

# MC65&M65&M95-R

# AT Commands Manual

**GSM/GPRS/GNSS Module Series**

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# About the Document

## Revision History

| Version | Date       | Author                                  | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| 1.0     | 2019-12-02 | Corwin SHUI/<br>Cathy WANG              | Initial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1.1     | 2022-11-14 | Rena Ruan/<br>Ablaze LU/<br>Allan LIANG | <ol style="list-style-type: none"> <li>Added the applicable modules: MC65 and M95-R.</li> <li>Deleted the following AT commands: <ul style="list-style-type: none"> <li>AT+QEXTUNSOL</li> <li>AT+QINISTAT</li> <li>ATS7</li> <li>ATS10</li> <li>AT+CRC</li> <li>AT+QALARM</li> <li>AT+QCFG="RFTXburst".</li> </ul> </li> <li>Added the following AT commands: <ul style="list-style-type: none"> <li>AT+QGSN (Chapter 2.11)</li> <li>Added AT+CGLA (Chapter 5.12)</li> <li>Added AT+QISSTAT (Chapter 10.11)</li> <li>Added AT+QTEMP (Chapter 13.7).</li> </ul> </li> <li>Added the note for AT+GOI (Chapter 2.5).</li> <li>Modified the default value of parameter &lt;value&gt; to 4 in ATX (Chapter 2.17).</li> <li>Modified the default value of parameter &lt;mode&gt; to 3 in AT+CTZU (Chapter 4.8).</li> <li>Added the notes for AT+CSIM (Chapter 5.6).</li> <li>Deleted the notes for AT+COPN (Chapter 6.5).</li> <li>Added the note for parameter &lt;stat&gt; in AT+CGREG (Chapter 9.9).</li> <li>Added the note for parameter &lt;ID&gt; in AT+QIFGCNT (Chapter 10.27).</li> <li>Deleted the example of AT+CLIR (Chapter 11.5).</li> </ol> |
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- (Chapter 1.7).
3. Updated the factory Time Server address. (Chapter 10.33)
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# 1 AT Commands Manual

## 1.1. Definitions

- **<CR>** Carriage return character.
- **<LF>** Line feed character.
- **<...>** Parameter name. Angle brackets do not appear on the command line.
- **[...]** Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on the command line. When an optional parameter is not given in a command, the new value equals its previous value or the default settings, unless otherwise specified.
- **Underline** Default setting of a parameter.

## 1.2. AT Command Syntax

All command lines must start with **AT** or **at** and end with **<CR>**. Information responses and result codes always start and end with a carriage return character and a line feed character: **<CR><LF><response><CR><LF>**. In tables presenting commands and responses throughout this document, only the commands and responses are presented, and **<CR>** and **<LF>** are deliberately omitted.

AT commands implemented by MC65, M65 and M95-R fall into three categories syntactically: “Basic”, “S Parameter” and “Extended”, as listed below:

- **Basic Command**

Basic command format is **AT<x><n>**, or **AT&<x><n>**, where **<x>** is the command, and **<n>** is/are the argument(s) of the command. For example, **ATE<n>** tells the DCE (Data Circuit-terminating Equipment) whether received characters should be echoed back to the DTE (Data Terminal Equipment) according to the value of **<n>**. **<n>** is optional and a default will be used if it is omitted.

- **S Parameter Syntax**

S Parameter command format is **ATS<n>=<m>**, where **<n>** is the index of the **S** register to be set, and **<m>** is the value to be assigned to it.

- **Extended Command**

There are several types of extended commands as shown in the following table.

**Table 1: Types of AT Commands**

| Command Type      | Syntax                                                          | Description                                                                                                              |
|-------------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Test Command      | <b>AT+&lt;cmd&gt;=?</b>                                         | Test the existence of the corresponding command and return information about the type, value, or range of its parameter. |
| Read Command      | <b>AT+&lt;cmd&gt;?</b>                                          | Check the current parameter value of the corresponding command.                                                          |
| Write Command     | <b>AT+&lt;cmd&gt;=&lt;p1&gt;[,&lt;p2&gt;[,&lt;p3&gt;[...]]]</b> | Set user-definable parameter value.                                                                                      |
| Execution Command | <b>AT+&lt;cmd&gt;</b>                                           | Return a specific information parameter or perform a specific action.                                                    |

Multiple commands can be placed on a single line using a semi-colon (;) between commands. In such cases, only the first command should have **AT** prefix. Commands can be in upper or lower case.

Spaces should be ignored when you enter AT commands, except in the following cases:

- Within quoted strings, where spaces are preserved;
- Within an unquoted string or numeric parameter;
- Within an IP address;
- Within the AT command name up to and including a =, ? or =?.

On input, at least a carriage return is required. A newline character is ignored so it is permissible to use carriage return/line feed pairs on the input.

If no command is entered after the **AT** token, **OK** will be returned. If an invalid command is entered, **ERROR** will be returned.

Optional parameters, unless explicitly stated, need to be provided up to the last entered parameter.

### 1.3. AT Command Responses

When the AT command processor has finished processing a line, it will output **OK**, **ERROR** or **+CME ERROR: <err>** to indicate that it is ready to accept a new command. Solicited information responses are sent before the final **OK**, **ERROR** or **+CME ERROR: <err>**.

Responses will be in the format of:

```
<CR><LF>+CMD1:<parameters><CR><LF>  
<CR><LF>OK<CR><LF>
```

Or

```
<CR><LF><parameters><CR><LF>  
<CR><LF>OK<CR><LF>
```

### 1.4. Supported Character Sets

The AT command interface of the module uses the **GSM** character set by default and supports the following character sets:

- GSM format
- UCS2
- HEX
- 8859-1

The character set can be configured and interrogated using the **AT+CSCS** command (*GSM 07.07*) and it is defined in *GSM Specification 07.05*. The character set affects transmission and reception of SMS and SMS Cell Broadcast Messages, as well as the entry and display of phone book entries text field and (U)SIM Application Toolkit alpha strings.

## 1.5. 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. MC65, M65 and M95-R currently do not support software flow control. In customer applications, especially in multiplex mode, it is recommended to use the hardware flow control.

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

The default flow control approach of MC65, M65 and M95-R 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 customers' application platform.

## 1.6. Unsolicited Result Code

A URC is a report message sent from the ME to the TE. An unsolicited result code can 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 15.6**.

When sending a URC, the ME activates its Ring Interrupt (Logic "I"), 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.

## **1.7. Declaration of AT Command Examples**

The AT command examples in this document are provided to help you learn about the use of the AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendations or suggestions about how to design a program flow or what status to set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there is a correlation among these examples, or that they should be executed in a given sequence. The URLs, domain names, IP addresses, usernames/accounts, and passwords (if any) in the AT command examples are provided for illustrative and explanatory purposes only, and they should be modified to reflect your actual usage and specific needs.

## 2 General Commands

### 2.1. ATI Display Product Identification Information

| ATI Display Product Identification Information |                                                                                                                                                           |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATI</b>                | Response<br>TA returns a product information text.<br><b>Quectel_Ltd</b><br><b>&lt;objectID&gt;</b><br><b>Revision: &lt;revision&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                          | 300 ms                                                                                                                                                    |
| Characteristics                                | /                                                                                                                                                         |
| Reference<br>V.25ter                           |                                                                                                                                                           |

#### Parameter

|                         |                                                               |
|-------------------------|---------------------------------------------------------------|
| <b>&lt;objectID&gt;</b> | String type. Identifier of device type.                       |
| <b>&lt;revision&gt;</b> | String type. Identification text of product software version. |

#### Example

```

ATI
Quectel_Ltd
Quectel_MC65
Revision: MC65MAR01A02

OK

```

## 2.2. AT+GMI Query Manufacturer Identification

| AT+GMI Query Manufacturer Identification |                                                                                                                                                                                                                          |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+GMI=?</b>          | Response<br><b>OK</b>                                                                                                                                                                                                    |
| Execution Command<br><b>AT+GMI</b>       | Response<br>TA reports one or more lines of information text which permits the user to identify the manufacturer.<br><b>Quectel_Ltd</b><br><b>&lt;objectID&gt;</b><br><b>Revision: &lt;revision&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                    | 300 ms                                                                                                                                                                                                                   |
| Characteristics                          | /                                                                                                                                                                                                                        |
| Reference<br>V.25ter                     |                                                                                                                                                                                                                          |

### Parameter

|                         |                                                               |
|-------------------------|---------------------------------------------------------------|
| <b>&lt;objectID&gt;</b> | String type. Identifier of device type.                       |
| <b>&lt;revision&gt;</b> | String type. Identification text of product software version. |

## 2.3. AT+GMM Query TA Model Identification

| AT+GMM Query TA Model Identification |                                                                                                         |
|--------------------------------------|---------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+GMM=?</b>      | Response<br><b>OK</b>                                                                                   |
| Execution Command<br><b>AT+GMM</b>   | Response<br>TA returns a product model identification text.<br><b>&lt;objectID&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                | 300 ms                                                                                                  |
| Characteristics                      | /                                                                                                       |

Reference  
V.25ter

## Parameter

<objectID> String type. Identifier of device type.

## 2.4. AT+GMR Query TA Identification of Software Version

### AT+GMR Query TA Identification of Software Version

|                                    |                                                                                                                                                                                         |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+GMR=?</b>    | Response<br><b>OK</b>                                                                                                                                                                   |
| Execution Command<br><b>AT+GMR</b> | Response<br>TA reports one or more lines of information text which permits the user to identify the revision of software release.<br><b>Revision: &lt;revision&gt;</b><br><br><b>OK</b> |
| Maximum Response Time              | 300 ms                                                                                                                                                                                  |
| Characteristics                    | /                                                                                                                                                                                       |
| Reference<br>V.25ter               |                                                                                                                                                                                         |

## Parameter

<revision> String type. Product software version number.

## Example

```
AT+GMR
Revision: MC65MAR01A02

OK
```

## 2.5. AT+GOI Query Global Object Identification

| AT+GOI Query Global Object Identification |                                                                                                                                                                                                                            |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+GOI=?</b>           | Response<br><b>OK</b>                                                                                                                                                                                                      |
| Execution Command<br><b>AT+GOI</b>        | Response<br>TA reports one or more lines of information text which permits the user to identify the device, based on the ISO system for registering unique object identifiers.<br><b>&lt;objectID&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                     | 300 ms                                                                                                                                                                                                                     |
| Characteristics                           | /                                                                                                                                                                                                                          |
| Reference<br>V.25ter                      |                                                                                                                                                                                                                            |

### Parameter

**<objectID>** String type. Identifier of device type.

#### NOTE

See *CCITT Recommendation X.208* and *CCITT Recommendation 209* for the format of **<objectID>**. For example, in MC65 module, string "MC65" is displayed.

## 2.6. AT+CGMI Query Manufacturer Identification

The command returns the manufacturer identification text. It is identical with **AT+GMI**.

| AT+CGMI Query Manufacturer Identification |                                                                                                           |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGMI=?</b>          | Response<br><b>OK</b>                                                                                     |
| Execution Command<br><b>AT+CGMI</b>       | Response<br>TA returns manufacturer identification text.<br><b>Quectel_Ltd</b><br><b>&lt;objectID&gt;</b> |

|                        |                      |
|------------------------|----------------------|
|                        | Revision: <revision> |
|                        | OK                   |
| Maximum Response Time  | 300 ms               |
| Characteristics        | /                    |
| Reference<br>GSM 07.07 |                      |

### Parameter

|            |                                                               |
|------------|---------------------------------------------------------------|
| <objectID> | String type. Identifier of device type.                       |
| <revision> | String type. Identification text of product software version. |

## 2.7. AT+CGMM Query Model Identification

The command returns product model identification text. It is identical with **AT+GMM**.

| AT+CGMM Query Model Identification  |                                                                                          |
|-------------------------------------|------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGMM=?</b>    | Response<br><b>OK</b>                                                                    |
| Execution Command<br><b>AT+CGMM</b> | Response<br>TA returns product model identification text.<br><objectID><br><br><b>OK</b> |
| Maximum Response Time               | 300 ms                                                                                   |
| Characteristics                     | /                                                                                        |
| Reference<br>GSM 07.07              |                                                                                          |

### Parameter

|            |                                         |
|------------|-----------------------------------------|
| <objectID> | String type. Identifier of device type. |
|------------|-----------------------------------------|

## 2.8. AT+CGMR Query TA Identification of Software Version

The command returns TA identification of the software version. It is identical with **AT+GMR**.

| AT+CGMR Query TA Identification of Software Version |                                                                                                                            |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGMR=?</b>                    | Response<br><b>OK</b>                                                                                                      |
| Execution Command<br><b>AT+CGMR</b>                 | Response<br>TA returns product software version identification text.<br><b>Revision: &lt;revision&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                               | 300 ms                                                                                                                     |
| Characteristics                                     | /                                                                                                                          |
| Reference<br>GSM 07.07                              |                                                                                                                            |

### Parameter

|                         |                                               |
|-------------------------|-----------------------------------------------|
| <b>&lt;revision&gt;</b> | String type. Product software version number. |
|-------------------------|-----------------------------------------------|

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

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

## Parameter

<sn> String type. IMEI of the ME.

### NOTE

The serial number (IMEI) varies with the individual ME device.

## 2.10. AT+CGSN Query International Mobile Equipment Identity (IMEI)

This command returns International Mobile Equipment Identity (IMEI) number of ME. It is identical with AT+GSN.

### AT+CGSN Query International Mobile Equipment Identity (IMEI)

|                                     |                                   |
|-------------------------------------|-----------------------------------|
| Test Command<br><b>AT+CGSN=?</b>    | Response<br><b>OK</b>             |
| Execution Command<br><b>AT+CGSN</b> | Response<br><sn><br><br><b>OK</b> |
| Maximum Response Time               | 300 ms                            |
| Characteristics                     | /                                 |
| Reference<br>GSM 07.07              |                                   |

## Parameter

<sn> String type. IMEI of the ME.

### NOTE

The serial number (IMEI) varies with the individual ME device.

## 2.11. AT+QGSN Query International Mobile Equipment Identity (IMEI)

| AT+QGSN Query International Mobile Equipment Identity (IMEI) |                                                       |
|--------------------------------------------------------------|-------------------------------------------------------|
| Test Command<br><b>AT+QGSN=?</b>                             | Response<br><b>OK</b>                                 |
| Execution Command<br><b>AT+QGSN</b>                          | Response<br><b>+QGSN: &lt;sn&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                                        | 300 ms                                                |
| Characteristics                                              | /                                                     |
| Reference                                                    |                                                       |

### Parameter

**<sn>** String type. IMEI of the ME.

#### NOTE

The serial number (IMEI) varies with the individual ME device.

### Example

```

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

OK
    
```

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

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

### Parameter

|                      |                                                 |
|----------------------|-------------------------------------------------|
| <b>&lt;value&gt;</b> | Integer type.                                   |
| 0                    | Set all TA parameters to manufacturer defaults. |

#### NOTE

The command resets AT command settings to manufacturer default values but does not change the current baud rate of UART.

## 2.13. AT&V Display Current Configuration

The command displays the current settings of several AT command parameters, including the single-letter AT command parameters which are not readable otherwise.

| AT&V Display Current Configuration              |                                                                                                                                                                                      |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>AT&amp;V[&lt;n&gt;]</b> | Response<br>TA returns the current parameter setting. Please refer to <b>Table 2</b> for details.<br><br><b>ACTIVE PROFILE</b><br><br><current configurations text><br><br><b>OK</b> |

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

## Parameter

|          |                |
|----------|----------------|
| <n>      | Integer type.  |
| <u>0</u> | Profile number |

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

| AT&V or AT&V0  |
|----------------|
| AT&V           |
| ACTIVE PROFILE |
| E: 1           |
| Q: 0           |
| V: 1           |
| X: 4           |
| S0: 0          |
| S3: 13         |
| S4: 10         |
| S5: 8          |
| +CMGF: 0       |
| +CSDH: 0       |
| +CMEE: 1       |
| +IFC: 0,0      |

**+ICF: 3,3**

**+CNMI: 2,1,0,0,0**

**+CSCS: "GSM"**

**+IPR: 0**

**&C: 1**

**&D: 0**

**+CLIP: 0**

**+COLP: 0**

**+CCWA: 0**

**+CLIR: 0**

**+CUSD: 0**

**+CREG: 0**

**+QSIMSTAT: 0**

**+QSIMDET: 0,0,0**

**+QMIC: 4,9,8**

**+QSIDET(NORMAL\_AUDIO): 80**

**+QSIDET(HEADSET\_AUDIO): 144**

**+CMUX: 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><b>AT&amp;W[&lt;n&gt;]</b>       | Response<br>TA stores the current parameter setting in the user defined profile.<br><b>OK</b> |
| Maximum Response Time                                 | 300 ms                                                                                        |
| Characteristics                                       | This command takes effect immediately.<br>The configurations will not be saved.               |
| Reference<br>V.25ter                                  |                                                                                               |

### Parameter

|     |                                                                      |
|-----|----------------------------------------------------------------------|
| <n> | Integer type.<br><u>0</u> Profile number to store current parameters |
|-----|----------------------------------------------------------------------|

#### NOTE

The profile defined by user is stored in nonvolatile memory.

