GOI** | TA reports one or more lines of information text which permit the user to identify the device, based on the ISO system for registering unique object identifiers.<br>**<Object Id>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | |
|---|---|
| **<Object Id>** | Identifier of device type |

**NOTE**

See X.208, 209 for the format of **<Object Id>**. For example, in MC60 wireless module, string “MC60” is displayed.

## 2.6. AT+CGMI Request Manufacturer Identification

| **AT+CGMI Request Manufacturer Identification** | |
|---|---|
| Test Command<br>**AT+CGMI=?** | Response<br>**OK** |
| Execution Command<br>**AT+CGMI** | Response<br>TA returns manufacturer identification text.<br>**Quectel_Ltd**<br>**<Object Id>**<br>**Revision: MTK 0828**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<Object Id>** | Identifier of device type |

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## 2.7. AT+CGMM Request Model Identification

| AT+CGMM Request Model Identification | |
|---|---|
| Test Command<br>**AT+CGMM=?** | Response<br>**OK** |
| Execution Command<br>**AT+CGMM** | Response<br>TA returns product model identification text.<br>**<Object Id>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

| | |
|---|---|
| **<Object Id>** | Identifier of device type |

## 2.8. AT+CGMR Request TA Revision Identification of Software Release

| AT+CGMR Request TA Revision Identification of Software Release | |
|---|---|
| Test Command<br>**AT+CGMR=?** | Response<br>**OK** |
| Execution Command<br>**AT+CGMR** | Response<br>TA returns product software version identification text.<br>**Revision: <revision>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

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

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

| AT+GSN Request International Mobile Equipment Identity (IMEI) | |
|---|---|
| Test Command<br>**AT+GSN=?** | Response<br>**OK** |
| Execution Command<br>**AT+GSN** | Response<br>TA reports the IMEI (International Mobile Equipment Identity) number in information text which permits the user to identify the individual ME device.<br>**<sn>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | |
|---|---|
| **<sn>** | IMEI of the ME |

**NOTE**

The serial number (**IMEI**) is varied with the individual ME device.

## 2.10. AT+CGSN Request Product Serial Number Identification (Identical with +GSN)

| AT+CGSN Request Product Serial Number Identification (Identical with +GSN) | |
|---|---|
| Test Command<br>**AT+CGSN=?** | Response<br>**OK** |
| Execution Command<br>**AT+CGSN** | Response<br>**<sn>**<br><br>**OK** |
| Maximum Response Time | 300ms |

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| | |
|---|---|
| Reference<br>GSM 07.07 | |

**NOTE**

See **AT+GSN**.

## 2.11. AT+QGSN Request Product Serial Number Identification (IMEI)

| **AT+QGSN Request Product Serial Number Identification (IMEI)** | |
|---|---|
| Test Command<br>**AT+QGSN=?** | Response<br>**OK** |
| Execution Command<br>**AT+QGSN** | Response<br>**+QGSN: <sn>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference | |

### Parameter

| | |
|---|---|
| **<sn>** | A string parameter which indicates the IMEI of the ME |

**NOTE**

The serial number (**IMEI**) is varied with the individual ME device.

### Example

```
AT+QGSN                          //Query the IMEI
+QGSN: "865734020000749"

OK
```

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## 2.12. AT&F Set All Current Parameters to Manufacturer Defaults

| AT&F Set All Current Parameters to Manufacturer Defaults | |
|---|---|
| Execution Command<br>**AT&F[<value>]** | Response<br>TA sets all current parameters to the manufacturer defined profile.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

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

**NOTE**

The command resets AT command settings to their factory default values. However, it does not change the current baud rate of UART.

## 2.13. AT&V Display Current Configuration

| AT&V Display Current Configuration | |
|---|---|
| Execution Command<br>**AT&V[<n>]** | Response<br>TA returns the current parameter setting.<br>**ACTIVE PROFILE**<br><current configurations text><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Profile number |

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**Table 2: Current Configuration List When Executing AT&V Command**

| AT&V or AT&V0 |
|---|
| AT&V<br>ACTIVE PROFILE<br>E: 1<br>Q: 0<br>V: 1<br>X: 4<br>S0: 0<br>S2: 43<br>S3: 13<br>S4: 10<br>S5: 8<br>S6: 2<br>S7: 60<br>S8: 2<br>S10: 15<br>+CR: 0<br>+FCLASS: 0<br>+CMGF: 0<br>+CSDH: 0<br>+ILRR: 0<br>+CMEE: 1<br>+CBST: 7,0,1<br>+IFC: 0,0<br>+ICF: 3,3<br>+CNMI: 2,1,0,0,0<br>+CSCS: "GSM"<br>+IPR: 0<br>&C: 1<br>&D: 0<br>+CSTA: 129<br>+CRLP: 61,61,128,6,0,3<br>+CCWE: 0<br>+QSIMSTAT: 0<br>+CMUX: -1<br>+CCUG: 0,0,0<br>+CLIP: 0<br>+COLP: 0<br>+CCWA: 0<br>+CAOC: 1<br>+CLIR: 0<br>+CUSD: 0 |

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```
+CREG: 0
+QSIMDET: 0,0,0
+QMIC: 4,9,8
+QECHO(NORMAL_AUDIO): 253,96,16388,57351,0
+QECHO(Earphone_AUDIO): 253,0,10756,57351,1
+QECHO(LoudSpk_AUDIO): 224,96,5256,57351,2
+QSIDET(NORMAL_AUDIO): 80
+QSIDET(HEADSET_AUDIO): 144
+QCLIP: 0
+QCOLP: 0
+CSNS: 0

OK
```

## 2.14. AT&W Store Current Parameters to User Defined Profile

| AT&W Store Current Parameters to User Defined Profile | |
|---|---|
| Execution Command<br>**AT&W[<n>]** | Response<br>TA stores the current parameter setting in the user defined profile.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Profile number to store current parameters |

**NOTE**

The profile defined by user is stored in nonvolatile memory.

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## 2.15. ATQ Set Result Code Presentation Mode

| ATQ Set Result Code Presentation Mode | |
|---|---|
| Execution Command<br>**ATQ[<n>]** | Response<br>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.<br>If **<n>**=0:<br>**OK**<br>If **<n>**=1:<br>(none) |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | TA transmits result code |
| | 1 | Result codes are suppressed and not transmitted |

## 2.16. ATV TA Response Format

| ATV TA Response Format | |
|---|---|
| Execution 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** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<value>** | 0 | Information response: **<text><CR><LF>** |

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| | |
|---|---|
| 1 | Short result code format: **<numeric code><CR>**<br>Information response: **<CR><LF><text><CR><LF>**<br>Long result code format: **<CR><LF><verbose code><CR><LF>** |

**NOTE**

The result codes, their numeric equivalents and brief descriptions of the use of each are listed in the following table.

### Example

```
ATV1                    //Set <value>=1
OK
AT+CSQ
+CSQ: 30,0

OK                      //When <value>=1, the result code is OK
ATV0                    //Set <value>=0
0
AT+CSQ
+CSQ: 30,0
0                       //When <value>=0, the result code is 0
```

**Table 3: ATV0&ATV1 Result Codes Numeric Equivalents and Brief Descriptions**

| 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 is 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 |

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| | | |
|---|---|---|
| | | 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 |

## 2.17. ATX Set CONNECT Result Code Format and Monitor Call Progress

| **ATX Set CONNECT Result Code Format and Monitor Call Progress** | |
|---|---|
| Execution Command<br>**ATX[<value>]** | Response<br>This parameter setting determines whether or not the TA detected the presence of a dial tone or busy signal, and whether or not the TA transmits particular result codes.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<value>** | 0 | **CONNECT** result code only returned; dial tone and busy signal detection are both disabled |
| | 1 | **CONNECT<text>** result code only returned; dial tone and busy signal detection are both disabled |
| | 2 | **CONNECT<text>** result code returned; dial tone detection is enabled, while busy signal detection is disabled |
| | 3 | **CONNECT<text>** result code returned; dial tone detection is disabled, while busy signal detection is enabled |
| | 4 | **CONNECT<text>** result code returned; dial tone and busy signal detection are both enabled |

**NOTES**

1. If parameter is omitted, the command has the same behavior as **ATX0**.
2. The factory default is **<value>**=4.

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## 2.18. ATZ Set All Current Parameters to User Defined Profile

| ATZ Set All Current Parameters to User Defined Profile | |
|---|---|
| Execution Command<br>**ATZ[<value>]** | Response<br>TA sets all current parameters to the user defined profile.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<value>** | 0 | Reset to profile number 0 |

**NOTES**

1. The command restores the current AT command settings to the user defined profile in non-volatile memory, if one was stored with AT&W before.
2. Any additional commands on the same command line are ignored.
3. The command won't change the current baud rate of UART.
4. If the user profile is invalid, it will default to the factory default profile.

## 2.19. 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** |
| Read Command<br>**AT+CFUN?** | Response<br>**+CFUN: <fun>**<br><br>**OK** |
| Write Command<br>**AT+CFUN=<fun>[,<rst>]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

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| | |
|---|---|
| Maximum Response Time | 15s, determined by network. |
| Reference<br>GSM 07.07 | |

## Parameter

| | | |
|---|---|---|
| **<fun>** | 0 | Minimum functionality |
| | 1 | Full functionality (Default) |
| | 4 | Disable phone from both transmitting and receiving RF signals |
| **<rst>** | 0 | Do not reset the ME before setting it to **<fun>** power level<br>This is default when **<rst>** is not given |
| | 1 | Reset the ME before setting it to **<fun>** power level |

## Example

```
AT+CFUN=0                          //Switch phone to minimum functionality
+CPIN: NOT READY

OK
AT+COPS?
+COPS: 0                           //Not registered to any operator

OK
AT+CPIN?
+CME ERROR: 13                     //SIM failure
AT+CFUN=1                          //Switch phone to full functionality
OK

+CPIN: SIM PIN
AT+CPIN=1234
+CPIN: READY

OK

Call Ready
AT+CPIN?
+CPIN: READY

OK
AT+COPS?
+COPS: 0,0,"CHINA MOBILE"          //Registered to an operator

OK
```

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## 2.20. AT+QPOWD Power off

| AT+QPOWD Power off | |
|---|---|
| Write Command<br>**AT+QPOWD=<n>** | Response<br>When **<n>**=0<br>**OK**<br>When **<n>**=1<br>**NORMAL POWER DOWN** |
| Maximum Response Time | 300ms |
| Reference | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Urgent power off (Do not send out URC "**NORMAL POWER DOWN**") |
| | 1 | Normal power off (Send out URC "**NORMAL POWER DOWN**") |

### Example

```
AT+QPOWD=0
OK                                  //Urgent power off: returns OK
AT+QPOWD=1
NORMAL POWER DOWN                   //Normal power off: sends out URC "NORMAL
                                     POWER DOWN"
```

## 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** |
| Read Command<br>**AT+CMEE?** | Response<br>**+CMEE: <n>**<br><br>**OK** |
| 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. |

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| | |
|---|---|
| | **OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Disable result code |
| | 1 | Enable result code and use numeric values |
| | 2 | Enable result code and use verbose values |

### Example

```
AT+CMEE=0                          //Disable result code
OK
AT+CPIN=1234
ERROR                              //Only "ERROR" will be displayed
AT+CMEE=1                          //Enable error result code with numeric values
OK
AT+CPIN=1234
+CME ERROR: 10
AT+CMEE=2                          //Enable error result code with verbose (string)
                                     values
OK
AT+CPIN=1234
+CME ERROR: SIM not inserted
```

## 2.22. AT+CSCS Select TE Character Set

| **AT+CSCS Select TE Character Set** | |
|---|---|
| Test Command<br>**AT+CSCS=?** | Response<br>**+CSCS:** (list of supported **<chset>**s)<br><br>**OK** |
| Read Command<br>**AT+CSCS?** | Response<br>**+CSCS: <chset>**<br><br>**OK** |
| Write Command<br>**AT+CSCS=<chset>** | Response<br>Set character set **<chset>** which is used by the TE. The TA |

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| | |
|---|---|
| | can then convert character strings correctly between the TE and ME character sets.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<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 |

### Example

```
AT+CSCS?                          //Query the current character set
+CSCS: "GSM"

OK
AT+CSCS="UCS2"                    //Set the character set to “UCS2”
OK
AT+CSCS?
+CSCS: "UCS2"

OK
```

## 2.23. AT+GCAP Request Complete TA Capabilities List

| **AT+GCAP Request Complete TA Capabilities List** | |
|---|---|
| Test Command<br>**AT+GCAP=?** | Response<br>**OK** |
| Execution Command<br>**AT+GCAP** | Response<br>TA reports a list of additional capabilities.<br>**+GCAP: <name>**<br><br>**OK** |
| Maximum Response Time | 300ms |

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

## Parameter

| | | |
|---|---|---|
| **<name>** | +CGSM | GSM function is supported |
| | +FCLASS | FAX function is supported |

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# 3 Serial Interface Control Commands

## 3.1. AT&C Set DCD Function Mode

| AT&C Set DCD Function Mode | |
|---|---|
| Execution Command<br>**AT&C[<value>]** | Response<br>This parameter determines how the state of circuit 109 (DCD) relates to the detection of received line signal from the distant end.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

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

## 3.2. AT&D Set DTR Function Mode

| AT&D Set DTR Function Mode | |
|---|---|
| Execution Command<br>**AT&D[<value>]** | Response<br>This parameter determines how the TA responds when circuit 108/2 (DTR) is changed from ON to OFF condition during data mode.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

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### Parameter

| | | |
|---|---|---|
| **<value>** | 0 | TA ignores status on DTR |
| | 1 | ON→OFF on DTR: Change to command mode while remaining the connected call |
| | 2 | ON→OFF on DTR: Disconnect data call, and then change to command mode. During state DTR=OFF, auto-answer is off |

## 3.3. AT+ICF Set TE-TA Control Character Framing

| **AT+ICF Set TE-TA Control Character Framing** | |
|---|---|
| Test Command<br>**AT+ICF=?** | Response<br>**+ICF:** (list of supported **<format>**s), (list of supported **<parity>**s)<br><br>**OK** |
| Read Command<br>**AT+ICF?** | Response<br>**+ICF: <format>,<parity>**<br><br>**OK** |
| 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** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<format>** | 1 | 8 data 0 parity 2 stop |
| | 2 | 8 data 1 parity 1 stop |
| | 3 | 8 data 0 parity 1 stop |
| | 4 | 7 data 0 parity 2 stop |
| | 5 | 7 data 1 parity 1 stop |
| | 6 | 7 data 0 parity 1 stop |
| **<parity>** | 0 | Odd |
| | 1 | Even |
| | 2 | Mark |
| | 3 | Space |

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**NOTES**

1. The command is applied for command state.
2. The **<parity>** field is ignored if the **<format>** field specifies no parity.

## 3.4. 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** |
| Read Command<br>**AT+IFC?** | Response<br>**+IFC: <dce_by_dte>,<dte_by_dce>**<br><br>**OK** |
| 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** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<dce_by_dte>** | Specifies the method that will be used by TE when receiving data from TA | |
| | 0 | None |
| | 1 | XON/XOFF |
| | 2 | RTS flow control |
| **<dte_by_dce>** | Specifies the method that will be used by TA when receiving data from TE | |
| | 0 | None |
| | 1 | XON/XOFF |
| | 2 | CTS flow control |

### Example

```
AT+IFC=2,2                    //Open the hardware flow control
OK
```

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```
AT+IFC?
+IFC: 2,2

OK
```

## 3.5. AT+ILRR Set TE-TA Local Data Rate Reporting Mode

| AT+ILRR Set TE-TA Local Data Rate Reporting Mode | |
|---|---|
| Test Command<br>**AT+ILRR=?** | Response<br>**+ILRR:** (list of supported **<value>**s)<br><br>**OK** |
| Read Command<br>**AT+ILRR?** | Response<br>**+ILRR: <value>**<br><br>**OK** |
| Write Command<br>**AT+ILRR=[<value>]** | Response<br>This parameter setting determines whether or not an intermediate result code of local rate is reported when the connection is established. The rate is applied after the final result code of the connection is transmitted to TE.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<value>** | 0 | Disables reporting of local port rate |
| | 1 | Enables reporting of local port rate |

**NOTE**

If the **<value>** is set to 1, the following intermediate result will come out on connection to indicate the port rate settings.

**+ILRR:<rate>**

| | |
|---|---|
| **<rate>** | Port rate setting on call connection in Baud per second |
| | 300 |
| | 1200 |
| | 2400 |

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| | |
|---|---|
| | 4800<br>9600<br>14400<br>19200<br>28800<br>38400<br>57600<br>115200 |

## 3.6. 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** |
| Read Command<br>**AT+IPR?** | Response<br>**+IPR: <rate>**<br><br>**OK** |
| 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 set by the command takes effect.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | |
|---|---|
| **<rate>** | Baud rate per second<br>0 (Autobauding)<br>75<br>150<br>300<br>600<br>1200 |

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| |
|---|
| 2400<br>4800<br>9600<br>14400<br>19200<br>28800<br>38400<br>57600<br>115200 |

**NOTES**

1. The default configuration of **AT+IPR** is adaptive baud rate enabled (**AT+IPR=0**).
2. If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel GSM module) are configured to the same rate. If adaptive baud rate is enabled, the TA could automatically recognize the baud rate currently used by the TE after receiving "**AT**" or "**at**" string.
3. 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**.
4. In multiplex mode, the baud rate cannot be changed by the write command **AT+IPR=<rate>**, and the setting is invalid and not stored even if **AT&W** is executed after the write command.
5. A selected baud rate takes effect after the write commands are executed and acknowledged by "OK".

### Example

```
AT+IPR=115200                    //Set fixed baud rate to 115200bps

OK
AT&W                             //Store current setting, that is, the serial
                                   communication speed is 115200bps after restart
                                   module
OK
AT+IPR?
+IPR: 115200

OK
```

### 3.6.1. Adaptive Baud Rate

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

1. Adaptive baud rate synchronization between TE and TA.
   - Ensure that TE and TA are correctly synchronized and the baud rate used by the TE is detected

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by the TA. The baud rate can be synchronized simply by use an "**AT**" or "**at**" string. This is necessary after customer activates adaptive baud rate or when customer starts up the module with adaptive baud rate 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 adaptive baud rate enabled. Otherwise undefined characters might be returned.

2. Restriction on adaptive baud rate 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 detect 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 adaptive baud rate is enabled. Especially, this operation is forbidden in data mode.

3. Adaptive baud rate and baud rate after restarting.
   - In the adaptive baud rate 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 adaptive baud rate and auto-answer mode (**ATS0≠0**) are enabled at the same time, especially if SIM PIN 1 authentication is done automatically and the setting **ATS0≠0** is stored to the user profile with **AT&W**.
   - Until the baud rate is synchronized, URCs after restarting will not be output when adaptive baud rate is enabled.

4. Adaptive baud rate and multiplex mode.
   If adaptive baud rate is active, it is not recommended to switch to multiplex mode.

5. Adaptive baud rate 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 adaptive baud rate mode.
   - Based on the same considerations, it is also not recommended to establish the FAX connection in adaptive baud rate mode for PC FAX application, such as WinFax.

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**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 adaptive baud rate after start-up.

## 3.7. AT+CMUX Multiplexer Control

| AT+CMUX Multiplexer Control | |
|---|---|
| Test Command<br>**AT+CMUX=?** | Response<br>**+CMUX:** (list of supported **<mode>**s), (**<subset>**s), (**<port_speed>**s),(**<N1>**s),(**<T1>**s),(**<N2>**s),(**<T2>**s),(**<T3>**s), (**<k>**s)<br><br>**OK** |
| Read Command<br>**AT+CMUX?** | Response<br>**+CMUX: <mode>,0,5,127,10,3,30,10,2**<br><br>**OK**<br>**ERROR** |
| Write Command<br>**AT+CMUX=[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]]** | Response<br>**OK**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<mode>** | Multiplexer transparency mechanism<br>0 Basic option |
| **<subset>** | The way by which the multiplexer control channel is set up<br>0 UIH frames used only |
| **<port_speed>** | Transmission rate<br>5 115200bit/s |
| **<N1>** | Maximum frame size<br>127 |
| **<T1>** | Acknowledgement timer in a unit of ten milliseconds<br>10 |

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| | |
|---|---|
| **<N2>** | Maximum number of re-transmissions<br>3 |
| **<T2>** | Response timer for the multiplexer control channel in a unit of ten milliseconds<br>30 |
| **<T3>** | Wake up response timers in seconds<br>10 |
| **<k>** | Window size, for advanced operation with Error Recovery options<br>2 |

**NOTES**

1. Advanced option with Error Recovery options is not supported.
2. The multiplexing transmission rate is fixed according to the current serial baud rate. It is recommended to enable multiplexing protocol under 115200bps baud rate.
3. Multiplexer control channels are listed as follows:

| Channel Number | Type | DLCI |
|---|---|---|
| None | Multiplexer Control | 0 |
| 1 | 07.07 and 07.05 | 1 |
| 2 | 07.07 and 07.05 | 2 |
| 3 | 07.07 and 07.05 | 3 |
| 4 | 07.07 and 07.05 | 4 |

## 3.8. AT+QEAUART Configure Dual UART Function

| **AT+QEAUART Configure Dual UART Function** | |
|---|---|
| Test Command<br>**AT+QEAUART=?** | Response<br>**+QEAUART:** (list of supported **<mode>**s) ,**<debug port>**<br><br>**OK** |
| Read Command<br>**AT+QEAUART?** | Response<br>**+QEAUART: <mode>,<debug port>**<br><br>**OK**<br>**ERROR** |
| Write Command<br>**AT+QEAUART=<mode>,<debug port>** | Response<br>**OK**<br>If error is related to ME functionality<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable dual UART function |
| | 1 | Enable dual UART function |
| **<mode>** | 2 | Uart 2 as debug port |
| | 99 | No uart port used as debug port |

**NOTES**

1. When dual UART function is enabled, the Debug UART port can be used to execute AT commands. About Debug UART port, please refer to ***MC60 Hardware Design*** document.
2. The Aux UART port cannot be used to execute data transmission-related AT commands. It is used for modem communication with MC60's embedded GNSS engine.

## 3.9. AT+QSEDCB Configure Parameters of the Dual UART

| **AT+QSEDCB Configure Parameters of the Dual UART** | |
|---|---|
| Test Command<br>**AT+QSEDCB=?** | Response<br>**+QSEDCB:** (list of supported **<baudrate>**s), (list of supported **<databits>**s), (list of supported **<stopbits>**s), (list of supported **<parity>**s)<br><br>**OK** |
| Read Command<br>**AT+QSEDCB?** | Response<br>**+QSEDCB: <baudrate>,<databits>,<stopbits>,<parity>**<br><br>**OK**<br>**ERROR** |
| Write Command<br>**AT+QSEDCB=<baudrate>,<databits>,<stopbits>,<parity>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<baudrate>** | Baud rate |

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| | | |
|---|---|---|
| | 1200 | |
| | 2400 | |
| | 4800 | |
| | 9600 | |
| | 14400 | |
| | 19200 | |
| | 28800 | |
| | 38400 | |
| | 57600 | |
| | 115200 | |
| **<databits>** | Data bits | |
| | 5 | |
| | 6 | |
| | 7 | |
| | 8 | |
| **<stopbits>** | Stop bits | |
| | 1 | |
| | 2 | |
| | 3 | |
| **<parity>** | Parity | |
| | 0 | None |
| | 1 | Odd |
| | 2 | Even |
| | 3 | Mark |

**NOTES**

1. This command can be saved by **AT&W**.
2. When dual UART port function is enabled, the **AT+QSEDCB** command will be executed successfully; otherwise it will return an error.

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# 4 Status Control Commands

## 4.1. AT+CEER Extended Error Report

| AT+CEER Extended Error Report | |
|---|---|
| Test Command<br>**AT+CEER=?** | Response<br>**OK** |
| Execution 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** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<locationID>** | Location ID as number code. Location IDs are listed in ***Chapter 8.3.1***.<br>Each ID is related with another 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 ***Chapter 8.3.1***. |

### Example

```
AT+CEER                          //Query error reporting in normal state, return “No error”
+CEER: 0,0

OK
ATD10086;
OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129,""
```

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```
OK

NO CARRIER                    //Established a call and the remote party hangs up the call
AT+CEER                       //Query error reporting, the <locationID>=1 means "Cause
                                for protocol stack (PS) layer", <cause>=16 means
                                "Normal call clearing"
+CEER: 1,16

OK
```

## 4.2. AT+CPAS Mobile Equipment Activity Status

| AT+CPAS Mobile Equipment Activity Status | |
|---|---|
| Test Command<br>**AT+CPAS=?** | Response<br>**+CPAS:** (list of supported **<pas>**s)<br><br>**OK** |
| Execution Command<br>**AT+CPAS** | Response<br>TA returns the activity status of ME.<br>**+CPAS: <pas>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<pas>** | 0 | Ready |
| | 2 | Unknown (ME is not guaranteed to respond to instructions) |
| | 3 | Ringing |
| | 4 | Call in progress or call hold |

### Example

```
AT+CPAS
+CPAS: 0                      //Module is idle
```

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```
OK
ATD10086;
OK
AT+CLCC
+CLCC: 1,0,3,0,0,"10086",129,""

OK
AT+CPAS
+CPAS: 3                                //An incoming call is ringing

OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129,""

OK
AT+CPAS
+CPAS: 4                                //Call in progress

OK
```

## 4.3. AT+QINDRI Indicate RI When Using URC

| AT+QINDRI Indicate RI When Using URC | |
|---|---|
| Test Command<br>**AT+QINDRI=?** | Response<br>**+QINDRI:** (list of supported **<status>**s)<br><br>**OK** |
| Read Command<br>**AT+QINDRI?** | Response<br>**+QINDRI: <status>**<br><br>**OK** |
| Write Command<br>**AT+QINDRI=<status>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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### Parameter

| | | |
|---|---|---|
| **<status>** | 0 | Off |
| | 1 | On |

## 4.4. AT+QMOSTAT Show State of Mobile Originated Call

| **AT+QMOSTAT Show State of Mobile Originated Call** | |
|---|---|
| Test Command<br>**AT+QMOSTAT=?** | Response<br>**+QMOSTAT:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QMOSTAT?** | Response<br>**+QMOSTAT: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QMOSTAT=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Do not show call state of mobile originated call |
| | 1 | Show call state of mobile originated call. After dialing call numbers, the URC string of MO RING will be sent if the called party is alerted; and the URC string of MO CONNECTED will be sent if the call is established |

### Example

```
AT+QMOSTAT=1                    //Show call state of mobile originated call
OK
ATD10086;
OK

MO RING                         //The called party is alerted

MO CONNECTED                    //The call is established
```

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## 4.5. AT+QREFUSECS Refuse to Receive SMS/Incoming Call or Not

| AT+QREFUSECS Refuse to Receive SMS/Incoming Call or Not | |
|---|---|
| Test Command<br>**AT+QREFUSECS=?** | Response<br>**+QREFUSECS:** (list of supported **<refuse_sms>**s)[,(list of supported **<refuse_call>**s)]<br><br>**OK** |
| Read Command<br>**AT+QREFUSECS?** | Response<br>**+QREFUSECS: <refuse_sms>,<refuse_call>**<br><br>**OK** |
| Write Command<br>**AT+QREFUSECS=<refuse_sms>[,<refuse_call>]** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

**Parameter**

| | | |
|---|---|---|
| **<refuse_sms>** | 0 | Receive the new SMS |
| | 1 | Refuse to receive the new SMS |
| **<refuse_call>** | 0 | Receive the incoming call |
| | 1 | Refuse to receive the incoming call |

## 4.6. AT+QIURC Enable or Disable Initial URC Presentation

| AT+QIURC Enable or Disable Initial URC Presentation | |
|---|---|
| Test Command<br>**AT+QIURC=?** | Response<br>**+QIURC:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QIURC?** | Response<br>**+QIURC: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QIURC=<mode>** | Response<br>**OK** |

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| | |
|---|---|
| | **ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable URC presentation |
| | 1 | Enable URC presentation |

**NOTE**

When the module powers on and initialization procedure is over. URC "**Call Ready**" will be presented if **<mode>** is 1.