## 2.15. ATQ Set Result Code Presentation Mode

| ATQ Set Result Code Presentation Mode      |                                                                                                                                                                                                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATQ[&lt;n&gt;]</b> | 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><b>OK</b><br><br>If <n>=1:<br>(none) |
| Maximum Response Time                      | 300 ms                                                                                                                                                                                                                                  |

|                      |                                                                                 |
|----------------------|---------------------------------------------------------------------------------|
| Characteristics      | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>V.25ter |                                                                                 |

## Parameter

|                  |                                                                   |
|------------------|-------------------------------------------------------------------|
| <b>&lt;n&gt;</b> | Integer type. Set whether the TA sends the result code to the TE. |
| <u>0</u>         | Transmit result code to TA                                        |
| <u>1</u>         | Result codes are suppressed and not transmitted                   |

## 2.16. ATV TA Response Format

| ATV TA Response Format                         |                                                                                                                                                                                                                                          |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATV[&lt;value&gt;]</b> | Response<br>This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.<br>If <b>&lt;value&gt;=0</b> :<br><b>0</b><br><br>If <b>&lt;value&gt;=1</b> :<br><b>OK</b> |
| Maximum Response Time                          | 300 ms                                                                                                                                                                                                                                   |
| Characteristics                                | /                                                                                                                                                                                                                                        |
| Reference<br>V.25ter                           |                                                                                                                                                                                                                                          |

## Parameter

|                      |                                                                                                                                                                                   |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;value&gt;</b> | Integer type. Information response format.                                                                                                                                        |
| <u>0</u>             | Information response: <b>&lt;text&gt;&lt;CR&gt;&lt;LF&gt;</b><br>Short result code format: <b>&lt;numeric code&gt;&lt;CR&gt;</b>                                                  |
| <u>1</u>             | Information response: <b>&lt;CR&gt;&lt;LF&gt;&lt;text&gt;&lt;CR&gt;&lt;LF&gt;</b><br>Long result code format: <b>&lt;CR&gt;&lt;LF&gt;&lt;verbose code&gt;&lt;CR&gt;&lt;LF&gt;</b> |

## Example

```

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

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

```

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

**Table 3: The Numeric Equivalents and Brief Descriptions of ATV0&ATV1**

| ATV1           | ATV0                  | Description                                                                                                                                                                 |
|----------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OK             | 0                     | Acknowledges execution of a command.                                                                                                                                        |
| CONNECT        | 1                     | A connection has been established; the DCE is switching from command mode to data mode.                                                                                     |
| 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 caused by command line maximum length exceeded, parameter value invalid, or other problem with processing the command line.                          |
| NO DIALTONE    | 6                     | No dial tone detected.                                                                                                                                                      |
| BUSY           | 7                     | Engaged (busy) signal detected.                                                                                                                                             |
| NO ANSWER      | 8                     | “@” (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer (S7). |
| PROCEEDING     | 9                     | An AT command is being processed.                                                                                                                                           |
| CONNECT <text> | Manufacturer-specific | Same as <b>CONNECT</b> , 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><b>ATX[&lt;value&gt;]</b>               | 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><b>OK</b> |
| Maximum Response Time                                        | 300 ms                                                                                                                                                                                             |
| Characteristics                                              | This command takes effect immediately.<br>The configurations will not be saved.                                                                                                                    |
| Reference<br>V.25ter                                         |                                                                                                                                                                                                    |

### Parameter

|                      |                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;value&gt;</b> | Integer type.                                                                                                             |
| 0                    | <b>CONNECT</b> result code returned only. Dial tone and busy signal detection are both disabled.                          |
| 1                    | <b>CONNECT&lt;text&gt;</b> result code returned only. Dial tone and busy signal detection are both disabled.              |
| 2                    | <b>CONNECT&lt;text&gt;</b> result code returned. Dial tone detection is enabled, while busy signal detection is disabled. |
| 3                    | <b>CONNECT&lt;text&gt;</b> result code returned. Dial tone detection is disabled, while busy signal detection is enabled. |
| <u>4</u>             | <b>CONNECT&lt;text&gt;</b> result code returned. Dial tone and busy signal detection are both enabled.                    |

### NOTE

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

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

| ATZ Set All Current Parameters to User Defined Profile |                                                                                      |
|--------------------------------------------------------|--------------------------------------------------------------------------------------|
| Execution Command<br><b>ATZ[&lt;value&gt;]</b>         | Response<br>TA sets all current parameters to the user defined profile.<br><b>OK</b> |
| Maximum Response Time                                  | 300 ms                                                                               |
| Characteristics                                        | This command takes effect immediately.<br>The configurations will not be saved.      |
| Reference<br>V.25ter                                   |                                                                                      |

### Parameter

|                      |                           |
|----------------------|---------------------------|
| <b>&lt;value&gt;</b> | Integer type.             |
| <u>0</u>             | Reset to profile number 0 |

#### NOTE

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 AT commands on the same command line are ignored.
3. The command will not 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 ME Functionality

| AT+CFUN Set ME Functionality     |                                                                                                  |
|----------------------------------|--------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CFUN=?</b> | Response<br><b>+CFUN:</b> (list of supported <fun>s),(list of supported <rst>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+CFUN?</b>  | Response<br><b>+CFUN:</b> <fun><br><br><b>OK</b>                                                 |

|                                                           |                                                                                                                   |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Write Command<br><b>AT+CFUN=&lt;fun&gt;[,&lt;rst&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                     | 15 s, determined by network.                                                                                      |
| Characteristics                                           | This command takes effect immediately.<br>The configurations will not be saved.                                   |
| Reference<br>GSM 07.07                                    |                                                                                                                   |

## Parameter

|                    |                                                                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;fun&gt;</b> | Integer type. ME functionality.<br>0 Minimum functionality.<br>1 Full functionality.<br>4 Disable the ME from both transmitting and receiving RF signals.                                                                   |
| <b>&lt;rst&gt;</b> | Integer type.<br>0 Do not reset the ME before setting it to <b>&lt;fun&gt;</b> power level.<br>This is default when <b>&lt;rst&gt;</b> is not given.<br>1 Reset the ME before setting it to <b>&lt;fun&gt;</b> power level. |
| <b>&lt;err&gt;</b> | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                           |

## Example

```

AT+CFUN=0 //Switch the ME to minimum functionality.
+CPIN: NOT READY

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

OK
AT+CPIN?
+CME ERROR: 13 //(U)SIM failure.
AT+CFUN=1 //Switch the ME 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
    
```

## 2.20. AT+QPOWD Power-off

| AT+QPOWD Power-off                         |                                                                                 |
|--------------------------------------------|---------------------------------------------------------------------------------|
| Write Command<br><b>AT+QPOWD=&lt;n&gt;</b> | Response<br>If <n>=0:<br><b>OK</b><br><br>If <n>=1:<br><b>NORMAL POWER DOWN</b> |
| Maximum Response Time                      | 300 ms                                                                          |
| Characteristics                            | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference                                  |                                                                                 |

### Parameter

|     |                                                                      |
|-----|----------------------------------------------------------------------|
| <n> | Integer type. Power-down mode.                                       |
| 0   | Immediate power-down (Do not send out URC <b>NORMAL POWER DOWN</b> ) |
| 1   | Normal power-down (Send out URC <b>NORMAL POWER DOWN</b> )           |

### Example

```

AT+QPOWD=0
OK           //Immediate power-down: returns OK.
AT+QPOWD=1
NORMAL POWER DOWN   //Normal power-down: sends out URC NORMAL POWER DOWN.
    
```

## 2.21. AT+CMEER Report Mobile Equipment Error

| AT+CMEER Report Mobile Equipment Error       |                                                                                                                                                                            |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMEER=?</b>            | Response<br><b>+CMEER:</b> (list of supported <n>s)<br><br><b>OK</b>                                                                                                       |
| Read Command<br><b>AT+CMEER?</b>             | Response<br><b>+CMEER:</b> <n><br><br><b>OK</b>                                                                                                                            |
| Write Command<br><b>AT+CMEER=[&lt;n&gt;]</b> | Response<br>TA disables or enables the use of result code <b>+CME ERROR: &lt;err&gt;</b> as an indication of an error related to the functionality of the ME.<br><b>OK</b> |
| Maximum Response Time                        | 300 ms                                                                                                                                                                     |
| Characteristics                              | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                              |
| Reference<br>GSM 07.07                       |                                                                                                                                                                            |

### Parameter

|       |                                                                                                                                                                                                                                                                                                                                                       |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <n>   | Integer type. Enable or disable the specified result code.<br>0        Disable result code <b>+CME ERROR: &lt;err&gt;</b> , and enable <b>ERROR</b> .<br><u>1</u> Enable result code <b>+CME ERROR: &lt;err&gt;</b> , use the numeric value of <err>.<br>2        Enable result code <b>+CME ERROR: &lt;err&gt;</b> , use the verbose value of <err>. |
| <err> | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                     |

### Example

|                     |                                                                                       |
|---------------------|---------------------------------------------------------------------------------------|
| <b>AT+CMEER=0</b>   | //Disable result code <b>+CME ERROR: &lt;err&gt;</b> , and enable <b>ERROR</b> .      |
| <b>OK</b>           |                                                                                       |
| <b>AT+CPIN=1234</b> |                                                                                       |
| <b>ERROR</b>        | //Only <b>ERROR</b> will be displayed.                                                |
| <b>AT+CMEER=1</b>   | //Enable result code <b>+CME ERROR: &lt;err&gt;</b> , use the numeric value of <err>. |
| <b>OK</b>           |                                                                                       |

AT+CPIN=1234

+CME ERROR: 10

AT+CMEE=2

//Enable result code +CME ERROR: <err>, use the verbose value of <err>.

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 can then convert character strings correctly between the TE and ME character sets.<br>OK<br><br>If there is any error related to ME functionality:<br>+CME ERROR: <err> |
| Maximum Response Time            | 300 ms                                                                                                                                                                                                                                        |
| Characteristics                  | This command takes effect immediately.<br>The configurations will be saved after AT+W is executed.                                                                                                                                            |
| Reference<br>GSM 07.07           |                                                                                                                                                                                                                                               |

### Parameter

|         |              |                                                                      |
|---------|--------------|----------------------------------------------------------------------|
| <chset> | String type. |                                                                      |
|         | "GSM"        | GSM default alphabet.                                                |
|         | "HEX"        | Character strings consist only of hexadecimal numbers from 00 to FF. |

---

|          |                                                   |
|----------|---------------------------------------------------|
| "UCS2"   | UCS2 alphabet.                                    |
| "8859-1" | ISO 8859 Latin 1 character set.                   |
| <err>    | Error codes. See <b>Chapter 15.7</b> for details. |

---

## 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

```

# 3 Serial Interface Control Commands

## 3.1. AT&C Set DCD Function Mode

| AT&C Set DCD Function Mode                          |                                                                                                                                                              |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>AT&amp;C[&lt;value&gt;]</b> | 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><b>OK</b> |
| Maximum Response Time                               | 300 ms                                                                                                                                                       |
| Characteristics                                     | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                |
| Reference<br>V.25ter                                |                                                                                                                                                              |

### Parameter

|                      |                                                     |
|----------------------|-----------------------------------------------------|
| <b>&lt;value&gt;</b> | Integer type.                                       |
| 0                    | DCD line is always ON                               |
| <u>1</u>             | 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><b>AT&amp;D[&lt;value&gt;]</b> | Response<br>This parameter determines how the TA responds when circuit 108/2 (DTR) is changed from low to high level during data mode.<br><b>OK</b> |

|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
| Maximum Response Time | 300 ms                                                                                                        |
| Characteristics       | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed. |
| Reference<br>V.25ter  |                                                                                                               |

## Parameter

|                      |                                                                                                                                |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;value&gt;</b> | Integer type.                                                                                                                  |
| <u>0</u>             | TA ignores status on DTR.                                                                                                      |
| 1                    | Low→High on DTR: Change to command mode while remaining the connected call.                                                    |
| 2                    | Low→High on DTR: Disconnect data call and change to command mode. When DTR is in high level, auto-answer function is disabled. |

## 3.3. AT+ICF Set the Frame Format and Parity of Serial Communication

| AT+ICF Set the Frame Format and Parity of Serial Communication |                                                                                                                                                                                                                                         |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+ICF=?</b>                                | Response<br><b>+ICF:</b> (list of supported <b>&lt;format&gt;s</b> ),(list of supported <b>&lt;parity&gt;s</b> )<br><br><b>OK</b>                                                                                                       |
| Read Command<br><b>AT+ICF?</b>                                 | Response<br><b>+ICF:</b> <b>&lt;format&gt;</b> , <b>&lt;parity&gt;</b><br><br><b>OK</b>                                                                                                                                                 |
| Write Command<br><b>AT+ICF=&lt;format&gt;[,&lt;parity&gt;]</b> | Response<br>This parameter setting determines the serial interface character framing format and parity received by TA from TE.<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                          | 300 ms                                                                                                                                                                                                                                  |
| Characteristics                                                | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                                                                                           |
| Reference<br>V.25ter                                           |                                                                                                                                                                                                                                         |

## Parameter

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>&lt;format&gt;</b> | Integer type. Frame 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                            |
| <b>&lt;parity&gt;</b> | Integer type. Parity type.                        |
| 0                     | Odd                                               |
| 1                     | Even                                              |
| 2                     | Mark                                              |
| 3                     | Space                                             |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.7</b> for details. |

### NOTE

1. The command is applied for command mode.
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><b>AT+IFC=?</b>                                      | Response<br><b>+IFC:</b> (list of supported <b>&lt;dce_by_dte&gt;</b> s),(list of supported <b>&lt;dte_by_dce&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+IFC?</b>                                       | Response<br><b>+IFC:</b> <b>&lt;dce_by_dte&gt;</b> , <b>&lt;dte_by_dce&gt;</b><br><br><b>OK</b>                                           |
| Write Command<br><b>AT+IFC=&lt;dce_by_dte&gt;,&lt;dte_by_dce&gt;</b> | Response<br>This parameter setting determines the data flow control on the serial interface for data mode.<br><b>OK</b>                   |
| Maximum Response Time                                                | 300 ms                                                                                                                                    |
| Characteristics                                                      | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                             |

Reference  
V.25ter

## Parameter

|                           |                                                                                         |
|---------------------------|-----------------------------------------------------------------------------------------|
| <b>&lt;dce_by_dte&gt;</b> | Integer type. Specifies the method that will be used by TE when receiving data from TA. |
| <u>0</u>                  | None                                                                                    |
| 2                         | RTS flow control                                                                        |
| <b>&lt;dte_by_dce&gt;</b> | Integer type. Specifies the method that will be used by TA when receiving data from TE. |
| <u>0</u>                  | None                                                                                    |
| 2                         | CTS flow control                                                                        |

## Example

```

AT+IFC=2,2 //Enable the hardware flow control.
OK
AT+IFC?
+IFC: 2,2
OK

```

## 3.5. AT+IPR Set TE-TA Fixed Local Rate

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

|                                             |                                                                                                                                                                                                                  |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+IPR=?</b>             | Response<br><b>+IPR:</b> (list of supported auto detectable <b>&lt;rate&gt;s</b> ),(list of supported fixed-only <b>&lt;rate&gt;s</b> )<br><br><b>OK</b>                                                         |
| Read Command<br><b>AT+IPR?</b>              | Response<br><b>+IPR: &lt;rate&gt;</b><br><br><b>OK</b>                                                                                                                                                           |
| Write Command<br><b>AT+IPR=&lt;rate&gt;</b> | Response<br>This parameter 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. |

|                       |                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------|
|                       | <b>OK</b>                                                                                                     |
| Maximum Response Time | 300 ms                                                                                                        |
| Characteristics       | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed. |
| Reference<br>V.25ter  |                                                                                                               |

## Parameter

|                     |                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;rate&gt;</b> | Integer type. Baud rate per second. Unit: bps.<br><u>0</u> (Adaptive baud rate)<br>2400<br>4800<br>9600<br>14400<br>19200<br>28800<br>33600<br>38400<br>57600<br>115200<br>230400<br>460800<br>921600 |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### NOTE

1. The default configuration of **AT+IPR** is an adaptive baud rate enabled by **AT+IPR=0**.
2. If a fixed baud rate is set, make sure that both TE (DTE, usually an external processor) and TA (DCE, Quectel GSM module) are configured to the same rate. If an adaptive baud rate is enabled, the TA could automatically recognize the baud rate currently used by the TE after receiving **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 115200 bps.
OK
AT&W                     //Store current setting, that is, the serial
                           communication speed is 115200 bps after restarting
                           module.
OK
AT+IPR?
+IPR: 115200
OK
```

#### 3.5.1. Adaptive Baud Rate

To take advantage of the 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 by the TA. The baud rate can be synchronized simply by using an **AT** string. It 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** 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** can be detected.
  - 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** 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, when 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 cannot be accepted. It must be taken

into account when adaptive baud rate and auto-answer mode (**ATS0≠0**) are enabled at the same time, especially if (U)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 an 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.

**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.

### 3.6. AT+CMUX Multiplexer Control

| AT+CMUX Multiplexer Control      |                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMUX=?</b> | <p>Response</p> <p><b>+CMUX:</b> (list of supported &lt;mode&gt;s),(list of supported &lt;subset&gt;s),(list of supported &lt;port_speed&gt;s),(list of supported &lt;N1&gt;s),(list of supported &lt;T1&gt;s),(list of supported &lt;N2&gt;s),(list of supported &lt;T2&gt;s),(list of supported &lt;T3&gt;s),(list of supported &lt;k&gt;s)</p> <p><b>OK</b></p> |
| Read Command<br><b>AT+CMUX?</b>  | <p>Response</p> <p><b>+CMUX:</b></p> <p>&lt;mode&gt;,&lt;subset&gt;,&lt;port_speed&gt;,&lt;N1&gt;,&lt;T1&gt;,&lt;N2&gt;,&lt;T2&gt;,&lt;T3&gt;,&lt;k&gt;</p>                                                                                                                                                                                                        |

|                                                                                                                                                                   |                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                   | <b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                                                           |
| Write Command<br><b>AT+CMUX=[&lt;mode&gt;[,&lt;subset&gt;[,&lt;port_speed&gt;[,&lt;N1&gt;[,&lt;T1&gt;[,&lt;N2&gt;[,&lt;T2&gt;[,&lt;T3&gt;[,&lt;k&gt;]]]]]]]]]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                                                                                                             | 300 ms                                                                                                            |
| Characteristics                                                                                                                                                   | This command takes effect immediately.<br>The configurations will not be saved.                                   |
| Reference                                                                                                                                                         |                                                                                                                   |
| GSM 07.07                                                                                                                                                         |                                                                                                                   |

## Parameter

|                           |                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b>       | Integer type. Multiplexer transparency mechanism.<br><u>0</u> Basic option                                   |
| <b>&lt;subset&gt;</b>     | Integer type. The way by which the multiplexer control channel is set up.<br><u>0</u> UIH frames used only   |
| <b>&lt;port_speed&gt;</b> | Integer type. Transmission rate.<br><u>5</u> 115200 bit/s                                                    |
| <b>&lt;N1&gt;</b>         | Integer type. Maximum frame size.<br><u>127</u>                                                              |
| <b>&lt;T1&gt;</b>         | Integer type. Acknowledgement timer in a unit of ten milliseconds.<br><u>10</u>                              |
| <b>&lt;N2&gt;</b>         | Integer type. Maximum number of re-transmissions.<br><u>3</u>                                                |
| <b>&lt;T2&gt;</b>         | Integer type. Response timer for the multiplexer control channel in a unit of ten milliseconds.<br><u>30</u> |
| <b>&lt;T3&gt;</b>         | Integer type. Wake up response timers in seconds.<br><u>10</u>                                               |
| <b>&lt;k&gt;</b>          | Integer type. Window size, for advanced operation with Error Recovery options.<br><u>2</u>                   |
| <b>&lt;err&gt;</b>        | Error codes. See <b>Chapter 15.7</b> for details.                                                            |

### NOTE

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 115200 bps 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    |

## 3.7. AT+QEAUART Configure Multi UART Function

| AT+QEAUART Configure Multi UART Function        |                                                                                                                   |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QEAUART=?</b>             | Response<br><b>+QEAUART:</b> (list of supported <mode>s)<br><br><b>OK</b>                                         |
| Read Command<br><b>AT+QEAUART?</b>              | Response<br><b>+QEAUART:</b> <mode><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                |
| Write Command<br><b>AT+QEAUART=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                           | 300 ms                                                                                                            |
| Characteristics                                 | This command takes effect immediately.<br>The configurations will be saved automatically.                         |
| Reference<br>Quectel                            |                                                                                                                   |

## Parameter

|                     |                                                                                                      |
|---------------------|------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.<br>0    Disable multi UART function<br>1    UART 1 and UART 3 are used as AT UART port |
| <b>&lt;err&gt;</b>  | Error codes. See <b>Chapter 15.7</b> for details.                                                    |

### NOTE

1. When multi UART function is enabled, the UART 3 port can be used to execute AT commands. For more details about the Debug UART port, please refer to **documents [8], [9]and[10]**.
2. The auxiliary UART port cannot be used to execute data transmission-related AT commands. It is used for modem communication with embedded GNSS engine.

## 3.8. AT+QSEDCB Configure Parameters of the Multi UART

| AT+QSEDCB Configure Parameters of the Multi UART                                                                    |                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QSEDCB=?</b>                                                                                  | Response<br><b>+QSEDCB:</b> (list of supported <b>&lt;baud_rate&gt;s</b> ),(list of supported <b>&lt;data_bits&gt;s</b> ),(list of supported <b>&lt;stop_bits&gt;s</b> ),(list of supported <b>&lt;parity&gt;s</b> ),(list of supported <b>&lt;port&gt;s</b> )<br><br><b>OK</b> |
| Read Command<br><b>AT+QSEDCB?</b>                                                                                   | Response<br><b>+QSEDCB:</b> <b>&lt;Port2&gt;</b> <b>&lt;baud_rate&gt;</b> , <b>&lt;data_bits&gt;</b> , <b>&lt;stop_bits&gt;</b> , <b>&lt;parity&gt;</b><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                                                          |
| Write Command<br><b>AT+QSEDCB=&lt;baud_rate&gt;,&lt;data_bits&gt;,&lt;stop_bits&gt;,&lt;parity&gt;,&lt;port&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b>                                                                                                                                                               |
| Maximum Response Time                                                                                               | 300 ms                                                                                                                                                                                                                                                                          |
| Characteristics                                                                                                     | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                                                                                                                                   |

Reference  
Quectel

## Parameter

|             |                                                   |
|-------------|---------------------------------------------------|
| <baud_rate> | Integer type. Baud rate.                          |
|             | 1200                                              |
|             | 2400                                              |
|             | 4800                                              |
|             | 9600                                              |
|             | 14400                                             |
|             | 19200                                             |
|             | 28800                                             |
|             | 38400                                             |
|             | 57600                                             |
|             | <u>115200</u>                                     |
|             | 230400                                            |
|             | 460800                                            |
|             | 921600                                            |
| <data_bits> | Integer type. Data bits.                          |
|             | 7                                                 |
|             | <u>8</u>                                          |
| <stop_bits> | Integer type. Stop bits.                          |
|             | <u>1</u>                                          |
|             | 2                                                 |
| <parity>    | Integer type. Parity.                             |
|             | <u>0</u> None                                     |
|             | 1    Odd                                          |
|             | 2    Even                                         |
|             | 3    Mark                                         |
| <port>      | Integer type. The UART port to be configured.     |
|             | <u>3</u> The selected UART port is UART 3         |
| <err>       | Error codes. See <b>Chapter 15.7</b> for details. |

### NOTE

When multi UART port function is enabled, the **AT+QSEDCB** will be executed successfully. Otherwise, an error will be returned.