## 4.7. AT+QEXTUNSOL Enable/Disable Proprietary Unsolicited Indications

| **AT+QEXTUNSOL Enable/Disable Proprietary Unsolicited Indications** | |
|---|---|
| Test Command<br>**AT+QEXTUNSOL=?** | Response<br>**+QEXTUNSOL:** (list of supported **<extunsol>**s)<br><br>**OK** |
| Write Command<br>**AT+QEXTUNSOL=<exunsol>,<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<extunsol>** | 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. |
| | "FN" | Forbidden network available only. When returning to a non-registered state, this indicates whether all the available PLMNs are forbidden. |

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| | | |
|---|---|---|
| | "MW" | SMS Message waiting. On receiving an SMS (as indicated by the **+CMTI** indication) the SMS is decoded and checked to see if it contains one or more of the message waiting indications (i.e. voicemail, email, fax, etc.). If so, an unsolicited indication is shown in the form for each message type:<br>**+QMWT: <store>,<index>,<voice>,<fax>,<email>,<other>**, where **<store>** is the message store containing the SM; index is the message index and **<voice>**; **<email>**, **<fax>**, **<other>** contain the number of waiting messages (with '0' defined as clear indication, non-zero for one or more waiting messages) or blank for not specified in this message. |
| | "UR" | Unsolicited result code. Produces an unsolicited indication in the following call state transition. 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 has been connected<br>6 Mobile Originated or Mobile Terminated Call has been disconnected<br>7 Mobile Originated or Mobile Terminated Call is hung up.<br>8 Mobile Originated Call dialed a non-emergency number in emergency mode<br>9 No answer for Mobile Originated Call<br>10 Remote number busy for Mobile Originated Call |
| | "BC" | Battery Charge. Displays battery connection status and battery charge level (similar to **AT+CBC**) in form **+CBCN: <bcs>,<bcl>** when values change. |
| | "BM" | Band mode. Displays band mode (similar to **AT+QBAND**) in form **+QBAND: <band>** when value changes. |
| | "SM" | Additional SMS Information. Displays additional information about SMS events in the form of unsolicited messages of the following format **+TSMSINFO: <CMS error info>** where **<CMS error info>** is a standard CMS error in the format defined by the **AT+CMEE** command i.e. either a number or a string. |
| | "CC" | Call information. Displays the disconnected call ID and the remaining call numbers after one of the calls is disconnected. **+CCINFO: <Call id disconnected>,<Remain calls>** |
| **<mode>** | 0 | Disable |
| | 1 | Enable |
| | 2 | Query |

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## 4.8. AT+QINISTAT Query State of Initialization

| AT+QINISTAT Query State of Initialization | |
|---|---|
| Test Command<br>**AT+QINISTAT=?** | Response<br>**OK** |
| Execution Command<br>**AT+QINISTAT** | Response<br>**+QINISTAT: <state>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<state>** | 0 | No initialization |
| | 1 | Ready to execute AT command |
| | 2 | Phonebook has finished initialization |
| | 3 | SMS has finished initialization |

**NOTE**

When **<state>** is 3, it also means initialization of SIM card related functions has been finished.

## 4.9. AT+QNSTATUS Query GSM Network Status

| AT+QNSTATUS Query GSM Network Status | |
|---|---|
| Test Command<br>**AT+QNSTATUS=?** | Response<br>**OK** |
| Execution Command<br>**AT+QNSTATUS** | Response<br>**+QNSTATUS: <status>**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |

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| | |
|---|---|
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<status>** | 255 | Not ready to retrieve network status |
| | 0 | Work in normal state |
| | 1 | No available cell |
| | 2 | Only limited service is available |

## 4.10. AT+QNITZ Network Time Synchronization

| **AT+QNITZ Network Time Synchronization** | |
|---|---|
| Test Command<br>**AT+QNITZ=?** | Response<br>**+QNITZ:** (list of supported **<enable>**s)<br><br>**OK** |
| Read Command<br>**AT+QNITZ?** | Response<br>**+QNITZ: <enable>**<br><br>**OK** |
| Write Command<br>**AT+QNITZ=<enable>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<enable>** | 0 | Disable to synchronize time from GSM network |
| | 1 | Enable to synchronize time from GSM network |
| | If the function is enabled, on receiving network time message, an unsolicited indication is shown in the form: "**+QNITZ: <time>,<ds>**" | |
| **<time>** | String type value. Format is "yy/MM/dd,hh:mm:ss±zz,ds", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range: -47...+48). E.g. 6th of May 2004, 22:10:00 GMT+2 hours equals to "04/05/06,22:10:00+08" | |

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| | |
|---|---|
| **<ds>** | Daylight Saving Time. When it is zero, the format will be "04/05/06,22:10:00+08,0" |

**NOTE**

This function needs support of local GSM network. And the unsolicited also can be read by **AT+QLTS** command later.

## 4.11. AT+QLTS Obtain Latest Network Time Synchronized

| **AT+QLTS Obtain Latest Network Time Synchronized** | |
|---|---|
| Test Command<br>**AT+QLTS=?** | Response<br>**OK** |
| Execution Command<br>**AT+QLTS** | Response<br>**+QLTS: <time>,<ds>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br><br>Execution Command returns the latest time for network synchronization. |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### 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: -47...+48). E.g. 6th of May 2004, 22:10:00 GMT+2 hours equals to “04/05/06,22:10:00+08” |
| **<ds>** | Daylight Saving Time. When it is zero, the format will be "04/05/06,22:10:00+08,0" |

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## 4.12. AT+CTZU Network Time Synchronization and Update the RTC Time

| AT+CTZU Network Time Synchronization and Update the RTC Time | |
|---|---|
| Test Command<br>**AT+CTZU=?** | Response<br>**+CTZU:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+CTZU?** | Response<br>**+CTZU: <mode>**<br><br>**OK** |
| Write Command<br>**AT+CTZU=<mode>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable automatic update RTC time via NITZ. |
| | 1 | Update network synchronized time to RTC and save time zone into NVRAM. |
| | 2 | Update GMT time with time zone to RTC, save time zone into NVRAM, and ignore daylight saving time. |
| | 3 | Update localized time and time zone to RTC, and save time zone into NVRAM. |
| | 4 | Same with **<mode>**=2 |

**NOTE**

This function needs support of local GSM network. After setting the **AT+CTZU**, the value will be automatically saved into flash. After the module is restarted, it can also take effect.

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## 4.13. AT+CTZR Network Time Synchronization Report

| AT+CTZR Network Time Synchronization Report | |
|---|---|
| Test Command<br>**AT+CTZR=?** | Response<br>**+CTZR:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+CTZR?** | Response<br>**+CTZR: <mode>**<br><br>**OK** |
| Write Command<br>**AT+CTZR=<mode>** | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable time zone change event reporting |
| | 1 | Enable time zone change event reporting by unsolicited result code **+CTZV: <tz>** |
| | 2 | Enable extended time zone reporting by unsolicited result code **+CTZE: <tz>,<dst>,[<time>]** |

**NOTE**

This function needs support of local GSM network. After setting the **AT+CTZU**, the value will be automatically saved into flash. The function takes effect after the module is restarted.

## 4.14. AT+QSIMDET Enable/Disable SIM Card Detection

| AT+QSIMDET Enable/Disable SIM Card Detection | |
|---|---|
| Test Command<br>**AT+QSIMDET=?** | Response<br>**+QSIMDET:** (list of supported **<enable>**s), (list of supported **<insert_level>**s), (list of supported **<pin_choice>**s) |

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| | |
|---|---|
| | **OK** |
| Read Command<br>**AT+QSIMDET?** | Response<br>**+QSIMDET: <enable>,<insert_level>,<pin_choice>**<br><br>**OK** |
| Write Command<br>**AT+QSIMDET=<enable>,<insert_level>,<pin_choice>** | Response<br>**OK**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference | |

### Parameter

| | |
|---|---|
| **<enable>** | Enable/Disable SIM card detection function<br>0 Disable<br>1 Enable |
| **<insert_level>** | Configure Pin level when SIM card is inserted<br>0 Low level<br>1 High level |
| **<pin_choice>** | Configure SIM card detection pin<br>0 Configure SIM_PRESENCE as SIM card detection pin<br>1 Configure DTR as SIM card detection pin |

**NOTES**

1. This command can be saved by **AT&W**.
2. The pin of SIM_PRESENCE and DTR are multiplexed in MC60, and MC60 only supports DTR pin as SIMCARD detection pin. If turning on the SIM detection function, it is recommended to set **<pin_choice>** to 1.

## 4.15. AT+QSIMSTAT SIM Inserted Status Reporting

| **AT+QSIMSTAT SIM Inserted Status Reporting** | |
|---|---|
| Test Command<br>**AT+QSIMSTAT=?** | Response<br>**+QSIMSTAT:** (list of supported **<enable>**s)<br><br>**OK** |

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| | |
|---|---|
| Read Command<br>**AT+QSIMSTAT?** | Response<br>**+QSIMSTAT: <enable>,<insert_status>**<br><br>**OK** |
| Write Command<br>**AT+QSIMSTAT=<enable>** | Response<br>**OK**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference | |

**Parameter**

| | | |
|---|---|---|
| **<enable>** | Indicates whether to show an unsolicited event code that indicates whether the SIM has been inserted or removed | |
| | 0 | Disable SIM card detection function |
| | 1 | Enable SIM card detection function |
| **<insert_status>** | Indicates whether SIM card has been inserted | |
| | 0 | Low level of pin indicates SIM card is present |
| | 1 | High level of pin indicates SIM card is present |

**NOTE**

This command can be saved by **AT&W.**

## 4.16. AT+QCGTIND Circuit Switched Call or GPRS PDP Context Termination Indication

| **AT+QCGTIND Circuit Switched Call or GPRS PDP Context Termination Indication** | |
|---|---|
| Test Command<br>**AT+QCGTIND=?** | Response<br>**+QCGTIND:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+QCGTIND?** | Response<br>**+QCGTIND: <n>**<br><br>**OK** |
| Write Command | Response |

| | |
|---|---|
| **AT+QCGTIND=<n>** | **OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

## Parameter

| | |
|---|---|
| **<n>** | A numeric parameter which indicates whether to enable an unsolicited event code indicating whether a circuit switched voice call, circuit switched data call or GPRS session has been terminated<br>0 Disable<br>1 Enable |
| **<type>** | Connection type<br>0 Circuit switched voice call<br>1 Circuit switched data call<br>2 PPP connection |

**NOTE**

When enabled, an unsolicited result code is returned after the connection has been terminated **+QCGTIND: <type>**.

## Example

```
ATD10086;
OK

+QCGTIND: 0          //A circuit switched voice call has been terminated

NO CARRIER
```

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# 5 SIM Related Commands

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

| AT+CIMI Request International Mobile Subscriber Identity (IMSI) | |
|---|---|
| Test Command<br>**AT+CIMI=?** | Response<br>**OK** |
| Execution Command<br>**AT+CIMI** | Response<br>TA returns <IMSI> for identifying the individual SIM which is attached to ME.<br>**<IMSI>**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

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

### Example

```
AT+CIMI
460023210226023                    //Query IMSI number of SIM which is attached to ME

OK
```

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## 5.2. AT+CLCK Facility Lock

| AT+CLCK Facility Lock | |
|---|---|
| Test Command<br>**AT+CLCK=?** | Response<br>**+CLCK:** (list of supported **<fac>**s)<br><br>**OK** |
| Write Command<br>**AT+CLCK=<fac>,<mode>,<passwd>[,<class>]** | Response<br>This command is used to lock, unlock or interrogate the ME or the network facility **<fac>**. Password is normally needed to perform 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><br>If **<mode>=2** and command is successful:<br>**+CLCK: <status>[,<class1>[<CR><LF>**<br>**+CLCK: <status>, class2....]]**<br><br>**OK** |
| Maximum Response Time | 5s |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<fac>** | "PS" | PH-SIM (lock Phone to SIM card) (ME asks password when other than current SIM card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted) |
| | "SC" | SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command is issued) |
| | "AO" | BAOC (Bar All Outgoing Calls) (refer to GSM02.88[6] clause 1) |
| | "OI" | BOIC (Bar Outgoing International Calls) (refer to GSM02.88[6] clause 1) |
| | "OX" | BOIC-exHC (Bar Outgoing International Calls except to Home Country) (refer to GSM02.88[6] clause 1) |
| | "AI" | BAIC (Bar All Incoming Calls) (refer to GSM02.88[6] clause 2) |
| | "IR" | BIC-Roam (Bar Incoming Calls when Roaming outside the home country) (refer to GSM02.88 [6] clause 2) |
| | "AB" | All Barring services (refer to GSM02.30[19]) (applicable only for **<mode>**=0) |

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| | | |
|---|---|---|
| | "AG" | All out Going barring services (refer to GSM02.30[19])(applicable only for **<mode>**=0) |
| | "AC" | All in Coming barring services (refer to GSM02.30[19])(applicable only for **<mode>**=0) |
| | "FD" | SIM fixed dialing memory: If the mobile is locked to "FD", only the phone numbers stored to the "FD" memory can be dialed |
| | "PF" | Lock Phone to the very first SIM card |
| | "PN" | Network Personalization (refer to GSM 02.22) |
| | "PU" | Network subset Personalization (refer to GSM 02.22) |
| | "PP" | Service Provider Personalization (refer to GSM 02.22) |
| | "PC" | Corporate Personalization (refer to GSM 02.22) |
| **<mode>** | 0 | Unlock |
| | 1 | Lock |
| | 2 | 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 |

## Example

```
AT+CLCK="SC", 2
+CLCK: 0                          //Query the status of SIM card lock: unlock

OK
AT+CLCK="SC",1,"1234"             //Lock the SIM card, and the password is 1234
OK
AT+CLCK="SC",2
+CLCK: 1                          //Query the status of SIM card lock: lock

OK
AT+CLCK="SC",0,"1234"             //Unlock the SIM card
OK
```

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## 5.3. AT+CPIN Enter PIN

| AT+CPIN Enter PIN | |
|---|---|
| Test Command<br>**AT+CPIN=?** | Response<br>**OK** |
| Read Command<br>**AT+CPIN?** | Response<br>TA returns an alphanumeric string indicating whether or not some password is required.<br>**+CPIN: <code>**<br><br>**OK** |
| Write Command<br>**AT+CPIN=<pin>[,<new pin>]** | Response<br>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.<br><br>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<br><br>**OK** |
| Maximum Response Time | 5s |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<code>** | 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 | PIN 2, 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** |
| **<pin>** | String type; password | |
| **<new pin>** | String type; if the PIN required is SIM PUK or SIM PUK2: new password | |

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### Example

```
AT+CPIN?
+CPIN: SIM PIN                    //Query PIN code is locked

OK
AT+CPIN=1234                      //PIN
+CPIN: READY

OK
AT+CPIN?                          //PIN has already been entered
+CPIN: READY

OK
AT+CPIN?
+CPIN: SIM PUK                    //Query PUK code is locked

OK
AT+CPIN="26601934","1234"         //Enter PUK and new PIN password
+CPIN: READY

OK
AT+CPIN?
+CPIN: READY                      //PUK has already been entered

OK
```

## 5.4. AT+CPWD Change Password

| AT+CPWD Change Password | |
|---|---|
| Test Command<br>**AT+CPWD=?** | Response<br>TA returns a list of pairs which present the available facilities and the maximum length of their password.<br>**+CPWD:** (list of supported **<fac>**s), (**<pwdlength>**s)<br><br>**OK** |
| Write Command<br>**AT+CPWD=<fac>,<oldpwd>,<newpwd>** | Response<br>TA sets a new password for the facility lock function.<br><br>**OK** |
| Maximum Response Time | 5s |

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| Reference | |
|---|---|
| GSM 07.07 | |

## Parameter

| | | |
|---|---|---|
| **<fac>** | "PS" | Phone locked to SIM (device code). The "PS" password may either be individually specified by the client or, depending on the subscription, supplied from the provider (e.g. with a prepaid mobile) |
| | "SC" | SIM (lock SIM card) (SIM asks password in ME power-up and when this lock Command issued) |
| | "AO" | BAOC (Bar All Outgoing Calls) (refer to GSM02.88[6] clause 1) |
| | "OI" | BOIC (Bar Outgoing International Calls) (refer to GSM02.88[6] clause 1) |
| | "OX" | BOIC-exHC (Bar Outgoing International Calls except to Home Country) (refer to GSM02.88[6] clause 1) |
| | "AI" | BAIC (Bar All Incoming Calls) (refer to GSM02.88[6] clause 2) |
| | "IR" | BIC-Roam (Bar Incoming Calls when Roaming outside the home country) (refer to GSM02.88 [6] clause 2) |
| | "AB" | All Baring services (refer to GSM02.30[19]) (applicable only for **<mode>**=0) |
| | "AG" | All outgoing barring services (refer to GSM02.30[19]) (applicable only for **<mode>**=0 |
| | "AC" | All incoming barring services (refer to GSM02.30[19]) (applicable only for **<mode>**=0) |
| | "FD" | SIM fixed dialing memory feature |
| | "P2" | SIM PIN2 |
| **<pwdlength>** | Integer. Max length of password | |
| **<oldpwd>** | Password specified for the facility from the user interface or with command | |
| **<newpwd>** | New password | |

## Example

```
AT+CPIN?
+CPIN: READY

OK
AT+CPWD="SC","1234","4321"          //Change SIM card password to “4321”
OK
AT+CPIN?                            //Restart module or re-activate the SIM card, query PIN
                                      code is locked
+CPIN: SIM PIN

OK
AT+CPIN="4321"                      //PIN must be entered to define a new password “4321”
+CPIN: READY
```

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**OK**

## 5.5. 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**<br>**ERROR**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<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 GSM 11.11 |
| **<fileId>** | Integer type; this is the identifier for an elementary data file on SIM. Mandatory for every command except STATUS |
| **<P1>,<P2>,<P3>** | Integer type; 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 GSM 11.11. |
| **<data>** | Information which shall be written to the SIM (hexadecimal character format) |
| **<sw1>,<sw2>** | 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. |
| **<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 GSM 11.11). 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. |

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### Example

```
AT+CRSM=242
+CRSM: 145, 211, "000000007F100200000000000A13000C0400838A808A"

OK                                  //<sw1>=145, <sw2>=211, "000000007F100200000000000
                                      A13000C0400838A808A" is the content which is returned
                                      from SIM card (refer to GSM 11.11)
```

## 5.6. AT+CSIM Generic SIM Access

| AT+CSIM Generic SIM Access | |
|---|---|
| Test Command<br>**AT+CSIM=?** | Response<br>**OK** |
| Write Command<br>**AT+CSIM=<length>,<command>** | Response<br>**+CSIM: <length>,<response>**<br><br>**OK**<br>**ERROR**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<length>** | Integer type; length of characters sent to the TE in <command> or <response> (i.e. two times of octets in the raw data) |
| **<command>** | String type (string should be included in quotation marks);<br>hex format: GSM11.11 SIM Command sent from the ME to the SIM |
| **<response>** | String type (string should be included in quotation marks);<br>hex format: GSM11.11 SIM Command sent from the SIM to <command> |

## 5.7. AT+QCSPWD Change PS Super Password

| AT+QCSPWD Change PS Super Password | |
|---|---|
| Test Command<br>**AT+QCSPWD=?** | Response<br>**OK** |

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| | |
|---|---|
| Write Command<br>**AT+QCSPWD=<oldpwd>,<newpwd>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<oldpwd>** | String type. Old password and length should be 8 |
| **<newpwd>** | String type. New password and length should be 8 |

**NOTES**

1. Default value of **<oldpwd>** is "12345678".
2. If the module is locked to a specific SIM card through **+CLCK** and password lost or SIM state is PH-SIM PUK, you can use the super password to unlock it.

## 5.8. AT+CCID Show CCID

| **AT+CCID Show CCID** | |
|---|---|
| Test Command<br>**AT+CCID=?** | Response<br>**OK** |
| Execution Command<br>**AT+CCID** | Response<br>**+CCID: <ccid data>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<ccid data>** | CCID number for the current SIM card. |

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### Example

| | |
|---|---|
| **AT+CCID** | //Query CCID of the SIM card |
| **+CCID: "898600220909A0206023"**<br><br>**OK** | |

## 5.9. AT+QCCID Show CCID

| **AT+QCCID Show CCID** | |
|---|---|
| Test Command<br>**AT+QCCID=?** | Response<br>**OK** |
| Execution Command<br>**AT+QCCID** | Response<br>**ccid data**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Example

| | |
|---|---|
| **AT+QCCID** | //Query CCID of the SIM card |
| **898600220909A0206023**<br><br>**OK** | |

## 5.10. AT+QGID Get SIM Card Group Identifier

| **AT+QGID Get SIM Card Group Identifier** | |
|---|---|
| Execution Command<br>**AT+QGID** | Response<br>**+QGID: <gid1> <gid2>**<br><br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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### Parameter

| | |
|---|---|
| **<gid1>** | Integer type of SIM card group identifier 1 |
| **<gid2>** | Integer type of SIM card group identifier 2 |

**NOTE**

If the SIM supports GID files, the GID values are retuned. Otherwise **0xff** is retuned.

## 5.11. AT+QSIMVOL Select SIM Card Operating Voltage

| **AT+QSIMVOL Select SIM Card Operating Voltage** | |
|---|---|
| Test Command<br>**AT+QSIMVOL=?** | Response<br>**+QSIMVOL:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QSIMVOL?** | Response<br>**+QSIMVOL: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QSIMVOL=<mode>** | Response<br>**OK**<br>**ERROR**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Recognize 1.8V and 3.0V SIM card (Default) |
| | 1 | Recognize 1.8V SIM card only |
| | 2 | Recognize 3.0V SIM card only |

**NOTE**

**AT+QSIMVOL** can take effect only when the command is set successfully and after the module is restarted.

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## 5.12. AT+QSPN Get Service Provider Name from SIM

| AT+QSPN Get Service Provider Name from SIM | |
|---|---|
| Read Command<br>**AT+QSPN?** | Response<br>**+QSPN:** (**<spn>**s), (list of supported **<display mode>**s)<br><br>**OK**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<spn>** | String type; service provider name on SIM | |
| **<display mode>** | 0 | Do not display PLMN. Already registered on PLMN |
| | 1 | Display PLMN |

**NOTE**

**CME** errors are possible if SIM is not inserted.

## 5.13. AT+QTRPIN Times Remain to Input SIM PIN/PUK

| AT+QTRPIN Times Remain to Input SIM PIN/PUK | |
|---|---|
| Execution Command<br>**AT+QTRPIN** | Response<br>Times remain to input SIM PIN.<br>**+QTRPIN: <chv1>,<chv2>,<puk1>,<puk2>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<chv1>** | Times remain to input chv1 |

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| | |
|---|---|
| **<chv2>** | Times remain to input chv2 |
| **<puk1>** | Times remain to input puk1 |
| **<puk2>** | Times remain to input puk2 |

## 5.14. AT+QDSIM Dual SIM Switching

| **AT+QDSIM Dual SIM Switching** | |
|---|---|
| Test Command<br>**AT+QDSIM=?** | Response<br>**+QDSIM:** (list of supported **<simslot>)**,<br><br>**OK** |
| Read Command<br>**AT+QDSIM?** | Response<br>**+QDSIM: <simslot>**<br><br>**OK** |
| Write Command<br>**AT+QDSIM=<simslot>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<simslot>** | 0 | Switch to SIM card 1 |
| | 1 | Switch to SIM card 2 |

**NOTE**

MC60 supports Dual SIM Single Standby function, and this command is used for switching between the two SIM cards.

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# 6 Network Service Commands

## 6.1. AT+COPS Operator Selection

| AT+COPS Operator Selection | |
|---|---|
| Test Command<br>**AT+COPS=?** | Response<br>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 the order of: home network, networks referenced in SIM, and other networks.<br>**+COPS:** (list of supported**<stat>**, long alphanumeric **<oper>**, short alphanumeric **<oper>**, numeric **<oper>**s)[,,(list of supported **<mode>**s),(list of supported **<format>**s)]<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Read Command<br>**AT+COPS?** | Response<br>TA returns the current mode and the currently selected operator. If no operator is selected, **<format>** and **<oper>** are omitted.<br>**+COPS: <mode>[,<format>[,<oper>]]**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Write Command<br>**AT+COPS=<mode>[,<format>[,<oper>]]** | Response<br>TA forces an attempt to select and register on the GSM 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?**).<br>**OK** |

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| | |
|---|---|
| | If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 75s, determined by network. |
| Reference<br>GSM 07.07 | |

## Parameter

| | | |
|---|---|---|
| **<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 |

**NOTES**

1. This write command is used to choose and register the GSM network operator. The setting of **<mode>** allows ME to determine whether automatic or manual network selection shall be used.
   - When **<mode>**=0, the ME searches for the operator which shall be used automatically.
   - When **<mode>**=1, the ME forces to register the selected **<oper>**. If the **<oper>** is invalid, the ME remains unregistered; until **<mode>**=0, the ME can register again. If restart module, the ME is still under **<mode>**=1 and there is no RPLMN. The ME will also be Not Registered to Network condition, until the mode is changed via the command to automatic registration mode.
   - When **<mode>**=4, if the ME fails to register to this operator, then it starts to select another operator automatically.
2. This command setting is saved to NVRAM automatically.

## Example

```
AT+COPS=?                                   //List all current network operators
+COPS: (2,"CHINA MOBILE","CMCC","46000"),(3,"CHINA UNICOM GSM","UNICOM","46001")
,,(0-4),(0-2)
```

```
OK
AT+COPS?                                  //Query the currently selected network operator
+COPS: 0,0,"CHINA MOBILE"

OK
```

## 6.2. AT+CREG Network Registration

| AT+CREG Network Registration | |
|---|---|
| Test Command<br>**AT+CREG=?** | Response<br>**+CREG:** (list of supported **<n>**s)<br><br>**OK** |
| 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>]**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+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** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Disable network registration unsolicited result code |
| | 1 | Enable network registration unsolicited result code **+CREG: <stat>** |
| | 2 | Enable network registration unsolicited result code with location information |
| **<stat>** | 0 | Not registered, ME is not currently searching a new network to register on |

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| | | |
|---|---|---|
| | 1 | Registered, home network |
| | 2 | Not registered, but ME is currently searching a new network to register on |
| | 3 | Registration denied |
| | 4 | Unknown |
| | 5 | Registered, roaming |
| **<lac>** | String type; two byte location area code in hexadecimal format | |
| **<ci>** | String type; two byte cell ID in hexadecimal format | |

**NOTE**

Unsolicited result code

If **<n>**=1 and there is a change in the ME network registration status: **+CREG: <stat>**

If **<n>**=2 and there is a change in the ME network registration status or a change of the network cell: **+CREG: <stat>[,<lac>,<ci>]**

### Example

```
AT+CREG=1
OK

+CREG: 1                          //URC reports that operator has been found
AT+CREG=2                         //Activates extended URC mode
OK

+CREG: 1,"1878","0873"            //URC reports that operator has been found with location
                                    area code and cell ID
```

## 6.3. 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 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. |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<rssi>** | 0 | -113 dBm or less |
| | 1 | -111 dBm |
| | 2...30 | -109... -53 dBm |
| | 31 | -51 dBm or greater |
| | 99 | Not known or not detectable |
| **<ber>** | (in percent): | |
| | 0...7 | As RXQUAL values in the table in GSM 05.08 subclause 8.2.4 |
| | 99 | Not known or not detectable |

### Example

```
AT+CSQ=?
+CSQ: (0-31,99),(0-7,99)

OK
AT+CSQ
+CSQ: 28,0                    //Query and reports that the current signal strength indication is
                              28 and the bit error rate is 0

OK
```

## 6.4. 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** |
| Read Command<br>**AT+CPOL?** | Response<br>**+CPOL: <index1>,<format>,<oper1>**<br>**[<CR><LF>+CPOL: <index2>,<format>,<oper2>**<br>**[…]]** |

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| | |
|---|---|
| | **OK**<br>**+CME ERROR: <err>** |
| Write Command<br>**AT+CPOL=<index>[,<format>[,<oper>]]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<index>** | 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>** |
| **<oper>** | String type: <format> indicates either alphanumeric or numeric format is used (see **+COPS** command) | |

**NOTE**

SIM card does not allow editing of the list of the preferred operators.

## 6.5. AT+COPN Read Operator Names

| **AT+COPN Read Operator Names** | |
|---|---|
| Test Command<br>**AT+COPN=?** | Response<br>**OK** |
| Execution Command<br>**AT+COPN** | Response<br>**+COPN: <numeric1>,<alpha1 >**<br>**[<CR><LF>+COPN: <numeric2>,<alpha2>**<br>**[…]]**<br><br>**OK**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |

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| | |
|---|---|
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<numericn>** | String type: operator in numeric format (see **+COPS**) |
| **<alphan>** | String type: operator in long alphanumeric format (see **+COPS**) |

## 6.6. AT+QBAND Get and Set Mobile Operation Band

| **AT+QBAND Get and Set Mobile Operation Band** | |
|---|---|
| Test Command<br>**AT+QBAND=?** | Response<br>**+QBAND:** (list of supported **<op_band>**s)<br><br>**OK** |
| Read Command<br>**AT+QBAND?** | Response<br>**+QBAND: <op_band>**<br><br>**OK** |
| Write Command<br>**AT+QBAND=<op_band>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 30s, determined by network. |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<op_band>** | "EGSM_MODE"<br>"DCS_MODE"<br>"PCS_MODE"<br>"GSM850_MODE"<br>"EGSM_DCS_MODE"<br>"GSM850_PCS_MODE"<br>"GSM850_EGSM_DCS_PCS_MODE" |

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**NOTE**

The following radio setting to be updated is stored in non-volatile memory.

## 6.7. AT+QENG Switch on or off Engineering Mode

| AT+QENG Switch on or off Engineering Mode | |
|---|---|
| Test Command<br>**AT+QENG=?** | Response<br>**+QENG:** (list of supported **<mode>**s),(list of supported **<dump>**s)<br><br>**OK** |
| Read Command<br>**AT+QENG?** | Response<br>The corresponding information is reported selectively according to **<dump>**.<br>**+QENG: <mode>,<dump>**<br><br>URCs of the serving cell information:<br>**+QENG: 0,<mcc>,<mnc>,<lac>,<cellid>,<bcch>,<bsic>,<dbm>,<c1>,<c2>,<txp>,<rla>,<tch>,<ts>,<maio>,<hsn><ta>,<rxq_sub>,<rxq_full>**<br><br>URCs of 1-6 neighboring cell information:<br>**[+QENG: 1,list of (<ncell>,<bcch>,<dbm>,<bsic>,<c1>,<c2>,<mcc>, <mnc>,<lac>,<cellid>)…]**<br><br>URCs of cell frequency list (CA) of the serving cell:<br>**[+QENG: 2,list of (<arfcn>)…]**<br><br>BA measured result list:<br>**[+QENG: 4,record number of the list, list of (<bcch>,<dbm>,<bsic>)]**<br><br>**OK** |
| Write Command<br>**AT+QENG=<mode>[,<dump>]** | Response<br>**OK**<br>**ERROR**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |

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| Reference | |
|---|---|
| Quectel | |

## Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Switch off engineering mode |
| | 1 | Switch on engineering mode |
| | 2 | Switch on engineering mode, and activate the URC report of network information |
| **<dump>** | 0 | Only display the serving cell information |
| | 1 | Display the serving cell information, 1-6 neighboring cells information |
| | 2 | Display the serving cell information and list of serving cell carrier list |
| | 3 | Display the serving cell information,1-6 neighboring cell information and list of serving cell carrier list |
| | 4 | Display the serving cell information,1-6 neighboring cell information, list of serving cell carrier list and BA measured result list. |
| **<mcc>** | Mobile country code | |
| **<mnc>** | Mobile network code | |
| **<lac>** | Location area code in hex format | |
| **<cellid>** | Cell ID in hex format | |
| **<bcch>** | Absolute Radio Frequency Channel Number of Broadcast Control Channel (BCCH) | |
| **<bsic>** | Base station identity code | |
| **<dbm>** | Receive signal level in dBm unit | |
| **<c1>** | C1 value | |
| **<c2>** | C2 value | |
| **<txp>** | Maximum TX power level when accessing on a CCH | |
| **<rla>** | Minimum receiving level permitted to access the system | |
| **<ts>** | TimeSlots | |
| **<maio>** | MAIO value | |
| **<hsn>** | HSN value | |
| **<tch>** | ARFCN of TCH, ‘h’ figure hopping | |
| **<ta>** | Timing Advance,range 0~63 | |
| **<rxq_sub>** | RX quality(sub), range 0-7 | |
| **<rxq_full>** | RX quality(full), range 0-7 | |
| **<ncell>** | Number of neighboring six cell ID 1~6 | |
| **<arfcn>** | Absolute radio frequency channel number | |

**NOTE**

The following radio settings to be updated are stored in non-volatile memory.

1. When mode is 2, auto URCs are reported per 5 seconds.
2. The **<lac>** and **<cellid>** parameters are available in hex format, and these parameters are in decimal.
3. If the cell information is not detected, the parameter is replaced by ‘x’ char.
4. If the detecting is not expert mode, parameters **<tch>**, **<ts>**, **<maio>**, **<hsn>**, **<ta>**, **<rxq_sub>** and

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**<rxq_full>** will not display the parameter value while are replaced by 'x' char.

5. During the network connecting, if the hopping frequency is supported by the network, the channel of TCH is instable. Using the 'h' figure **<tch>** under this mode.
6. Under expert mode, when the **<c1>** and **<c2>** of the serving cell cannot be updated, using the '-1' figure to display the illegal value. At the same time, **<txp>** and **<rla>** parameters cannot be updated in a certain condition, all the same holding the value of idle mode. This is because ME cannot be updated in this mode. ME cannot update the selection of cell and reselection of the parameter. When the connecting is over, mobile device will go back to idle mode and offer the correct value.
7. If TA can report the information of the neighboring cell, the URCs of six neighboring cell should be reported. If some cells cannot be measured, the 'x' char will be filled in the parameter of these cells.
8. Under the special mode, **<c1>** and **<c2>** parameters of the neighboring cell may be measured, and then an unmeaning value will be reported. When **<mcc>**, **<mnc>** ,**<lac>** and **<cellid>** parameters of the neighboring cell cannot be measured, the 'x' char will be filled in these parameters of all the six cells.
9. The command does not report the RX level and the RX quality. The "**AT+CSQ**" command can be used to query the values of RX level and RX quality.
10. The "**AT+QSPCH**" command can be used to re-query the type of the voice channel during calling (FR, HR, EFR, AMR_FR, AMR_HR).
11. The maximum record number of BA measured result list is 32. If any of the BCCH cannot get the BSIC value, the BSIC will show 'x' instead. The measured list only includes the measured BCCH in the BA list, not the whole BA list.

## Example

Idle mode:

```
AT+QENG=2
OK

+QENG: 0,460,00,1806,2602,64,46,-72,119,119,5,8,x,x,x,x,x,x,x

Dedicated mode:
AT+QENG=2,3
OK

+QENG: 0,460,00,1806,2031,17,41,-73,-1,-1,5,8,h,7,0,24,1,0,1

+QENG:
1,1,17,-74,41,111,95,460,00,1806,2031,2,2,-74,45,110,94,460,00,1878,151,3,22,-77,40,100,84,460,00,1
806,2012,4,24,-77,45,97,81,460,00,1806,2013,5,25,-81,40,83,67,460,00,1806,2032,6,532,-92,48,-1,-1,x
,x,x,x
```

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## 6.8. AT+QSCANF Scan Power of GSM Frequency

| AT+QSCANF Scan Power of GSM Frequency | |
|---|---|
| Test Command<br>**AT+QSCANF=?** | Response<br>**+QSCANF:** (list of supported **<band>**s),(list of supported **<freq>**s)<br><br>**OK** |
| Write Command<br>**AT+QSCANF=<band>,<freq>** | Response<br>If **<freq>=9999** and command is successful:<br>**+QSCANF:**<br>**1, CH113, -63.5**<br>**2, CH80, -64.2**<br>**4, CH22, -64.5**<br>**…..**<br>**20, CH116, -74.2**<br>**OK**<br><br>If **<freq>** is fixed frequency and command is successful:<br>**+QSCANF:**<br>**CH<freq>, <dbm>**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<band>** | 0 | BAND 900 |
| | 1 | BAND 1800 |
| | 2 | BAND 1900 |
| | 3 | BAND 850 |
| **<freq>** | 9999 | Scan all frequencies in a specified band |
| | 0-1023 | Scan a fixed frequency in a specified band |
| **<dbm>** | The signal strength indication in dbm value for a specified frequency | |

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**NOTE**

Before using this AT command, RF function of system MUST be disabled. Please make sure CFUN state is 0 or 4. About how to change CFUN state, please refer to AT command **AT+CFUN**.

## 6.9. AT+QLOCKF Lock GSM Frequency

| **AT+QLOCKF Lock GSM Frequency** | |
|---|---|
| Test Command<br>**AT+QLOCKF=?** | Response<br>**+QLOCKF:** (list of supported **<mode>**s),(list of supported **<band1900>**s), (list of supported **<arfcn>**s)<br><br>**OK** |
| Read Command<br>**AT+QLOCKF?** | Response<br>**+QLOCKF: <status>**<br><br>**OK** |
| Write Command<br>**AT+QLOCKF=<mode>,<band1900>,<arfcn1>[,<arfcn2>[,<arfcn3>]]** | Response<br>**OK**<br>**ERROR**<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable lock frequency |
| | 1 | Enable lock frequency |
| | 2 | Enable lock frequency and auto switch to saved frequency after powered on |
| **<band1900>** | 0 | Not a cell ID of 1900 band |
| | 1 | Cell ID of 1900 band |
| | 2 | Auto distinguish whether is a cell ID of 1900 band |
| **<arfcn>** | 0-1024 | ARFCN information |
| **<status>** | 0 | ME did not lock a certain ARFCN |
| | 1 | ME has locked a certain ARFCN |

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# 7 Call Related Commands

## 7.1. ATA Answer an Incoming Call

| ATA Answer an Incoming Call | |
|---|---|
| Execution Command<br>**ATA** | Response<br>TA sends off-hook to the remote station.<br>Response in case of voice call, if successfully connected:<br>**OK**<br><br>Response if no connection:<br>**NO CARRIER** |
| Maximum Response Time | 1s, determined by network. |
| Reference<br>V.25ter | |

**NOTES**

1. Any additional commands on the same command line are ignored.
2. 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.
3. See also **ATX**.

### Example

```
RING                                    //A voice call is ringing
AT+CLCC
+CLCC: 1,1,4,0,0,"02154450290",129,""

OK
ATA                                     //Accept the voice call with ATA
OK
```

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## 7.2. ATD Mobile Originated Call to Dial a Number

| ATD Mobile Originated Call to Dial a Number | |
|---|---|
| Execution Command<br>**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>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 is successful and voice call:<br>**OK** |
| Maximum Response Time | 1s, determined by network. |
| Reference<br>V.25ter | |

### Parameter

| | |
|---|---|
| **<n>** | String of dialing digits and optionally V.25ter modifiers<br>Dialing digits: **0-9, * , #, +, A, B, C**<br>Following V.25ter modifiers are ignored:<br>**,(comma), T, P, !, W, @** |
| **Emergency call:** | |
| **<n>** | Standardized emergency number 112 (no SIM needed) |
| **<mgsm>** | String of **GSM** modifiers:<br>**I** Actives **CLIR** (Disables presentation of own number to called party)<br>**i** Deactivates **CLIR** (Enable presentation of own number to called party)<br>**G** Activates closed user group invocation for this call only<br>**g** Deactivates closed user group invocation for this call only |
| **<;>** | Only required to set up voice call, return to command state |

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**NOTES**

1. This command may be aborted generally by receiving an **ATH** command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.
2. Parameter "I" and "i" are applicable for cases where there are no *# codes within the dial string.
3. **<n>** is the default value for last number that can be dialed by **ATDL**.
4. *# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";".
5. See **ATX** command for setting result code and call monitoring parameters.
6. Responses returned after dialing with **ATD**
   - For voice call, two different responses modes 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”.
7. 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.

**Example**

| | |
|---|---|
| **ATD10086;**<br>**OK** | //Dialing out the called party’s number |

## 7.3. ATH Disconnect Existing Connection

| **ATH Disconnect Existing Connection** | |
|---|---|
| Execution Command<br>**ATH[n]** | Response<br>Disconnect existing call by local TE from command line and terminate call.<br>**OK** |
| Maximum Response Time | 90s, determined by network. |
| Reference<br>V.25ter | |

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**Parameter**

| | | |
|---|---|---|
| **<n>** | 0 | Disconnect from line and terminate the call |

**NOTE**

OK is issued after circuit 109 (DCD) is turned off, if it was previously on.

## 7.4. +++ Switch from Data Mode to Command Mode

| **+++ Switch from Data Mode to Command Mode** | |
|---|---|
| Execution Command<br>**+++** | Response<br>This command is only available during TA is in data mode, such as, 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.<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**NOTES**

1. To prevent the "**+++**" escape sequence from being misinterpreted as data, it should comply to following sequence:
   - No characters entered for T1 time (0.5 seconds).
   - "**+++**" characters entered with no characters in between. For PPP online mode, the interval between two "**+**" MUST be less than 1 second and for a transparent TCPIP connection, the interval MUST be less than 20ms.
   - No characters entered for T1 time (0.5 seconds).
   - Switch to command mode, otherwise go to step 1.
2. To return from command mode back to data or PPP online mode: Enter **ATO**
   - Another way to change to command mode is through DTR, see **AT&D** command for the details.

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

| ATO Switch from Command Mode to Data Mode | |
|---|---|
| Execution 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>** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 0 | Switch from command mode to data mode |

**NOTE**

TA returns to data mode from command mode **CONNECT <text>**,**<text>** only if parameter setting is X>0.

## 7.6. ATP Select Pulse Dialing

| ATP Select Pulse Dialing | |
|---|---|
| Execution Command<br>**ATP** | Response<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**NOTE**

No effect in GSM.

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## 7.7. ATS0 Set Number of Rings before Automatically Answering Call

| ATS0 Set Number of Rings before Automatically Answering Call | |
|---|---|
| Read Command<br>**ATS0?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS0=<n>** | Response<br>This parameter setting determines the number of rings before auto-answer.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Automatic answering is disabled |
| | 1-255 | Enable automatic answering on the ring number specified |

**NOTE**

If **<n>** is set too high, the calling party may hang up before the call can be answered automatically.

### Example

```
ATS0=3                    //Set three rings before automatically answering a call
OK

RING                      //Call coming
RING
RING                      //Automatically answering the call after three rings
```

## 7.8. ATS6 Set Pause before Blind Dialing

| ATS6 Set Pause before Blind Dialing | |
|---|---|
| Read Command<br>**ATS6?** | Response<br>**<n>** |

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| | |
|---|---|
| | **OK** |
| Write Command<br>**ATS6=<n>** | Response<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 0-2-10 | Number of seconds to wait before blind dialing |

**NOTE**

No effect in GSM.

## 7.9. 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 duration of time to wait for the connection completion in case of answering or originating a call.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 1-60-255 | Number of seconds to wait for connection completion |

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**NOTES**

1. If the called party has specified a high value for **ATS0=<n>**, call setup may fail.
2. The correlation between **ATS7** and **ATS0** is important. For example: call may fail if **ATS7=30** and **ATS0=20**.
3. **ATS7** is only applicable to data call.

## 7.10. ATS8 Set the Number of Seconds to Wait for Comma Dial Modifier

| ATS8 Set the 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** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 0 | No pause when comma encountered in dial string |
| | 1-2-255 | Number of seconds to wait |

**NOTE**

No effect in GSM.

## 7.11. 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>** |

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| | |
|---|---|
| | **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** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 1-15-254 | Number of delay in 100ms |

## 7.12. ATT Select Tone Dialing

| **ATT Select Tone Dialing** | |
|---|---|
| Execution Command<br>**ATT** | Response<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**NOTE**

No effect in GSM.

## 7.13. AT+CSTA Select Type of Address

| **AT+CSTA Select Type of Address** | |
|---|---|
| Test Command<br>**AT+CSTA=?** | Response<br>**+CSTA:** (list of supported **<type>**s)<br><br>**OK** |

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| | |
|---|---|
| Read Command<br>**AT+CSTA?** | Response<br>**+CSTA: <type>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

| | | |
|---|---|---|
| **<type>** | Current address type setting. | |
| | 129 | Unknown type (IDSN format number) |
| | 145 | International number type (ISDN format ) |
| | 161 | National number type (IDSN format) |

## 7.14. AT+CLCC List Current Calls of ME

| **AT+CLCC List Current Calls of ME** | |
|---|---|
| Test Command<br>**AT+CLCC=?** | Response<br>**OK** |
| Execution Command<br>**AT+CLCC** | Response<br>TA returns a list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.<br>**[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,""]]**<br>**[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,""]]**<br>**[...]]]**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

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### Parameter

| | | |
|---|---|---|
| **<idx>** | Integer type; call identification number as described in GSM 02.30 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 ) |

### Example

```
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129,""          //List the current call of ME

OK
```

## 7.15. AT+CR Service Reporting Control

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

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| | |
|---|---|
| | **OK** |
| 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 set up.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

| | | |
|---|---|---|
| **<mode>** | 0 | Disable |
| | 1 | Enable |
| **<serv>** | ASYNC | Asynchronous transparent |
| | SYNC | Synchronous transparent |
| | REL ASYNC | Asynchronous non-transparent |
| | REL SYNC | Synchronous non-transparent |

**NOTE**

Intermediate result code:
If it is enabled, an intermediate result code is transmitted at a point during link negotiation. At the same time, 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.

## 7.16. AT+CRC Set Cellular Result Code for Incoming Call Indication

| **AT+CRC Set Cellular Result Code for Incoming Call Indication** | |
|---|---|
| Test Command<br>**AT+CRC=?** | Response<br>**+CRC:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+CRC?** | Response<br>**+CRC: <mode>**<br><br>**OK** |
| Write Command<br>**AT+CRC=[<mode>]** | Response<br>TA controls whether or not the extended format of incoming |

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| | |
|---|---|
| | call indication is used.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

## Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable extended format |
| | 1 | Enable extended format |

**NOTE**

Unsolicited result code:
When it is enabled, an incoming call is indicated to the TE with unsolicited result code **+CRING: <type>** instead of the normal RING.
Parameter

| | | |
|---|---|---|
| **<type>** | ASYNC | Asynchronous transparent |
| | SYNC | Synchronous transparent |
| | REL ASYNC | Asynchronous non-transparent |
| | REL SYNC | Synchronous non-transparent |
| | FAX | Facsimile |
| | VOICE | Voice |

## Example

```
AT+CRC=1                    //Enable extended format
OK

+CRING: VOICE               //Indicate an incoming call to the TE
ATH
OK
AT+CRC=0                    //Disable extended format
OK

RING                        //Indicate incoming call to the TE
ATH
OK
```

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## 7.17. 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 **<verx>** 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** |
| 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** |
| 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** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<iws>** | 0-61 | Interworking window size (IWF to MS) |
| **<mws>** | 0-61 | Mobile window size (MS to IWF) |
| **<T1>** | 39-255 | Acknowledgment timer T1 in a unit of 10ms |
| **<N2>** | 1-255 | Retransmission attempts N2 |
| **<verx>** | RLP | RLP version number in integer format. When version indication is not present, it shall equal to 0. |
| **<T4>** | 3-255 | Re-sequencing period in integer format, in a unit of 10ms |

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## 7.18. 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** |
| Read Command<br>**AT+CSNS?** | Response<br>**+CSNS: <mode>**<br><br>**OK** |
| Write Command<br>**AT+CSNS=[<mode>]** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Voice |
| | 1 | Alternating voice/fax, voice first |
| | 2 | FAX |
| | 3 | Alternating voice/data, voice first |
| | 4 | Data |
| | 5 | Alternating voice/fax, fax first |
| | 6 | Alternating voice/data, data first |
| | 7 | Voice followed by data |

## 7.19. AT+CMOD Configure Alternating Mode Calls

| AT+CMOD Configure Alternating Mode Calls | |
|---|---|
| Test Command<br>**AT+CMOD=?** | Response<br>**+CMOD:** (list of supported **<mode>**s)<br><br>**OK** |
| Write Command<br>**AT+CMOD=[<mode>]** | Response<br>**OK**<br>**ERROR** |

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| | |
|---|---|
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

| | | |
|---|---|---|
| **<mode>** | 0 | Single mode |
| | 1 | Alternating voice/fax |
| | 2 | Alternating voice/data |
| | 3 | Voice followed by data |

## 7.20. AT+QSFR Preference Speech Coding

| **AT+QSFR Preference Speech Coding** | |
|---|---|
| Test Command<br>**AT+QSFR=?** | Response<br>**+QSFR:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QSFR?** | Response<br>**+QSFR: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QSFR=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

**Parameter**

| | | |
|---|---|---|
| **<mode>** | 0 | Automatic mode |
| | 1 | FR |
| | 2 | HR |
| | 3 | EFR |
| | 4 | AMR_FR |
| | 5 | AMR_HR |
| | 6 | FR and EFR, FR priority |
| | 7 | EFR and FR, EFR priority |

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| | |
|---|---|
| 8 | EFR and HR, EFR priority |
| 9 | EFR and AMR_FR, EFR priority |
| 10 | AMR_FR and FR, AMR_FR priority |
| 11 | AMR_FR and HR, AMR_FR priority |
| 12 | AMR_FR and EFR, AMR_FR priority |
| 13 | AMR_HR and FR, AMR_HR priority |
| 14 | AMR_HR and HR, AMR_HR priority |
| 15 | AMR_HR and EFR, AMR_HR priority |

**MOTE**

This setting is stored in the non-volatile memory and will be used whenever the module is powered up again.

## 7.21. AT+QSPCH Speech Channel Type Report

| **AT+QSPCH Speech Channel Type Report** | |
|---|---|
| Test Command<br>**AT+QSPCH=?** | Response<br>**+QSPCH:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QSPCH?** | Response<br>**+QSPCH: <mode>,<speech channel>**<br><br>**OK** |
| Write Command<br>**AT+QSPCH=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable report speech channel type |
| | 1 | Enable report speech channel type |
| **<speech channel>** | Speech channel type | |
| | 0 | NO SPEECH TCH |
| | 1 | FR |
| | 2 | HR |

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| | | |
|---|---|---|
| | 3 | EFR |
| | 4 | AMR_FR |
| | 5 | AMR_HR |

**NOTE**

URC **+QSPCH: <mode>,<speech channel>** will be indicated when speech channel type changes.