# 4 Status Control Commands

## 4.1. AT+CEER Report Extended Error

| AT+CEER Report Extended Error       |                                                                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CEER=?</b>    | Response<br><b>OK</b>                                                                                                                                 |
| Execution Command<br><b>AT+CEER</b> | Response<br>TA returns an extended report of the reason for the last call release.<br><b>+CEER: &lt;locationID&gt;,&lt;cause&gt;</b><br><br><b>OK</b> |
| Maximum Response Time               | 300 ms                                                                                                                                                |
| Characteristics                     | /                                                                                                                                                     |
| Reference<br>GSM 07.07              |                                                                                                                                                       |

### Parameter

|                           |                                                                                                                                                                                                                    |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;locationID&gt;</b> | Location ID as number code. Location IDs are listed in <b>Table 12</b> . Each ID is related with another table that contains a list of <b>&lt;cause&gt;</b> s.                                                     |
| <b>&lt;cause&gt;</b>      | 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 <b>Chapter 15.9</b> . |

### Example

```

AT+CEER                                     //Query error reporting in normal state, return 0 (indicates no error).
+CEER: 0,0

OK
ATD10086;
OK

```

### AT+CLCC

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

OK

### NO CARRIER

### AT+CEER

+CEER: 1,16

OK

//Established a call and the remote party hangs up the call.

//Query error reporting, the <locationID>=1 means "Cause for protocol stack (PS) layer", <cause>=16 means "Normal call clearing".

## 4.2. AT+CPAS Query Mobile Equipment Activity Status

### AT+CPAS Query Mobile Equipment Activity Status

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

### Parameter

|       |                                                           |
|-------|-----------------------------------------------------------|
| <pas> | Integer type.                                             |
| 0     | Ready                                                     |
| 1     | Unknown (ME is not guaranteed to respond to instructions) |
| 3     | Ringing                                                   |

|       |                                                   |                                  |
|-------|---------------------------------------------------|----------------------------------|
|       | 4                                                 | Call in progress or call holding |
| <err> | Error codes. See <b>Chapter 15.7</b> for details. |                                  |

### Example

```

AT+CPAS
+CPAS: 0 //The module is idle.

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

OK
AT+CPAS
+CPAS: 3 //There is an incoming call (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 RI Indication When Using URC

| AT+QINDRI RI Indication When Using URC           |                                                                            |
|--------------------------------------------------|----------------------------------------------------------------------------|
| Test Command<br><b>AT+QINDRI=?</b>               | Response<br><b>+QINDRI:</b> (list of supported <status>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QINDRI?</b>                | Response<br><b>+QINDRI:</b> <status><br><br><b>OK</b>                      |
| Write Command<br><b>AT+QINDRI=&lt;status&gt;</b> | Response<br><b>OK</b>                                                      |

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
|                       | If there is any error, response:<br><b>ERROR</b>                                |
| Maximum Response Time | 300 ms                                                                          |
| Characteristics       | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>Quectel  |                                                                                 |

## Parameter

|                       |                        |
|-----------------------|------------------------|
| <b>&lt;status&gt;</b> | Integer type.          |
| 0                     | Disables RI indication |
| <u>1</u>              | Enables RI indication  |

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

| AT+QMOSTAT Show State of Mobile Originated Call |                                                                                         |
|-------------------------------------------------|-----------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QMOSTAT=?</b>             | Response<br><b>+QMOSTAT:</b> (list of supported <b>&lt;mode&gt;s</b> )<br><br><b>OK</b> |
| Read Command<br><b>AT+QMOSTAT?</b>              | Response<br><b>+QMOSTAT:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                       |
| Write Command<br><b>AT+QMOSTAT=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is an error:<br><b>ERROR</b>                      |
| Maximum Response Time                           | 300 ms                                                                                  |
| Characteristics                                 | This command takes effect immediately.<br>The configurations will not be saved.         |
| Reference<br>Quectel                            |                                                                                         |

## Parameter

|                     |                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.                                                                                                                                                                                                                          |
| <u>0</u>            | 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 <b>MO RING</b> will be sent if the called party is alerted; and the URC string of <b>MO CONNECTED</b> 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.

```

## 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><b>AT+QREFUSECS=?</b>                                         | Response<br><b>+QREFUSECS:</b> (list of supported <refuse_SMS>s)[,(list of supported <refuse_call>s)]<br><br><b>OK</b> |
| Read Command<br><b>AT+QREFUSECS?</b>                                          | Response<br><b>+QREFUSECS:</b> <refuse_SMS>,<refuse_call><br><br><b>OK</b>                                             |
| Write Command<br><b>AT+QREFUSECS=&lt;refuse_SMS&gt;[,&lt;refuse_call&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                                                    |
| Maximum Response Time                                                         | 300 ms                                                                                                                 |
| Characteristics                                                               | This command takes effect immediately.<br>The configurations will not be saved.                                        |
| Reference                                                                     |                                                                                                                        |

Quectel

## Parameter

|                            |                                     |
|----------------------------|-------------------------------------|
| <b>&lt;refuse_SMS&gt;</b>  | Integer type.                       |
| <u>0</u>                   | Receive the new SMS                 |
| 1                          | Refuse to receive the new SMS       |
| <b>&lt;refuse_call&gt;</b> | Integer type.                       |
| <u>0</u>                   | Receive the incoming call           |
| 1                          | Refuse to receive the incoming call |

## 4.6. AT+QNITZ Network Time Synchronization

| AT+QNITZ Network Time Synchronization           |                                                                                                                   |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QNITZ=?</b>               | Response<br><b>+QNITZ:</b> (list of supported <b>&lt;enable&gt;</b> s)<br><br><b>OK</b>                           |
| Read Command<br><b>AT+QNITZ?</b>                | Response<br><b>+QNITZ:</b> <b>&lt;enable&gt;</b><br><br><b>OK</b>                                                 |
| Write Command<br><b>AT+QNITZ=&lt;enable&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                           | 300 ms                                                                                                            |
| Characteristics                                 | This command takes effect immediately.<br>The configurations will be saved automatically.                         |
| Reference<br>Quectel                            |                                                                                                                   |

## Parameter

|                       |                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;enable&gt;</b> | Integer type. If the function is enabled, on receiving network time message, an unsolicited indication is shown in the format of: <b>+QNITZ: &lt;time&gt;,&lt;ds&gt;</b> . |
| <u>0</u>              | Disable to synchronize time from GSM network                                                                                                                               |

|        |                                                                                                                                                                                                                                                                                                                                                    |                                             |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
|        | 1                                                                                                                                                                                                                                                                                                                                                  | Enable to synchronize time from GSM network |
| <time> | String type. 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 to +48). E.g. 6th of May 2004, 22:10:00 GMT+2 hours equals to "04/05/06,22:10:00+08". |                                             |
| <ds>   | Integer type. Daylight Saving Time. When it is zero, the format will be "04/05/06,22:10:00+08,0".                                                                                                                                                                                                                                                  |                                             |
| <err>  | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                  |                                             |

**NOTE**

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

## 4.7. AT+QLTS Obtain the Latest Time Synchronized Through Network

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

### Parameter

|        |                                                                                                                                                                                                                                                                  |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <time> | String type. Format: "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 to +48). |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|       |                                                                                                   |
|-------|---------------------------------------------------------------------------------------------------|
|       | E.g. 6th of May 2004, 22:10:00 GMT+2 hours equal to "04/05/06,22:10:00+08".                       |
| <ds>  | Integer type. Daylight saving time. When it is zero, the format will be "04/05/06,22:10:00+08,0". |
| <err> | Error codes. See <b>Chapter 15.7</b> for details.                                                 |

## 4.8. AT+CTZU Network Time Synchronization and RTC Time Update

### AT+CTZU Network Time Synchronization and RTC Time Update

|                                              |                                                                                                                   |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CTZU=?</b>             | Response<br><b>+CTZU:</b> (list of supported <mode>s)<br><br><b>OK</b>                                            |
| Read Command<br><b>AT+CTZU?</b>              | Response<br><b>+CTZU:</b> <mode><br><br><b>OK</b>                                                                 |
| Write Command<br><b>AT+CTZU=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                        | 300 ms                                                                                                            |
| Characteristics                              | This command takes effect immediately.<br>The configurations will be saved automatically.                         |
| Reference                                    |                                                                                                                   |

### Parameter

|        |                                                                                                                                                                                                                                                                                                                                                                         |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <mode> | Integer type.<br>0      Disable automatic update RTC time via NITZ<br>1      Update network synchronized time to RTC and save time zone to NVRAM<br>2      Update GMT time with time zone to RTC, save time zone to NVRAM, and ignore daylight saving time<br>3      Update localized time and time zone to RTC, and save time zone to NVRAM<br>4      Same as <mode>=2 |
| <err>  | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                       |

### 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.

## 4.9. AT+QSIMDET Enable/Disable (U)SIM Card Detection

| AT+QSIMDET Enable/Disable (U)SIM Card Detection                                           |                                                                                                                                                   |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QSIMDET=?</b>                                                       | Response<br><b>+QSIMDET:</b> (list of supported <enable>s),(list of supported <insert_level>s),(list of supported <pin_choice>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QSIMDET?</b>                                                        | Response<br><b>+QSIMDET:</b> <enable>,<insert_level>,<pin_choice><br><br><b>OK</b>                                                                |
| Write Command<br><b>AT+QSIMDET=&lt;enable&gt;,&lt;insert_level&gt;,&lt;pin_choice&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b>                                 |
| Maximum Response Time                                                                     | 300 ms                                                                                                                                            |
| Characteristics                                                                           | This command takes effect immediately.<br>The configurations will be saved after <b>AT+W</b> is executed.                                         |
| Reference                                                                                 |                                                                                                                                                   |

### Parameter

|                |                                                                                                                                                                     |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <enable>       | Integer type. Enable/Disable (U)SIM card detection function.<br>0     Disable<br>1     Enable                                                                       |
| <insert_level> | Integer type. Configure pin level when (U)SIM card is inserted.<br>0     Low level<br>1     High level                                                              |
| <pin_choice>   | Integer type. Configure (U)SIM card detection pin.<br>0     Configure SIM_PRESENCE as (U)SIM card detection pin<br>1     Configure DTR as (U)SIM card detection pin |

<err> Error codes. See **Chapter 15.7** for details.

#### NOTE

The pin SIM\_PRESENCE and DTR are multiplexed in MC65, M65 and M95-R, and the modules only support DTR pin as (U)SIM card detection pin. If (U)SIM card detection function is turned on, it is recommended to set <pin\_choice> to 1.

## 4.10. AT+QSIMSTAT (U)SIM Insertion Status Report

### AT+QSIMSTAT (U)SIM Insertion Status Report

|                                                    |                                                                                                                   |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QSIMSTAT=?</b>               | Response<br><b>+QSIMSTAT:</b> (list of supported <enable>s)<br><br><b>OK</b>                                      |
| Read Command<br><b>AT+QSIMSTAT?</b>                | Response<br><b>+QSIMSTAT:</b> <enable>,<insert_status><br><br><b>OK</b>                                           |
| Write Command<br><b>AT+QSIMSTAT=&lt;enable&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                              | 300 ms                                                                                                            |
| Characteristics                                    | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.     |
| Reference                                          |                                                                                                                   |

### Parameter

|                 |                                                                                                                                                                                                                                           |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <enable>        | Integer type. Enable or disable (U)SIM card insertion status report. If it is enabled, when (U)SIM card is removed or inserted, the URC <b>+QSIMSTAT: &lt;enable&gt;,&lt;insert_status&gt;</b> will be reported.<br>0 Disable<br>1 Enable |
| <insert_status> | Integer type. Indicates whether (U)SIM card has been inserted.<br>0 (U)SIM card has been not inserted                                                                                                                                     |

---

|       |   |                                                   |
|-------|---|---------------------------------------------------|
|       | 1 | (U)SIM card has been inserted                     |
| <err> |   | Error codes. See <b>Chapter 15.7</b> for details. |

---

# 5 (U)SIM Related Commands

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

This command queries the International Mobile Subscriber Identity which is intended to permit the TE to identify the individual (U)SIM card that is attached to MT.

| AT+CIMI Query International Mobile Subscriber Identity (IMSI) |                                                                                                                           |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CIMI=?</b>                              | Response<br><b>OK</b>                                                                                                     |
| Execution Command<br><b>AT+CIMI</b>                           | Response<br><IMSI><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                         | 300 ms                                                                                                                    |
| Characteristics                                               | /                                                                                                                         |
| Reference<br>GSM 07.07                                        |                                                                                                                           |

### Parameter

|        |                                                                              |
|--------|------------------------------------------------------------------------------|
| <IMSI> | String type without double quotes. International Mobile Subscriber Identity. |
| <err>  | Error codes. See <b>Chapter 15.7</b> for details.                            |

### Example

```

AT+CIMI
460023210226023           //Query IMSI number of (U)SIM card which is attached to ME.

OK

```

## 5.2. AT+CLCK Facility Lock

This command locks/unlocks or interrogates 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>**.

| AT+CLCK Facility Lock                                                                   |                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CLCK=?</b>                                                        | Response<br><b>+CLCK:</b> (list of supported <b>&lt;fac&gt;</b> s)<br><br><b>OK</b>                                                                                                                                                                                                                                                                                                   |
| Write Command<br><b>AT+CLCK=&lt;fac&gt;,&lt;mode&gt;,&lt;passwd&gt;[,&lt;class&gt;]</b> | Response<br>If <b>&lt;mode&gt;</b> is not equal to 2 and the command is set successfully:<br><b>OK</b><br><br>If <b>&lt;mode&gt;</b> =2 and the command is set successfully:<br><b>+CLCK: &lt;status&gt;[,&lt;class&gt;]</b><br><b>[+CLCK: &lt;status&gt;[,&lt;class&gt;]]</b><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                                   | 5 s                                                                                                                                                                                                                                                                                                                                                                                   |
| Characteristics                                                                         | This command takes effect immediately.<br>The configurations will be saved automatically.                                                                                                                                                                                                                                                                                             |
| Reference<br>GSM 07.07                                                                  |                                                                                                                                                                                                                                                                                                                                                                                       |

### Parameter

|                    |                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;fac&gt;</b> | String type.<br>"SC" (U)SIM (lock (U)SIM card) ((U)SIM asks password in ME power-up and when this lock command is issued)<br>"AO" BAOC (Bar All Outgoing Calls) (refer to <i>GSM02.88[6] clause 1</i> )<br>"OI" BOIC (Bar Outgoing International Calls) (refer to <i>GSM02.88[6] clause 1</i> )<br>"OX" BOIC-exHC (Bar Outgoing International Calls except to Home Country) (refer |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

to *GSM02.88[6] clause 1)*

"FD" (U)SIM fixed dialing memory: If the mobile is locked to "FD", only the phone numbers stored in "FD" memory can be dialed

|                       |                                                   |
|-----------------------|---------------------------------------------------|
| <b>&lt;mode&gt;</b>   | Integer type. Operation mode.                     |
| 0                     | Unlock                                            |
| 1                     | Lock                                              |
| 2                     | Query status                                      |
| <b>&lt;passwd&gt;</b> | String type. Password.                            |
| <b>&lt;class&gt;</b>  | Integer type. Class of information.               |
| 1                     | Voice                                             |
| 2                     | Data                                              |
| 4                     | FAX                                               |
| 7                     | All telephony except SMS                          |
| 8                     | Short message service                             |
| 16                    | Data circuit synchronization                      |
| 32                    | Data circuit asynchronization                     |
| <b>&lt;status&gt;</b> | Integer type. Business status.                    |
| 0                     | Off                                               |
| 1                     | On                                                |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.7</b> for details. |

## Example

```

AT+CLCK="SC",2           //Query the status of (U)SIM card lock.
+CLCK: 0

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

OK
AT+CLCK="SC",0,"1234"    //Unlock the (U)SIM card.
OK

```

### 5.3. AT+CPIN Enter PIN

This command enters a password or queries whether or not the module requires a password which is necessary before it can be operated.

| AT+CPIN Enter PIN                                             |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CPIN=?</b>                              | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                         |
| Read Command<br><b>AT+CPIN?</b>                               | Response<br><b>+CPIN: &lt;code&gt;</b><br><br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                       |
| Write Command<br><b>AT+CPIN=&lt;pin&gt;[,&lt;new pin&gt;]</b> | Response<br>TA stores a password, such as (U)SIM PIN, (U)SIM PUK, PH-SIM PIN, etc., which is necessary before it can be operated. 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 <b>+CME ERROR</b> is returned to TE.<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                         | 5 s                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Characteristics                                               | This command takes effect immediately.<br>The configurations will not be saved.                                                                                                                                                                                                                                                                                                                                               |
| Reference<br>GSM 07.07                                        |                                                                                                                                                                                                                                                                                                                                                                                                                               |

#### Parameter

|                     |                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>&lt;code&gt;</b> | String type (without double quotes).                                                                                  |
| READY               | No further entry needed                                                                                               |
| SIM PIN             | ME is waiting for (U)SIM PIN                                                                                          |
| SIM PUK             | ME is waiting for (U)SIM PUK                                                                                          |
| PH_SIM PIN          | ME is waiting for phone to (U)SIM card (antitheft)                                                                    |
| PH_SIM PUK          | ME is waiting for (U)SIM PUK (antitheft)                                                                              |
| SIM PIN2            | PIN 2, e.g. it is possible to edit the FDN book only if preceding command was acknowledged with <b>+CME ERROR: 17</b> |
| SIM PUK2            | Possible only if preceding command was acknowledged with error                                                        |

### +CME ERROR: 18.

See **Chapter 15.7** for error codes details.

|           |                                                                                                                                                           |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pin>     | String type. Password.                                                                                                                                    |
| <new pin> | String type. New password. It is required if the requested code is (U)SIM PUK or (U)SIM PUK2. This pin is used to replace the old pin in the (U)SIM card. |
| <err>     | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                         |

### Example

```

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

OK
AT+CPIN="1234"                //Enter PIN.
+CPIN: READY

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

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

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

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

OK

```

## 5.4. AT+CPWD Change Password

This function sets a new password for the facility lock function. This Test Command returns a list of pairs which present the available facilities and the maximum length of their password.

| AT+CPWD Change Password                                                   |                                                                                                             |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CPWD=?</b>                                          | Response<br><b>+CPWD:</b> list of supported (<fac>,<pwdlength>)s<br><br><b>OK</b>                           |
| Write Command<br><b>AT+CPWD=&lt;fac&gt;,&lt;oldpwd&gt;,&lt;newpwd&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                     | 5 s                                                                                                         |
| Characteristics                                                           | This command takes effect immediately.<br>The configurations will not be saved.                             |
| Reference<br>GSM 07.07                                                    |                                                                                                             |

### Parameter

|             |                                                                                                                                            |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <fac>       | String type.<br>"SC" (U)SIM (lock (U)SIM card) ((U)SIM asks password in ME power-up and when this lock command issued)<br>"P2" (U)SIM PIN2 |
| <pwdlength> | Integer type. Maximum length of password. Maximum length: 11 bytes.                                                                        |
| <oldpwd>    | String type. Password specified for the facility from the user interface or with command.                                                  |
| <newpwd>    | String type. New password.                                                                                                                 |
| <err>       | Error codes. See <b>Chapter 15.7</b> for details.                                                                                          |

### Example

```
AT+CPIN?
+CPIN: READY

OK
```

```

AT+CPWD="SC","1234","4321" //Change (U)SIM card password to "4321".
OK
AT+CPIN? //Restart module or re-activate the (U)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

OK

```

## 5.5. AT+CRSM Restricted (U)SIM Access

This command offers easy and limited access to the (U)SIM database. It transmits the (U)SIM command **<command>** and its required parameters to ME.

| AT+CRSM Restricted (U)SIM Access                                                                                   |                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CRSM=?</b>                                                                                   | Response<br><b>OK</b>                                                                                                                                                       |
| Write Command<br><b>AT+CRSM=&lt;command&gt;[,&lt;fileid&gt;[,&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;[,&lt;data&gt;]]]</b> | Response<br><b>+CRSM: &lt;sw1&gt;,&lt;sw2&gt;[,&lt;response&gt;]</b><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                                                              | 300 ms                                                                                                                                                                      |
| Characteristics                                                                                                    | This command takes effect immediately.<br>The configurations will not be saved.                                                                                             |
| Reference<br>GSM 07.07                                                                                             |                                                                                                                                                                             |

### Parameter

|                        |                                      |
|------------------------|--------------------------------------|
| <b>&lt;command&gt;</b> | Integer type. (U)SIM command number. |
| 176                    | READ BINARY                          |
| 178                    | READ RECORD                          |
| 192                    | GET RESPONSE                         |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|                | 214                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | UPDATE BINARY |
|                | 220                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | UPDATE RECORD |
|                | 242                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | STATUS        |
|                | All other values are reserved; refer to <i>GSM 11.11</i> .                                                                                                                                                                                                                                                                                                                                                                                                               |               |
| <fileid>       | Integer type. Identifier for an elementary data file on (U)SIM. Mandatory for every command except STATUS.                                                                                                                                                                                                                                                                                                                                                               |               |
| <P1>,<P2>,<P3> | Integer type. Parameters passed on by the ME to the (U)SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in <i>GSM 11.11</i> .                                                                                                                                                                                                                                                                             |               |
| <data>         | Information which shall be written to the (U)SIM (hexadecimal character format).                                                                                                                                                                                                                                                                                                                                                                                         |               |
| <sw1>,<sw2>    | Integer type. Information from the (U)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 <i>GSM 11.11</i> ). 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. |               |
| <err>          | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                                                                                                                        |               |

## Example

**AT+CRSM=242**

**+CRSM: 145,211,"000000007F1002000000000000A13000C0400838A808A"**

**OK**      //<sw1>=145, <sw2>=211, "000000007F1002000000000000A13000C0400838A808A" is the content which is returned from (U)SIM card (refer to *GSM 11.11*).

## 5.6. AT+CSIM Generic (U)SIM Access

This command allows a direct control of the (U)SIM that is inserted in the currently selected card slot by a distant application on ME. ME should then keep the processing of (U)SIM information within the frame specified by GSM/UMTS.

| AT+CSIM Generic (U)SIM Access                                  |                                                           |
|----------------------------------------------------------------|-----------------------------------------------------------|
| Test Command<br><b>AT+CSIM=?</b>                               | Response<br><b>OK</b>                                     |
| Write Command<br><b>AT+CSIM=&lt;length&gt;,&lt;command&gt;</b> | Response<br><b>+CSIM: &lt;length&gt;,&lt;response&gt;</b> |

|                        |                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------|
|                        | <b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time  | 300 ms                                                                                          |
| Characteristics        | This command takes effect immediately.<br>The configurations will not be saved.                 |
| Reference<br>GSM 07.07 |                                                                                                 |

## Parameter

|                         |                                                                                                                                                    |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;length&gt;</b>   | Integer type. Length of characters sent to the TE in <b>&lt;command&gt;</b> or <b>&lt;response&gt;</b> (i.e. two times of octets in the raw data). |
| <b>&lt;command&gt;</b>  | String type in hex format. Commands sent by the ME to the (U)SIM. See GSM 11.11 for details.                                                       |
| <b>&lt;response&gt;</b> | String type in hex format. Response to the command sent by the ME to the (U)SIM. See GSM 11.11 for details.                                        |
| <b>&lt;err&gt;</b>      | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                  |

### NOTE

- AT+CSIM** is supported with limitation:
  - Only supports SELECT, STATUS, READ BINARY, UPDATE BINARY, READ RECORD, UPDATE RECORD, GET RESPONSE commands.
  - Another application should not be selected, and termination indication or initialization indication should not be sent. If the user sends SELECT by AID, STATUS by initialization or termination, **ERROR** is returned.
- AT+CSIM** is supported with GSM CLA and UICC CLA, but logical channels are not supported other than the default channel.

## 5.7. AT+CCID Show CCID

This command queries CCID of the current (U)SIM card.

| AT+CCID Show CCID                   |                                                              |
|-------------------------------------|--------------------------------------------------------------|
| Test Command<br><b>AT+CCID=?</b>    | Response<br><b>OK</b>                                        |
| Execution Command<br><b>AT+CCID</b> | Response<br><b>+CCID: &lt;CCIC_data&gt;</b><br><br><b>OK</b> |
| Maximum Response Time               | 300 ms                                                       |
| Characteristics                     | /                                                            |
| Reference<br>Quectel                |                                                              |

### Parameter

**<CCID\_data>** String type. CCID number for the current (U)SIM card.

### Example

```

AT+CCID //Query CCID of the (U)SIM card.
+CCID: "898600220909A0206023"
OK

```

## 5.8. AT+QCCID Show CCID

This command queries CCID of the current (U)SIM card.

| AT+QCCID Show CCID                   |                                                       |
|--------------------------------------|-------------------------------------------------------|
| Test Command<br><b>AT+QCCID=?</b>    | Response<br><b>OK</b>                                 |
| Execution Command<br><b>AT+QCCID</b> | Response<br><b>&lt;CCID_data&gt;</b><br><br><b>OK</b> |

|                       |        |
|-----------------------|--------|
| Maximum Response Time | 300 ms |
| Characteristics       | /      |
| Reference<br>Quectel  |        |

## Parameter

|             |                                                       |
|-------------|-------------------------------------------------------|
| <CCID_data> | String type. CCID number for the current (U)SIM card. |
|-------------|-------------------------------------------------------|

## Example

```

AT+QCCID                                     //Query CCID of the (U)SIM card.
898600220909A0206023

OK

```

## 5.9. AT+QGID Get (U)SIM Card Group Identifier (GID)

This command gets (U)SIM card group identifier.

| AT+QGID Get (U)SIM Card Group Identifier (GID) |                                                                                                                                                            |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>AT+QGID</b>            | Response<br><b>+QGID: &lt;gid1&gt; &lt;gid2&gt;</b><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                          | 300 ms                                                                                                                                                     |
| Characteristics                                | /                                                                                                                                                          |
| Reference<br>Quectel                           |                                                                                                                                                            |

## Parameter

|        |                                               |
|--------|-----------------------------------------------|
| <gid1> | Integer type. (U)SIM card group identifier 1. |
|--------|-----------------------------------------------|

|        |                                                   |
|--------|---------------------------------------------------|
| <gid2> | Integer type. (U)SIM card group identifier 2.     |
| <err>  | Error codes. See <b>Chapter 15.7</b> for details. |

**NOTE**

If the (U)SIM supports GID files, the GID values are returned. Otherwise **0xff** is returned.

## 5.10. AT+QSPN Get Service Provider Name from (U)SIM

This command queries service provider name from (U)SIM card.

### AT+QSPN Get Service Provider Name from (U)SIM

|                                 |                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Read Command<br><b>AT+QSPN?</b> | Response<br><b>+QSPN: &lt;spn&gt;,&lt;display_mode&gt;</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time           | 300 ms                                                                                                                                                                  |
| Characteristics                 | /                                                                                                                                                                       |
| Reference<br>Quectel            |                                                                                                                                                                         |

### Parameter

|                |                                                                                      |
|----------------|--------------------------------------------------------------------------------------|
| <spn>          | String type. Service provider name on (U)SIM.                                        |
| <display_mode> | Integer type.<br>0 Do not display PLMN. Already registered on PLMN<br>1 Display PLMN |
| <err>          | Error codes. See <b>Chapter 15.7</b> for details.                                    |

**NOTE**

If SIM is not inserted, it may return **+CME ERROR: <err>**.

## 5.11. AT+QTRPIN Query Times Remained to Input (U)SIM PIN/PUK

This command queries the retry times remained to input (U)SIM PIN/PUK.

| AT+QTRPIN Query Times Remained to Input (U)SIM PIN/PUK |                                                                                                  |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Execution Command<br><b>AT+QTRPIN</b>                  | Response<br><b>+QTRPIN: &lt;chv1&gt;,&lt;chv2&gt;,&lt;puk1&gt;,&lt;puk2&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                                  | 300 ms                                                                                           |
| Characteristics                                        | /                                                                                                |
| Reference<br>Quectel                                   |                                                                                                  |

### Parameter

|                     |                                                   |
|---------------------|---------------------------------------------------|
| <b>&lt;chv1&gt;</b> | Integer type. Retry times remained to input CHV1. |
| <b>&lt;chv2&gt;</b> | Integer type. Retry times remained to input CHV2. |
| <b>&lt;puk1&gt;</b> | Integer type. Retry times remained to input PUK1. |
| <b>&lt;puk2&gt;</b> | Integer type. Retry times remained to input PUK2. |

## 5.12. AT+CGLA Generic (U)SIM Logical Channel Access

This command allows a direct control of the currently selected UICC by a distant application on the ME. The ME shall then take care of processing UICC information within the frame specified by GSM/UMTS.

| AT+CGLA Generic (U)SIM Logical Channel Access                                    |                                                                                                                                                                            |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGLA=?</b>                                                 | Response<br><b>OK</b>                                                                                                                                                      |
| Write Command<br><b>AT+CGLA=&lt;sessionid&gt;,&lt;length&gt;,&lt;command&gt;</b> | Response<br><b>+CGLA: &lt;length&gt;,&lt;response&gt;</b><br><br><b>OK</b><br><br>If there is any error, response:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |

|                         |        |
|-------------------------|--------|
| Maximum Response Time   | 300 ms |
| Characteristics         | /      |
| Reference<br>GSM 27.007 |        |

## Parameter

|             |                                                                                                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <sessionid> | integer type. Session identifier used to send APDU commands to the UICC. It is mandatory in order to send commands to the UICC when targeting applications on the smart card using a logical channel other than the default channel (channel "0"). |
| <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>   | Command passed on by the MT to the UICC in the format of hexadecimal character as described in <i>3GPP TS 31.101 [65]</i> . See <b>AT +CSCS</b> .                                                                                                  |
| <response>  | Response to the command passed on by the UICC to the MT in the format of hexadecimal character as described in <i>3GPP TS 31.101 [65]</i> . See <b>AT +CSCS</b> .                                                                                  |
| <err>       | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                  |

# 6 Network Service Commands

## 6.1. AT+COPS Operator Selection

This command returns the current operators and their status, and allows setting automatic or manual network selection.

The Test Command returns a list of four parameters, 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 (U)SIM, and other networks.

The Read Command returns the current mode and the currently selected operator. If no operator is selected, **<format>** and **<oper>** are omitted.

The Write Command 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 Command (**AT+COPS?**).

| AT+COPS Operator Selection       |                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+COPS=?</b> | <p>Response</p> <p><b>+COPS:</b> [list of supported (<b>&lt;stat&gt;</b>,long alphanumeric <b>&lt;oper&gt;</b>,short alphanumeric <b>&lt;oper&gt;</b>,numeric <b>&lt;oper&gt;</b>s)][,,(list of supported <b>&lt;mode&gt;</b>s),(list of supported <b>&lt;format&gt;</b>s)]</p> <p><b>OK</b></p> <p>If there is any error related to ME functionality:<br/><b>+CME ERROR: &lt;err&gt;</b></p> |
| Read Command<br><b>AT+COPS?</b>  | <p>Response</p> <p><b>+COPS:</b> <b>&lt;mode&gt;</b>[,<b>&lt;format&gt;</b>][,<b>&lt;oper&gt;</b>]</p> <p><b>OK</b></p> <p>If there is any error related to ME functionality:<br/><b>+CME ERROR: &lt;err&gt;</b></p>                                                                                                                                                                          |
| Write Command                    | Response                                                                                                                                                                                                                                                                                                                                                                                      |

|                                    |                                                                                                |
|------------------------------------|------------------------------------------------------------------------------------------------|
| AT+COPS=<mode>[,<format>[,<oper>]] | OK<br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time              | 75 s, determined by network.                                                                   |
| Characteristics                    | This command takes effect immediately.<br>The configurations will not be saved.                |
| Reference<br>GSM 07.07             |                                                                                                |

## Parameter

|          |                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <stat>   | Integer type. Availability of operators.<br>0 Unknown<br>1 Operator available<br>2 Operator current<br>3 Operator forbidden                                                                                                                                                                                                                                                         |
| <oper>   | String type. Operator in format as per <mode>.                                                                                                                                                                                                                                                                                                                                      |
| <mode>   | Integer type.<br>0 Automatic mode; <oper> field is ignored.<br>1 Manual operator selection; <oper> field shall be present.<br>2 Manual deregister from network.<br>3 Set only <format> (for Read Command <b>AT+COPS?</b> ). This value is invalid in the response of Read Command.<br>4 Manual/automatic selected; if manual selection fails, automatic mode (<mode>=0) is entered. |
| <format> | Integer type. Format of operator name.<br>0 Long format alphanumeric <oper> which can be up to 16 characters<br>1 Short format alphanumeric <oper><br>2 Numeric <oper>; GSM location area identification number                                                                                                                                                                     |
| <err>    | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                                   |

### NOTE

This Write Command chooses and registers the GSM network operator. The setting of <mode> allows ME to determine whether automatic or manual network selection shall be used.

- When <mode>=0, ME automatically searches for the operator which shall be used.
- When <mode>=1, ME is forced to register the selected <oper>. If the <oper> is invalid, the ME remains unregistered. ME can register again until <mode>=0. If the module is restarted, ME is still under <mode>=1 and there is no RPLMN. ME is not registered on network until <mode> is changed to automatic mode with the command.
- When <mode>=4, if ME fails to register the selected operator, the module restarts and select

another operator 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 Status

The Read Command returns the status of result code presentation and an integer **<stat>** which shows whether the network has currently indicated the registration of the ME. Location information elements **<lac>** and **<ci>** are returned only when **<n>=2** and ME is registered in the network.

The Write Command controls the presentation of an unsolicited result code **+CREG: <stat>** when **<n>=1** and there is a change in the ME network registration status.

| AT+CREG Network Registration Status       |                                                                                                                                                                                                                                  |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CREG=?</b>          | Response<br><b>+CREG:</b> (list of supported <b>&lt;n&gt;s</b> )<br><br><b>OK</b>                                                                                                                                                |
| Read Command<br><b>AT+CREG?</b>           | Response<br><b>+CREG:</b> <b>&lt;n&gt;</b> , <b>&lt;stat&gt;</b> [, <b>&lt;lac&gt;</b> , <b>&lt;ci&gt;</b> ]<br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR:</b> <b>&lt;err&gt;</b> |
| Write Command<br><b>AT+CREG=&lt;n&gt;</b> | Response<br><b>OK</b>                                                                                                                                                                                                            |
| Maximum Response Time                     | 300 ms                                                                                                                                                                                                                           |
| Characteristics                           | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                                                                                    |

Reference  
GSM 07.07

## Parameter

|                     |                                                                                                                                                                                                                                                                                                                                            |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b>    | Integer type.<br><u>0</u> Disable network registration URC<br>1      Enable network registration URC<br>2      Enable network registration URC with location information:<br><b>+CREG: &lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;]</b>                                                                                                           |
| <b>&lt;stat&gt;</b> | Integer type. Circuit mode registration status.<br>0      Not registered, ME is not currently searching a new network to register on<br>1      Registered, home network<br>2      Not registered, but ME is currently searching a new network to register on<br>3      Registration denied<br>4      Unknown<br>5      Registered, roaming |
| <b>&lt;lac&gt;</b>  | String type. Two-byte location area code in hexadecimal format.                                                                                                                                                                                                                                                                            |
| <b>&lt;ci&gt;</b>   | String type. Two-byte cell ID in hexadecimal format.                                                                                                                                                                                                                                                                                       |
| <b>&lt;err&gt;</b>  | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                          |

### NOTE

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

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

| AT+CSQ Signal Quality Report       |                                                                                                                                                                                       |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CSQ=?</b>    | Response<br><b>+CSQ:</b> (list of supported <b>&lt;rssi&gt;</b> s),(list of supported <b>&lt;ber&gt;</b> s)<br><br><b>OK</b>                                                          |
| Execution Command<br><b>AT+CSQ</b> | Response<br><b>+CSQ:</b> <b>&lt;rssi&gt;</b> , <b>&lt;ber&gt;</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR:</b> <b>&lt;err&gt;</b> |
| Maximum Response Time              | 300 ms                                                                                                                                                                                |
| Characteristics                    | /                                                                                                                                                                                     |
| Reference<br>GSM 07.07             |                                                                                                                                                                                       |

#### Parameter

|                     |                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;rssi&gt;</b> | Integer type. Received signal strength.<br>0        -113 dBm or less<br>1        -111 dBm<br>2–30    -109 to -53 dBm<br>31       -51 dBm or greater<br>99       Not known or not detectable |
| <b>&lt;ber&gt;</b>  | Integer type. Channel bit error rate (in percent).<br>0–7      As RXQUAL values in the table in <i>GSM 05.08 subclause 8.2.4</i><br>99       Not known or not detectable                    |
| <b>&lt;err&gt;</b>  | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                           |