## 7.22. AT+QDISH Disable ATH

| **AT+QDISH Disable ATH** | |
|---|---|
| Test Command<br>**AT+QDISH=?** | Response<br>**+QDISH:** (list of supported **<disableath>**s)<br><br>**OK** |
| Read Command<br>**AT+QDISH?** | Response<br>**+QDISH: <disableath>**<br><br>**OK** |
| Write Command<br>**AT+QDISH=<disableath>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<disableath>** | Disable ATH | |
| | 0 | Enable ATH command |
| | 1 | Disable ATH command |

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# 8 SMS Commands

## 8.1. AT+CSMS Select Message Service

| AT+CSMS Select Message Service | |
|---|---|
| Test Command<br>**AT+CSMS=?** | Response<br>**+CSMS:** (list of supported **<service>**s)<br><br>**OK** |
| Read Command<br>**AT+CSMS?** | Response<br>**+CSMS: <service>,<mt>,<mo>,<bm>**<br><br>**OK** |
| Write Command<br>**AT+CSMS=<service>** | Response<br>**+CSMS: <mt>,<mo>,<bm>**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

### Parameter

| | | |
|---|---|---|
| **<service>** | 0 | GSM 03.40 and 03.41 [the syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0; Phase 2+ features which do not require new command syntax may be supported (e.g. correct routing of messages with new Phase 2+ data coding schemes)] |
| | 128 | SMS PDU mode - TPDU only used for ending/receiving SMSs |
| **<mt>** | Mobile Terminated Messages | |
| | 0 | Type not supported |
| | 1 | Type supported |
| **<mo>** | Mobile Originated Messages | |

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| | | |
|---|---|---|
| | 0 | Type not supported |
| | 1 | Type supported |
| **<bm>** | Broadcast Type Messages | |
| | 0 | Type not supported |
| | 1 | Type supported |

## 8.2. AT+CMGF Select SMS Message Format

| **AT+CMGF Select SMS Message Format** | |
|---|---|
| Test Command<br>**AT+CMGF=?** | Response<br>**+CMGF:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+CMGF?** | Response<br>**+CMGF: <mode>**<br><br>**OK** |
| Write Command<br>**AT+CMGF=[<mode>]** | Response<br>TA sets parameter to denote which kind of I/O format of messages is used.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

**Parameter**

| | | |
|---|---|---|
| **<mode>** | 0 | PDU mode |
| | 1 | Text mode |

## 8.3. AT+CSCA SMS Service Center Address

| **AT+CSCA SMS Service Center Address** | |
|---|---|
| Test Command<br>**AT+CSCA=?** | Response<br>**OK** |
| Read Command<br>**AT+CSCA?** | Response<br>**+CSCA: <sca>,<tosca>** |

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| | |
|---|---|
| | **OK** |
| Write Command<br>**AT+CSCA=<sca>[,<tosca>]** | Response<br>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.<br>**OK**<br><br>If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

## Parameter

| | |
|---|---|
| **<sca>** | GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<tosca>** |
| **<tosca>** | Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer to **<toda>**) |

**NOTE**

The command writes the parameters in non-volatile memory.

## Example

```
AT+CSCA="+8613800210500",145          //SMS service center address
OK
AT+CSCA?                              //Query SMS service center address
+CSCA: "+8613800210500",145

OK
```

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## 8.4. AT+CPMS Preferred SMS Message Storage

| AT+CPMS Preferred SMS Message Storage | |
|---|---|
| Test Command<br>**AT+CPMS=?** | Response<br>**+CPMS:** (list of supported **<mem1>**s),(list of supported **<mem2>**s),(list of supported **<mem3>**s)<br><br>**OK** |
| Read Command<br>**AT+CPMS?** | Response<br>**+CPMS:**<br>**<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3>**<br><br>**OK** |
| Write Command<br>**AT+CPMS=<mem1>[,<mem2>[,<mem3>]]** | Response<br>TA selects memory storages **<mem1>**, **<mem2>** and **<mem3>** to be used for reading, writing, etc.<br>**+CPMS:**<br>**<used1>,<total1>,<used2>,<total2>,<used3>,<total3>**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

### Parameter

| | |
|---|---|
| **<mem1>** | Messages to be read and deleted from this memory storage<br>"SM" SIM message storage<br>"ME" Mobile Equipment message storage<br>"MT" Sum of "SM" and "ME" storages |
| **<mem2>** | Messages will be written and sent to this memory storage<br>"SM" SIM message storage<br>"ME" Mobile Equipment message storage<br>"MT" Sum of "SM" and "ME" storages |
| **<mem3>** | Received messages will be placed in this memory storage,<br>if routing to PC is not set ("**+CNMI**")<br>"SM" SIM message storage<br>"ME" Mobile Equipment message storage |

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| | |
|---|---|
| | "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>** |

**NOTE**

The SIM and ME message storages offer maximum space for 50 and 10 messages, respectively. The SIM message storage is selected in priority.

### Example

```
AT+CPMS="SM","SM","SM"                    //Set SMS message storage as “SM” (SIM)
+CPMS: 0,50,0,50,0,50

OK
AT+CPMS?                                  //Query the current SMS message storage
+CPMS: "SM",0,50,"SM",0,50,"SM",0,50

OK
```

## 8.5. AT+CMGD Delete SMS Message

| **AT+CMGD Delete SMS Message** | |
|---|---|
| Test Command<br>**AT+CMGD=?** | Response<br>**+CMGD:** (list of supported **<index>**s),(list of supported **<delflag>**s)<br><br>**OK** |
| Write Command<br>**AT+CMGD=<index>[,<delflag>]** | Response<br>TA deletes message from preferred message storage **<mem1>** location **<index>**.<br>**OK**<br>**ERROR**<br><br>If error is related to ME functionality:<br>**+CMS ERROR:<err>** |
| Maximum Response Time | 300ms.<br>Note: Operation of **<delflag>** depends on the storage of deleted messages. |
| Reference<br>GSM 07.05 | |

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### Parameter

| | | |
|---|---|---|
| **<index>** | Integer type; value in the range of location numbers supported by the associated memory | |
| **<delflag>** | 0 | Delete message specified in **<index>** |
| | 1 | Delete all read messages from **<mem1>** storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched |
| | 2 | Delete all read messages from **<mem1>** storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched |
| | 3 | Delete all read messages from **<mem1>** storage, sent and unsent mobile originated messages, leaving unread messages untouched |
| | 4 | Delete all messages from **<mem1>** storage |

### Example

```
AT+CMGD=1                    //Delete the message specified in <index>=1
OK
AT+CMGD=1,4                  //Delete all messages from <mem1> storage
OK
```

## 8.6. AT+CMGL List SMS Messages from Preferred Storage

| **AT+CMGL List SMS Messages from Preferred Storage** | |
|---|---|
| Test Command<br>**AT+CMGL=?** | Response<br>**+CMGL:** (list of supported **<stat>**s)<br><br>**OK** |
| Write Command<br>**AT+CMGL=<stat>[,<mode>]** | Response<br>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'.<br><br>1) In text mode (**+CMGF=1**) and when the command is successful:<br>for SMS-SUBMITs and/or SMS-DELIVERs:<br>**+CMGL:**<br>**<index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF>**<br>**+CMGL:**<br>**<index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[...]]** |

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| | |
|---|---|
| | for SMS-STATUS-REPORTs:<br>**+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF>**<br>**+CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]]**<br><br>for SMS-COMMANDs:<br>**+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>**<br>**+CMGL: <index>,<stat>,<fo>,<ct>[...]]**<br><br>for CBM storage:<br>**+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[<CR><LF>**<br>**+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[...]]**<br>**OK**<br><br>2) In PDU mode (**+CMGF=0**) and when the command is successful:<br>**+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu><CR><LF>**<br>**+CMGL: <index>,<stat>,[alpha],<length><CR><LF><pdu>[...]]**<br>**OK**<br><br>3) If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 300ms.<br>Note: Operation of **<stat>** depends on the storage of listed messages. |
| Reference<br>GSM 07.05 | |

## Parameter

| | | |
|---|---|---|
| **<stat>** | 1) In text mode | |
| | "REC UNREAD" | Received unread messages |
| | "REC READ" | Received read messages |
| | "STO UNSENT" | Stored unsent messages |

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| | | |
|---|---|---|
| | "STO SENT" | Stored sent messages |
| | "ALL" | All messages |
| | 2) In PDU mode | |
| | 0 | Received unread messages |
| | 1 | Received read messages |
| | 2 | Stored unsent messages |
| | 3 | Stored sent messages |
| | 4 | All messages |
| **<mode>** | 0 | Normal (default) |
| | 1 | Not change status of the specified SMS record |

**<alpha>** String type alphanumeric representation of **<da>** or **<oa>** corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command select TE character set **+CSCS** (see definition of this command in TS 07.07)

**<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command **+CSCS** in TS 07.07); type of address given by **<toda>**

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

- if **<dcs>** indicates that GSM 03.38 default alphabet is used and **<fo>** indicates that GSM 03.40 is used: 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 **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, or **<fo>** indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number [e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)]

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

- if **<dcs>** indicates that GSM 03.38 default alphabet is used: ME/TA converts GSM into the current character supported by TE
- if TE character set other than "HEX" (refer to Command **+CSCS** in GSM 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
- if **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number

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

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

**<oa>** GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or

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| | |
|---|---|
| | 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: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number [e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)]. In the case of CBS: GSM 03.41 TPDU in hexadecimal format |
| **<scts>** | GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer to **<dt>**) |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129) |
| **<tooa>** | GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (refer to **<toda>**) |

**NOTE**

If parameter is omitted, the command returns the list of SMS with “REC UNREAD” status.

### Example

```
AT+CMGF=1                          //Set SMS message format as text mode
OK
AT+CMGL="ALL"                      //List all messages from message storage
+CMGL: 1,"STO UNSENT","",",
This is a test from Quectel

+CMGL: 2,"STO UNSENT","",",
This is a test from Quectel,once again.

OK
```

## 8.7. AT+CMGR Read SMS Message

| **AT+CMGR Read SMS Message** | |
|---|---|
| Test Command<br>**AT+CMGR=?** | Response<br>**OK** |
| Write Command<br>**AT+CMGR=<index>[,<mode>]** | 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><br>1) In text mode (**+CMGF=1**) and when the command is |

| | |
|---|---|
| | executed successfully:<br>for SMS-DELIVER:<br>**+CMGR:**<br>**<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>**<br><br>for SMS-SUBMIT:<br>**+CMGR:**<br>**<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]<CR><LF><data>**<br><br>for SMS-STATUS-REPORTs:<br>**+CMGR:**<br>**<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>**<br><br>for SMS-COMMANDs:<br>**+CMGR:**<br>**<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]**<br><br>for CBM storage:<br>**+CMGR:**<br>**<stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>**<br><br>2) In PDU mode (+CMGF=0) and when command is successful:<br>**+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>**<br><br>**OK**<br><br>3) If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | Depends on the length of message content. |
| Reference<br>GSM 07.05 | |

## Parameter

| | | |
|---|---|---|
| **<index>** | Integer type value in the range of location numbers supported by the associated memory | |
| **<mode>** | 0 | Normal |
| | 1 | Not change the status of the specified SMS record |
| **<alpha>** | String type alphanumeric representation of **<da>** or **<oa>** corresponding to the entry found | |

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| | |
|---|---|
| | in MT phonebook; implementation of this feature is manufacturer specific |
| **<da>** | GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>** |
| **<data>** | In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format<br>− if **<dcs>** indicates that GSM 03.38 default alphabet is used and **<fo>** indicates that GSM 03.40 is used: TPUser-Data-Header-Indication is not set<br>− 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<br>− if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number [ e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55)]<br>− if **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used, or **<fo>** indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number [e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)]<br><br>In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format<br>− if **<dcs>** indicates that GSM 03.38 default alphabet is used: ME/TA converts GSM into the current character supported by TE<br>− if TE character set other than "HEX" (refer to command **+CSCS** in GSM 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A<br>− if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number<br>− if **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number |
| **<dcs>** | Depending on the command or result code: GSM 03.38 SMS Data Coding Scheme (default value is 0), or Cell Broadcast Data Coding Scheme in integer format |
| **<fo>** | Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default value is 17), SMS-STATUS-REPORT, or SMS-COMMAND (default value is 2) in integer format |
| **<length>** | Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) |
| **<mid>** | GSM 03.41 CBM Message Identifier in integer format |
| **<oa>** | GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<tooa>** |
| **<pdu>** | In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number [e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)]<br>In the case of CBS: GSM 03.41 TPDU in hexadecimal format |

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| | |
|---|---|
| **<pid>** | GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0) |
| **<sca>** | GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<tosca>** |
| **<scts>** | GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to **<dt>**) |
| **<stat>** | PDU mode / Text mode / Explanation<br>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>** | GSM 04.11 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>** | GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer to **<toda>**) |
| **<tosca>** | GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer to **<toda>**) |
| **<vp>** | Depending on SMS-SUBMIT **<fo>** setting: GSM 03.40 TP-Validity-Period either in integer format (default value is 167) or in time-string format (refer to **<dt>**) |

### Example

```
+CMTI: "SM",3                    //Indicates that new message has been received and saved
                                   to <index>=3 of "SM"
AT+CMGR=3                        //Read message
+CMGR: "REC UNREAD","+8615021012496","","2010/09/25 15:06:37+32",145,4,0,241,"+8
613800210500",145,27
This is a test from Quectel

OK
```

## 8.8. AT+CMGS Send SMS Message

| **AT+CMGS Send SMS Message** | |
|---|---|
| Test Command<br>**AT+CMGS=?** | Response<br>**OK** |
| Write Command<br>1) In text mode (**+CMGF=1**):<br>**AT+CMGS=<da>[,<toda>]**<CR><br>**text is entered**<br><ctrl-Z/ESC><br>ESC quits without sending | Response<br>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 |

| | |
|---|---|
| 2) In PDU mode (**+CMGF=0**):<br>**AT+CMGS=<length>**<CR><br>**PDU is given** <ctrl-Z/ESC> | unsolicited delivery status report result code.<br>1) In text mode (**+CMGF=1**) and when the command is sent successfully:<br>**+CMGS: <mr>**<br><br>**OK**<br><br>2) In PDU mode (**+CMGF=0**) and when the command is sent successfully:<br>**+CMGS: <mr>**<br><br>**OK**<br><br>3) If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 120s, determined by network. |
| Reference<br>GSM 07.05 | |

## Parameter

| | |
|---|---|
| **<da>** | GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>** |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format [when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129] |
| **<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) |
| **<mr>** | GSM 03.40 TP-Message-Reference in integer format |

## Example

```
AT+CMGF=1                                  //Set SMS message format as text mode
OK
AT+CSCS="GSM"                              //Set character set as GSM which is used by the TE
OK
AT+CMGS="15021012496"
> This is a test from Quectel              //Enter in text, <CTRL+Z> send message, <ESC> quits
                                             without sending
+CMGS: 247

OK
```

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## 8.9. 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) In 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<br><br>2) In PDU mode (**+CMGF=0**):<br>**AT+CMGW=<length>[,<stat>]**<CR><br>**PDU is given** <ctrl-Z/ESC> | 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><br>If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

### Parameter

| | | | |
|---|---|---|---|
| **<oa>** | GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<tooa>** | | |
| **<da>** | GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>** | | |
| **<tooa>** | GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer to **<toda>**) | | |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format [when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129]<br>129 Unknown type (IDSN format number)<br>145 International number type (ISDN format) | | |
| **<stat>** | PDU mode | Text mode | Explanation |
| | 0 | "REC UNREAD" | Received unread messages |
| | 1 | "REC READ" | Received read messages |
| | 2 | "STO UNSENT" | Stored unsent messages |
| | 3 | "STO SENT" | Stored sent messages |

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| | | | |
|---|---|---|---|
| | 4 | "ALL" | All messages |
| **<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: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number [ e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)]<br>In the case of CBS: GSM 03.41 TPDU in hexadecimal format | | |
| **<index>** | Index of message in selected storage **<mem2>** | | |

### Example

```
AT+CMGF=1                                  //Set SMS message format as text mode
OK
AT+CSCS="GSM"                              //Set character set as GSM which is used by the TE
OK
AT+CMGW="15021012496"
> This is a test from Quectel              //Enter in text, <CTRL+Z> write message, <ESC> quits
                                             without sending
+CMGW: 4

OK
```

## 8.10. 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=<index>[,<da>[,<toda>]]** | 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) In text mode (**+CMGF=1**) and when the command is sent successfully:<br>**+CMSS: <mr> [,<scts>]**<br><br>**OK** |

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| | |
|---|---|
| | 2) In PDU mode (**+CMGF=0**) and the command is sent successfully;<br>**+CMSS: <mr> [,<ackpdu>]**<br><br>**OK**<br><br>3) If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 120s, determined by network. |
| Reference<br>GSM 07.05 | |

### Parameter

| | |
|---|---|
| **<index>** | Integer type value in the range of location numbers supported by the associated memory |
| **<da>** | GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>** |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format [when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129] |
| **<mr>** | GSM 03.40 TP-Message-Reference in integer format |
| **<scts>** | GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to **<dt>**) |
| **<ackpdu>** | In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number [e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)].<br>In the case of CBS: GSM 03.41 TPDU in hexadecimal format |

## 8.11. AT+CMGC Send SMS Command

| **AT+CMGC Send SMS Command** | |
|---|---|
| Test Command<br>**AT+CMGC=?** | Response<br>**OK** |
| Write Command<br>1) In text mode (**+CMGF=1**):<br>**AT+CMGC=<fo>[,<ct>,<pid>,<mn>,<da>,<toda>]<CR>**<br>**text is entered**<br><ctrl-Z/ESC> | Response<br>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. |

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| | |
|---|---|
| ESC quits without sending<br><br>2) In PDU mode (**+CMGF=**0):<br>**AT+CMGC=<length>**<CR><br>**PDU is given** <ctrl-Z/ESC> | 1) In text mode(**+CMGF=1**) and when the command is sent successfully:<br>**+CMGC: <mr> [,<scts>]**<br><br>**OK**<br><br>2) In PDU mode(**+CMGF=0**) and when the command is sent successfully:<br>**+CMGC: <mr> [,<ackpdu>]**<br><br>**OK**<br><br>3) If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

## Parameter

| | |
|---|---|
| **<fo>** | First octet of GSM 03.40 SMS-COMMAND (default value is 2) in integer format |
| **<ct>** | GSM 03.40 TP-Command-Type in integer format (default value is 0) |
| **<pid>** | GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0) |
| **<mn>** | GSM 03.40 TP-Message-Number in integer format |
| **<da>** | GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>** |
| **<toda>** | GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format [when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129]<br>129 Unknown type (IDSN format number)<br>145 International number type (ISDN format) |
| **<length>** | 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) |
| **<mr>** | GSM 03.40 TP-Message-Reference in integer format |
| **<scts>** | GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to **<dt>**) |
| **<ackpdu>** | In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number [e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)].<br>In the case of CBS: GSM 03.41 TPDU in hexadecimal format |

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## 8.12. 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** |
| Read Command<br>**AT+CNMI?** | Response<br>**+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>**<br><br>**OK** |
| Write Command<br>**AT+CNMI=[<mode>[,<mt>[,<bm>[,<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), receiving message should be done as specified in GSM 03.38.<br><br>**OK**<br><br>If error is related to ME functionality:<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

### Parameter

| | | |
|---|---|---|
| **<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. Use specified TA-TE link technique to transmit both result codes and data to TE when TA is in on-line data mode |

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| | | |
|---|---|---|
| **<mt>** | (The rules for storing received SMS depend on its data coding scheme [refer to GSM 03.38 [2]), preferred memory storage (**+CPMS**) setting and this value]: | |
| | 0 | No SMS-DELIVER indications are routed to the TE |
| | 1 | If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE 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 GSM 03.38 [2]), the setting of Select CBM Types (**+CSCB**) and this value]: | |
| | 0 | No CBM indications are routed to the TE |
| | 2 | New CBMs are routed directly to the TE 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) |
| | 1 | TA buffer of unsolicited result codes defined within this command is cleared when **<mode>**1…3 is entered |

**NOTE**

Unsolicited result code

| | |
|---|---|
| **+CMTI: <mem>,<index>** | Indicates that 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 |

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### Example

```
AT+CMGF=1                                   //Set SMS message format as text mode
OK
AT+CSCS="GSM"                               //Set character set as GSM which is used by the TE
OK
AT+CNMI=2,1                                 //SMS-DELIVER is stored into ME/TA, indication of the
                                              memory location is routed to the TE
OK

+CMTI: "SM",5                               //Indicate that new message has been received
AT+CNMI=2,2                                 //Set SMS-DELIVERs are routed directly to the TE
OK

+CMT: "+8615021012496"," ","2010/09/25 17:25:01+32",145,4,0,241,"+8613800210500",145,27
This is a test from Quectel                 //Short message is output directly
```

## 8.13. 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[=<profile>]** | 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 center 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><br>If error is related to ME functionality:<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

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**Parameter**

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

## 8.14. 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[=<profile>]** | 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 center 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><br>If error is related to ME functionality:<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

**Parameter**

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

## 8.15. AT+CSCB Select Cell Broadcast SMS Messages

| **AT+CSCB Select Cell Broadcast SMS Messages** | |
|---|---|
| Test Command<br>**AT+CSCB=?** | Response<br>**+CSCB:** (list of supported **<mode>**s) |

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| | |
|---|---|
| | **OK** |
| Read Command<br>**AT+CSCB?** | Response<br>**+CSCB: <mode>,<mids>,<dcss>**<br><br>**OK** |
| Write Command<br>**AT+CSCB=<mode>[,mids>[,<dcss>]]** | Response<br>TA selects which types of CBMs are to be received by the ME.<br>**OK**<br><br>If error is related to ME functionality:<br>**+CMS ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

### Parameter

| | | |
|---|---|---|
| **<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)<br>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)<br>e.g. "0-3,5" | |

**NOTE**

The command writes the parameters in non-volatile memory.

## 8.16. AT+CSDH Show SMS Text Mode Parameters

| **AT+CSDH Show SMS Text Mode Parameters** | |
|---|---|
| Test Command<br>**AT+CSDH=?** | Response<br>**+CSDH:** (list of supported **<show>**s)<br><br>**OK** |
| Read Command | Response |

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| | |
|---|---|
| **AT+CSDH?** | **+CSDH: <show>**<br><br>**OK** |
| Write Command<br>**AT+CSDH=[<show>]** | Response<br>TA determines whether detailed header information is shown in text mode result codes.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

## Parameter

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

## Example

```
AT+CSDH=0
OK
AT+CMGR=3
+CMGR: "REC READ","+8615021012496","","2010/09/25 15:06:37+32"
This is a test from Quectel

OK
AT+CSDH=1
OK
AT+CMGR=3
+CMGR: "REC READ","+8615021012496", ,"2010/09/25 15:06:37+32",145,4,0,241,"+861
3800210500",145,27
This is a test from Quectel

OK
```

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## 8.17. AT+CSMP Set SMS Text Mode Parameters

| AT+CSMP Set SMS Text Mode Parameters | |
|---|---|
| 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** |
| Read Command<br>**AT+CSMP?** | Response<br>**+CSMP: <fo>,<vp>,<pid>,<dcs>**<br><br>**OK** |
| Write Command<br>**AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]** | Response<br>TA selects values for additional parameters needed when SM is sent to the network or placed in a storage when text mode is selected (**+CMGF=1**). It is possible to set the validity period starting from when the SM is received by the SMSC (**<vp>** is in range 0... 255) or define the absolute time of the validity period termination (**<vp>** is a string).<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.05 | |

### Parameter

| | |
|---|---|
| **<fo>** | Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default value is 17), SMS-STATUS-REPORT, or SMS-COMMAND (default value is 2) in integer format. SMS status report is supported under text mode if **<fo>** is set to 49 |
| **<vp>** | Depending on SMS-SUBMIT **<fo>** setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer to **<dt>**) |
| **<pid>** | GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0) |
| **<dcs>** | GSM 03.38 SMS Data Coding Scheme in Integer format |

**NOTE**

The command writes the parameters in NON-VOLATILE memory.

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## 8.18. AT+QCLASS0 Store Class 0 SMS to SIM when Receiving Class 0 SMS

| AT+QCLASS0 Store Class 0 SMS to SIM when Receiving Class 0 SMS | |
|---|---|
| Test Command<br>**AT+QCLASS0=?** | Response<br>**+QCLASS0:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QCLASS0?** | Response<br>**+QCLASS0: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QCLASS0=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Disable storing Class 0 SMS when receiving Class 0 SMS |
| | 1 | Enable storing Class 0 SMS when receiving Class 0 SMS |

### Example

```
// When in text mode:
AT+CPMS?
+CPMS: "SM",6,50,"SM",6,50,"SM",6,50

OK
AT+QCLASS0=0                    //Disable storing SMS when receiving Class 0 SMS
OK

+CMT: "+8615021012496",,"2010/09/26 09:55:37+32"
TEST1 from Quectel              //Short message is output directly
AT+QCLASS0=1                    //Enable storing SMS when receiving Class 0 SMS
OK

+CMTI: "SM",7                   //Indicate that new message has been received
AT+CMGR=7
```

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```
+CMGR: "REC UNREAD","+8615021012496","","2010/09/26 09:56:17+32"
TEST2 from Quectel

OK
```

## 8.19. 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** |
| Write Command<br>**AT+QMGDA=<type>** | Response<br>**OK**<br>**ERROR**<br>**+CME ERROR: <err>** |
| Maximum Response Time | Depends on the storage of deleted messages. |
| Reference<br>Quectel | |

### Parameter

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

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## 8.20. AT+QSMSCODE Configure SMS Code Mode

| AT+QSMSCODE Configure SMS Code Mode | |
|---|---|
| Test Command<br>**AT+QSMSCODE=?** | Response<br>**+QSMSCODE:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QSMSCODE?** | Response<br>**+QSMSCODE: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QSMSCODE=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Code mode according with NOKIA |
| | 1 | Code mode according with SIEMENS |
| | 2 | Code mode according with NOKIA, and hexadecimal 0x11 treated as "_" hexadecimal 0x02 treated as "$" |

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# 9 Phonebook Commands

## 9.1. 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)<br><br>**OK** |
| Read Command<br>**AT+CPBS?** | Response<br>**+CPBS: <storage>[,<used>,<total>]**<br><br>**OK** |
| Write Command<br>**AT+CPBS=<storage>** | Response<br>TA selects current phone book memory storage, which is used by other phone book commands.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<storage>** | "MC" | ME missed (unanswered) calls list |
| | "RC" | ME received calls list |
| | "DC" | ME dialed calls list (**+CPBW** may not be applicable or this storage)(same as LD) |
| | "LA" | Last Number All list (LND/LNM/LNR) |
| | "ME" | ME phonebook |
| | "BN" | SIM barred dialed number |
| | "SD" | SIM service dial number |
| | "VM" | SIM voice mailbox |
| | "FD" | SIM fix dialing-phone book |
| | "LD" | SIM last-dialing-phone book |
| | "ON" | SIM (or ME) own numbers (MSISDNs) list |
| | "SM" | SIM phonebook |

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| | |
|---|---|
| **<used>** | Integer type value indicating the total number of used locations in selected memory |
| **<total>** | Integer type value indicating the total number of locations in selected memory |

**NOTE**

SIM phonebook record can store up to 250pcs and ME phonebook record can store up to 100pcs.

## 9.2. 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** |
| Write Command<br>**AT+CPBW=<index>[,<number>[,<type>[,<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** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| <**nlength**> | Maximum length of phone number |
| <**tlength**> | Maximum length of text for number |
| <**index**> | Location number |
| <**number**> | Phone number |
| <**type**> | Type of number |

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| | | |
|---|---|---|
| | 129 | Unknown type (IDSN format number) |
| | 145 | International number type (ISDN format ) |
| <text> | Text for phone number in current TE character set specified by **+CSCS** | |

**NOTES**

1. If the current memory storage is “MC”, “RC”, “DC”, “LA” or “LD”, **<number>**, **<type>** and **<text>** parameters must be default. **AT+CPBW** command only supports settings **<index>** delete the number of current phone book.
2. **<number>** can’t be empty.
3. The following characters in **<text>** must be entered via the escape sequence:

| GSM char | Seq.Seq.(hex) | Note |
|---|---|---|
| \ | \5C 5C 35 43 | (backslash) |
| " | \22 5C 32 32 | (string delimiter) |
| BSP | \08 5C 30 38 | (backspace) |
| NULL | \00 5C 30 30 | (GSM null) |

‘0’ (GSM null) may cause problems for application layer software when reading string lengths.

**Example**

```
AT+CSCS="GSM"
OK
AT+CPBW=10,"15021012496",129,"QUECTEL"
OK                                  //Make a new phonebook entry at location 10
AT+CPBW=10                          //Delete entry at location 10
OK
```

## 9.3. 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** |
| Write Command<br>**AT+CPBR=<index1>[,<index2>]** | Response<br>TA returns phone book entries in location number range **<index1>... <index2>** from the current phone book memory storage selected with **+CPBS**. If **<index2>** is left out, only |

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| | |
|---|---|
| | location **<index1>** is returned.<br>**+CPBR:<index1>,<number>,<type>,<text>[<CR><LF>+CPBR: .....+CPBR: <index2>, <number>, <type>, <text>]**<br><br>**OK** |
| Maximum Response Time | 300ms.<br>Note: Operation of **<index2>** depends on the storage of read phonebook entries. |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<index>** | Location number |
| **<nlength>** | Maximum length of phone number |
| **<tlength>** | Maximum length of name for number |
| **<index1>** | The first phone book record to read |
| **<index2>** | The last phonebook record to read |
| **<number>** | Phone number |
| **<type>** | Type of number |
| **<text>** | Text name for phone number in current TE character set specified by **+CSCS** |

### Example

```
AT+CSCS="GSM"
OK
AT+CPBR=10                          //Query phone book entries in location 10
+CPBR: 10,"15021012496",129,"QUECTEL"

OK
```

## 9.4. AT+CPBF Find Phonebook Entries

| **AT+CPBF Find Phonebook Entries** | |
|---|---|
| Test Command<br>**AT+CPBF=?** | Response<br>**+CPBF: <nlength>,<tlength>**<br><br>**OK** |
| Write Command<br>**AT+CPBF=[<findtext>]** | Response<br>TA returns phone book entries (from the current phone book memory storage selected with **+CPBS**) which contain |

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| | |
|---|---|
| | alphanumeric string **<findtext>**.<br>**[+CPBF: <index1>, <number>,<type>, <text>[[...]**<br>**<CR><LF>+CBPF: <index2>,<number>,<type>,<text>]**<br><br>**OK** |
| Maximum Response Time | Depends on the storage of phonebook entries. |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<findtext>** | String type field of maximum length **<tlength>** in current TE character set specified by **+CSCS**. |
| **<index1>** | Integer type values in the range of location numbers of phone book memory |
| **<index2>** | Integer type values in the range of location numbers of phone book memory |
| **<number>** | Phone number in string type of format **<type>** |
| **<type>** | Type of address octet in integer format:<br>129 Unknown type (IDSN format number)<br>145 International number type (ISDN format ) |
| **<text>** | String type field of maximum length **<tlength>** in current TE character set specified by **+CSCS** |
| **<nlength>** | Integer type value indicating the maximum length of field **<number>** |
| **<tlength>** | Integer type value indicating the maximum length of field **<text>** |

## 9.5. AT+CNUM Subscriber Number

| **AT+CNUM Subscriber Number** | |
|---|---|
| Test Command<br>**AT+CNUM=?** | Response<br>**OK** |
| Execution Command<br>**AT+CNUM** | Response<br>**+CNUM: [<alpha1>],<number1>,<type1>**<br>**[<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>**<br>**[...]]**<br><br>**OK**<br><br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

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### Parameter

| | |
|---|---|
| **<alpha*x*>** | Optional alphanumeric string associated with **<numberx>**; used character set should be the one selected with command. Select TE character set **+CSCS** |
| **<number*x*>** | Phone number in string type of format specified by **<type*x*>** |
| **<type*x*>** | Type of address octet in integer format (refer to GSM 04.08 subclause 10.5.4.7) |

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# 10 GPRS Commands

## 10.1. AT+CGATT Attach to/Detach from GPRS Service

| AT+CGATT Attach to/Detach from GPRS Service | |
|---|---|
| Test Command<br>**AT+CGATT=?** | Response<br>**+CGATT:** (list of supported **<state>**s)<br><br>**OK** |
| Read Command<br>**AT+CGATT?** | Response<br>**+CGATT: <state>**<br><br>**OK** |
| Write Command<br>**AT+CGATT=<state>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 75s, determined by network. |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<state>** | Indicates the state of GPRS attachment<br>0 Detached<br>1 Attached<br>Other values are reserved and will result in an **ERROR** response to the Write Command |

### Example

```
AT+CGATT=1                    //Attach to GPRS service
OK
AT+CGATT=0                    //Detach from GPRS service
OK
```

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| | |
|---|---|
| **AT+CGATT?** | //Query the current GPRS service state |
| **+CGATT: 0**<br><br>**OK** | |

## 10.2. AT+CGDCONT Define PDP Context

| **AT+CGDCONT Define PDP Context** | |
|---|---|
| Test Command<br>**AT+CGDCONT=?** | Response<br>**+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** |
| Read Command<br>**AT+CGDCONT?** | Response<br>**+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>**<br>**<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>**<br>**…**<br><br>**OK** |
| Write Command<br>**AT+CGDCONT=<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<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) |

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| | |
|---|---|
| **<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 |

### Example

```
AT+CGDCONT=1,"IP","CMNET"          //Define PDP context, <cid>=1,
                                     <PDP_type>=IP,<APN>=CMNET
OK
```

## 10.3. AT+CGQREQ Quality of Service Profile (Requested)

| **AT+CGQREQ Quality of Service Profile (Requested)** | |
|---|---|
| Test Command<br>**AT+CGQREQ=?** | Response<br>**+CGQREQ: <PDP_type>**,(list of supported **<precedence>**s),(list of supported **<delay>**s),(list of supported **<reliability>**s),(list of supported **<peak>**s),(list of supported **<mean>**s)<br><br>**OK** |
| Read Command<br>**AT+CGQREQ?** | Response<br>**+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>**<br>**<CR><LF>+CGQREQ: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>**<br>**…**<br><br>**OK** |
| Write Command<br>**AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean** | Response<br>**OK** |

| | |
|---|---|
| **>]]]]]** | If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

| | |
|---|---|
| **<cid>** | A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command) |
| The following parameter are defined in GSM 03.60 | |
| **<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 |

## 10.4. 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><br>**OK** |
| Read Command<br>**AT+CGQMIN?** | Response<br>**+CGQMIN:**<br>**<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>**<br>**<CR><LF>+CGQMIN:**<br>**<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>**<br>**…**<br><br>**OK** |
| Write Command<br>**AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]** | Response<br>**OK**<br><br>If error is related to ME functionality: |

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| | |
|---|---|
| | **+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<cid>** | A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command) |
| The following parameters are defined in GSM 03.60. | |
| **<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 |

## 10.5. AT+CGACT PDP Context Activate or Deactivate

| **AT+CGACT PDP Context Activate or Deactivate** | |
|---|---|
| Test Command<br>**AT+CGACT=?** | Response<br>**+CGACT:** (list of supported **<state>**s)<br><br>**OK** |
| Read Command<br>**AT+CGACT?** | Response<br>**+CGACT:**<br>**<cid>,<state>[<CR><LF>+CGACT:<cid><state>…]**<br><br>**OK** |
| Write Command<br>**AT+CGACT=<state>[,<cid>]** | Response<br>**OK**<br>**NO CARRIER**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 150s, determined by network. |
| Reference<br>GSM 07.07 | |

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### Parameter

| | |
|---|---|
| **<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 |
| **<cid>** | A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command). The default value is 1. |

**NOTE**

If context is deactivated successfully, NO CARRIER is returned.

### Example

```
AT+CGDCONT=1,"IP","CMNET"        //Define PDP context
OK
AT+CGACT=1,1                     //Activated PDP
OK
AT+CGACT=0,1                     //Deactivated PDP
NO CARRIER
```

## 10.6. 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** |
| Write Command<br>**AT+CGDATA=<L2P>[,<cid>[,<cid>[,…]]]** | Response<br>**OK**<br>**NO CARRIER**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

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### Parameter

| | |
|---|---|
| **<L2P>** | A string parameter that indicates the layer 2 protocol to be 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 **ERROR** response to the execution command |
| **<cid>** | A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command) |

## 10.7. AT+CGPADDR Show PDP Address

| **AT+CGPADDR Show PDP Address** | |
|---|---|
| Test Command<br>**AT+CGPADDR=?** | Response<br>**+CGPADDR:** (list of defined **<cid>**s)<br><br>**OK** |
| Write Command<br>**AT+CGPADDR=<cid>** | Response<br>**+CGPADDR: <cid>[,<PDP_addr>]**<br><br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<cid>** | A numeric parameter which specifies a particular PDP 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 |

**NOTE**

This command dictates the behaviour of PPP in the ME but not that of any other GPRS-enabled foreground layer, e.g. browser.

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### Example

```
AT+CGDCONT=1,"IP","CMNET"          //Define PDP context
OK
AT+CGACT=1,1                       //Activated PDP
OK
AT+CGPADDR=1                       //Show PDP address
+CGPADDR: 1,"10.76.51.180"

OK
```

## 10.8. AT+CGCLASS GPRS Mobile Station Class

| AT+CGCLASS GPRS Mobile Station Class | |
|---|---|
| Test Command<br>**AT+CGCLASS=?** | Response<br>**+CGCLASS:** (list of supported **<class>**s)<br><br>**OK** |
| Read Command<br>**AT+CGCLASS?** | Response<br>**+CGCLASS: <class>**<br><br>**OK** |
| Write Command<br>**AT+CGCLASS=<class>** | Response<br>**OK**<br>**ERROR**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 30s, determined by network. |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<class>** | A string parameter which indicates the GPRS mobile class (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 |

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## 10.9. AT+CGEREP Control Unsolicited GPRS Event Reporting

| AT+CGEREP Control Unsolicited GPRS Event Reporting | |
|---|---|
| Test Command<br>**AT+CGEREP=?** | Response<br>**+CGEREP:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+CGEREP?** | Response<br>**+CGEREP: <mode>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Write Command<br>**AT+CGEREP=<mode>** | Response<br>**OK**<br>**ERROR** |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest one can be discarded. No codes are forwarded to the TE |
| | 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 |

**NOTE**

Unsolicited Result Codes supported:
**+CGEV: NW DEACT <PDP_type>, <PDP_addr>[,<cid>]**
**+CGEV: ME DEACT <PDP_type>, <PDP_addr>[,<cid>]**
**+CGEV: NW DETACH**
**+CGEV: ME CLASS <class>**
Parameters
**<PDP_type>** Packet Data Protocol type (see **+CGDCONT** command)
**<PDP_addr>** Packet Data Protocol address (see **+CGDCONT** command)
**<cid>** Context ID (see **+CGDCONT** command)
**<class>** GPRS mobile class (see **+CGCLASS** command)

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## 10.10. 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** |
| Read Command<br>**AT+CGREG?** | Response<br>**+CGREG: <n>,<stat>[,<lac>,<ci>]**<br><br>**OK** |
| Write Command<br>**AT+CGREG=[<n>]** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Disable network registration unsolicited result code |
| | 1 | Enable network registration unsolicited result code **+CGREG:<stat>** |
| | 2 | Enable network registration and location information unsolicited result code **+CGREG: <stat>[,<lac>,<ci>]** |
| **<stat>** | 0 | Not registered, ME is not currently searching a new operator to register to |
| | 1 | Registered, home network |
| | 2 | Not registered, but ME is currently searching a new operator to register to |
| | 3 | Registration denied |
| | 4 | Unknown |
| | 5 | Registered, roaming |
| **<lac>** | String type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) | |
| **<ci>** | String type; two bytes cell ID in hexadecimal format | |

**NOTE**

For parameter state, options of 0 and 1 are supported only.

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### Example

```
AT+CGATT=0
NO CARRIER

+CGREG: 0,"1878","0873"
AT+CGATT=1
OK

+CGREG: 2,"1878","0873"