#### Example

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

OK
```

### AT+CSQ

**+CSQ: 28,0** //The current signal strength indication is 28 and channel bit error rate is 0.

OK

## 6.4. AT+CPOL Preferred Operator List

This command edits and queries the list of preferred operators.

| AT+CPOL Preferred Operator List                                               |                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CPOL=?</b>                                              | Response<br><b>+CPOL:</b> (list of supported <index>s),(list of supported <format>s)<br><br>OK                                                                                                                   |
| Read Command<br><b>AT+CPOL?</b>                                               | Response<br><b>+CPOL:</b> <index1>,<format>,<oper1><br>[<CR><LF>+CPOL: <index2>,<format>,<oper2><br>[...]]<br><br>OK<br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Write Command<br><b>AT+CPOL=&lt;index&gt;[,&lt;format&gt;[,&lt;oper&gt;]]</b> | Response<br>OK<br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b>                                                                                                       |
| Maximum Response Time                                                         | 300 ms                                                                                                                                                                                                           |
| Characteristics                                                               | This command takes effect immediately.<br>The configurations will not be saved.                                                                                                                                  |
| Reference<br>GSM 07.07                                                        |                                                                                                                                                                                                                  |

### Parameter

|          |                                                                            |
|----------|----------------------------------------------------------------------------|
| <index>  | Integer type. Order number of operators in (U)SIM preferred operator list. |
| <format> | Integer type.<br>0 Long format alphanumeric <oper>                         |

|                     |   |                                                                                                                                         |
|---------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------|
|                     | 1 | Short format alphanumeric <b>&lt;oper&gt;</b>                                                                                           |
|                     | 2 | Numeric <b>&lt;oper&gt;</b>                                                                                                             |
| <b>&lt;oper&gt;</b> |   | String type. <b>&lt;format&gt;</b> indicates the format of <b>&lt;oper&gt;</b> is either alphanumeric or numeric (see <b>AT+COPS</b> ). |
| <b>&lt;err&gt;</b>  |   | Error codes. See <b>Chapter 15.7</b> for details.                                                                                       |

#### NOTE

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

## 6.5. AT+COPN Read Operator Names

This command returns the list of the supported operator names from MT. Each operator code **<numeric>** that has an alphanumeric equivalent **<alphan>** in the ME memory is returned.

| AT+COPN Read Operator Names         |                                                                                                                                                                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+COPN=?</b>    | Response<br><b>OK</b>                                                                                                                                                                                                                     |
| Execution Command<br><b>AT+COPN</b> | Response<br><b>+COPN: &lt;numeric1&gt;,&lt;alpha1&gt;</b><br><b>[+COPN: &lt;numeric2&gt;,&lt;alpha2&gt;</b><br><b>[...]]</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time               | 300 ms                                                                                                                                                                                                                                    |
| Characteristics                     | /                                                                                                                                                                                                                                         |
| Reference<br>GSM 07.07              |                                                                                                                                                                                                                                           |

### Parameter

|                        |                                                                          |
|------------------------|--------------------------------------------------------------------------|
| <b>&lt;numeric&gt;</b> | String type. Operator in numeric format (see <b>AT+COPS</b> ).           |
| <b>&lt;alphan&gt;</b>  | String type. Operator in long alphanumeric format (see <b>AT+COPS</b> ). |
| <b>&lt;err&gt;</b>     | Error codes. See <b>Chapter 15.7</b> for details.                        |

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

This command gets or sets mobile operation band.

| AT+QBAND Get and Set Mobile Operation Band       |                                                                                                                   |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QBAND=?</b>                | Response<br><b>+QBAND:</b> (list of supported <op_band>s)<br><br><b>OK</b>                                        |
| Read Command<br><b>AT+QBAND?</b>                 | Response<br><b>+QBAND:</b> <op_band><br><br><b>OK</b>                                                             |
| Write Command<br><b>AT+QBAND=&lt;op_band&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                            | 30 s, determined by network.                                                                                      |
| Characteristics                                  | This command takes effect immediately.<br>The configurations will be saved automatically.                         |
| Reference<br>Quectel                             |                                                                                                                   |

### Parameter

|           |                                                                                                                                                                       |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <op_band> | String type. Mobile operation band.<br>"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" |
| <err>     | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                     |

## 6.7. AT+QENG Switch On or Off Engineering Mode

This command switches on/off engineering mode and obtains the network information, such as serving cell and neighbor cells.

| AT+QENG Switch On or Off Engineering Mode                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QENG=?</b>                            | <p>Response</p> <p><b>+QENG:</b> (list of supported <b>&lt;mode&gt;s</b>),(list of supported <b>&lt;dump&gt;s</b>)</p> <p><b>OK</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Read Command<br><b>AT+QENG?</b>                             | <p>Response</p> <p>The corresponding information is reported selectively according to <b>&lt;dump&gt;</b>.</p> <p><b>+QENG:</b> <b>&lt;mode&gt;</b>,<b>&lt;dump&gt;</b></p> <p>URCs of the serving cell information:</p> <p><b>+QENG: 0</b>,<b>&lt;mcc&gt;</b>,<b>&lt;mnc&gt;</b>,<b>&lt;lac&gt;</b>,<b>&lt;cellID&gt;</b>,<b>&lt;bcch&gt;</b>,<b>&lt;bsic&gt;</b>,<b>&lt;dbm&gt;</b>,<b>&lt;c1&gt;</b>,<b>&lt;c2&gt;</b>,<b>&lt;txp&gt;</b>,<b>&lt;rla&gt;</b>,<b>&lt;tch&gt;</b>,<b>&lt;ts&gt;</b>,<b>&lt;maio&gt;</b>,<b>&lt;hsn&gt;</b><b>&lt;ta&gt;</b>,<b>&lt;rxq_sub&gt;</b>,<b>&lt;rxq_full&gt;</b></p> <p>URCs of 1-6 neighboring cell information:</p> <p><b>[+QENG: 1</b>,list of (<b>&lt;ncell&gt;</b>,<b>&lt;bcch&gt;</b>,<b>&lt;dbm&gt;</b>,<b>&lt;bsic&gt;</b>,<b>&lt;c1&gt;</b>,<b>&lt;c2&gt;</b>,<b>&lt;mcc&gt;</b>,<b>&lt;mnc&gt;</b>,<b>&lt;lac&gt;</b>,<b>&lt;cellid&gt;</b>)...]</p> <p>URCs of cell frequency list (CA) of the serving cell:</p> <p><b>[+QENG: 2</b>,list of (<b>&lt;arfcn&gt;</b>)...]</p> <p><b>OK</b></p> |
| Write Command<br><b>AT+QENG=&lt;mode&gt;[,&lt;dump&gt;]</b> | <p>Response</p> <p><b>OK</b></p> <p>If there is any error:</p> <p><b>ERROR</b></p> <p>Or</p> <p><b>+CME ERROR: &lt;err&gt;</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Maximum Response Time                                       | 300 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Characteristics                                             | <p>This command takes effect immediately.</p> <p>The configurations will not be saved.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Reference<br>Quectel                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## Parameter

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b>     | Integer type.<br>0 Switch off engineering mode<br>1 Switch on engineering mode<br>2 Switch on engineering mode, and activate the URC report of network information                                                                                                                                                                                                                                                                                                                     |
| <b>&lt;dump&gt;</b>     | Integer type.<br>0 Only display the serving cell information<br>1 Display the serving cell information, 1–6 neighboring cells information<br>2 Display the serving cell information and list of serving cell carrier list<br>3 Display the serving cell information, 1–6 neighboring cell information and list of serving cell carrier list<br>4 Display the serving cell information, 1–6 neighboring cell information, list of serving cell carrier list and BA measured result list |
| <b>&lt;mcc&gt;</b>      | Mobile country code.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>&lt;mnc&gt;</b>      | Mobile network code.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>&lt;lac&gt;</b>      | Location area code in hex format.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>&lt;cellID&gt;</b>   | Cell ID in hex format.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>&lt;bcch&gt;</b>     | Absolute Radio Frequency Channel Number of Broadcast Control Channel (BCCH).                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>&lt;bsic&gt;</b>     | Base station identity code.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>&lt;dbm&gt;</b>      | Receive signal level in dBm unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>&lt;c1&gt;</b>       | C1 value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>&lt;c2&gt;</b>       | C2 value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>&lt;txp&gt;</b>      | Maximum TX power level when accessing on a CCH.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>&lt;rla&gt;</b>      | Minimum receiving level permitted to access the system.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>&lt;ts&gt;</b>       | Time Slots.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>&lt;maio&gt;</b>     | Mobile allocation index offset value.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>&lt;hsn&gt;</b>      | Hopping sequence number.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>&lt;tch&gt;</b>      | ARFCN of TCH, 'h' figure hopping.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>&lt;ta&gt;</b>       | Integer type. Timing advance. Range: 0–63.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>&lt;rxq_sub&gt;</b>  | Integer type. RX quality(sub). Range: 0–7.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>&lt;rxq_full&gt;</b> | Integer type. RX quality(full). Range: 0–7.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>&lt;ncell&gt;</b>    | Integer type. Number of neighboring cell ID. Range: 1–6.                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>&lt;arfcn&gt;</b>    | Absolute radio frequency channel number.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>&lt;err&gt;</b>      | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### 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>** 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 **<rxq\_full>** do not display their values but are replaced by 'x' char.
5. During the network connecting, if the hopping frequency is supported by the network, the channel of TCH is unstable. The 'h' figure **<tch>** is used under this mode.
6. Under expert mode, when **<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>** cannot be updated in a certain condition, with all holding the value of idle mode. This is because ME cannot be updated in this mode. ME cannot update the selection of cells and reselection of the parameter. When the connecting is over, mobile device goes 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 is filled in the parameter of these cells.
8. Under the special mode, **<c1>** and **<c2>** of the neighboring cell may be measured, and then an unmeaning value is reported. When **<mcc>**, **<mnc>**, **<lac>** and **<cellid>** of the neighboring cell cannot be measured, the 'x' char is filled in these parameters of all the six cells.
9. The command does not report the RX level and the RX quality. **AT+CSQ** can be used to query the values of RX level and RX quality.
10. **AT+QSPCH** 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 shows '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**

//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,-77,40,100,84,460,00,1806,2012,4,24,-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**

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

This command scans power of GSM frequency.

| AT+QSCANF Scan Power of GSM Frequency                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QSCANF=?</b>                          | Response<br><b>+QSCANF:</b> (list of supported <b>&lt;band&gt;</b> s),(list of supported <b>&lt;freq&gt;</b> s)<br><br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                  |
| Write Command<br><b>AT+QSCANF=&lt;band&gt;,&lt;freq&gt;</b> | Response<br>If <b>&lt;freq&gt;</b> =9999 and command is executed successfully:<br><b>+QSCANF:</b><br><b>1, CH113, -63.5</b><br><b>2, CH80, -64.2</b><br><b>4, CH22, -64.5</b><br><b>.....</b><br><b>20, CH116, -74.2</b><br><b>OK</b><br><br>If <b>&lt;freq&gt;</b> is fixed frequency and command is executed successfully:<br><b>+QSCANF:</b><br><b>CH&lt;freq&gt;, &lt;dbm&gt;</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                       | 300 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Characteristics                                             | This command takes effect immediately.<br>The configurations will not be saved.                                                                                                                                                                                                                                                                                                                                                                                                   |
| Reference<br>Quectel                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### Parameter

|                     |                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------|
| <b>&lt;band&gt;</b> | Integer type.<br>0      BAND 900<br>1      BAND 1800<br>2      BAND 1900<br>3      BAND 850 |
| <b>&lt;freq&gt;</b> | Integer type.<br>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. |
| <err> | Error codes. See <b>Chapter 15.7</b> for details.                      |

#### NOTE

Before using this AT command, RF function of system MUST be disabled. Please make sure equipment functionality level (CFUN state) is 0 or 4. See **AT+CFUN** to change the functionality level.

## 6.9. AT+QLOCKF Lock GSM Frequency

This command locks GSM frequency.

| AT+QLOCKF Lock GSM Frequency                                                                                     |                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QLOCKF=?</b>                                                                               | Response<br><b>+QLOCKF:</b> (list of supported <mode>s),(list of supported <band1900>s),(list of supported <arfcn>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QLOCKF?</b>                                                                                | Response<br><b>+QLOCKF:</b> <status><br><br><b>OK</b>                                                                                 |
| Write Command<br><b>AT+QLOCKF=&lt;mode&gt;,&lt;band1900&gt;,&lt;arfcn1&gt;[,&lt;arfcn2&gt;[,&lt;arfcn3&gt;]]</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b>                           |
| Maximum Response Time                                                                                            | 300 ms                                                                                                                                |
| Characteristics                                                                                                  | This command takes effect immediately.<br>The configurations will not be saved.                                                       |
| Reference<br>Quectel                                                                                             |                                                                                                                                       |

## Parameter

---

|                         |                                                                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b>     | Integer type.<br><u>0</u> Disable lock frequency<br>1    Enable lock frequency<br>2    Enable lock frequency and auto switch to saved frequency after powered on |
| <b>&lt;band1900&gt;</b> | Integer type.<br>0    Not a cell ID of 1900 band<br>1    Cell ID of 1900 band<br>2    Auto distinguish whether is a cell ID of 1900 band                         |
| <b>&lt;arfcn&gt;</b>    | Integer type.<br>0–1024   ARFCN information                                                                                                                      |
| <b>&lt;status&gt;</b>   | Integer type.<br>0    ME did not lock a certain ARFCN<br>1    ME has locked a certain ARFCN                                                                      |
| <b>&lt;err&gt;</b>      | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                |

---

# 7 Call Related Commands

## 7.1. ATA Answer an Incoming Call

This command sends off-hook to the remote station.

| ATA Answer an Incoming Call     |                                                                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATA</b> | Response<br>In case of voice call, if successfully connected:<br><b>OK</b><br><br>If no connection:<br><b>NO CARRIER</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time           | 1 s, determined by network.                                                                                                                                                                                    |
| Characteristics                 | /                                                                                                                                                                                                              |
| Reference<br>V.25ter            |                                                                                                                                                                                                                |

### Parameter

|       |                                                   |
|-------|---------------------------------------------------|
| <err> | Error codes. See <b>Chapter 15.7</b> for details. |
|-------|---------------------------------------------------|

#### NOTE

- Any additional commands on the same command line are ignored when executing **ATA**.
- This command may be aborted generally when the module receives a character during command execution. The aborting is not possible during some states of connection establishment such as handshaking.

## 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
    
```

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

This command sets up outgoing voice, data or fax calls. It also serves to control supplementary services.

### ATD Mobile Originated Call to Dial a Number

|                                                                  |                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATD&lt;n&gt;[&lt;mgs&gt;][&lt;;&gt;]</b> | Response<br>If no dial tone and <b>ATX2</b> or <b>ATX4</b> is set:<br><b>NO DIALTONE</b><br><br>If busy and <b>ATX3</b> or <b>ATX4</b> is set:<br><b>BUSY</b><br><br>If a connection cannot be established:<br><b>NO CARRIER</b><br><br>If connection is successful and voice call:<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                            | 1 s, determined by network.                                                                                                                                                                                                                                                                                                                                                            |
| Characteristics                                                  | /                                                                                                                                                                                                                                                                                                                                                                                      |
| Reference<br>V.25ter                                             |                                                                                                                                                                                                                                                                                                                                                                                        |

## Parameter

|     |                                                                                                        |
|-----|--------------------------------------------------------------------------------------------------------|
| <n> | String type. Dialing digits and optionally V.25ter modifiers.<br>Dialing digits: 0–9, *, #, +, A, B, C |
|-----|--------------------------------------------------------------------------------------------------------|

|                 |                                                                       |
|-----------------|-----------------------------------------------------------------------|
| Emergency call: | Following V.25ter modifiers are ignored: ,(comma), T, P, !, W, @      |
| <n>             | String type. Standardized emergency number 112 (no (U)SIM needed).    |
| <mgsms>         | String type. GSM modifiers:                                           |
| I               | Activates CLIR (Disables presentation of own number to called party)  |
| i               | Deactivates CLIR (Enable presentation of own number to called party)  |
| G               | Activates closed user group invocation for this call only             |
| g               | Deactivates closed user group invocation for this call only           |
| <;>             | Only required to set up voice call, and then return to command state. |
| <err>           | Error codes. See <b>Chapter 15.7</b> for details.                     |

#### NOTE

1. This command may be aborted generally if **ATH** command or a character is received during execution. The aborting is not possible during some states of connection establishment such as handshaking.
2. <mgsms>=I and i are applicable for cases where there is no "\*" or "#" code 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** 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 returns **OK**, **BUSY**, **NO DIALTONE**, or **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 is automatically put on hold.
  - The current states of all calls can be easily checked at any time by **AT+CLCC**.

#### Example

```
ATD10086;           //Dialing out the called party's number.
OK
```

### 7.3. ATH Disconnect Existing Connection

This command disconnects existing call by local TE from command line and terminate call.

| ATH Disconnect Existing Connection |                                                                                                             |
|------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATH[n]</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time              | 90 s, determined by network.                                                                                |
| Characteristics                    | /                                                                                                           |
| Reference<br>V.25ter               |                                                                                                             |

#### Parameter

|                    |                                                                                      |
|--------------------|--------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b>   | Integer type.<br>0 Disconnect existing call from command line and terminate the call |
| <b>&lt;err&gt;</b> | Error codes. See <b>Chapter 15.7</b> for details.                                    |

#### 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

This command is only available during TA is in data mode, such as, a GPRS connection and a transparent TCP/IP connection. The +++ character sequence causes the TA to cancel the data flow over the AT interface and switch to command mode. This allows entering AT command while maintaining the data connection with the remote server or, accordingly, the GPRS connection.

| +++ Switch from Data Mode to Command Mode |                       |
|-------------------------------------------|-----------------------|
| Execution Command<br><b>+++</b>           | Response<br><b>OK</b> |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
|                       | If there is any error:<br><b>ERROR</b><br>Or<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time | 300 ms                                                                         |
| Characteristics       | /                                                                              |
| Reference<br>V.25ter  |                                                                                |

## Parameter

|       |                                                   |
|-------|---------------------------------------------------|
| <err> | Error codes. See <b>Chapter 15.7</b> for details. |
|-------|---------------------------------------------------|

### NOTE

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

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

This command resumes the connection and switches back from command mode to data mode.

| ATO Switch from Command Mode to Data Mode |                                                                                                                                                                                                    |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATO[n]</b>        | Response<br>If connection is not successfully resumed:<br><b>NO CARRIER</b><br><br>If connection is successfully resumed, TA returns to data mode from command mode<br><b>CONNECT &lt;text&gt;</b> |

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

### Parameter

|     |                                       |
|-----|---------------------------------------|
| <n> | Integer type.                         |
| 0   | Switch from command mode to data mode |

#### NOTE

TA returns to data mode from command mode **CONNECT** <text>. <text> is returned only when <value> is greater than 0 in **ATX<value>**.

## 7.6. ATSO Set Number of Rings Before Automatically Answering Call

This command determines the number of rings before auto-answer.

### ATSO Set Number of Rings Before Automatically Answering Call

|                                        |                                                                                                               |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Read Command<br><b>ATSO?</b>           | Response<br><n><br><br><b>OK</b>                                                                              |
| Write Command<br><b>ATSO=&lt;n&gt;</b> | Response<br><b>OK</b>                                                                                         |
| Maximum Response Time                  | 300 ms                                                                                                        |
| Characteristics                        | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed. |
| Reference<br>V.25ter                   |                                                                                                               |

### Parameter

|       |                                                         |
|-------|---------------------------------------------------------|
| <n>   | Integer type.                                           |
| 0     | Automatic answering is disabled                         |
| 1–255 | Enable automatic answering on the ring number specified |

**NOTE**

If <n> is set too large, the calling party may hang up before the call is answered automatically.

**Example**

```

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

RING //A call is incoming.
RING
RING //Automatically answering the call after three rings.
    
```

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

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

| AT+CLCC List Current Calls of ME    |                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CLCC=?</b>    | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                       |
| Execution Command<br><b>AT+CLCC</b> | Response<br><b>[+CLCC: &lt;id1&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;[,&lt;number&gt;,&lt;type&gt;[,]]]</b><br><b>[+CLCC: &lt;id2&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;[,&lt;number&gt;,&lt;type&gt;[,]]]</b><br><b>[...]</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time               | 300 ms                                                                                                                                                                                                                                                                                                                                                                      |
| Characteristics                     | /                                                                                                                                                                                                                                                                                                                                                                           |
| Reference<br>GSM 07.07              |                                                                                                                                                                                                                                                                                                                                                                             |

## Parameter

|                       |                                                                                                                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;idx&gt;</b>    | Integer type. Call identification number as described in <i>GSM 02.30 subclause 4.5.5.1</i> ; The number can be used in <b>AT+CHLD</b> .             |
| <b>&lt;dir&gt;</b>    | Integer type.<br>0 Mobile originated (MO) call<br>1 Mobile terminated (MT) call                                                                      |
| <b>&lt;stat&gt;</b>   | Integer type. State of the call.<br>0 Active<br>1 Held<br>2 Dialing (MO call)<br>3 Alerting (MO call)<br>4 Incoming (MT call)<br>5 Waiting (MT call) |
| <b>&lt;mode&gt;</b>   | Integer type. Bearer/telecommunication service.<br>0 Voice<br>1 Data<br>2 FAX<br>9 Unknown                                                           |
| <b>&lt;mpty&gt;</b>   | Integer type.<br>0 Call is not one of multiparty (conference) call parties<br>1 Call is one of multiparty (conference) call parties                  |
| <b>&lt;number&gt;</b> | String type. Phone number in format specified by <b>&lt;type&gt;</b> .                                                                               |
| <b>&lt;type&gt;</b>   | Integer type. Address type of octet.<br>129 Unknown type (ISDN format number)<br>145 International number type (ISDN format)                         |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                    |

## Example

**AT+CLCC**

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

**OK**

## 7.8. AT+QDISH Disable or Enable ATH

This command disables or enables **ATH**.

| AT+QDISH Disable or Enable ATH                       |                                                                                                                   |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QDISH=?</b>                    | Response<br><b>+QDISH:</b> (list of supported <disable_ath>s)<br><br><b>OK</b>                                    |
| Read Command<br><b>AT+QDISH?</b>                     | Response<br><b>+QDISH:</b> <disable_ath><br><br><b>OK</b>                                                         |
| Write Command<br><b>AT+QDISH=&lt;disable_ath&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                | 300 ms                                                                                                            |
| Characteristics                                      | This command takes effect immediately.<br>The configurations will not be saved.                                   |
| Reference<br>Quectel                                 |                                                                                                                   |

### Parameter

|               |                                                                                         |
|---------------|-----------------------------------------------------------------------------------------|
| <disable_ath> | Integer type. Disable or enable <b>ATH</b> .<br>0      Enable ATH<br>1      Disable ATH |
| <err>         | Error codes. See <b>Chapter 15.7</b> for details.                                       |

# 8 SMS Commands

## 8.1. AT+CSMS Select Message Service

This command selects message service **<service>** and queries the types of messages supported by ME.

| AT+CSMS Select Message Service                  |                                                                                                                                                                                                         |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CSMS=?</b>                | Response<br><b>+CSMS:</b> (list of supported <b>&lt;service&gt;s</b> )<br><br><b>OK</b>                                                                                                                 |
| Read Command<br><b>AT+CSMS?</b>                 | Response<br><b>+CSMS:</b> <b>&lt;service&gt;</b> , <b>&lt;mt&gt;</b> , <b>&lt;mo&gt;</b> , <b>&lt;bm&gt;</b><br><br><b>OK</b>                                                                           |
| Write Command<br><b>AT+CSMS=&lt;service&gt;</b> | Response<br><b>+CSMS:</b> <b>&lt;mt&gt;</b> , <b>&lt;mo&gt;</b> , <b>&lt;bm&gt;</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CMS ERROR:</b> <b>&lt;err&gt;</b> |
| Maximum Response Time                           | 300 ms                                                                                                                                                                                                  |
| Characteristics                                 | This command takes effect immediately.<br>The configurations will not be saved.                                                                                                                         |
| Reference<br>GSM 07.05                          |                                                                                                                                                                                                         |

### Parameter

|                        |                                                                                                                                                                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;service&gt;</b> | Integer type. Type of message service.                                                                                                                                                                                                                      |
| <u>0</u>               | 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 |
| <b>&lt;mt&gt;</b>  | Integer type. Mobile terminated messages.         |                                                         |
|                    | 0                                                 | Type not supported                                      |
|                    | <u>1</u>                                          | Type supported                                          |
| <b>&lt;mo&gt;</b>  | Integer type. Mobile originated messages.         |                                                         |
|                    | 0                                                 | Type not supported                                      |
|                    | <u>1</u>                                          | Type supported                                          |
| <b>&lt;bm&gt;</b>  | Integer type. Broadcast type messages.            |                                                         |
|                    | 0                                                 | Type not supported                                      |
|                    | <u>1</u>                                          | Type supported                                          |
| <b>&lt;err&gt;</b> | Error codes. See <b>Chapter 15.8</b> for details. |                                                         |

## 8.2. AT+CMGF Select Message Format

This command selects which kind of I/O format of messages is used.

| AT+CMGF Select Message Format                  |                                                                                                               |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMGF=?</b>               | Response<br><b>+CMGF:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b>                          |
| Read Command<br><b>AT+CMGF?</b>                | Response<br><b>+CMGF:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                                                |
| Write Command<br><b>AT+CMGF=[&lt;mode&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CMS ERROR: &lt;err&gt;</b>   |
| Maximum Response Time                          | 300 ms                                                                                                        |
| Characteristics                                | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed. |
| Reference<br>GSM 07.05                         |                                                                                                               |

## Parameter

|                     |                                                   |
|---------------------|---------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type. SMS message format.                 |
| <u>0</u>            | PDU mode                                          |
| 1                   | Text mode                                         |
| <b>&lt;err&gt;</b>  | Error codes. See <b>Chapter 15.8</b> for details. |

## 8.3. AT+CSCA Service Center Address

This command updates the SMSC address when 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.

| AT+CSCA Service Center Address                              |                                                                                                                   |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CSCA=?</b>                            | Response<br><b>OK</b>                                                                                             |
| Read Command<br><b>AT+CSCA?</b>                             | Response<br><b>+CSCA: &lt;sca&gt;,&lt;tosca&gt;</b><br><br><b>OK</b>                                              |
| Write Command<br><b>AT+CSCA=&lt;sca&gt;[,&lt;tosca&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CMS ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                       | 300 ms                                                                                                            |
| Characteristics                                             | This command takes effect immediately.<br>The configurations will be saved automatically.                         |
| Reference<br>GSM 07.05                                      |                                                                                                                   |

## Parameter

|                      |                                                                                                                                                                                                                                                                                      |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;sca&gt;</b>   | String type. GSM 04.11 RP SC address Address-Value field; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by <b>AT+CSCS</b> in <i>TS 07.07</i> ); type of address given by <b>&lt;tosca&gt;</b> . |
| <b>&lt;tosca&gt;</b> | Integer type. Service center address format GSM 04.11 RP SC address Type-of-Address octet (see <b>&lt;toda&gt;</b> by default).                                                                                                                                                      |
| <b>&lt;err&gt;</b>   | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                                                                    |

### Example

```

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

```

## 8.4. AT+CPMS Preferred Message Storage

This command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

| AT+CPMS Preferred Message Storage                                          |                                                                                                                                                                                           |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CPMS=?</b>                                           | Response<br><b>+CPMS:</b> (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)<br><br><b>OK</b>                                                            |
| Read Command<br><b>AT+CPMS?</b>                                            | Response<br><b>+CPMS:</b> <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3><br><br><b>OK</b>                                                                        |
| Write Command<br><b>AT+CPMS=&lt;mem1&gt;[,&lt;mem2&gt;[,&lt;mem3&gt;]]</b> | Response<br><b>+CPMS:</b> <used1>,<total1>,<used2>,<total2>,<used3>,<total3><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CMS ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                      | 300 ms                                                                                                                                                                                    |
| Characteristics                                                            | This command takes effect immediately.<br>The configurations will be saved automatically.                                                                                                 |
| Reference<br>GSM 07.05                                                     |                                                                                                                                                                                           |

## Parameter

|          |                                                                                                                                                                                                                                  |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <mem1>   | String type. 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>   | String type. 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>   | String type. Received messages will be placed in this memory storage, if routing to PC is not set ( <b>AT+CNMI</b> ).<br>"SM" SIM message storage<br>"ME" Mobile Equipment message storage<br>"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>.                                                                                                                                                                             |
| <err>    | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                |

### NOTE

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

## Example

```

AT+CPMS="SM","SM","SM"           //Set SMS message storage as "SM" ((U)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 Message

This command deletes message from preferred message storage **<mem1>** location **<index>**.

| AT+CMGD Delete Message                                          |                                                                                                                                    |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMGD=?</b>                                | Response<br><b>+CMGD:</b> (list of supported <b>&lt;index&gt;</b> s),(list of supported <b>&lt;delflag&gt;</b> s)<br><br><b>OK</b> |
| Write Command<br><b>AT+CMGD=&lt;index&gt;[,&lt;delflag&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b><br>Or<br><b>+CMS ERROR:&lt;err&gt;</b>                         |
| Maximum Response Time                                           | 300 ms.<br>Operation of <b>&lt;delflag&gt;</b> depends on the storage of deleted messages.                                         |
| Characteristics                                                 | /                                                                                                                                  |
| Reference<br>GSM 07.05                                          |                                                                                                                                    |

### Parameter

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;index&gt;</b>   | Integer type. Value in the range of location numbers supported by the associated memory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>&lt;delflag&gt;</b> | Integer type.<br><u>0</u> Delete message specified in <b>&lt;index&gt;</b><br>1 Delete all read messages from <b>&lt;mem1&gt;</b> storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched<br>2 Delete all read messages from <b>&lt;mem1&gt;</b> storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched<br>3 Delete all read messages from <b>&lt;mem1&gt;</b> storage, sent and unsent mobile originated messages, leaving unread messages untouched<br>4 Delete all messages from <b>&lt;mem1&gt;</b> storage |
| <b>&lt;err&gt;</b>     | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## 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 Messages from Preferred Storage

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

### AT+CMGL List Messages from Preferred Storage

|                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMGL=?</b>                            | Response<br><b>+CMGL:</b> (list of supported <b>&lt;stat&gt;</b> s)<br><br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Write Command<br><b>AT+CMGL=&lt;stat&gt;[,&lt;mode&gt;]</b> | <p>Response</p> <p>1) In text mode (<b>AT+CMGF=1</b>) and when the command is executed successfully:<br/>For SMS-SUBMITs and/or SMS-DELIVERs:<br/><b>+CMGL:</b> <b>&lt;index&gt;</b>,<b>&lt;stat&gt;</b>,<b>&lt;oa/da&gt;</b>,<b>[&lt;alpha&gt;]</b>,<b>[&lt;scts&gt;]</b>,<b>[&lt;toa/toda&gt;</b>,<b>&lt;length&gt;]</b><b>&lt;CR&gt;&lt;LF&gt;&lt;data&gt;[&lt;CR&gt;&lt;LF&gt;...]</b></p> <p>For SMS-STATUS-REPORTs:<br/><b>+CMGL:</b> <b>&lt;index&gt;</b>,<b>&lt;stat&gt;</b>,<b>&lt;fo&gt;</b>,<b>&lt;mr&gt;</b>,<b>[&lt;ra&gt;]</b>,<b>[&lt;tora&gt;]</b>,<b>&lt;scts&gt;</b>,<b>&lt;dt&gt;</b>,<b>&lt;st&gt;[&lt;CR&gt;&lt;LF&gt;...]</b></p> <p>For SMS-COMMANDs:<br/><b>+CMGL:</b> <b>&lt;index&gt;</b>,<b>&lt;stat&gt;</b>,<b>&lt;fo&gt;</b>,<b>&lt;ct&gt;[&lt;CR&gt;&lt;LF&gt;...]</b></p> <p>For CBM storage:<br/><b>+CMGL:</b> <b>&lt;index&gt;</b>,<b>&lt;stat&gt;</b>,<b>&lt;sn&gt;</b>,<b>&lt;mid&gt;</b>,<b>&lt;page&gt;</b>,<b>&lt;pages&gt;</b><b>&lt;CR&gt;&lt;LF&gt;&lt;data&gt;[&lt;CR&gt;&lt;LF&gt;...]</b></p> <p><b>OK</b></p> <p>2) In PDU mode (<b>AT+CMGF=0</b>) and when the command is successful:<br/><b>+CMGL:</b> <b>&lt;index&gt;</b>,<b>&lt;stat&gt;</b>,<b>[&lt;alpha&gt;]</b>,<b>&lt;length&gt;</b><b>&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;[&lt;CR&gt;&lt;LF&gt;...]</b></p> |

|                       |                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------|
|                       | <b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CMS ERROR: &lt;err&gt;</b> |
| Maximum Response Time | 300 ms.<br>Operation of <b>&lt;stat&gt;</b> depends on the storage of listed messages.                |
| Characteristics       | /                                                                                                     |
| Reference             |                                                                                                       |
| GSM 07.05             |                                                                                                       |

## Parameter

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;stat&gt;</b>  | 1) In text mode<br>“REC UNREAD” Received unread messages<br>“REC READ” Received read messages<br>“STO UNSENT” Stored unsent messages<br>“STO SENT” Stored sent messages<br>“ALL” All messages<br><br>2) In PDU mode<br>0 Received unread messages<br>1 Received read messages<br>2 Stored unsent messages<br>3 Stored sent messages<br>4 All messages                                                                                                                                                                                                       |
| <b>&lt;mode&gt;</b>  | Integer type.<br><u>0</u> Normal<br>1 Not change status of the specified SMS record                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>&lt;alpha&gt;</b> | String type. Alphanumeric representation of <b>&lt;da&gt;</b> or <b>&lt;oa&gt;</b> 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 <b>AT+CSCS</b> (see definition of this command in <i>TS 07.07</i> ).                                                                                                                                                                                                       |
| <b>&lt;da&gt;</b>    | <i>GSM 03.40</i> TP-Destination-Address Address-Value field in string format; BCD numbers (or <i>GSM</i> default alphabet characters) are converted to characters of the currently selected TE character set (refer to <b>AT+CSCS</b> in <i>TS 07.07</i> ); type of address given by <b>&lt;toda&gt;</b> .                                                                                                                                                                                                                                                  |
| <b>&lt;data&gt;</b>  | In the case of SMS: <i>GSM 03.40</i> TP-User-Data in text mode responses; format: <ul style="list-style-type: none"> <li>– If <b>&lt;dcs&gt;</b> indicates that <i>GSM 03.38</i> default alphabet is used and <b>&lt;fo&gt;</b> indicates that <i>GSM 03.40</i> is used: TPUser-Data-Header-Indication is not set.</li> <li>– If TE character set other than “HEX” (refer to Command Select TE character set <b>AT+CSCS</b> in <i>TS 07.07</i>): ME/TA converts <i>GSM</i> alphabet into current TE character set according to rules of Annex A.</li> </ul> |

- If TE character set is “HEX”: ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number [e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55)].
- If **<dc>** indicates that 8-bit or UCS2 data coding scheme is used, or **<fo>** indicates that *GSM 03.40* TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number [e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)]

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

- If **<dc>** indicates that *GSM 03.38* default alphabet is used: ME/TA converts GSM into the current character supported by TE.
- If TE character set other than “HEX” (refer to **AT+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 **<dc>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.

|                       |                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;length&gt;</b> | Integer type. In the text mode ( <b>AT+CMGF=1</b> ), it is the length of the message body <b>&lt;data&gt;</b> (or <b>&lt;cdata&gt;</b> ) in characters; or in PDU mode ( <b>AT+CMGF=0</b> ), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length).                                            |
| <b>&lt;index&gt;</b>  | Integer type. Value in the range of location numbers supported by the associated memory.                                                                                                                                                                                                                                                                       |
| <b>&lt;oa&gt;</b>     | String type. <i>GSM 03.40</i> TP-Originating-Address Address-Value field; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to <b>AT+CSCS</b> in <i>TS 07.07</i> ); type of address given by <b>&lt;toa&gt;</b> .                                                                 |
| <b>&lt;pdu&gt;</b>    | In the case of SMS: <i>GSM 04.11</i> SC address followed by <i>GSM 03.40</i> 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: <i>GSM 03.41</i> TPDU in hexadecimal format. |
| <b>&lt;scts&gt;</b>   | <i>GSM 03.40</i> TP-Service-Center-Time-Stamp in time-string format (refer to <b>&lt;dt&gt;</b> ).                                                                                                                                                                                                                                                             |
| <b>&lt;toda&gt;</b>   | Integer type. <i>GSM 04.11</i> TP-Destination-Address Type-of-Address octet in integer format (when first character of <b>&lt;da&gt;</b> is + (IRA 43) default value is 145, otherwise default value is 129).                                                                                                                                                  |
| <b>&lt;toa&gt;</b>    | Integer type. <i>GSM 04.11</i> TP-Originating-Address Type-of-Address octet in integer format (refer to <b>&lt;toda&gt;</b> ).                                                                                                                                                                                                                                 |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                                                                                                                                              |

**NOTE**

If the parameter **<mode>** 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 Message

This command 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'.

| AT+CMGR Read Message                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMGR=?</b>                             | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Write Command<br><b>AT+CMGR=&lt;index&gt;[,&lt;mode&gt;]</b> | <p>Response</p> <p>1) In text mode (<b>AT+CMGF=1</b>) and when the command is executed successfully:<br/>For SMS-DELIVER:<br/><b>+CMGR: &lt;stat&gt;,&lt;oa&gt;,[&lt;alpha&gt;],&lt;scts&gt;[,&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dc&gt;,&lt;dc&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b></p> <p>For SMS-SUBMIT:<br/><b>+CMGR: &lt;stat&gt;,&lt;da&gt;,[&lt;alpha&gt;][,&lt;toda&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dc&gt;,&lt;vp&gt;],&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b></p> <p>for SMS-STATUS-REPORTs:<br/><b>+CMGR: &lt;stat&gt;,&lt;fo&gt;,&lt;mr&gt;,&lt;ra&gt;,[&lt;tora&gt;],&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;</b></p> <p>For SMS-COMMANDs:<br/><b>+CMGR: &lt;stat&gt;,&lt;fo&gt;,&lt;ct&gt;[,&lt;pid&gt;,[&lt;mn&gt;],[&lt;da&gt;],[&lt;toda&gt;],&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;cdata&gt;</b></p> <p>For CBM storage:<br/><b>+CMGR: &lt;stat&gt;,&lt;sn&gt;,&lt;mid&gt;,&lt;dc&gt;,&lt;page&gt;,&lt;pages&gt;&lt;CR&gt;</b></p> |

|                        |                                                                                                                                                                                                                                                                                                                         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | <p>&lt;LF&gt;&lt;data&gt;</p> <p>2) In PDU mode (<b>AT+CMGF=0</b>) and when command is successful:</p> <p><b>+CMGR: &lt;stat&gt;,[&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b></p> <p><b>OK</b></p> <p>If there is any error related to ME functionality:</p> <p><b>+CMS ERROR: &lt;err&gt;</b></p> |
| Maximum Response Time  | Depends on the length of message content.                                                                                                                                                                                                                                                                               |
| Characteristics        | /                                                                                                                                                                                                                                                                                                                       |
| Reference<br>GSM 07.05 |                                                                                                                                                                                                                                                                                                                         |

## Parameter

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <index> | Integer type. Value in the range of location numbers supported by the associated memory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <mode>  | Integer type.<br>0 Normal<br>1 Not change the 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 specified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <da>    | String type. <i>GSM 03.40</i> TP-Destination-Address Address-Value field; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by <b>AT+CSCS</b> in <i>TS 07.07</i> ); type of address given by <toda>.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <data>  | <p>In the case of SMS: <i>GSM 03.40</i> TP-User-Data in text mode responses; format.</p> <ul style="list-style-type: none"> <li>– If &lt;dcs&gt; indicates that <i>GSM 03.38</i> default alphabet is used and &lt;fo&gt; indicates that <i>GSM 03.40</i> is used: TPUser-Data-Header-Indication is not set.</li> <li>– If TE character set other than “HEX” (refer to command select TE character set <b>AT+CSCS</b> in <i>TS 07.07</i>): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A.</li> <li>– 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)].</li> <li>– If &lt;dcs&gt; indicates that 8-bit or UCS2 data coding scheme is used, or &lt;fo&gt; indicates that <i>GSM 03.40</i> 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)].</li> </ul> <p>In the case of CBS: <i>GSM 03.41</i> CBM Content of Message in text mode responses;</p> |

format.

- If **<dc>** 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 **AT+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 **<dc>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number.

**<dc>** Depending on the command or result code: *GSM 03.38* SMS Data Coding Scheme (default 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 (**AT+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**AT+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>** Integer type. *GSM 03.41* CBM Message Identifier.

**<oa>** String type. *GSM 03.40* TP-Originating-Address Address-Value field; BCD numbers (or GSM default alphabet characters) are converted characters of the currently selected TE character set (specified by **AT+CSCS** in *TS 07.07*); type of address given by **<toa>**.

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

In the case of CBS: *GSM 03.41* TPDU in hexadecimal format.

**<pid>** Integer type. *GSM 03.40* TP-Protocol-Identifier. Default value: 0.

**<sca>** String type. *GSM 04.11* RP SC address Address-Value field; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **AT+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>**)

| <b>&lt;stat&gt;</b> | 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     |
| 4                   |          | “ALL”        | All messages             |

**<toda>** Integer type. *GSM 04.11* TP-Destination-Address Type-of-Address octet (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default is 129).

**<toa>** Integer type. *GSM 04.11* TP-Originating-Address Type-of-Address octet (default refer to **<toda>**).

**<tosca>** Integer type. *GSM 04.11* RP SC address Type-of-Address octet (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>). |
| <err> | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                            |

### 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,"+861380021
0500",145,27
This is a test from Quectel
OK
```