+CGREG: 1,"1878","0873"
```

## 10.11. 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** |
| Read Command<br>**AT+CGSMS?** | Response<br>**+CGSMS: <service>**<br><br>**OK** |
| Write Command<br>**AT+CGSMS=[<service>]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<service>** | A numeric parameter which indicates the service or service preference to be used | |
| | 0 | GPRS |
| | 1 | Circuit switch |
| | 2 | GPRS preferred (use circuit switched if GPRS is not available) |
| | 3 | Circuit switch preferred (use GPRS if circuit switched is not available) |

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**NOTE**

The circuit switched service route is the default method.

## 10.12. AT+QGPCLASS Change GPRS Multi-slot Class

| AT+QGPCLASS Change GPRS Multi-slot Class | |
|---|---|
| Test Command<br>**AT+QGPCLASS=?** | Response<br>**MULTISLOT CLASS:** (list of currently available **<class>**s)<br><br>**OK** |
| Read Command<br>**AT+QGPCLASS?** | Response<br>**MULTISLOT CLASS: <class>**<br><br>**OK** |
| Write Command<br>**AT+QGPCLASS=<class>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<class>** | GPRS multi-slot class<br>1-12 Default value is 12 |

**NOTE**

The command takes effect after the module is restarted.

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# 11 TCPIP Commands

## 11.1. 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>**)s,(**IP address range**),(**port**)<br><CR><LF>**+QIOPEN:** (list of supported **<mode>**s),(**domain name**),(**port**)<br><br>**OK** |
| 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><br>If the connection has already existed, respond:<br>**ALREADY CONNECT**<br><br>And then if connection is successful, respond:<br>**[<index>,] CONNECT OK**<br><br>Otherwise respond:<br>**[<index>,] CONNECT FAIL** |
| Maximum Response Time | 75s, determined by network. |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<index>** | A numeric indicates which socket opens the connection. MC60 supports at most 6 sockets at the same time. 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 |

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| | |
|---|---|
| | omitted |
| **<mode>** | A string parameter which indicates the connection type<br>"TCP" Establish a TCP connection<br>"UDP" Establish a UDP connection |
| **<IP address>** | A string parameter that gives the address of the remote server in dotted decimal style. |
| **<port>** | The port of the remote server<br>0-65535 |
| **<domain name>** | A string parameter which represents the domain name address of the remote server |

**NOTES**

1. This command is allowed to establish a TCP/UDP connection only when the state is IP INITIAL, 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, IP STATUS or IP CLOSE.
2. 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.

## 11.2. 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**<br>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** |
| Write Command<br>1) When **AT+QIMUX=0**<br>**AT+QISEND=<length>**<br>2) When **AT+QIMUX=1**<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: |

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| | |
|---|---|
| | **SEND FAIL** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<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 |
| **<length>** | A numeric parameter which indicates the length of data to be sent, it MUST be less than 1460 |

**NOTES**

1. 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.
2. The maximum length of the data to input at a time is 1460.
3. There are at most 1460 bytes that can be sent each time.
4. Only send data at the status of connection, otherwise respond with ERROR.
5. 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 node, it is necessary to execute the command **AT+QISACK** to query it.

## 11.3. 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** |
| Write Command<br>**AT+QICLOSE=<index>** | Response<br>If close succeeds:<br>**<index>, CLOSE OK**<br>If close fails:<br>**ERROR** |
| Maximum Response Time | 300ms |

| | |
|---|---|
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<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 |

**NOTES**

1. Execution Command **AT+QICLOSE**:
   - 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.
   - If **QISRVC** is 1 and **QIMUX** is 1, it will return ERROR.
   - If **QISRVC** is 2, **QIMUX** equals 0, the module is used as a server and some clients have been connected to it, this command will close the connection between the module and the remote client.
   - If **QISRVC** is 2, **QIMUX** is 0 and the module is in listening state without any client, this command will cause the module to quit the listening state.
   - If **QISRVC** is 2, **QIMUX** is 1 and the module is used as a server, this command will close all the income connection and cause the module to quit the listening state.
2. Write Command **AT+QICLOSE=<index>**:
   - 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>**.
3. If **QISRVC** is 1 and **QIMUX** is 0, **AT+QICLOSE** only closes the connection when the status is CONNECTING or CONNECT OK, otherwise respond with ERROR. After closing the connection, the status is IP CLOSE.

## 11.4. AT+QIDEACT Deactivate GPRS/CSD PDP Context

| **AT+QIDEACT Deactivate GPRS/CSD PDP Context** | |
|---|---|
| Test Command<br>**AT+QIDEACT=?** | Response<br>**OK** |
| Execution Command<br>**AT+QIDEACT** | Response<br>If close succeeds:<br>**DEACT OK** |

| | |
|---|---|
| | If close fails:<br>**ERROR** |
| Maximum Response Time | 40s, determined by network. |
| Reference<br>Quectel | |

**NOTES**

1. Except at the status of IP INITIAL, you can deactivate GPRS/CSD PDP context by **AT+QIDEACT**. After closing the connection, the status becomes IP INITIAL again.
2. CSD context is not supported at present.

## 11.5. AT+QILPORT Set Local Port

| **AT+QILPORT Set Local Port** | |
|---|---|
| Test Command<br>**AT+QILPORT=?** | Response<br>**+QILPORT:** (list of supported **<port>**s)<br><br>**OK** |
| Read Command<br>**AT+QILPORT?** | Response<br>**<mode>: <port>**<br>**<CR><LF><mode>: <port>**<br><br>**OK** |
| Write Command<br>**AT+QILPORT=<mode>,<port>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<mode>** | A string parameter which indicates the connection type<br>"TCP" TCP local port<br>"UDP" UDP local port |
| **<port>** | 0-65535 A numeric parameter which indicates the local port |

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**NOTE**

This command is used to set the port for listening.

## 11.6. 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=?** | Response<br>**+QIREGAPP: "APN","USER","PWD"**<br><br>**OK** |
| Read Command<br>**AT+QIREGAPP?** | Response<br>**+QIREGAPP: <apn>,<user name>,<password>**<br><br>**OK** |
| Write Command<br>**AT+QIREGAPP=<apn>,<user name>,< password>[,<rate>]** | Response<br>**OK**<br>**ERROR** |
| Execution Command<br>**AT+QIREGAPP** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

**<apn>** A string parameter which indicates the GPRS access point name or the call number of CSD
**<user name>** A string parameter which indicates the GPRS/CSD user name
**<password>** A string parameter which indicates the GPRS/CSD password
**<rate>** The speed of data transmit for CSD

**NOTES**

1. The write command and execution commands are valid only at the status of IP INITIAL. After operating this command, the status will become IP START.
2. The value of **QICSGP** (please refer to **AT+QICSGP**) defines what kind of bearer (GPRS or CSD) the

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parameters are used for.
3. CSD function and related configuration are not supported at present.

## 11.7. AT+QIACT Activate GPRS/CSD Context

| AT+QIACT Activate GPRS/CSD Context | |
|---|---|
| Test Command<br>**AT+QIACT=?** | Response<br>**OK** |
| Execution Command<br>**AT+QIACT** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 150s, determined by network. |
| Reference<br>Quectel | |

**NOTES**

1. **AT+QIACT** only activates GPRS/CSD context at the status of IP START. After operating this command, the status will become IP CONFIG. If TA accepts the activated operation, the status will become IP IND. After GPRS/CSD context is activated successfully, the status will become IP GPRSACT, and respond with OK; otherwise respond with ERROR.
2. CSD context is not supported at present.

## 11.8. AT+QILOCIP Get Local IP Address

| AT+QILOCIP Get Local IP Address | |
|---|---|
| Test Command<br>**AT+QILOCIP=?** | Response<br>**OK** |
| Execution Command<br>**AT+QILOCIP** | Response<br>If execution successful, respond:<br>**<IP address>**<br>Otherwise respond:<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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### Parameter

| | |
|---|---|
| **<IP address>** | A string parameter which indicates the IP address assigned from GPRS or CSD network |

**NOTES**

1. 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 IP STATUS after the command.
2. CSD function is not supported at present.

## 11.9. AT+QISTAT Query Current Connection Status

| **AT+QISTAT Query Current Connection Status** | |
|---|---|
| Test Command<br>**AT+QISTAT=?** | Response<br>**OK** |
| Execution Command<br>**AT+QISTAT** | Response<br>When **AT+QIMUX=0**, respond:<br>**OK**<br><br>**STATE: <state>**<br>When **AT+QIMUX=1**, respond:<br>List of<br>**(+QISTAT: <index>,<mode>,<addr>,<port><CR><LF>)**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<state>** | A string parameter to indicate the status of the connection | |
| | "IP INITIAL" | The TCPIP stack is in idle state |
| | "IP START" | The TCPIP stack has been registered |
| | "IP CONFIG" | It has been start-up to activate GPRS/CSD context |
| | "IP IND" | It is activating GPRS/CSD context |
| | "IP GPRSACT" | GPRS/CSD context has been activated successfully |

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| | |
|---|---|
| "IP STATUS" | The local IP address has been gotten by the command **AT+QILOCIP** |
| "TCP CONNECTING" | It is trying to establish a TCP connection |
| "UDP CONNECTING" | It is trying to establish a UDP connection |
| "IP CLOSE" | The TCP/UDP connection has been closed |
| "CONNECT OK" | The TCP/UDP connection has been established successfully |
| "PDP DEACT" | GPRS/CSD context was deactivated because of unknown reason |

If **ATV** was set to 0 by the command **ATV0**, the TCPIP stack gives the following numeric to indicate the former status

| | |
|---|---|
| 0 | "IP INITIAL" |
| 1 | "IP START" |
| 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<br>"TCP" TCP connection<br>"UDP" UDP connection |
| **<addr>** | The IP address of the remote |
| **<port>** | The port of the remote |

**NOTES**

1. Display former style of response when **QIMUX=0** and the later style of response when **QIMUX=1**.
2. CSD context is not supported at present.

## 11.10. AT+QISTATE Query Connection Status of the Current Access

| **AT+QISTATE Query Connection Status of the Current Access** | |
|---|---|
| Test Command<br>**AT+QISTATE=?** | Response<br>**OK** |
| Execution Command<br>**AT+QISTATE** | Response<br>When **AT+QIMUX=0**, respond: |

| | |
|---|---|
| | **OK**<br><br>**STATE: <state>**<br>When **AT+QIMUX=1**, respond:<br>**OK**<br><br>**STATE: <state>**<br><br>**+QISTATE: <index>,<mode>,<addr>,<port>,<socketstate>**<br><br>**OK**<br>Otherwise respond:<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

## Parameter

| | |
|---|---|
| **<state>** | A string parameter to indicate the status of the connection<br><br>When **AT+QIMUX=0**:<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 GPRS/CSD context.<br>"IP IND" It is activating GPRS/CSD context.<br>"IP GPRSACT" GPRS/CSD context has been activated successfully.<br>"IP STATUS" The local IP address has been gotten by the command **AT+QILOCIP**.<br>"TCP CONNECTING" It is trying to establish a TCP connection.<br>"UDP CONNECTING" It is trying to establish a UDP connection.<br>"IP CLOSE" The TCP/UDP connection has been closed.<br>"CONNECT OK" The TCP/UDP connection has been established successfully.<br>"PDP DEACT" GPRS/CSD context was deactivated because of unknown reason.<br>When **AT+QIMUX=1**:<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 GPRS/CSD context.<br>"IP IND" It is activating GPRS/CSD context.<br>"IP GPRSACT" GPRS/CSD context has been activated successfully.<br>"IP STATUS" The local IP address has been gotten by the command |

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| | | |
|---|---|---|
| | | **AT+QILOCIP**. |
| | "IP PROCESSING" | Data phase. Processing the existing connection now. |
| | "PDP DEACT" | GPRS/CSD context was deactivated because of unknown reason. |
| **<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 | |
| **<socketstate>** | A string parameter to indicate the status of the access connection, including INITIAL,CONNECTED. | |

## 11.11. AT+QISSTAT Query the Current Server Status

| **AT+QISSTAT Query the Current Server Status** | |
|---|---|
| Test Command<br>**AT+QISSTAT=?** | Response<br>**OK** |
| Execution Command<br>**AT+QISSTAT** | Response<br>When **AT+QIMUX=0**, respond:<br>**OK**<br><br>**S: <ServerState>**<br>When **AT+QIMUX=1**, respond:<br>**OK**<br><br>**S: <ServerState>**<br><br>**C: <index>,<mode>,<addr>,<port>**<br>Otherwise respond:<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<ServerState>** | A string parameter to indicate the status of the connection | |
| | "INITIAL" | The TCPIP stack is in idle state |
| | "OPENNING" | The TCPIP stack has been registered |

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| | |
|---|---|
| | "LISTENING" Listening to server port<br>"CLOSING" Closing connection now |
| **<index>** | The index of the connection, the range is (0-4) |
| **<mode>** | The type of the connection<br>"TCP" TCP connection<br>"UDP" UDP connection |
| **<addr>** | The IP address of the remote |
| **<port>** | The port of the remote |

## 11.12. 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** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<pri_dns>** | A string parameter which indicates the IP address of the primary domain name server |
| **<sec_dns>** | A string parameter which indicates the IP address of the secondary domain name server |

**NOTES**

1. 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.
2. CSD function and configuration are not supported currently.

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## 11.13. 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=?** | Response<br>**OK** |
| Write Command<br>**AT+QIDNSGIP=<domain name>** | Response<br>**OK**<br>**ERROR**<br>If succeeds, return:<br>**<IP address>**<br>If fails, return:<br>**ERROR: <err>**<br>**STATE: <state>** |
| Maximum Response Time | 14s, determined by network. |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<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<br>1 DNS not Authorized<br>2 Invalid parameter<br>3 Network error<br>4 No server<br>5 Time out<br>6 No configuration<br>7 No memory<br>8 Unknown error |
| **<state>** | Refer to **AT+QISTAT** |

## 11.14. AT+QIDNSIP Connect with IP Address or Domain Name Server

| AT+QIDNSIP Connect with IP Address or Domain Name Server | |
|---|---|
| Test Command<br>**AT+QIDNSIP=?** | Response<br>**+QIDNSIP:** (list of supported **<mode>**s)<br><br>**OK** |

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| | |
|---|---|
| Read Command<br>**AT+QIDNSIP?** | Response<br>**+QIDNSIP: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QIDNSIP=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<mode>** | A numeric parameter indicates which kind of server format is used when establishing the connection: IP address server or domain name server<br>0 The address of the remote server is a dotted decimal IP address<br>1 The address of the remote server is a domain name |

## 11.15. AT+QIHEAD Add an IP Header When Receiving Data

| **AT+QIHEAD Add an IP Header When Receiving Data** | |
|---|---|
| Test Command<br>**AT+QIHEAD=?** | Response<br>**+QIHEAD:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QIHEAD?** | Response<br>**+QIHEAD: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QIHEAD=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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### Parameter

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

## 11.16. AT+QIAUTOS Set Auto Sending Timer

| **AT+QIAUTOS Set Auto Sending Timer** | |
|---|---|
| Test Command<br>**AT+QIAUTOS=?** | Response<br>**+QIAUTOS:** (list of supported **<mode>**s), (list of supported **<time>**s)<br><br>**OK** |
| Read Command<br>**AT+QIAUTOS?** | Response<br>**+QIAUTOS: <mode>,<time>**<br><br>**OK** |
| Write Command<br>**AT+QIAUTOS=<mode>[,<time>]** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<mode>** | A numeric parameter which indicates whether or not to set timer when sending data<br>0 DO Not set timer for data sending<br>1 Set timer for data sending |
| **<time>** | A numeric parameter which indicates a time in seconds<br>After the time expires since **AT+QISEND**, the input data will be sent automatically |

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## 11.17. AT+QIPROMPT Set Prompt of '>' When Sending Data

| AT+QIPROMPT Set Prompt of '>' When Sending Data | |
|---|---|
| Test Command<br>**AT+QIPROMPT=?** | Response<br>**+QIPROMPT:** (list of supported **<send prompt>**s)<br><br>**OK** |
| Read Command<br>**AT+QIPROMPT?** | Response<br>**+QIPROMPT: <send prompt>**<br><br>**OK** |
| Write Command<br>**AT+QIPROMPT=<send prompt>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<send prompt>** | A numeric parameter which indicates whether or not to echo prompt ">" after issuing **AT+QISEND** Command<br>0 No prompt ">" and show "SEND OK" when sending succeeds<br>1 Echo prompt ">" and show "SEND OK" when sending succeeds<br>2 No prompt and not show "SEND OK" when sending succeeds<br>3 Echo prompt ">" and show "socket ID" "SEND OK" when sending succeeds |

## 11.18. AT+QISERVER Configured as Server

| AT+QISERVER Configured as Server | |
|---|---|
| Test Command<br>**AT+QISERVER=?** | Response<br>**OK** |
| Read Command<br>**AT+QISERVER?** | Response<br>**+QISERVER**: **<mode>, <num>**<br><br>**OK** |
| Execution Command<br>**AT+QISERVER** | Response<br>**OK** |

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| | |
|---|---|
| | **ERROR**<br><br>If configured as server successfully, return:<br>**SERVER OK**<br><br>If configured as server unsuccessfully, return:<br>**CONNECT FAIL** |
| Write Command<br>**AT+QISERVER=<type>[,<max>]** | Response<br>**OK**<br>**ERROR**<br><br>If configured as server successfully, return:<br>**SERVER OK**<br><br>If configured as server unsuccessfully, return:<br>**CONNECT FAIL** |
| Maximum Response Time | 150s, determined by network. |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | NOT configured as server |
| | 1 | Configured as server |
| **<num>** | The number of clients that have been connected in. The range is 0~5 | |
| **<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 | |

**NOTES**

1. Execution command configures the module as a TCP server and the maximum allowed client is 1.
2. The parameter **<max>** is excluded when **QIMUX** is 0.

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## 11.19. AT+QICSGP Select CSD or GPRS as the Bearer

| AT+QICSGP Select CSD or GPRS as the Bearer | |
|---|---|
| Test Command<br>**AT+QICSGP=?** | Response<br>**+QICSGP: 0-CSD,DIAL NUMBER,USER NAME,PASSWORD,RATE(0-3)**<br>**+QICSGP: 1-GPRS,APN,USER NAME,PASSWORD**<br><br>**OK** |
| Read Command<br>**AT+QICSGP?** | Response<br>**+QICSGP: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QICSGP=<mode>[,(<apn>,<user name>,<password>)/(<dial number>,<user name>,<password>,<rate>)]** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

**<mode>** A numeric parameter which indicates the bearer type
- 0 Set CSD as the bearer for TCPIP connection
- 1 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
- 2 9600
- 3 14400

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**NOTE**

CSD configuration is not supported at present.

## 11.20. AT+QISRVC Choose Connection

| AT+QISRVC Choose Connection | |
|---|---|
| Test Command<br>**AT+QISRVC=?** | Response<br>**+QISRVC**: (list of supported **<connection>**s)<br><br>**OK** |
| Read Command<br>**AT+QISRVC?** | Response<br>**+QISRVC: <connection>**<br><br>**OK** |
| Write Command<br>**AT+QISRVC=<connection>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<connection>** | A numeric parameter which indicates the chosen connection<br>1 Choose the connection in which MS used as a client<br>2 Choose the connection in which MS used as a server |

**NOTE**

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.

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## 11.21. AT+QISHOWRA Set Whether or Not to Display the Address of Sender

| AT+QISHOWRA Set Whether or Not to Display the Address of Sender | |
|---|---|
| Test Command<br>**AT+QISHOWRA=?** | Response<br>**+QISHOWRA:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QISHOWRA?** | Response<br>**+QISHOWRA**: **<mode>**<br><br>**OK** |
| Write Command<br>**AT+QISHOWRA=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

**Parameter**

| | |
|---|---|
| **<mode>** | A numeric parameter which indicates whether or not to show the address (including IP address in dotted decimal style of the remote end) when receiving data.<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>** |

## 11.22. AT+QISCON Save TCPIP Application Context

| AT+QISCON Save TCPIP Application Context | |
|---|---|
| Test Command<br>**AT+QISCON=?** | Response<br>**OK** |
| Read Command<br>**AT+QISCON?** | Response<br>TA returns TCPIP application context, which consists of the following AT command parameters.<br>**SHOW APPTCPIP CONTEXT**<br>**+QIDNSIP:<mode>**<br>**+QIPROMPT:<sendprompt>** |

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| | |
|---|---|
| | **+QIHEAD:<iphead>**<br>**+QISHOWRA:<srip>**<br>**+QICSGP:<csgp>**<br>**Gprs Config APN:<apn>**<br>**Gprs Config UserId:<gusr>**<br>**Gprs Config Password:<gpwd>**<br>**Gprs Config inactivityTimeout:<timeout>**<br>**CSD Dial Number:<cnum>**<br>**CSD Config UserId:<cusr>**<br>**CSD Config Password:<cpwd>**<br>**CSD Config rate:<crate>**<br>**App Tcpip Mode:<mode>**<br>**In Transparent Transfer Mode**<br>**Number of Retry:<nmRetry>**<br>**Wait Time:<waitTm>**<br>**Send Size:<sendSz>**<br>**esc:<esc>**<br><br>**OK** |
| Execution Command<br>**AT+QISCON** | Response<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

## Parameter

| | |
|---|---|
| **<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 configurations are only for transparent transfer mode.

| | |
|---|---|
| **<nmRetry>** | See **AT+QITCFG** |

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| | |
|---|---|
| **<waitTm>** | See **AT+QITCFG** |
| **<sendSz>** | See **AT+QITCFG** |
| **<esc>** | See **AT+QITCFG** |

**NOTES**

1. The execution command makes TA save TCPIP Application Context which consists of the following AT Command parameters; and when the system is rebooted, these parameters will be loaded automatically:
   **AT+QIDNSIP**, **AT+QIPROMPT**, **AT+QIHEAD**, **AT+QISHOWRA**, **AT+QICSGP**, **AT+QITCFG**.
2. The execution command only save the corresponding parameters of the foreground context (refer to **AT+QIFGCNT**).
3. CSD configuration is not supported at present.

## 11.23. AT+QIMODE Select TCPIP Transfer Mode

| **AT+QIMODE Select TCPIP Transfer Mode** | |
|---|---|
| Test Command<br>**AT+QIMODE=?** | Response<br>**+QIMODE:** (list of supported **<mode>**s),<br><br>**OK** |
| Read Command<br>**AT+QIMODE?** | Response<br>**+QIMODE: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QIMODE=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### 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. |

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## 11.24. AT+QITCFG Configure Transparent Transfer Mode

| AT+QITCFG Configure Transparent Transfer Mode | |
|---|---|
| Test Command<br>**AT+QITCFG=?** | Response<br>**+QITCFG:** (list of supported **<NmRetry>**s),(list of supported **<WaitTm>**s),(list of supported **<SendSz>**s),(list of supported **<esc>**s)<br><br>**OK** |
| Read Command<br>**AT+QITCFG?** | Response<br>**+QITCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>**<br><br>**OK** |
| Write Command<br>**AT+QITCFG=<NmRetry>,<WaitTm>,<SendSz>,<esc>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<NmRetry>** | Number of times to retry to send an IP packet |
| **<WaitTm>** | Number of 100ms intervals to wait for serial input before sending the packet |
| **<SendSz>** | Size in bytes of data block to be received from serial port before sending |
| **<esc>** | Whether to turn on the escape sequence or not; default is TRUE |

**NOTES**

1. **<WaitTm>** and **<SendSz>** are two conditions to send data packet.
2. 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.
3. 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.
4. This command is invalid when **QIMUX** is 1.

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## 11.25. AT+QISHOWPT Control Whether or Not to Show the Protocol Type

| AT+QISHOWPT Control Whether or Not to Show the Protocol Type | |
|---|---|
| Test Command<br>**AT+QISHOWPT=?** | Response<br>**+QISHOWPT:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QISHOWPT?** | Response<br>**+QISHOWPT: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QISHOWPT=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | 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): |

**NOTE**

This command is invalid if **QIHEAD** was set as 0 by the command **AT+QIHEAD=0**.

## 11.26. AT+QIMUX Control Whether or Not to Enable Multiple TCPIP Sessions

| AT+QIMUX Control Whether or Not to Enable Multiple TCPIP Sessions | |
|---|---|
| Test Command<br>**AT+QIMUX=?** | Response<br>**+QIMUX:** (list of supported **<mode>**s) |

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| | |
|---|---|
| | **OK** |
| Read Command<br>**AT+QIMUX?** | Response<br>**+QIMUX: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QIMUX=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

**Parameter**

| | | |
|---|---|---|
| **<mode>** | 0 | DO NOT enable multiple TCPIP sessions at the same time |
| | 1 | Enable multiple TCPIP sessions at the same time |

## 11.27. AT+QISHOWLA Control Whether or Not to Display Local IP Address

| **AT+QISHOWLA Control Whether or Not to Display Local IP Address** | |
|---|---|
| Test Command<br>**AT+QISHOWLA=?** | Response<br>**+QISHOWLA:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QISHOWLA?** | Response<br>**+QISHOWLA**: **<mode>**<br><br>**OK** |
| Write Command<br>**AT+QISHOWLA=<mode>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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### Parameter

| | |
|---|---|
| **<mode>** | A numeric parameter indicates whether or not to show the destination address before receiving data.<br>0 DO NOT show the destination address<br>1 Show the destination address: **TO:<IP ADDRESS>** |

**NOTE**

Because MC60 can activate two GPRS contexts at the same time, i.e. MC60 can 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.

## 11.28. 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** |
| Read Command<br>**AT+QIFGCNT?** | Response<br>**+QIFGCNT: <id>,<channel>**<br><br>**OK** |
| Write Command<br>**AT+QIFGCNT=<id>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### 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>**<br>0 VIRTUAL_UART_1<br>1 VIRTUAL_UART_2<br>2 VIRTUAL_UART_3<br>3 VIRTUAL_UART_4<br>255 The context is not controlled by any channel |

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**NOTE**

When **CMUX** is opened, if the status of the context defined by **<id>** is not IP_INITIAL and the context is controlled by the other channel, it will return ERROR.

## 11.29. AT+QISACK Query the Data Information for Sending

| AT+QISACK Query the Data Information for Sending | |
|---|---|
| Test Command<br>**AT+QISACK=?** | Response<br>**OK** |
| Execution Command<br>**AT+QISACK** | Response<br>**+QISACK**: **<sent>, <acked>, <nAcked>**<br><br>**OK** |
| Write Command<br>**AT+QISACK=<n>** | Response<br>**+QISACK**: **<sent>, <acked>, <nAcked>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### 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 |

**NOTES**

1. Write command is invalid when **QIMUX** was set as 0 by the command **AT+QIMUX=0**.
2. 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 MC60 serves as a client. If the **QISRVC** was set as 2, this command is used to query the data information for sending during the session in which MC60 serves as a server.

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## 11.30. 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:** (list of supported **<m>**s)<br><br>**OK** |
| Read Command<br>**AT+QINDI?** | Response<br>**+QINDI**: **<m>**<br><br>**OK** |
| Write Command<br>**AT+QINDI=<m>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<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>**) have been retrieved by the command **AT+QIRD.**<br>2 Output a notification statement **"+QIRDI: <id>,<sc>,<sid>,<num>,<len>,<tlen>**" through UART. This statement will establish a buffer for each socket, the data received will be saved in the buffer until it has been retrieved by the command **AT+QIRD**, sum lengths of all the buffer is no more than 400K. |
| **<id>** | A numeric points out which context the connection for the received data is based on.<br>Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. The range is 0-1. |
| **<sc>** | A numeric points out the role of MC60 in the connection for the received data.<br>1 The module serves as the client of the connection<br>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. |
| **<num>** | The number of packets received in the buffer. |
| **<len>** | The length of the current package in the buffer. |

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| | |
|---|---|
| **<tlen>** | The sum of the length of all packages received in the buffer. |

**NOTES**

1. The length of a package can't exceed 1460 bytes. If it exceeds 1460 bytes, it may be split to two or more packages.
2. The sum of length of the lengths of all packages received can't exceed 400K bytes.

## 11.31. AT+QIRD Retrieve the Received TCP/IP Data

| **AT+QIRD Retrieve the Received TCP/IP Data** | |
|---|---|
| Test Command<br>**AT+QIRD=?** | Response<br>**+QIRD:** (list of supported **<id>**s),(list of supported **<sc>**s),(list of supported **<sid>**s),(list of supported **<len>**s)<br><br>**OK** |
| Write Command<br>**AT+QIRD=<id>,<sc>,<sid>,<len>** | Response<br>**[+QIRD: <ipAddr>:<port>,<type>,<length><CR><LF><data>]**<br>**OK**<br><br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### 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 MC60 in the connection for the received data<br>1 The module serves as the client of the connection<br>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 |

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| | |
|---|---|
| **<type>** | An alpha string without quotation marks indicates the transport protocol type<br>TCP the transport protocol is TCP<br>UDP the transport protocol is UDP |
| **<length>** | The real length of the retrieved data |
| **<data>** | The retrieved data |

**NOTES**

1. **<id>**, **<sc>** and **<sid>** are the same as the parameters in the statement "**+QIRDI: <id>,<sc>,<sid>**".
2. If it replies only OK for the write command, it means there is no received data in the buffer of the connection.

## 11.32. AT+QISDE Control Whether or Not to Echo the Data for QISEND

| **AT+QISDE Control Whether or Not to Echo the Data for QISEND** | |
|---|---|
| Test Command<br>**AT+QISDE=?** | Response<br>**+QISDE:** (list of supported **<m>**s)<br><br>**OK** |
| Read Command<br>**AT+QISDE?** | Response<br>**+QISDE**: **<m>**<br><br>**OK** |
| Write Command<br>**AT+QISDE=<m>** | Response<br>**OK**<br>**ERROR** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<m>** | A numeric indicates whether or not to echo the data for **AT+QISEND**<br>0 Do not echo the data<br>1 Echo the data |

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## 11.33. AT+QPING Ping a Remote Server

| AT+QPING Ping a Remote Server | |
|---|---|
| Test Command<br>**AT+QPING=?** | Response<br>**+QPING: "HOST"**,(list of supported **<timeout>**s),(list of supported **<pingnum>**s)<br><br>**OK** |
| Write Command<br>**AT+QPING=“<host>”[,[<timeout>][,<pingnum>]]** | Response<br>**OK**<br><br>**[+QPING: <result>[,<ipAddr>,<bytes>,<time>,<ttl>]<CR><LF> …]<CR><LF> +QPING:<finresult>[,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>]**<br><br>**ERROR** |
| Maximum Response Time | Depends on **<timeout>**. |
| Reference<br>Quectel | |

### 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 |

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| | |
|---|---|
| **<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 |

## 11.34. 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",**(list of supported **<port>**s)<br><br>**OK** |
| Read Command<br>**AT+QNTP?** | Response<br>**+QNTP: "<server>",<port>**<br><br>**OK** |
| Execution Command<br>**AT+QNTP** | Response<br>**OK**<br><br>**+QNTP: <result>** |
| Write Command<br>**AT+QNTP="<server>"[,<port>]** | Response<br>**OK**<br><br>**+QNTP: <result>**<br><br>**ERROR** |
| Maximum Response Time | 120s, determined by network. |
| Reference<br>Quectel | |

### 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<br>0 Successfully synchronize the local time<br>1 Failed to synchronize the local time because of unknown reason |

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| | |
|---|---|
| 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 |

**NOTE**

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

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# 12 Supplementary Service Commands

## 12.1. 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>**s)<br><br>**OK** |
| Write Command<br>**AT+CCFC=<reads>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,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><br>If **<mode>**<>2 and command successful:<br>**OK**<br>If **<mode>**=2 and command successful (only in connection with **<reads>** 0 –3)<br><br>For registered call forwarding numbers:<br>**+CCFC: <status>, <class1>[, <number>, <type> [,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: ....]**<br><br>**OK**<br><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><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

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| | |
|---|---|
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

## Parameter

| | | |
|---|---|---|
| **<reads>** | 0 | Unconditional |
| | 1 | Mobile busy |
| | 2 | No reply |
| | 3 | Not reachable |
| | 4 | All call forwarding (0-3) |
| | 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 |

## Example

```
AT+CCFC=0,3,"15021012496"          //Register the destination number for unconditional call
                                     forwarding (CFU)
OK
AT+CCFC=0,2                        //Query the status of CFU without specifying <class>
+CCFC: 1,1,"+8615021012496",145

+CCFC: 1,4,"+8615021012496",145
```

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```
+CCFC: 1,32,"+8615021012496",145

+CCFC: 1,16,"+8615021012496",145

OK
AT+CCFC=0,4                    //Erase the registered CFU destination number
OK
AT+CCFC=0,2                    //Query the status, no destination number
+CCFC: 0,7

OK
```

## 12.2. AT+CCUG Closed User Group Control

| AT+CCUG Closed User Group Control | |
|---|---|
| Test Command<br>**AT+CCUG=?** | Response<br>**OK** |
| Read Command<br>**AT+CCUG?** | Response<br>**+CCUG: <n>,<index>,<info>**<br><br>**OK** |
| Write Command<br>**AT+CCUG=[<n>][,<index>[,<info>]]** | Response<br>TA sets the closed user group supplementary service parameters as a default adjustment for all following calls.<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<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) |

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| | | |
|---|---|---|
| | 2 | Suppress preferential CUG |
| | 3 | Suppress OA and preferential CUG |

## 12.3. AT+CCWA Call Waiting Control

| AT+CCWA Call Waiting Control | |
|---|---|
| Test Command<br>**AT+CCWA=?** | Response<br>**+CCWA:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+CCWA?** | Response<br>**+CCWA: <n>**<br><br>**OK** |
| Write Command<br>**AT+CCWA=[<n>][,<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><br>If **<mode>**=2 and command successful:<br>**+CCWA:<status>,<class1>[<CR><LF>+CCWA:<status>,<class2>[...]]**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<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 |

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| | | |
|---|---|---|
| **<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 |

**NOTES**

1. **<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.
2. When **<mode>**=2, all active call waiting classes will be reported. In this mode the command is available by pressing any key.
3. Unsolicited result code
   When the presentation call waiting at the TA is enabled (and call waiting is enabled) and a terminating call set up 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 |

### Example

```
AT+CCWA=1,1                          //Enable presentation of an unsolicited result code
OK
ATD10086;                            //Establish a call
OK

+CCWA: "02154450293",129,1           //Indication of a call that has been waiting
```

## 12.4. AT+CHLD Call Hold and Multiparty

| **AT+CHLD Call Hold and Multiparty** | |
|---|---|
| Test Command | Response |
| **AT+CHLD=?** | **+CHLD:** (list of supported **<n>**s) |

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| | |
|---|---|
| | **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>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

## Parameter

| | | |
|---|---|---|
| **<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) |
| | 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 |
| | 1X | Terminate the specific call number X (X=1-7)( active, waiting or held) |
| | 2 | Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call |
| | 2X | Place all active calls except call X (X=1-7) on hold |
| | 3 | Add the held call to the active calls |

**NOTE**

These supplementary services are only available to the teleservice 11 (Speech: Telephony).

## Example

```
ATD10086;                          //Establish a call
OK

+CCWA: "02154450293",129,1         //Indication of a call that has been waiting
AT+CHLD=2                          //Place the active call on hold and accept the waiting call as
                                     the active call
OK
AT+CLCC
+CLCC: 1,0,1,0,0,"10086",129,""    //The first call on hold
```

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```
+CLCC: 2,1,0,0,0,"02154450293",129,""      //The second call becomes active

OK
AT+CHLD=21                                 //Place the active call except call X=1 on hold
OK
AT+CLCC
+CLCC: 1,0,0,0,0,"10086",129,""            //The first call becomes active

+CLCC: 2,1,1,0,1,"02154450293",129,""      //The second call on hold

OK
AT+CHLD=3                                  //Add a held call to the active calls in order to set up a
                                             conference (multiparty) call
OK
AT+CLCC
+CLCC: 1,0,0,0,1,"10086",129,""

+CLCC: 2,1,0,0,1,"02154450293",129,""

OK
```

## 12.5. AT+CLIP Calling Line Identification Presentation

| AT+CLIP Calling Line Identification Presentation | |
|---|---|
| Test Command<br>**AT+CLIP=?** | Response<br>**+CLIP:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+CLIP?** | Response<br>**+CLIP: <n>,<m>**<br><br>**OK** |
| 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><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

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| | |
|---|---|
| Maximum Response Time | 15s, determined by network. |
| Reference<br>GSM 07.07 | |

## Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Suppress unsolicited result codes |
| | 1 | Display unsolicited result codes |
| **<m>** | 0 | CLIP not provisioned |
| | 1 | CLIP provisioned |
| | 2 | Unknown |

**NOTE**

Unsolicited result code

When the presentation of the CLI at the TE is enabled (and calling subscriber allows), an unsolicited result code is returned after every RING (or **+CRING: <type>**) at a mobile terminating call.

**+CLIP: <number>, <type>,"",,<alphaId>,<CLI validity>**

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 ) |
| **<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 |

## Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+CLIP=1
OK

RING

+CLIP: "02151082965",129,"",,"",0
```

## 12.6. AT+QCLIP Control Whether or Not to Show the Name of Incoming Call Number

| AT+QCLIP Control Whether or Not to Show the Name of Incoming Call Number | |
|---|---|
| Test Command<br>**AT+QCLIP=?** | Response<br>**+QCLIP:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+QCLIP?** | Response<br>**+QCLIP: <n>**<br><br>**OK** |
| Write Command<br>**AT+QCLIP=<n>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<n>** | Enable or disable the function of show the name of incoming call number | |
| | 0 | Enable |
| | 1 | Disable |

**NOTE**

This AT command should be used in conjunction with **CLIP** command.

### Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+QCLIP=1
OK
AT+CLIP=1
OK
```

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**RING**

**+CLIP: "02151082965",129,"",,"QUECTEL",0**

## 12.7. AT+CLIR Calling Line Identification Restriction

| **AT+CLIR Calling Line Identification Restriction** | |
|---|---|
| Test Command<br>**AT+CLIR=?** | Response<br>**+CLIR:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+CLIR?** | Response<br>**+CLIR: <n>,<m>**<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>** |
| Maximum Response Time | 15s, determined by network |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<n>** | (Parameter sets the adjustment for outgoing calls) | |
| | 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 |

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| | |
|---|---|
| 4 | CLIR temporary mode presentation allowed |

## 12.8. AT+COLP Connected Line Identification Presentation

| AT+COLP Connected Line Identification Presentation | |
|---|---|
| Test Command<br>**AT+COLP=?** | Response<br>**+COLP:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+COLP?** | Response<br>**+COLP: <n>,<m>**<br><br>**OK** |
| 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** |
| Maximum Response Time | 15s, determined by network. |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<n>** | (Parameter sets/shows the result code presentation status in the TA) | |
| | 0 | Disable |
| | 1 | Enable |
| **<m>** | (Parameter shows the subscriber COLP service status in the network) | |
| | 0 | COLP not provisioned |
| | 1 | COLP provisioned |
| | 2 | Unknown (e.g. no network, etc.) |

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**NOTE**

Intermediate result code

When enabled (and called subscriber allows), an intermediate result code is returned before any +CR or V.25ter responses:

**+COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]]**

Parameters

| | |
|---|---|
| **<number>** | Phone number in string type, format specified by **<type>** |
| **<type>** | Type of address octet in integer format<br>129 Unknown type (IDSN format number)<br>145 International number type (ISDN format ) |
| **<subaddr>** | String type sub-address of format specified by **<satype>** |
| **<satype>** | Type of sub-address octet in integer format (refer to GSM 04.08 sub clause 10.5.4.8) |
| **<alpha>** | Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book |

### Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+COLP=1
OK
ATD02151082965;
+COLP: "02151082965",129,"",0,""

OK
```

## 12.9. AT+QCOLP Show Alpha Field in +COLP String

| **AT+QCOLP Show Alpha Field in +COLP String** | |
|---|---|
| Test Command<br>**AT+QCOLP=?** | Response<br>**+QCOLP:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QCOLP?** | Response<br>**+QCOLP: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QCOLP=<mode>** | Response<br>**OK** |

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| | |
|---|---|
| | If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | Whether or not to show alpha field in **+COLP** string | |
| | 0 | NOT show alpha field in **+COLP** string |
| | 1 | Show alpha field in **+COLP** string |

**NOTE**

This command setting only works under **AT+COLP=1**.

### Example

```
AT+CPBW=1,"02151082965",129,"QUECTEL"
OK
AT+QCOLP=1
OK
AT+COLP=1
OK
ATD02151082965;
+COLP: "02151082965",129,"",0,"QUECTEL"

OK
```

## 12.10. AT+CUSD Unstructured Supplementary Service Data

| **AT+CUSD Unstructured Supplementary Service Data** | |
|---|---|
| Test Command<br>**AT+CUSD=?** | Response<br>**+CUSD:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+CUSD?** | Response<br>**+CUSD: <n>** |

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| | |
|---|---|
| | **OK** |
| Write Command<br>**AT+CUSD=[<n>[,<str>[,<dcs>]]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 120s, determined by network. |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<n>** | A numeric parameter which indicates control of the 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) |
| **<str>** | String type USSD-string |
| **<dcs>** | Cell Broadcast Data Coding Scheme in integer format (default 0) |

### Example

```
AT+CSCS="UCS2"
OK
AT+CUSD=1,"002A0031003000300023"
+CUSD:
1,"0031002E59296C14000A0032002E65B095FB000A0033002E8BC15238000A0034002E5F6979680
00A0035002E751F6D3B000A0036002E5A314E50000A0037002E5E385DDE98CE91C7000A002A002
E900051FA000A", 72

OK
```

## 12.11. AT+CSSN Supplementary Services Notification

| **AT+CSSN Supplementary Services Notification** | |
|---|---|
| Test Command<br>**AT+CSSN=?** | Response<br>**+CSSN:** (list of supported **<n>**s), (list of supported **<m>**s)<br><br>**OK** |
| Read Command<br>**AT+CSSN?** | Response<br>**+CSSN: <n>,<m>** |

| | |
|---|---|
| | **OK** |
| Write Command<br>**AT+CSSN=[<n>[,<m>]]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

## Parameter

| | |
|---|---|
| **<n>** | A numeric parameter which indicates whether to show the **+CSSI:<code1>[,<index>]** result code presentation status after a mobile originated call setup<br>0 Disable<br>1 Enable |
| **<m>** | A numeric parameter which indicates whether to show the **+CSSU:<code2>** result code presentation status during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received<br>0 Disable<br>1 Enable |
| **<code1>** | 0 Unconditional call forwarding is active<br>1 Some of the conditional call forwarding are active<br>2 Call has been forwarded<br>3 Call is waiting<br>4 This is a CUG call (also **<index>** present)<br>5 Outgoing calls are barred<br>6 Incoming calls are barred<br>7 CLIR suppression rejected |
| **<index>** | Closed user group index |
| **<code2>** | 0 This is a forwarded call |

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# 13 Audio Commands

## 13.1. ATL Set Monitor Speaker Loudness

| ATL Set Monitor Speaker Loudness | |
|---|---|
| Execution Command<br>**ATL<value>** | Response<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<value>** | 0 | Low speaker volume |
| | 1 | Low speaker volume |
| | 2 | Medium speaker volume |
| | 3 | High speaker volume |

**NOTE**

The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.

## 13.2. ATM Set Monitor Speaker Mode

| ATM Set Monitor Speaker Mode | |
|---|---|
| Execution Command<br>**ATM<value>** | Response<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

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### Parameter

| | | |
|---|---|---|
| **<value>** | 0 | Speaker is always off |
| | 1 | Speaker is on until TA informs TE that the carrier has been detected |
| | 2 | Speaker is always on when TA is off-hook |

**NOTE**

The two commands **ATL** and **ATM** are implemented only for V.25 compatibility reasons and have no effect.

## 13.3. AT+VTD Tone Duration

| **AT+VTD Tone Duration** | |
|---|---|
| Test Command<br>**AT+VTD=?** | Response<br>**+VTD:** ( list of supported **<internalduration>**s )[,( list of supported **<duration>**s )]<br><br>**OK** |
| Read Command<br>**AT+VTD?** | Response<br>**+VTD: <internalduration>,<duration>**<br><br>**OK** |
| Write Command<br>**AT+VTD=<internalduration>[,<duration>]** | Response<br>This command refers to an integer **<internalduration>** that defines the length of tones emitted as a result of the **+VTS** command. This does not affect the D command.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<internalduration>** | 1-255 | Duration between two tones, unit is 100ms |
| **<duration>** | 0 | Do not set duration of every single tone. |
| | 1-100000 | Duration of every single tone, unit is 1ms |

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## 13.4. 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** |
| Write Command<br>**AT+VTS=<dtmf-string>** | Response<br>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.<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | Depends on the length of **<dtmf-string>**. |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<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<br>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<br>2) **{<dtmf>, <duration>}** This is interpreted as a DTMF tone whose duration is determined by **<duration>** |
| **<duration>** | Duration of the tone, unit: 100ms, range: 1-255 |

### Example

```
ATD10086;                    //Establish a call
OK
AT+VTS=1                     //Send a single DTMF tone according to the prompts of voice
OK
```

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## 13.5. 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** |
| Read Command<br>**AT+CALM?** | Response<br>**+CALM: <mode>**<br><br>**OK** |
| Write Command<br>**AT+CALM=<mode>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

| | | |
|---|---|---|
| **<mode>** | 0 | Normal mode |
| | 1 | Silent mode (all sounds from ME are prevented) |

## 13.6. 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** |
| Read Command<br>**AT+CRSL?** | Response<br>**+CRSL: <level>**<br><br>**OK** |
| Write Command<br>**AT+CRSL=<level>** | Response<br>**OK** |

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| | |
|---|---|
| | If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<level>** | Integer type value (0-100) with manufacturer specific range (smallest value represents the lowest sound level). |

## 13.7. 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** |
| Read Command<br>**AT+CLVL?** | Response<br>**+CLVL: <level>**<br><br>**OK** |
| Write Command<br>**AT+CLVL=<level>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | |
|---|---|
| **<level>** | Integer type value (0-100) with manufacturer specific range (smallest value represents the lowest sound level). Default value is 60. |

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## 13.8. AT+CMUT Mute Control

| AT+CMUT Mute Control | |
|---|---|
| Test Command<br>**AT+CMUT=?** | Response<br>**+CMUT:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+CMUT?** | Response<br>**+CMUT: <n>**<br><br>**OK** |
| Write Command<br>**AT+CMUT=<n>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 0 | Mute off |
| | 1 | Mute on |

**NOTE**

This command is to mute the uplink.

## 13.9. AT+QSIDET Change the Side Tone Gain Level

| AT+QSIDET Change the Side Tone Gain Level | |
|---|---|
| Test Command<br>**AT+QSIDET=?** | Response<br>**+QSIDET:** (list of supported **<gainlevel>**s)<br><br>**OK** |
| Read Command<br>**AT+QSIDET?** | Response<br>(1) If **AT+QAUDCH=0**: |

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| | |
|---|---|
| | **+QSIDET(NORMAL_AUDIO): <gainlevel>**<br><br>**OK**<br><br>(2) If **AT+QAUDCH=1**:<br>**+QSIDET(HEADSET_AUDIO): <gainlevel>**<br><br>**OK** |
| Write Command<br>**AT+QSIDET=<gainlevel>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

**Parameter**

| | |
|---|---|
| **<gainlevel>** | Range is 0-255. Default value is 80. |

**NOTE**

**<gainlevel>** value is related to specific channel.

## 13.10. AT+QMIC Change the Microphone Gain Level

| **AT+QMIC Change the Microphone Gain Level** | |
|---|---|
| Test Command<br>**AT+QMIC=?** | Response<br>**+QMIC:** (list of supported **<channel>**s), (list of supported **<gainlevel>**s)<br><br>**OK** |
| Read Command<br>**AT+QMIC?** | Response<br>**+QMIC:**<br>**<gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)>**<br><br>**OK** |

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| | |
|---|---|
| Write Command<br>**AT+QMIC=<channel>,<gainlevel>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<channel>** | 0 | Normal microphone |
| | 1 | Headset microphone |
| | 2 | Loudspeaker microphone |
| **<gainlevel>** | Range is 0-15. The default values are 4, 9, and 8 for each channel. | |

## 13.11. AT+QLDTMF Generate Local DTMF Tones

| **AT+QLDTMF Generate Local DTMF Tones** | |
|---|---|
| Test Command<br>**AT+QLDTMF=?** | Response<br>**+QLDTMF:** (list of supported **<durations>**s ) ,(list of supported **<DTMF string>**s)<br><br>**OK** |
| Write Command<br>**AT+QLDTMF=<durations>[,<DTMF string>]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Execution Command<br>**AT+QLDTMF** | Response<br>**OK** |
| Maximum Response Time | Depends on the length of **<DTMF string>**. |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<durations>** | A numeric parameter (1-1000) which indicates the duration of all DTMF tones in **<DTMF string>** in 1/10 seconds |

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| | |
|---|---|
| **<DTMF string>** | A string parameter which has a max length of 20 DTMF characters (single ASCII chars in the set 0-9,#,*,A-D), separated by commas |

**NOTE**

Aborts any DTMF tones that are generated currently and any DTMF tones sequence.

## 13.12. AT+QAUDCH Swap the Audio Channels

| **AT+QAUDCH Swap the Audio Channels** | |
|---|---|
| Test Command<br>**AT+QAUDCH=?** | Response<br>**+QAUDCH:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+QAUDCH?** | Response<br>**+QAUDCH: <n>**<br><br>**OK** |
| Write Command<br>**AT+QAUDCH=[<n>]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Normal audio channel (default) |
| | 1 | Headset audio channel |
| | 2 | Loudspeaker audio |

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## 13.13. AT+QAUDLOOP Audio Channel Loop Back Test

| AT+QAUDLOOP Audio Channel Loop Back Test | |
|---|---|
| Test Command<br>**AT+QAUDLOOP=?** | Response<br>**+QAUDLOOP:** (list of supported **<state>**s),(list of supported **<type>**s)<br><br>**OK** |
| Write Command<br>**AT+QAUDLOOP=<state>[,<type>]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<state>** | 0 | Test is off |
| | 1 | Test is on |
| **<type>** | 0 | Normal audio channel |
| | 1 | Headset audio channel |
| | 2 | Loudspeaker audio channel |

## 13.14. AT+QLTONE Generate Local Specific Tone

| AT+QLTONE Generate Local Specific Tone | |
|---|---|
| Test Command<br>**AT+QLTONE=?** | Response<br>**+QLTONE:** (list of supported **<mode>**s), (list of supported **<frequency>**s), (list of supported **<periodOn>**s), (list of supported **<periodOff>**s), (list of supported **<duration>**s)<br><br>**OK** |
| Write Command<br>**AT+QLTONE=<mode>,<frequency>,<periodOn>,<periodOff>,<duration>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |

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| | |
|---|---|
| Maximum Response Time | Depends on the content of the play. |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<mode>** | 0 | Stop playing tone |
| | 1 | Start playing tone |
| **<frequency>** | | The frequency of tone to be generated |
| **<periodOn>** | | The period of generating tone |
| **<periodOff>** | | The period of stopping tone |
| **<duration>** | | Duration of tones in milliseconds |

**NOTE**

When playing the tone of a specified frequency, the module will continuously play for **<periodOn>**, and then stop playing for **<periodOff>** in a cycle. The total time of cycles is **<duration>**.

## 13.15. AT+QTONEP Set DTMF Output Path

| **AT+QTONEP Set DTMF Output Path** | |
|---|---|
| Test Command<br>**AT+QTONEP=?** | Response<br>**+QTONEP:** (list of supported **<outputpath>**s)<br><br>**OK** |
| Read Command<br>**AT+QTONEP?** | Response<br>**+QTONEP: <outputpath>**<br><br>**OK** |
| Write Command<br>**AT+QTONEP=<outputpath>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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### Parameter

| | | |
|---|---|---|
| **<outputpath>** | Output path | |
| | 0 | Output DTMF or tone from Normal speaker |
| | 1 | Output DTMF or tone from Headset speaker |
| | 2 | Output DTMF or tone from Loud speaker |
| | 3 | Auto |

**NOTE**

Set **AT+QTONEP=3**, output DTMF or tone from default speak path. For more details, consult **AT+QAUDCH**.

## 13.16. AT+QTDMOD Set Tone Detection Mode

| **AT+QTDMOD Set Tone Detection Mode** | |
|---|---|
| Test Command<br>**AT+QTDMOD=?** | Response<br>**+QTDMOD:** (list of supported **<operatefuntion>**s),(list of supported **<funtionstatus>**s)<br><br>**OK** |
| Read Command<br>**AT+QTDMOD?** | Response<br>**+QTDMOD: <operatefuntion>,<funtionstatus>**<br><br>**OK** |
| Write Command<br>**AT+QTDMOD=<operatefuntion>,<funtionstatus>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<operatefuntion>** | Operate function | |
| | 1 | Set detection range |
| | 2 | Set detection mode |
| **<funtionstatus>** | Function status | |

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| | |
|---|---|
| 0 | When set **<operatefuntion>**=1, detect all DTMF, including 1400Hz and 2300Hz handshake signal. When set **<operatefuntion>**=2, detect DTMF tone by normal arithmetic |
| 1 | When set **<operatefuntion>**=1, only detect 1400Hz and 2300Hz handshake signal by using optimal arithmetic. When set **<operatefuntion>**=2, detect long continuous DTMF tone by using optimal arithmetic |
| 2 | When set **<operatefuntion>**=1, not detected 1400Hz and 2300Hz handshake signal. |

**NOTES**

1. Set **AT+QTDMOD=1,0**, detect all DTMF, including 1400Hz and 2300Hz handshake signal.
2. Set **AT+QTDMOD=1,1**, only detect 1400Hz and 2300Hz handshake signal by using optimal arithmetic.
3. Set **AT+QTDMOD=1,2**, detect all DTMF, not including 1400Hz and 2300Hz handshake signal.
4. Set **AT+QTDMOD=2,0**, detect DTMF tone by using normal arithmetic.
5. Set **AT+QTDMOD=2,1**, detect long continuous DTMF tone by using optimal arithmetic.
6. Consult **AT+QTONEDET**.

## 13.17. AT+QTONEDET Detect DTMF

| **AT+QTONEDET Detect DTMF** | |
|---|---|
| Test Command<br>**AT+QTONEDET=?** | Response<br>**+QTONEDET:** (list of supported **<mode>**s)<br><br>**OK** |
| Read Command<br>**AT+QTONEDET?** | Response<br>**+QTONEDET: <mode>**<br><br>**OK** |
| Write Command<br>**AT+QTONEDET=<mode>[,<operate >][,<prefixpause>][,<lowthreshold>][,<highthreshold>]** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>**<br><br>Open after successful DTMF tone is detected, report:<br>**+QTONEDET: <dtmfcode>[,< persistencetime>]** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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## Parameter

| | | |
|---|---|---|
| **<mode>** | Mode function | |
| | 0 | Close tone detection |
| | 1 | Open tone detection |
| | 2 | Configure 1400Hz or 2300Hz detection threshold, duration of which is 100ms |
| | 3 | Configure 1400Hz and 2300Hz 400ms detection threshold |
| | 4 | Configure DTMF detection threshold |
| | 5 | Open debug |
| **<operate>** | Operate value | |
| | When **<mode>**=2, **<operate>** set as follows | |
| | 0 | Query threshold values; these values are 1400Hz and 2300Hz detection threshold, each duration of which is 100ms |
| | 1 | Set threshold values; these values are 1400Hz and 2300Hz 100ms detection threshold |
| | When **<mode>**=3, **<operate>** set as follows | |
| | 0 | Query threshold values; these values are 1400Hz and 2300Hz 400ms detect threshold |
| | 1 | Set threshold values; these values are 1400Hz and 2300Hz 400ms detect threshold. |
| | When **<mode>**=4, **<operate>** set as follows | |
| | 0 | Query threshold values; these values are detection threshold |
| | 1 | Set threshold values; these values are DTMF detection threshold |
| | When **<mode>**=5, **<param1>** set as follows | |
| | 0 | Working status, default value, report **+QTONEDET: x,x,** please refer to Note3 |
| | 1 | Debug status, only report **+QTONEDTD:x,x,…** debug information (refer to Note 2) |
| | 2 | Debug status and working status, report **+QTONEDTD: x,x,…** debug information (refer to Note 2) and **+QTONEDET:x,x,** please refer to Note 4 |
| **<prefixpause>** | Prefix pause number | |
| **<lowthreshold>** | Low threshold value | |
| **<highthreshold>** | High threshold value | |
| **<dtmfcode>** | DTMF tone code corresponding ASSCII | |
| | 48 | DTMF 0 |
| | 49 | DTMF 1 |
| | 50 | DTMF 2 |
| | 51 | DTMF 3 |
| | 52 | DTMF 4 |
| | 53 | DTMF 5 |
| | 54 | DTMF 6 |
| | 55 | DTMF 7 |
| | 56 | DTMF 8 |
| | 57 | DTMF 9 |
| | 65 | DTMF A |

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| | | |
|---|---|---|
| | 66 | DTMF B |
| | 67 | DTMF C |
| | 68 | DTMF D |
| | 42 | DTMF * |
| | 35 | DTMF # |
| | 69 | 1400Hz frequency |
| | 70 | 2300Hz frequency |
| **<persistencetime>** | | |
| | 100 | 100ms of the tone is detected, only 1400Hz and 2300 Hz |
| | 400 | 400ms of the tone is detected, only 1400Hz and 2300 Hz |

**NOTES**

1. Available during voice call.
2. If the duration of DTMF tone is within the value range of low and high threshold value, it is effective. Unit is 20ms.
3. When in debug mode, report **+QTONEDTD: <dtmfcode>,<weak>,,<pause_f7>,<pause_dtmf>,<pause_unkown>,<framecnt>**.
4. When report as follows:
   **+QTONEDET: 50** Detected DTMF 2
   **+QTONEDET: 69,100** Detected 100ms of 1400Hz
   **+QTONEDET: 70,100** Detected 100ms of 2300Hz
   **+QTONEDET: 69,400** Detected 400ms of 1400Hz
   **+QTONEDET: 70,400** Detected 400ms of 2300Hz
5. Consult **AT+QTDMOD**.

## 13.18. AT+QWDTMF Play DTMF Tone During the Call

| **AT+QWDTMF Play DTMF Tone During the Call** | |
|---|---|
| Test Command<br>**AT+QWDTMF=?** | Response<br>**+QWDTMF:** (list of supported **<ul_volume>**s),(list of supported**<dl_volume>**s),(**"<dtmfcode>,<continuancetime>,<mutetime>"**),(list of supported **<channel>**s),(list of supported **<mode>**s)<br><br>**OK** |
| Write Command<br>**AT+QWDTMF=<ul_volume>,<dl_volume>,("<dtmfcode>,<continuancetime>,<mutetime>")[,<channel>][,<mode>]** | Response<br>If success is related to ME functionality:<br>**+QWDTMF: 5**<br><br>**OK** |

| | |
|---|---|
| | If fail is related to ME functionality:<br>**+QWDTMF: <playcode>**<br><br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | Depends on the content of the play. |
| Reference<br>Quectel | |

## Parameter

| | | |
|---|---|---|
| **<ul_volume>** | 0-7, uplink channel of the volume | |
| **<dl_volume>** | 0-7, downlink channel of the volume, recommended to be set as 0 | |
| **<dtmfcode>** | The DTMF tone strings | |
| | '0' | DTMF 0 |
| | '1' | DTMF 1 |
| | '2' | DTMF 2 |
| | '3' | DTMF 3 |
| | '4' | DTMF 4 |
| | '5' | DTMF 5 |
| | '6' | DTMF 6 |
| | '7' | DTMF 7 |
| | '8' | DTMF 8 |
| | '9' | DTMF 9 |
| | 'A' | DTMF A |
| | 'B' | DTMF B |
| | 'C' | DTMF C |
| | 'D' | DTMF D |
| | '*' | DTMF * |
| | '#' | DTMF # |
| | ‘E’ | Frequency of 1400Hz |
| | ‘F’ | Frequency of 2300Hz |
| | ‘G’ | Frequency of 1KHz |
| **<continuancetime>** | Duration of each DTMF tone, unit is ms | |
| **<mutetime>** | Mute time, unit is ms | |
| **<channel>** | 0 | Normal audio channel |
| | 1 | Headset audio channel |
| | 2 | Loudspeaker audio |
| **<mode>** | 0 | Algorithm 1 (Default) |
| | 1 | Algorithm 2 |

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| | |
|---|---|
| **<playcode>** | Indicate status of sending DTMF<br>If **<playcode>** is 5, it means sending DTMF successfully<br>If **<playcode>** is not 5, it means sending DTMF unsuccessfully |

**NOTES**

1. **AT+QWDTMF=7,0,"0A5,50,50,1,55,50,23,100,50"**
   Send DTMF '0' for 50ms, mute 50ms; send DTMF 'A' for 50ms, mute 50ms; send DTMF '5' for 50ms, mute 50ms; send DTMF '1' for 55ms, mute 50ms; send DTMF '2' for 100ms, mute 50ms; send DTMF '3' for 100ms, mute 50ms.
2. **<channel>** is available for non-call.

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# 14 Hardware Related Commands

## 14.1. AT+CCLK Clock

| AT+CCLK Clock | |
|---|---|
| Test Command<br>**AT+CCLK=?** | Response<br>**OK** |
| Read Command<br>**AT+CCLK?** | Response<br>**+CCLK: <time>**<br><br>**OK** |
| Write Command<br>**AT+CCLK=<time>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### 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 -47...+48). E.g. May 6th, 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08" |

### Example

```
AT+CCLK?                          //Query the local time
+CCLK: "08/01/04, 00:19:43+00"

OK
```

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## 14.2. AT+QALARM Set Alarm

| AT+QALARM Set Alarm | |
|---|---|
| Test Command<br>**AT+QALARM=?** | Response<br>**+QALARM:** (list of supported **<state>**s),**<time>**,(list of supported **<repeat>**s),(list of supported **<power>**s)<br><br>**OK** |
| Write Command<br>**AT+QALARM=<state>,<time>,<repeat>,<power>** | Response<br>**OK**<br>**ERROR**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | |
|---|---|
| **<state>** | An integer parameter which indicates whether or not to enable alarm<br>0 Clear alarm<br>1 Set alarm |
| **<time>** | A string parameter which indicates the time when an alarm arises. The format is "yy/MM/dd,hh:mm:ss±zz" where characters indicate the last two digits of year, month, day, hour, minute, second and time zone. The time zone is expressed in quarters of an hour between the local time and GMT, ranging from -47 to +48 |
| **<repeat>** | An integer parameter which indicates the repeat mode<br>0 None<br>1 Daily<br>2 Weekly<br>3 Monthly |
| **<power>** | An integer parameter which indicates the method of controlling power when alarm arises<br>0 None. Only send "ALARM RING" to serial port<br>1 Alarm power off. Send "ALARM RING" to serial port and power off in 5 seconds<br>2 Alarm power on. Send "ALARM MODE" to serial port and enter into alarm mode |

**NOTE**

In alarm mode, protocol stack and SIM protocol are closed, only a few AT commands can be executed, and system will be powered down after 90 seconds, if neither power key is pressed nor functionality is changed to full functionality. If power key is pressed, system will be powered down immediately.

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## 14.3. 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** |
| Execution Command<br>**AT+CBC** | Response<br>**+CBC: <bcs>, <bcl>,<voltage>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>GSM 07.07 | |

### Parameter

| | | |
|---|---|---|
| **<bcs>** | Battery charge status | |
| | 0 | ME is not charging |
| | 1 | ME is charging |
| | 2 | Charging has finished |
| **<bcl>** | Battery charge level | |
| | 0...100 | Battery has 0-100 percent of capacity remaining vent |
| **<voltage>** | Battery voltage (mV) | |

**NOTE**

As MC60 doesn't support battery charge, **<bcs>** and **<bcl>** are invalid while the **<voltage>** still represents the correct voltage of VBATT.