## 8.8. AT+CMGS Send Message

| AT+CMGS Send Message                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMGS=?</b>                                                                                                                                                                                                                                                                                                                                                         | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Write Command<br>1) In text mode ( <b>AT+CMGF=1</b> ):<br><b>AT+CMGS=&lt;da&gt;[,&lt;toda&gt;]&lt;CR&gt;</b><br>text is entered<br>Tap <b>Ctrl+Z</b> to send the message or quit by tapping <b>ESC</b> .<br><br>2) In PDU mode ( <b>AT+CMGF=0</b> ):<br><b>AT+CMGS=&lt;length&gt;&lt;CR&gt;</b><br>PDU is given<br>Tap <b>Ctrl+Z</b> to send the message or quit by tapping <b>ESC</b> . | Response<br>TA sends message from TE to the network (SMS-SUBMIT).<br>The message reference value <mr> is returned to the TE on successful message delivery. Optionally (when <service> value of <b>AT+CSMS</b> is 1 and network supports) <scts> is returned. The values can be used to identify message upon unsolicited delivery status report result code.<br>1) If in text mode ( <b>AT+CMGF=1</b> ) and the message is sent successfully:<br><b>+CMGS: &lt;mr&gt;</b><br><br><b>OK</b><br><br>2) If in PDU mode ( <b>AT+CMGF=0</b> ) and the message is sent successfully:<br><b>+CMGS: &lt;mr&gt;</b><br><br><b>OK</b><br><br>If there is any error:<br><b>+CMS ERROR: &lt;err&gt;</b> |

|                        |                                        |
|------------------------|----------------------------------------|
| Maximum Response Time  | 120 s, determined by network.          |
| Characteristics        | This command takes effect immediately. |
| Reference<br>GSM 07.05 |                                        |

## Parameter

|          |                                                                                                                                                                                                                                                                                                               |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <da>     | String type. Destination Address. <i>GSM 03.40</i> TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by <b>AT+CSCS</b> in <i>TS 07.07</i> ). The type of address given by <tda>. |
| <tda>    | Integer type. <i>GSM 04.11</i> TP-Destination-Address Type-of-Address octet (when the first character of <da> is + (IRA 43), the default value is 145, otherwise the default value is 129).                                                                                                                   |
| <length> | Integer type. It indicates in the text mode ( <b>AT+CMGF=1</b> ) the length of the message body <data> (or <cdata>) in characters; or in PDU mode ( <b>AT+CMGF=0</b> ), 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>     | Integer type. <i>GSM 03.40</i> TP-Message-Reference.                                                                                                                                                                                                                                                          |
| <err>    | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                                                                                             |

## Example

```

AT+CMGF=1                                //Set SMS message format to text mode.
OK
AT+CSCS="GSM"                            //Set character set to GSM which is used by the TE.
OK
AT+CMGS="15021012496"
> This is a test from Quectel             //Enter in text, tap CTRL+Z to send message, and tap ESC
                                           to quit sending the message.
+CMGS: 247
OK

```

## 8.9. AT+CMGW Write Message to Memory

| AT+CMGW Write Message to Memory                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMGW=?</b>                                                                                                                                                                                                                                                                                                                                                                                                              | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Write Command<br>1) In text mode ( <b>AT+CMGF=1</b> ):<br><b>AT+CMGW[=&lt;oa/da&gt;[,&lt;tooa/toda&gt;[,&lt;stat&gt;]]]</b><br><CR> text is entered<br>Tap <b>Ctrl+Z</b> to write the message or quit writing by tapping <b>ESC</b> .<br><br>2) In PDU mode ( <b>AT+CMGF=0</b> ):<br><b>AT+CMGW=&lt;length&gt;[,&lt;stat&gt;]&lt;CR&gt;</b><br>PDU is given<br>Tap <b>Ctrl+Z</b> to write the message or quit writing by tapping <b>ESC</b> . | Response<br>TA transmits SMS messages (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <mem2>. Memory location <index> of the stored message is returned. By default, the message status will be set to "STO SENT", but parameter <stat> also allows other status values to be given.<br><br>If message writing is successful:<br><b>+CMGW: &lt;index&gt;</b><br><br><b>OK</b><br><br>If there is any error:<br><b>+CMS ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                                                                                                                                                                                                                                                                                                                                                                                         | 300 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                               | This command takes effect immediately.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Reference<br>GSM 07.05                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

### Parameter

|        |                                                                                                                                                                                                                                                                                                                |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <oa>   | String type. Originating Address. <i>GSM 03.40</i> TP-Originating-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by <b>AT+CSCS</b> in <i>TS 07.07</i> ). The type of address given by <tooa>. |
| <da>   | String type. Destination Address. <i>GSM 03.40</i> TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by <b>AT+CSCS</b> in <i>TS 07.07</i> ). The type of address given by <toda>. |
| <tooa> | Integer type. <i>GSM 04.11</i> TP-Originating-Address Type-of-Address octet. (default refer to <toda>).                                                                                                                                                                                                        |
| <toda> | Integer type. <i>GSM 04.11</i> TP-Destination-Address Type-of-Address octet (when the first character of <da> is + (IRA 43) the default value is 145, otherwise the default value is 129).                                                                                                                     |

|                       |                                                                                                                                                                                                                                                                                                                                                                   |                                         |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|                       | 129                                                                                                                                                                                                                                                                                                                                                               | Unknown type (ISDN format)              |
|                       | 145                                                                                                                                                                                                                                                                                                                                                               | International number type (ISDN format) |
| <b>&lt;stat&gt;</b>   | String type in text mode:                                                                                                                                                                                                                                                                                                                                         |                                         |
|                       | "REC UNREAD"                                                                                                                                                                                                                                                                                                                                                      | Received unread messages                |
|                       | "REC READ"                                                                                                                                                                                                                                                                                                                                                        | Received read messages                  |
|                       | "STO UNSENT"                                                                                                                                                                                                                                                                                                                                                      | Stored unsent messages                  |
|                       | "STO SENT"                                                                                                                                                                                                                                                                                                                                                        | Stored sent messages                    |
|                       | "ALL"                                                                                                                                                                                                                                                                                                                                                             | All messages                            |
|                       | Integer type in PDU mode:                                                                                                                                                                                                                                                                                                                                         |                                         |
|                       | 0                                                                                                                                                                                                                                                                                                                                                                 | Received unread messages                |
|                       | 1                                                                                                                                                                                                                                                                                                                                                                 | Received read messages                  |
|                       | 2                                                                                                                                                                                                                                                                                                                                                                 | Stored unsent messages                  |
|                       | 3                                                                                                                                                                                                                                                                                                                                                                 | Stored sent messages                    |
|                       | 4                                                                                                                                                                                                                                                                                                                                                                 | All messages                            |
| <b>&lt;length&gt;</b> | Integer type. Indicates in the text mode ( <b>AT+CMGF=1</b> ) the length of the message body <b>&lt;data&gt;</b> (or <b>&lt;cdata&gt;</b> ) in characters; or in PDU mode ( <b>AT+CMGF=0</b> ), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length).                                            |                                         |
| <b>&lt;pdu&gt;</b>    | In the case of SMS: <i>GSM 04.11</i> SC address followed by <i>GSM 03.40</i> 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: <i>GSM 03.41</i> TPDU in hexadecimal format. |                                         |
| <b>&lt;index&gt;</b>  | Index of message in selected storage <b>&lt;mem2&gt;</b> .                                                                                                                                                                                                                                                                                                        |                                         |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                                                                                                                                                 |                                         |

## Example

```

AT+CMGF=1                                //Set SMS message format to text mode.
OK
AT+CSCS="GSM"                             //Set character set to GSM which is used by the TE.
OK
AT+CMGW="15021012496"
> This is a test from Quectel              //Enter in text, tap CTRL+Z to write the message and tap
                                           ESC to quit sending the message.
+CMGW: 4
OK

```

## 8.10. AT+CMSS Send Message from Storage

| AT+CMSS Send Message from Storage                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMSS=?</b>                                          | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Write Command<br><b>AT+CMSS=&lt;index&gt;[,&lt;da&gt;[,&lt;toda&gt;]]</b> | <p>Response</p> <p>TA sends messages with location value <b>&lt;index&gt;</b> from message storage <b>&lt;mem2&gt;</b> to the network (SMS-SUBMIT). If new recipient address <b>&lt;da&gt;</b> is given, it shall be used instead of the one stored with the message. Message reference <b>&lt;mr&gt;</b> is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code.</p> <p>1) If in text mode (<b>AT+CMGF=1</b>) and the message is sent successfully:<br/> <b>+CMSS: &lt;mr&gt;[,&lt;scts&gt;]</b></p> <p><b>OK</b></p> <p>2) In PDU mode (<b>AT+CMGF=0</b>) and the message is sent successfully;<br/> <b>+CMSS: &lt;mr&gt;[,&lt;ackpdu&gt;]</b></p> <p><b>OK</b></p> <p>If there is any error:<br/> <b>+CMS ERROR: &lt;err&gt;</b></p> |
| Maximum Response Time                                                     | 120 s, determined by network.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Characteristics                                                           | This command takes effect immediately.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Reference<br>GSM 07.05                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### Parameter

|                      |                                                                                                                                                                                                                                                                                                                              |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;index&gt;</b> | Integer type. Value in the range of location numbers supported by the associated memory.                                                                                                                                                                                                                                     |
| <b>&lt;da&gt;</b>    | String type. Destination Address. <i>GSM 03.40</i> TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by <b>AT+CSCS</b> in <i>TS 07.07</i> ). The type of address given by <b>&lt;toda&gt;</b> . |

|                       |                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;tda&gt;</b>    | Integer type. <i>GSM 04.11</i> TP-Destination-Address Type-of-Address octet (when the first character of <b>&lt;da&gt;</b> is + (IRA 43) the default value is 145, otherwise the default value is 129).                                                                                                                                                               |
| <b>&lt;mr&gt;</b>     | Integer type. <i>GSM 03.40</i> TP-Message-Reference.                                                                                                                                                                                                                                                                                                                  |
| <b>&lt;scts&gt;</b>   | <i>GSM 03.40</i> TP-Service-Centre-Time-Stamp in time-string format (refer to <b>&lt;dt&gt;</b> ).                                                                                                                                                                                                                                                                    |
| <b>&lt;ackpdu&gt;</b> | In the case of SMS: <i>GSM 04.11</i> SC address followed by <i>GSM 03.40</i> 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><br>In the case of CBS: <i>GSM 03.41</i> TPDU in hexadecimal format. |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                                                                                                                                                     |

## 8.11. AT+CMGC Send SMS Command

| AT+CMGC Send SMS Command                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMGC=?</b>                                                                                                                                                                                                                                                                                                                                                                                                     | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Write Command<br>1) In text mode ( <b>AT+CMGF=1</b> ):<br><b>AT+CMGC=&lt;fo&gt;[,&lt;ct&gt;,&lt;pid&gt;,&lt;mn&gt;,&lt;da&gt;,&lt;tda&gt;]&lt;CR&gt;</b><br>text is entered<br>Tap <b>Ctrl+Z</b> to send the message or quit by tapping <b>ESC</b> .<br><br>2) In PDU mode ( <b>AT+CMGF=0</b> ):<br><b>AT+CMGC=&lt;length&gt;&lt;CR&gt;</b><br>PDU is given<br>Tap <b>Ctrl+Z</b> to send the message or quit by tapping <b>ESC</b> . | Response<br>TA transmits SMS command messages from TE to the network (SMS-COMMAND). Message reference <b>&lt;mr&gt;</b> 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 ( <b>AT+CMGF=1</b> ) and the message is sent successfully:<br><b>+CMGC: &lt;mr&gt;[,&lt;scts&gt;]</b><br><br><b>OK</b><br><br>2) In PDU mode ( <b>AT+CMGF=0</b> ) and when the message is sent successfully:<br><b>+CMGC: &lt;mr&gt;[,&lt;ackpdu&gt;]</b><br><br><b>OK</b><br><br>If there is any error:<br><b>+CMS ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                                                                                                                                                                                                                                                                                                                                                                                | 300 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                      | This command takes effect immediately.<br>The configurations will be saved automatically.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

Reference  
GSM 07.05

## Parameter

|                       |                                                                                                                                                                                                                                                                                                                                             |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;fo&gt;</b>     | Integer type. First octet of GSM 03.40 SMS-COMMAND (default value is 2).                                                                                                                                                                                                                                                                    |
| <b>&lt;ct&gt;</b>     | Integer type. GSM 03.40 TP-Command-Type (default value is 0).                                                                                                                                                                                                                                                                               |
| <b>&lt;pid&gt;</b>    | Integer type. GSM 03.40 TP-Protocol-Identifier (default value is 0).                                                                                                                                                                                                                                                                        |
| <b>&lt;mn&gt;</b>     | Integer type. GSM 03.40 TP-Message-Number.                                                                                                                                                                                                                                                                                                  |
| <b>&lt;da&gt;</b>     | String type. Destination Address GSM 03.40 TP-Destination-Address Address-Value field. BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by <b>AT+CSCS</b> in TS 07.07). The type of address given by <b>&lt;toda&gt;</b> .                                |
| <b>&lt;toda&gt;</b>   | Integer type. GSM 04.11 TP-Destination-Address Type-of-Address octet (when the first character of <b>&lt;da&gt;</b> is + (IRA 43) the default value is 145, otherwise the default value is 129).<br>129 Unknown type (ISDN format)<br>145 International number type (ISDN format)                                                           |
| <b>&lt;length&gt;</b> | Integer type. Indicates in PDU mode ( <b>AT+CMGF=0</b> ), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length).                                                                                                                                                            |
| <b>&lt;mr&gt;</b>     | Integer type. GSM 03.40 TP-Message-Reference.                                                                                                                                                                                                                                                                                               |
| <b>&lt;scts&gt;</b>   | GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to <b>&lt;dt&gt;</b> ).                                                                                                                                                                                                                                                 |
| <b>&lt;ackpdu&gt;</b> | 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 |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.8</b> for details.                                                                                                                                                                                                                                                                                           |

## 8.12. AT+CNMI New SMS Message Indications

| AT+CNMI New SMS Message Indications |                                                                                                                                                                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CNMI=?</b>    | Response<br><b>+CNMI:</b> (list of supported <b>&lt;mode&gt;s</b> ),(list of supported <b>&lt;mt&gt;s</b> ),(list of supported <b>&lt;bm&gt;s</b> ),(list of supported <b>&lt;ds&gt;s</b> ),(list of supported <b>&lt;bfr&gt;s</b> )<br><br><b>OK</b> |
| Read Command<br><b>AT+CNMI?</b>     | Response<br><b>+CNMI:</b> <b>&lt;mode&gt;</b> , <b>&lt;mt&gt;</b> , <b>&lt;bm&gt;</b> , <b>&lt;ds&gt;</b> , <b>&lt;bfr&gt;</b>                                                                                                                        |

|                                                                                                     |                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                     | <b>OK</b>                                                                                                                                                                                                                                                                                                                               |
| Write Command<br><b>AT+CNMI=[&lt;mode&gt;[,&lt;mt&gt;[,&lt;bm&gt;[,&lt;ds&gt;[,&lt;bfr&gt;]]]]]</b> | Response<br>TA selects the procedure on how the received new messages from the network are indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in <i>GSM 03.38</i> .<br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b> |
| Maximum Response Time                                                                               | 300 ms                                                                                                                                                                                                                                                                                                                                  |
| Characteristics                                                                                     | Take effect immediately.<br>Remain valid after powering down ( <b>AT&amp;W</b> executed first).                                                                                                                                                                                                                                         |
| Reference<br>GSM 07.05                                                                              |                                                                                                                                                                                                                                                                                                                                         |

## Parameter

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.<br>0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other places or the oldest indications may be discarded and replaced with the new received indications.<br>1 Discard indication and reject new received messages unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.<br>2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.<br>3 Forward unsolicited result codes directly to the TE. Specific TA-TE link in band technique can be used to embed result codes and data into TE when TA is in on-line data mode. |
| <b>&lt;mt&gt;</b>   | Integer type. The rules for storing received SMS depend on its data coding scheme (refer to <i>GSM 03.38 [2]</i> ), and on preferred memory storage ( <b>AT+CPMS</b> ) setting, and the values are as follows:<br>0 No SMS-DELIVER indications are routed to the TE.<br>1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: <b>+CMTI: &lt;mem&gt;,&lt;index&gt;</b> .<br>2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code: <b>+CMT: [&lt;alpha&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b> (PDU mode is enabled) or <b>+CMT: &lt;oa&gt;,&lt;alpha&gt;,&lt;scts&gt;</b>                                                                                                              |

|       |                                                                                                                                                                                                                                                                                                |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | [,<tooa>,<fo>,<pid>,<dc>,<sca>,<tosca>,<length>]<CR><LF><data> (Text mode is enabled; about parameters in italics, refer to <b>AT+CSDH</b> ). 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>  | Integer type. The rules for storing received CBMs depend on its data coding scheme (refer to <i>GSM 03.38 [2]</i> ), and the setting of Select CBM Types ( <b>AT+CSCB</b> ), and the values are as follows:                                                                                    |
| 0     | No CBM indications are routed to the TE.                                                                                                                                                                                                                                                       |
| 2     | New CBMs are routed directly to the TE by using unsolicited result code: <b>+CBM: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b> (PDU mode is enabled) or <b>+CBM: &lt;sn&gt;,&lt;mid&gt;,&lt;dc&gt;,&lt;page&gt;,&lt;pages&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b> (Text mode is 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>  | Integer type.                                                                                                                                                                                                                                                                                  |
| 0     | No SMS-STATUS-REPORTs are routed to the TE.                                                                                                                                                                                                                                                    |
| 1     | SMS-STATUS-REPORTs are routed to the TE by using unsolicited result code: <b>+CDS: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b> (PDU mode is enabled) or <b>+CDS: &lt;fo&gt;,&lt;mr&gt;,&lt;ra&gt;,&lt;tora&gt;,&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;</b> (Text mode is enabled).            |
| <bfr> | Integer type.                                                                                                                                                                                                                                                                                  |
| 0     | TA buffer of unsolicited result codes defined in this command is flushed to the TE when <mode> 1-3 is entered ( <b>OK</b> 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:

|                                                                            |                                                 |
|----------------------------------------------------------------------------|-------------------------------------------------|
| <b>+CMTI: &lt;mem&gt;,&lt;index&gt;</b>                                    | Indicates that a new message has been received. |
| <b>+CMT: [&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b> | A short message is output directly.             |
| <b>+CBM: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b>                 | A cell broadcast message is output directly.    |

#### Example

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

```
+CMTI: "SM",5 //Indicate that a new message has been received.
AT+CNMI=2,2 //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 //A short message is output directly.
```

### 8.13. AT+CSCB Select Cell Broadcast Message Types

| AT+CSCB Select Cell Broadcast Message Types                                |                                                                                                                                                   |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CSCB=?</b>                                           | Response<br><b>+CSCB:</b> (list of supported <b>&lt;mode&gt;s</b> )<br><br><b>OK</b>                                                              |
| Read Command<br><b>AT+CSCB?</b>                                            | Response<br><b>+CSCB:</b> <b>&lt;mode&gt;</b> , <b>&lt;mids&gt;</b> , <b>&lt;dcss&gt;</b><br><br><b>OK</b>                                        |
| Write Command<br><b>AT+CSCB=&lt;mode&gt;[,&lt;mids&gt;[,&lt;dcss&gt;]]</b> | Response<br>TA selects which types of CBMs to be received by the ME.<br><b>OK</b><br><br>If there is any error:<br><b>+CMS ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                      | 300 ms                                                                                                                                            |
| Characteristics                                                            | This command takes effect immediately.<br>The configurations will not be saved.                                                                   |
| Reference<br>GSM 07.05                                                     |                                                                                                                                                   |

#### Parameter

|                     |                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.<br>0 Message types specified in <b>&lt;mids&gt;</b> and <b>&lt;dcss&gt;</b> are accepted.<br>1 Message types specified in <b>&lt;mids&gt;</b> and <b>&lt;dcss&gt;</b> are not accepted. |
| <b>&lt;mids&gt;</b> | String type. All different possible combinations of CBM message identifiers (refer to <b>&lt;mid&gt;</b> ) (default is an empty string), e.g. "0,1,5,320-478,922".                                    |
| <b>&lt;dcss&gt;</b> | String type. All different possible combinations of CBM data coding schemes (refer to <b>&lt;dcs&gt;</b> ) (default is an empty string), e.g. "0-3,5".                                                |

<err> Error codes. See **Chapter 15.8** for details.