## 14.4. AT+QADC Read ADC

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

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| | |
|---|---|
| | **OK** |
| Execution Command<br>**AT+QADC?** | Response<br>**+QADC: <status>,<value>**<br><br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<status>** | Status | |
| | 0 | Fail |
| | 2 | Success |
| **<value>** | 0-2800 | Voltage |

## 14.5. AT+QSCLK Configure Slow Clock

| **AT+QSCLK Configure Slow Clock** | |
|---|---|
| Test Command<br>**AT+QSCLK=?** | Response<br>**+QSCLK:** (list of supported **<n>**s)<br><br>**OK** |
| Read Command<br>**AT+QSCLK?** | Response<br>**+QSCLK: <n>**<br><br>**OK** |
| Write Command<br>**AT+QSCLK=<n>** | Response<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<n>** | 0 | Disable slow clock |
| | 1 | Enable slow clock, and it is controlled by DTR |
| | 2 | When there is no data on serial port in 5 seconds, module will enter into sleep |

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| | |
|---|---|
| | mode. Otherwise, it will exit from sleep mode. |

**NOTE**

In mode 2, the first UART data that the module received in sleep mode will be discarded as it is used to wake up the module. It's suggested to send an extra AT command to wake up the module first, and then continue to send other commands.

## 14.6. AT+QLEDMODE Configure the Network Indication LED Patterns

| **AT+QLEDMODE Configure the Network Indication LED Patterns** | |
|---|---|
| Test Command<br>**AT+QLEDMODE=?** | Response<br>**+QLEDMODE:** (list of supported **<ledmode>**s)<br><br>**OK** |
| Read Command<br>**AT+QLEDMODE?** | Response<br>**+QLEDMODE: <ledmode>**<br><br>**OK** |
| Write Command<br>**AT+QLEDMODE=<ledmode>** | Response<br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

### Parameter

| | | |
|---|---|---|
| **<ledmode>** | 0 | Network Indication LED flashes rapidly when a call is ringing |
| | 1 | No effect on the Network Indication LED when a call is ringing |
| | 2 | No effect on the Network Indication LED when a call is ringing, and RI will not change when URC reported until the ringing ends |

**NOTE**

Please restart the module after the command is set.

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## 14.7. AT+QVBATT Configure the Threshold of Voltage

| AT+QVBATT Configure the Threshold of Voltage | |
|---|---|
| Test Command<br>**AT+QVBATT=?** | Response<br>**+QVBATT: 0,(3451-3600),(0,1)**<br>**+QVBATT: 1,(3100-3450),(0,1)**<br>**+QVBATT: 2,(4300-4550),(0,1)**<br>**+QVBATT: 3,(4551-4730),(0,1)**<br>**OK** |
| Read Command<br>**AT+QVBATT?** | Response<br>**+QVBATT: 0,<threshold>,<state>**<br>**+QVBATT: 1,<threshold>,<state>**<br>**+QVBATT: 2,<threshold>,<state>**<br>**+QVBATT: 3,<threshold>,<state>**<br><br>**OK** |
| Write Command<br>**AT+QVBATT=<threshold_type>[,<threshold>[,<state>]]** | Response<br>If format is right, response<br>**OK**<br><br>Else if **<threshold>** is omitted and **<threshold_type>** is legal, this command is used to query the value of the corresponding parameter, and response<br>**+QVBATT: <threshold_type>,<threshold>,<state>**<br><br>**OK**<br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel<br>Quectel | |

### Parameter

| | |
|---|---|
| **<threshold_type>** | Type of configuring voltage threshold.<br>0 The threshold of low voltage warning<br>1 The threshold of low voltage power down<br>2 The threshold of high voltage warning<br>3 The threshold of high voltage power down |
| **<threshold>** | Voltage threshold. Unit: mV |
| **<state>** | The corresponding function of **<threshold_type>** parameter is enabled/disabled. |

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| | |
|---|---|
| | The default low voltage warning and low voltage power down function is enabled.<br>The default high voltage warning and high voltage power down function is disabled<br>0 The function is disabled<br>1 The function is enabled |

**NOTES**

1. When the battery voltage reaches the setting threshold, reported the URC as follows:
   UNDER_VOLTAGE WARNING
   UNDER_VOLTAGE POWER DOWN
   OVER_VOLTAGE WARNING
   OVER_VOLTAGE POWER DOWN
2. This command can be saved by **AT&W**.

### Example

```
AT+QVBATT=?                          //Test command, query threshold setting range
+QVBATT: 0,(3451-3600),(0,1)
+QVBATT: 1,(3100-3450),(0,1)
+QVBATT: 2,(4300-4550),(0,1)
+QVBATT: 3,(4551-4730),(0,1)

OK
AT+QVBATT?                           //Read command
+QVBATT: 0,3500,1
+QVBATT: 1,3100,1
+QVBATT: 2,4500,0
+QVBATT: 3,4600,0

OK
AT+QVBATT=0,3490                     //Set the low voltagel warning voltage as 3490mV
OK
AT+QVBATT=0                          //Query the low voltage warning threshold and state
+QVBATT: 0,3490,1                    //0 is the function type of the low voltage warning; 3490 is
                                       the threshold of the low voltage warning; 1 means that the
                                       function of the low voltage power warning is enabled.

OK
AT+QVBATT=1,3300,0                   //The functon of the low voltagel power off is disabled.
OK
AT+QVBATT=1                          //Query the threshold of the low voltage power off and the
                                       state
+QVBATT: 1,3300,0                     //1 means the function type of the low voltage power off;
                                       3300 is the threshold of the low voltage power off; 0 means
```

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| | |
|---|---|
| | that the function of low voltage power off is disabled. |
| **OK** | |

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# 15 Others Commands

## 15.1. A/ Re-issue the Last Command Given

| A/ Re-issue the Last Command Given | |
|---|---|
| Execution Command<br>**A/** | Response<br>Re-issue the previous command |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**NOTE**

This command does not work when the serial multiplexer is active. It does not have to end with the terminating character.

**Example**

```
AT
OK
A/                                  //Re-issue the previous command
OK
```

## 15.2. ATE Set Command Echo Mode

| ATE Set Command Echo Mode | |
|---|---|
| Execution Command<br>**ATE[<value>]** | Response<br>This setting determines whether or not the TA echoes characters received from TE during command state.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference | |

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

**Parameter**

| | | |
|---|---|---|
| **<value>** | 0 | Echo mode off |
| | 1 | Echo mode on |

## 15.3. ATS3 Set Command Line Termination Character

| **ATS3 Set Command Line Termination Character** | |
|---|---|
| Read Command<br>**ATS3?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS3=<n>** | Response<br>This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 0-13-127 | Command line termination character (Default 13=**<CR>**) |

## 15.4. ATS4 Set Response Formatting Character

| **ATS4 Set Response Formatting Character** | |
|---|---|
| Read Command<br>**ATS4?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS4=<n>** | Response<br>This parameter setting determines the character generated |

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| | |
|---|---|
| | by the TA for result code and information text.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 0-10-127 | Response formatting character (Default 10=**<LF>**) |

## 15.5. ATS5 Set Command Line Editing Character

| **ATS5 Set Command Line Editing Character** | |
|---|---|
| Read Command<br>**ATS5?** | Response<br>**<n>**<br><br>**OK** |
| Write Command<br>**ATS5=<n>** | Response<br>This parameter setting determines the character recognized by TA as a request to delete the immediately preceding character from the command line.<br>**OK** |
| Maximum Response Time | 300ms |
| Reference<br>V.25ter | |

**Parameter**

| | | |
|---|---|---|
| **<n>** | 0-8-127 | Response editing character (Default 8=**<Backspace>**) |

## 15.6. AT+QRIMODE Set RI Time

| **AT+QRIMODE Set RI Time** | |
|---|---|
| Test Command<br>**AT+QRIMODE=?** | Response<br>**+QRIMODE:** (list of supported **<timemode>**s) |

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| | |
|---|---|
| | **OK** |
| Read Command<br>**AT+QRIMODE?** | Response<br>**+QRIMODE: <timemode>**<br><br>**OK** |
| Write Command<br>**AT+QRIMODE=<timemode>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

**Parameter**

| | | |
|---|---|---|
| **<timemode>** | Time mode | |
| | 0 | 120ms low pulse for RI when receiving SMS or other URCs |
| | 1 | 120ms low pulse for RI when receiving SMS; 50ms low pulse when receiving other URCs |
| | 2 | When a new SMS is received, RI changes to LOW and holds low level for 120ms; when other URCs are received, it takes no effect on RI |

## 15.7. AT+QCFG="RFTXburst" Burst Transition Signal Indication

| **AT+QCFG="RFTXburst" Burst Transition Signal Indication** | |
|---|---|
| Read Command<br>**AT+QCFG="RFTXburst"** | Response<br>**+QCFG: "RFTXburst",<indmode>**<br><br>**OK** |
| Write Command<br>**AT+QCFG="RFTXburst",<indmode>** | Response<br>**OK**<br><br>If error is related to ME functionality:<br>**+CME ERROR: <err>** |
| Maximum Response Time | 300ms |
| Reference<br>Quectel | |

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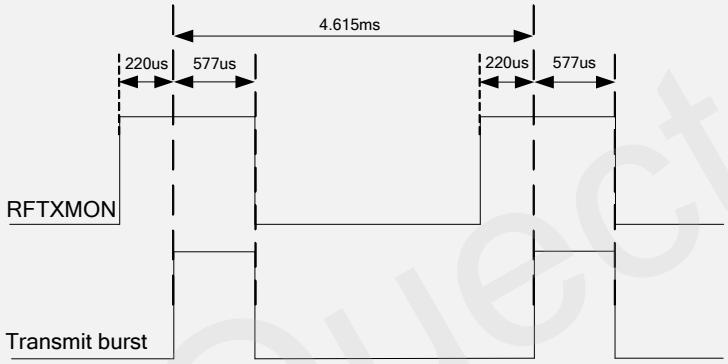
## Parameter

| | |
|---|---|
| **<indmode>** | Burst transition signal indication through GPIO line.<br>0 Disable TX burst indication. The pin output LOW level as GPIO function.<br>1 Enable TX burst indication. The output wave as notes<br>2 Enable TX burst indication. The pin will be HIGH during a call and the pin will become LOW after the call is released. |

**NOTES**

1. This AT command will be saved by **AT&W**.
2. Below is the output wave of **<indmode>=1**:

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# 16 Appendixes

## 16.1. Related Documents

**Table 4: Related Documents**

| SN | Document Name | Remark |
|---|---|---|
| [1] | V.25ter | Serial asynchronous automatic dialing and control |
| [2] | GSM 07.07 | Digital cellular telecommunications (Phase 2+); AT command set for GSM Mobile Equipment (ME) |
| [3] | GSM 07.05 | Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE- DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS) |
| [4] | GSM 07.10 | Support GSM 07.10 multiplexing protocol |
| [5] | Quectel_GSM_TCPIP_Application_Note | GSM TCPIP Application Note |
| [6] | Quectel_GPRS_Startup_User_Guide | GPRS Startup User Guide |
| [7] | Quectel_GSM_MUX_Application_Note | MUX Application Note |
| [8] | Quectel_SMS_Application_Note | SMS Application Note |
| [9] | Quectel_MC60_Hardware_Design | MC60 Hardware Design |

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## 16.2. Terms and Abbreviations

**Table 5: Terms and Abbreviations**

| Abbreviation | Description |
|---|---|
| AMR | Adaptive Multi-Rate |
| CSD | Circuit Switch Data |
| DCD | Dynamic Content Delivery |
| DCE | Data Communication Equipment |
| DTE | Data Terminal Equipment |
| DTR | Data Terminal Ready |
| GPRS | General Packet Radio Service |
| ME | Mobile Equipment |
| MS | Mobile Station |
| PDP | Packet Data Protocol |
| PSC | Primary Synchronization Code |
| RTS/CTS | Request To Send/Clear To Send |
| TA | Terminal Adapter |
| TCP | Transmission Control Protocol |
| TE | Terminal Equipment |
| UDP | User Datagram Protocol |

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## 16.3. Factory Default Settings Restorable with AT&F

**Table 6: Factory Default Settings Restorable with AT&F**

| AT Command | Parameters | Factory Defaults |
|---|---|---|
| ATE | <value> | 1 |
| ATQ | <n> | 0 |
| ATS0 | <n> | 0 |
| ATS3 | <n> | 13 |
| ATS4 | <n> | 10 |
| ATS5 | <n> | 8 |
| ATS6 | <n> | 2 |
| ATS7 | <n> | 60 |
| ATS8 | <n> | 2 |
| ATS10 | <n> | 15 |
| ATV | <value> | 1 |
| ATX | <value> | 4 |
| AT&C | <value> | 1 |
| AT&D | <value> | 0 |
| AT+ILRR | <value> | 0 |
| AT+CREG | <n> | 0 |
| AT+CCUG | <n>,<index>,<info> | 0,0,0 |
| AT+CCWA | <n> | 0 |
| AT+CSCS | <chset> | “GSM” |
| AT+CSTA | <type> | 129 |
| AT+CLIP | <n> | 0 |
| AT+CLIR | <n> | 0 |

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| | | |
|---|---|---|
| AT+CMEE | <n> | 1 |
| AT+COLP | <n> | 0 |
| AT+CR | <mode> | 0 |
| AT+QDISH | <disableath> | 0 |
| AT+CRLP | <iws>,<mws>,<T1>,<N2>,<Ver1>,<T4> | 61,61,128,6,0,3 |
| AT+CRSL | <level> | 55 |
| AT+CLVL | <level> | When AT+QAUDCH=0, the default value <level>=60;<br>When AT+QAUDCH=1, the default value <level>=40;<br>When AT+QAUDCH=2, the default value <level>=35; |
| AT+CUSD | <n> | 0 |
| AT+CSSN | <n>,<m> | 0,0 |
| AT+CSNS | <mode> | 0 |
| AT+CMOD | <mode> | 0 |
| AT+CMGF | <mode> | 0 |
| AT+CNMI | <mode>,<mt>,<bm>,<ds>,<bfr> | 2,1,0,0,0 |
| AT+CSDH | <show> | 0 |
| AT+CSMS | <service> | 0 |
| AT+QSIDET | <gainlevel> | When AT+QAUDCH=0, the default value <gainlevel>=80;<br>When AT+QAUDCH=1, the default value <gainlevel>=144; |
| AT+QMIC | <gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)> | 4,9,8 |
| AT+QSCLK | <n> | 0 |
| AT+QCLIP | <n> | 0 |
| AT+QCOLP | <n> | 0 |
| AT+QIURC | <mode> | 1 |

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| | | |
|---|---|---|
| AT+QEXTUNSOL | <mode> | 0 |
| AT+QRIMODE | <timemode> | 0 |
| AT+QSIMDET | <enable>,<insert_level>,<pin_choice> | 0,0,0 |
| AT+QSIMSTAT | <enable> | 0 |

## 16.4. AT Command Settings Storable with AT&W

**Table 7: AT Command Settings Storable with AT&W**

| AT Command | Parameters | Display with AT&V |
|---|---|---|
| ATE | <value> | Yes |
| ATQ | <n> | Yes |
| ATS0 | <n> | Yes |
| ATS3 | <n> | Yes |
| ATS4 | <n> | Yes |
| ATS5 | <n> | Yes |
| ATS6 | <n> | Yes |
| ATS7 | <n> | Yes |
| ATS8 | <n> | Yes |
| ATS10 | <n> | Yes |
| ATV | <value> | Yes |
| ATX | <value> | No |
| AT&C | <value> | Yes |
| AT&D | <value> | Yes |
| AT+ICF | <format>,<parity> | Yes |
| AT+IFC | <dce_by_dte>,<dte_by_dce> | Yes |

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| | | |
|---|---|---|
| AT+ILRR | <value> | Yes |
| AT+IPR | <rate> | Yes |
| AT+CREG | <n> | Yes |
| AT+CCUG | <n>,<index>,<info> | Yes |
| AT+CCWA | <n> | Yes |
| AT+CSCS | <chset> | Yes |
| AT+CSTA | <type> | Yes |
| AT+CLIP | <n> | Yes |
| AT+CLIR | <n> | Yes |
| AT+CMEE | <n> | Yes |
| AT+COLP | <n> | Yes |
| AT+CR | <mode> | Yes |
| AT+QDISH | <disableath> | No |
| AT+CRLP | <iws>,<mws>,<T1>,<N2>,<Ver1>,<T4> | Yes |
| AT+CRSL | <level> | No |
| AT+CLVL | <level> | No |
| AT+CUSD | <n> | Yes |
| AT+CSNS | <mode> | Yes |
| AT+CMGF | <mode> | Yes |
| AT+CNMI | <mode>,<mt>,<bm>,<ds>,<bfr> | Yes |
| AT+CSDH | <show> | Yes |
| AT+QSIDET | <gainlevel> | Yes |
| AT+QMIC | <gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)> | Yes |
| AT+QSCLK | <n> | No |

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| | | |
|---|---|---|
| AT+QCLIP | <n> | Yes |
| AT+QCOLP | <n> | Yes |
| AT+QIURC | <mode> | No |
| AT+QEXTUNSOL | <mode> | No |
| AT+QRIMODE | <timemode> | No |
| AT+QSIMDET | <enable>,<insert_level>,<pin_choice> | Yes |
| AT+QSIMSTAT | <enable> | Yes |

## 16.5. AT Command Settings Storable with ATZ

**Table 8: AT Command Settings Storable with ATZ**

| AT Command | Parameters | Factory Defaults |
|---|---|---|
| ATE | <value> | 1 |
| ATQ | <n> | 0 |
| ATS0 | <n> | 0 |
| ATS3 | <n> | 13 |
| ATS4 | <n> | 10 |
| ATS5 | <n> | 8 |
| ATS6 | <n> | 2 |
| ATS7 | <n> | 60 |
| ATS8 | <n> | 2 |
| ATS10 | <n> | 15 |
| ATV | <value> | 1 |
| ATX | <value> | 4 |
| AT&C | <value> | 1 |

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| | | |
|---|---|---|
| AT&D | <value> | 0 |
| AT+ILRR | <value> | 0 |
| AT+CREG | <n> | 0 |
| AT+CCUG | <n>,<index>,<info> | 0,0,0 |
| AT+CCWA | <n> | 0 |
| AT+CSCS | <chset> | “GSM” |
| AT+CSTA | <type> | 129 |
| AT+CLIP | <n> | 0 |
| AT+CLIR | <n> | 0 |
| AT+CMEE | <n> | 1 |
| AT+COLP | <n> | 0 |
| AT+CR | <mode> | 0 |
| AT+QDISH | <disableath> | 0 |
| AT+CRLP | <iws>,<mws>,<T1>,<N2>,<Ver1>,<T4> | 61,61,128,6,0,3 |
| AT+CRSL | <level> | 55 |
| AT+CLVL | <level> | When AT+QAUDCH=0, the default value <level>=60;<br>When AT+QAUDCH=1, the default value <level>=40;<br>When AT+QAUDCH=2, the default value <level>=35; |
| AT+CUSD | <n> | 0 |
| AT+CSSN | <n>,<m> | 0,0 |
| AT+CSNS | <mode> | 0 |
| AT+CMOD | <mode> | 0 |
| AT+CMGF | <mode> | 0 |
| AT+CNMI | <mode>,<mt>,<bm>,<ds>,<bfr> | 2,1,0,0,0 |
| AT+CSDH | <show> | 0 |

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| | | |
|---|---|---|
| AT+CSMS | <service> | 0 |
| AT+QSIDET | <gainlevel> | When AT+QAUDCH=0, the default value <gainlevel>=80;<br>When AT+QAUDCH=1, the default value <gainlevel>=144; |
| AT+QMIC | <gainlevel(Normal_Mic)>,<gainlevel(Headset_Mic)>,<gainlevel(Loudspeaker_Mic)> | 4,9,8 |
| AT+QSCLK | <n> | 0 |
| AT+QCLIP | <n> | 0 |
| AT+QCOLP | <n> | 0 |
| AT+QIURC | <mode> | 1 |
| AT+QEXTUNSOL | <mode> | 0 |
| AT+QRIMODE | <timemode> | 0 |
| AT+QSIMDET | <enable>,<insert_level>,<pin_choice> | 0,0,0 |
| AT+QSIMSTAT | <enable> | 0 |

## 16.6. Summary of URC

**Table 9: 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><data> | New short message is received and output directly to TE (Text mode) | AT+CNMI=2,2 |
| 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 |

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| | | | |
|---|---|---|---|
| 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>] | GPRS network detach | AT+CGEREP=1 |
| 9 | +CGEV:ME DEACT<PDP_type>,<PDP_addr>[,<cid>] | GPRS ME detach | AT+CGEREP=1 |
| 10 | +CGEV:NW DETACH | GPRS network detach | AT+CGEREP=1 |
| 11 | +CGEV:ME DETACH | GPRS ME detach | AT+CGEREP=1 |
| 12 | +CGREG:1 | Network registered | AT+CGREG=1 |
| 13 | +CGREG:0 | Network unregistered | AT+CGREG=1 |
| 14 | +CGREG:1,<lac><ci> | Network registered, with location code | AT+CGREG=2 |
| 15 | +CGREG:0,<lac><ci> | Network unregistered, with location code | AT+CGREG=2 |
| 16 | +QCGTIND | A CS voice call, CS data, fax call or GPRS session termination indicator | AT+QCGTIND=1 |
| 17 | +CSQN:<rssi>,<ber> | Signal quality change | AT+QEXTUNSOL="SQ",1 |
| 18 | +FPLMN: <status> | Forbidden network is available only | AT+QEXTUNSOL="FN",1 |
| 19 | +CMWT:<store>,<index>,<voice>,<fax>,<email>,<other> | Message waiting | AT+QEXTUNSOL="MW",1 |
| 20 | +QGURC:<event> | Unsolicited result code follows particular call state transition | AT+QEXTUNSOL="UR",1 |
| 21 | +CBCN<bcs>,<bcl> | Display battery connection status and battery charge level | AT+QEXTUNSOL="BC",1 |
| 22 | +QBAND:<band> | Band mode display | AT+QEXTUNSOL="BM",1 |
| 23 | +TSMSINFO:<CMS error info> | Additional SMS information | AT+QEXTUNSOL="SM",1 |
| 24 | +CCINFO:<Call is Disconnected>,<remain calls> | Displays the disconnected call ID and the remain call numbers after one of the call is disconnected | AT+QEXTUNSOL="CC",1 |
| 25 | RING | Indicates incoming call | N/A |

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| | | | |
|---|---|---|---|
| 26 | Call Ready | Device is ready to make/receive calls | N/A |
| 27 | UNDER_VOLTAGE POWER DOWN | Under voltage shutdown indication | N/A |
| 28 | UNDER_VOLTAGE WARNING | Under voltage warning | N/A |
| 29 | OVER_VOLTAGE POWER DOWN | Over voltage shutdown indication | N/A |
| 30 | OVER_VOLTAGE WARNING | Over voltage warning | N/A |
| 31 | NORMAL POWER DOWN | Normal power down | N/A |
| 32 | +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 |
| 33 | +CLIP:<number>,<type>"",,<alphaID>,<CLI validity> | Mobile terminating call indication | AT+CLIP=1 |
| 34 | +CRING:<type> | An incoming call is indicated to the TE with unsolicited result code instead of the normal RING | AT+CRC=1 |
| 35 | +CREG:<stat> | Indicate registration status of the ME | AT+CREG=1 |
| 36 | +CREG:<stat>[,<lac>,<ci>] | After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code | AT+CREG=2 |
| 37 | +CCWA:<number>,<type>,<class>[,<alpha>] | Call waiting indication | AT+CCWA=1,1 |
| 38 | RDY | ME initialization is successful | N/A |
| 39 | +CFUN:1 | All function of the ME is available | N/A |
| 40 | +CPIN:<state> | SIM card pin state | N/A |
| 41 | MO RING | MO call ringing | AT+QMOSTAT=1 |
| 42 | MO CONNECTED | MO call connected | AT+QMOSTAT=1 |
| 43 | ALARM RING | Alarm event is triggered | AT+QALARM=1,<time>,<repeat>,0/1 |
| 44 | ALARM MODE | ME is switched on by alarm | AT+QALARM=1,<time>,<repeat>,2 |

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## 16.7. 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 message 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.

**Table 10: Different Coding Schemes of +CME ERROR: <err>**

| 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

## 16.8. 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 message commands:

**Table 11: Different Coding Schemes of +CMS ERROR: <err>**

| Code of <err> | Meaning |
|---|---|
| 300 | ME failure |
| 301 | SMS ME reserved |
| 302 | Operation not allowed |
| 303 | Operation not supported |
| 304 | Invalid PDU mode |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

## 16.9. Summary of Cause for Extended Error Report

### 16.9.1. Location ID for the Extended Error Report

**Table 12: 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 |

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### 16.9.2. Cause for Protocol Stack (PS) Layer

**Table 13: 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 98 | Message type not compatible with protocol state |
| 99 | Information element non-existent or not implemented |
| 100 | Conditional information element error |
| 101 | Message not compatible with protocol |
| 102 | Recovery on timer expiry |
| 111 | Protocol error, unspecified |
| 127 | Interworking, unspecified |
| 128 | Telematic interworking not supported |
| 129 | Short message Type 0 not supported |
| 130 | Cannot replace short message |
| 143 | Unspecified TP-PID error |
| 144 | Data coding scheme (alphabet) not supported |
| 145 | Message class not supported |
| 159 | Unspecified TP-DCS error |
| 160 | Command cannot be acted |
| 161 | Command unsupported |
| 175 | Unspecified TP-Command error |
| 176 | TPDU not supported |
| 192 | SC busy |
| 193 | No SC subscription |
| 194 | SC system failure |
| 195 | Invalid SME address |
| 196 | Destination SME barred |
| 197 | SM Rejected-Duplicate SM |
| 198 | TP-VPF not supported |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 | |

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| | |
|---|---|
| 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 |

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| | |
|---|---|
| 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 |
| 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 |

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| | |
|---|---|
| 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 |

### 16.9.3. Internal Cause for MM Layer

**Table 14: 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 |

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| | |
|---|---|
| 128 | Connection failure |
| 129 | Emergency not allowed |
| 130 | No GPRS coverage |
| 131 | Abnormal LU |
| 132 | Abnormal LU less than 4 times |
| 133 | Same LAI IMSI attaching |

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

**Table 15: 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 |

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