#### NOTE

The command writes the parameters in non-volatile memory.

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

### AT+CSDH Show SMS Text Mode Parameters

|                                                |                                                                                                                |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CSDH=?</b>               | Response<br><b>+CSDH:</b> (list of supported <show>s)<br><br><b>OK</b>                                         |
| Read Command<br><b>AT+CSDH?</b>                | Response<br><b>+CSDH:</b> <show><br><br><b>OK</b>                                                              |
| Write Command<br><b>AT+CSDH=[&lt;show&gt;]</b> | Response<br>TA determines whether detailed header information is shown in text mode result codes.<br><b>OK</b> |
| Maximum Response Time                          | 300 ms                                                                                                         |
| Characteristics                                | This command takes effect immediately.<br>The configurations will be saved after <b>AT+W</b> is executed.      |
| Reference<br>GSM 07.05                         |                                                                                                                |

### Parameter

|        |                                                                                                                                                                                                                                                                       |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <show> | Integer type.                                                                                                                                                                                                                                                         |
| 0      | Do not show header values defined in commands <b>AT+CSCA</b> and <b>AT+CSMP</b> (<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs>) nor <length>, <toda> or <tooa> in <b>+CMT</b> , <b>+CMGL</b> , <b>+CMGR</b> 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

```

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

| AT+CSMP Set SMS Text Mode Parameters                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CSMP=?</b>                                                 | Response<br><b>+CSMP:</b> (list of supported <fo>s),(list of supported <vp>s),(list of supported <pid>s),(list of supported <dc>s)<br><br><b>OK</b>                                                                                                                                                                                                                                                                                                                                       |
| Read Command<br><b>AT+CSMP?</b>                                                  | Response<br><b>+CSMP:</b> <fo>,<vp>,<pid>,<dc><br><br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Write Command<br><b>AT+CSMP=[&lt;fo&gt;,&lt;vp&gt;,&lt;pid&gt;,&lt;dc&gt;]]]</b> | 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 ( <b>AT+CMGF=1</b> ). 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><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |

|                        |                                                                                 |
|------------------------|---------------------------------------------------------------------------------|
| Maximum Response Time  | 300 ms                                                                          |
| Characteristics        | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>GSM 07.05 |                                                                                 |

## Parameter

|                    |                                                                                                                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;fo&gt;</b>  | Integer type. Depends on the command or result code: first octet of <i>GSM 03.40</i> . SMS-DELIVER, SMS-SUBMIT (default value is 17), SMS-STATUS-REPORT, or SMS-COMMAND (default value is 2). A SMS status report is supported under text mode if <b>&lt;fo&gt;</b> is set to 49. |
| <b>&lt;vp&gt;</b>  | Depends on SMS-SUBMIT <b>&lt;fo&gt;</b> setting: <i>GSM 03.40</i> TP-Validity-Period either in integer format (default 167) or in time-string format (refer to <b>&lt;dt&gt;</b> ).                                                                                               |
| <b>&lt;pid&gt;</b> | Integer type. <i>GSM 03.40</i> TP-Protocol-Identifier. Default value: 0.                                                                                                                                                                                                          |
| <b>&lt;dc&gt;</b>  | Integer type. <i>GSM 03.38</i> SMS Data Coding Scheme.                                                                                                                                                                                                                            |
| <b>&lt;err&gt;</b> | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                 |

### NOTE

The command writes the parameters in non-volatile memory.

## 8.16. AT+QCLASS0 Store Class 0 SMS to (U)SIM When Receiving Class 0 SMS

| AT+QCLASS0 Store Class 0 SMS to (U)SIM When Receiving Class 0 SMS |                                                                                         |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QCLASS0=?</b>                               | Response<br><b>+QCLASS0:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QCLASS0?</b>                                | Response<br><b>+QCLASS0:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                       |
| Write Command<br><b>AT+QCLASS0=&lt;mode&gt;</b>                   | Response<br><b>OK</b>                                                                   |

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
|                       | If there is any error:<br><b>ERROR</b>                                          |
| Maximum Response Time | 300 ms                                                                          |
| Characteristics       | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>Quectel  |                                                                                 |

## Parameter

|                     |                                                        |
|---------------------|--------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.                                          |
| <u>0</u>            | 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 to store SMS when receiving Class 0 SMS.
OK

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

+CMTI: "SM",7                                //Indicate that new message has been received.
AT+CMGR=7
+CMGR: "REC UNREAD","+8615021012496","", "2010/09/26 09:56:17+32"
TEST2 from Quectel

OK
```

## 8.17. AT+QMGDA Delete All SMS

| AT+QMGDA Delete All SMS                       |                                                                                                             |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QMGDA=?</b>             | Response<br><b>+QMGDA:</b> (listed of supported <b>&lt;type&gt;s</b> )<br><br><b>OK</b>                     |
| Write Command<br><b>AT+QMGDA=&lt;type&gt;</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b><br><br>If there is any error:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                         | Depends on the storage of deleted messages.                                                                 |
| Characteristics                               | This command takes effect immediately.                                                                      |
| Reference<br>Quectel                          |                                                                                                             |

### Parameter

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;type&gt;</b> | <p>In text mode:</p> <p>"DEL READ"      Delete all read messages</p> <p>"DEL UNREAD"    Delete all unread messages</p> <p>"DEL SENT"        Delete all sent SMS</p> <p>"DEL UNSENT"     Delete all unsent SMS</p> <p>"DEL INBOX"       Delete all received SMS</p> <p>"DEL ALL"          Delete all SMS</p> <p>In PDU mode:</p> <p>1                    Delete all read messages</p> <p>2                    Delete all unread messages</p> <p>3                    Delete all sent SMS</p> <p>4                    Delete all unsent SMS</p> <p>5                    Delete all received SMS</p> <p>6                    Delete all SMS</p> |
| <b>&lt;err&gt;</b>  | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

# 9 GPRS Commands

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

| AT+CGATT Attach to/Detach from GPRS Service    |                                                                                       |
|------------------------------------------------|---------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGATT=?</b>              | Response<br><b>+CGATT:</b> (list of supported <state>s)<br><br><b>OK</b>              |
| Read Command<br><b>AT+CGATT?</b>               | Response<br><b>+CGATT:</b> <state><br><br><b>OK</b>                                   |
| Write Command<br><b>AT+CGATT=&lt;state&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                          | 75 s, determined by network.                                                          |
| Characteristics                                | This command takes effect immediately.<br>The configurations will not be saved.       |
| Reference<br>GSM 07.07                         |                                                                                       |

### Parameter

|         |                                                                                             |
|---------|---------------------------------------------------------------------------------------------|
| <state> | Integer type. Indicates the state of GPRS attachment.                                       |
|         | 0 Detached                                                                                  |
|         | 1 Attached                                                                                  |
|         | Other values are reserved and will result in an <b>ERROR</b> response to the Write Command. |
| <err>   | Error codes. See <b>Chapter 15.7</b> for details.                                           |

## Example

```

AT+CGATT=1           //Attach to GPRS service.
OK
AT+CGATT=0           //Detach from GPRS service.
OK
AT+CGATT?            //Query the current GPRS service state.
+CGATT: 0
OK

```

## 9.2. AT+CGDCONT Define PDP Context

| AT+CGDCONT Define PDP Context                                                                                                              |                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGDCONT=?</b>                                                                                                        | Response<br><b>+CGDCONT:</b> (list of supported<br><cid>s),<PDP_type>,<APN>,<PDP_addr>,(list of supported<br><data_comp>s),(list of supported <head_comp>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+CGDCONT?</b>                                                                                                         | Response<br><b>+CGDCONT:</b><br><cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp><br>[...]<br><br><b>OK</b>                                                          |
| Write Command<br><b>AT+CGDCONT=&lt;cid&gt;[,&lt;PDP_type&gt;[,&lt;APN&gt;[,&lt;PDP_addr&gt;[,&lt;data_comp&gt;[,&lt;head_comp&gt;]]]]]</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                                                                                                                  |
| Maximum Response Time                                                                                                                      | 300 ms                                                                                                                                                                       |
| Characteristics                                                                                                                            | This command takes effect immediately.<br>The configurations will not be saved.                                                                                              |
| Reference                                                                                                                                  |                                                                                                                                                                              |
| GSM 07.07                                                                                                                                  |                                                                                                                                                                              |

## Parameter

|       |                                                                                    |
|-------|------------------------------------------------------------------------------------|
| <cid> | Integer type. PDP context 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. Range: 1–3.                                                                                                        |
| <b>&lt;PDP_type&gt;</b>  | String type. Packet data protocol type which specifies the type of packet data protocol X25 ITU-T/CCITT X.25-layer 3:<br>IP            Internet Protocol ( <i>IETF STD 5</i> )<br>OSPIH       Internet Hosted Octet Stream Protocol<br>PPP          Point to Point Protocol ( <i>IETF STD 51</i> )           |
| <b>&lt;APN&gt;</b>       | String type. Access Point Name. A logical name 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.                                                                                                                  |
| <b>&lt;PDP_addr&gt;</b>  | String type. Identifies the MT in the address space applicable to the PDP. If the value is null or omitted, 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 <b>AT+CGPADDR</b> command. |
| <b>&lt;data_comp&gt;</b> | Integer type. Controls PDP data compression.<br>0            OFF (Default value if the parameter is omitted)<br>Other values are reserved.                                                                                                                                                                   |
| <b>&lt;head_comp&gt;</b> | Integer type. Controls PDP header compression.<br>0            OFF (Default value if the parameter is omitted)<br>Other values are reserved.                                                                                                                                                                 |

### Example

```
AT+CGDCONT=1,"IP","CMNET" //Define PDP context by configuring <cid>=1, <PDP_type>="IP" and
                             <APN>="CMNET".
```

OK

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

| AT+CGQREQ Quality of Service Profile (Requested) |                                                                                                                                                                                                                            |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGQREQ=?</b>               | Response<br><b>+CGQREQ:</b> <PDP_type>,(list of supported<br><precedence>s),(list of supported <delay>s),(list of<br>supported <reliability>s),(list of supported <peak>s),(list of<br>supported <mean>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+CGQREQ?</b>                | Response<br><b>+CGQREQ:</b> <cid>,<precedence>,<delay>,<reliability>,<p<br>eak>,<mean>                                                                                                                                     |

|                                                                                                                                        |                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|                                                                                                                                        | [...]                                                                           |
|                                                                                                                                        | OK                                                                              |
| Write Command<br><b>AT+CGQREQ=&lt;cid&gt;[,&lt;precedence&gt;[,&lt;delay&gt;[,&lt;reliability&gt;[,&lt;peak&gt;[,&lt;mean&gt;]]]]]</b> | Response<br>OK<br><br>If there is any error:<br><b>+CME ERROR: &lt;err&gt;</b>  |
| Maximum Response Time                                                                                                                  | 300 ms                                                                          |
| Characteristics                                                                                                                        | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>GSM 07.07                                                                                                                 |                                                                                 |

## Parameter

|                                                         |                                                                                              |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>&lt;cid&gt;</b>                                      | Integer type. Specifies a particular PDP context definition (see <b>AT+CGDCONT</b> command). |
| The following parameter are defined in <i>GSM 03.60</i> |                                                                                              |
| <b>&lt;precedence&gt;</b>                               | Integer type. Specifies the precedence class.                                                |
| <b>&lt;delay&gt;</b>                                    | Integer type. Specifies the delay class.                                                     |
| <b>&lt;reliability&gt;</b>                              | Integer type. Specifies the reliability class.                                               |
| <b>&lt;peak&gt;</b>                                     | Integer type. Specifies the peak throughput class.                                           |
| <b>&lt;mean&gt;</b>                                     | Integer type. Specifies the mean throughput class.                                           |
| <b>&lt;err&gt;</b>                                      | Error codes. See <b>Chapter 15.7</b> for details.                                            |

## 9.4. AT+CGQMIN Quality of Service Profile (Minimum Acceptable)

| AT+CGQMIN Quality of Service Profile (Minimum Acceptable) |                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGQMIN=?</b>                        | Response<br><b>+CGQMIN: &lt;PDP_type&gt;,(list of supported &lt;precedence&gt;s),</b><br><b>(list of supported &lt;delay&gt;s),(list of supported</b><br><b>&lt;reliability&gt;s),(list of supported &lt;peak&gt;s),(list of supported</b><br><b>&lt;mean&gt;s)</b><br><br>OK |
| Read Command<br><b>AT+CGQMIN?</b>                         | Response<br><b>+CGQMIN: &lt;cid&gt;,&lt;precedence&gt;,&lt;delay&gt;,&lt;reliability&gt;,&lt;peak&gt;,&lt;mean&gt;</b>                                                                                                                                                        |

|                                                                                                                                        |                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
|                                                                                                                                        | [...]                                                                                     |
|                                                                                                                                        | OK                                                                                        |
| Write Command<br><b>AT+CGQMIN=&lt;cid&gt;[,&lt;precedence&gt;[,&lt;delay&gt;[,&lt;reliability&gt;[,&lt;peak&gt;[,&lt;mean&gt;]]]]]</b> | Response<br>OK<br><br>If there is any error:<br><b>+CME ERROR: &lt;err&gt;</b>            |
| Maximum Response Time                                                                                                                  | 300 ms                                                                                    |
| Characteristics                                                                                                                        | This command takes effect immediately.<br>The configurations will be saved automatically. |
| Reference<br>GSM 07.07                                                                                                                 |                                                                                           |

## Parameter

|                                                            |                                                                                              |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>&lt;cid&gt;</b>                                         | Integer type. Specifies a particular PDP context definition (see <b>AT+CGDCONT</b> command). |
| The following parameters are defined in <i>GSM 03.60</i> . |                                                                                              |
| <b>&lt;precedence&gt;</b>                                  | Integer type. Specifies the precedence class.                                                |
| <b>&lt;delay&gt;</b>                                       | Integer type. Specifies the delay class.                                                     |
| <b>&lt;reliability&gt;</b>                                 | Integer type. Specifies the reliability class.                                               |
| <b>&lt;peak&gt;</b>                                        | Integer type. Specifies the peak throughput class.                                           |
| <b>&lt;mean&gt;</b>                                        | Integer type. Specifies the mean throughput class.                                           |
| <b>&lt;err&gt;</b>                                         | Error codes. See <b>Chapter 15.7</b> for details.                                            |

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

| AT+CGACT Activate or Deactivate PDP Context |                                                                   |
|---------------------------------------------|-------------------------------------------------------------------|
| Test Command<br><b>AT+CGACT=?</b>           | Response<br><b>+CGACT:</b> (list of supported <state>s)<br><br>OK |
| Read Command<br><b>AT+CGACT?</b>            | Response<br><b>+CGACT:</b> <cid>,<state><br>[...]<br><br>OK       |
| Write Command                               | Response                                                          |

|                          |                                                                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| AT+CGACT=<state>[,<cid>] | <p>OK</p> <p>If context is deactivated successfully, response:<br/><b>NO CARRIER</b></p> <p>If there is any error:<br/><b>+CME ERROR: &lt;err&gt;</b></p> |
| Maximum Response Time    | 150 s, determined by network.                                                                                                                             |
| Characteristics          | <p>This command takes effect immediately.</p> <p>The configurations will not be saved.</p>                                                                |
| Reference<br>GSM 07.07   |                                                                                                                                                           |

## Parameter

|         |                                                                                                                                                                                                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <state> | <p>Integer type. Indicates the state of PDP context activation.</p> <p>0        Deactivated</p> <p>1        Activated</p> <p>Other values are reserved and will result in an <b>ERROR</b> response to the Write Command.</p> |
| <cid>   | <p>Integer type. Specifies a particular PDP context definition (see <b>AT+CGDCONT</b>). Default value: 1.</p>                                                                                                                |
| <err>   | <p>Error codes. See <b>Chapter 15.7</b> for details.</p>                                                                                                                                                                     |

## Example

```

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

```

## 9.6. AT+CGDATA Enter Data State

| AT+CGDATA Enter Data State  |                                                                                |
|-----------------------------|--------------------------------------------------------------------------------|
| Test Command<br>AT+CGDATA=? | <p>Response<br/><b>+CGDATA:</b> (list of supported &lt;L2P&gt;s)</p> <p>OK</p> |

|                                                                                       |                                                                                                            |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Write Command<br><b>AT+CGDATA=&lt;L2P&gt;[,&lt;cid&gt;[,&lt;cid&gt;[,<br/> ...]]]</b> | Response<br><b>OK</b><br><b>NO CARRIER</b><br><br>If there is any error:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                                 | 300 ms                                                                                                     |
| Characteristics                                                                       | This command takes effect immediately.                                                                     |
| Reference<br>GSM 07.07                                                                |                                                                                                            |

## Parameter

|                    |                                                                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;L2P&gt;</b> | String type. 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 <b>ERROR</b> response to the Execution Command. |
| <b>&lt;cid&gt;</b> | Integer type. Specifies a particular PDP context definition (see <b>AT+CGDCONT</b> command).                                                                                                                                       |
| <b>&lt;err&gt;</b> | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                  |

## 9.7. AT+CGPADDR Show PDP Address

| <b>AT+CGPADDR Show PDP Address</b>             |                                                                                                    |
|------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGPADDR=?</b>            | Response<br><b>+CGPADDR: (list of defined &lt;cid&gt;s)</b><br><br><b>OK</b>                       |
| Write Command<br><b>AT+CGPADDR=&lt;cid&gt;</b> | Response<br><b>+CGPADDR: &lt;cid&gt;[,&lt;PDP_addr&gt;]</b><br><br><b>OK</b><br>Or<br><b>ERROR</b> |
| Maximum Response Time                          | 300 ms                                                                                             |
| Characteristics                                | This command takes effect immediately.                                                             |
| Reference<br>GSM 07.07                         |                                                                                                    |

## Parameter

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;cid&gt;</b>      | Integer type. Specifies a particular PDP context definition (see <b>AT+CGDCONT</b> ).                                                                                                                                                                                                                                                                                                                                                                |
| <b>&lt;PDP_addr&gt;</b> | String type. 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 <b>AT+CGDCONT</b> 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 <b>&lt;cid&gt;</b> . <b>&lt;PDP_address&gt;</b> 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.

## Example

```

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

```

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

### AT+CGEREP Control Unsolicited GPRS Event Reporting

|                                                |                                                                                        |
|------------------------------------------------|----------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGEREP=?</b>             | Response<br><b>+CGEREP:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+CGEREP?</b>              | Response<br><b>+CGEREP:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                       |
| Write Command<br><b>AT+CGEREP=&lt;mode&gt;</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                            |

|                       |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------|
| Maximum Response Time | 300 ms                                                                                    |
| Characteristics       | This command takes effect immediately.<br>The configurations will be saved automatically. |
| Reference             |                                                                                           |
| GSM 07.07             |                                                                                           |

## Parameter

|                     |                                                                                                                            |
|---------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.                                                                                                              |
| <u>0</u>            | Buffer URC 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 URC 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 **AT+CGDCONT**)

**<PDP\_addr>** Packet Data Protocol address (see **AT+CGDCONT**)

**<cid>** Context ID (see **AT+CGDCONT**)

**<class>** GPRS mobile class (see **AT+CGCLASS**)

## 9.9. AT+CGREG Network Registration Status

| AT+CGREG Network Registration Status |                                                                      |
|--------------------------------------|----------------------------------------------------------------------|
| Test Command<br><b>AT+CGREG=?</b>    | Response<br><b>+CGREG:</b> (list of supported <n>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+CGREG?</b>     | Response<br><b>+CGREG:</b> <n>,<stat>[,<lac>,<ci>]<br><br><b>OK</b>  |
| Write Command                        | Response                                                             |

|                        |                                                                                 |
|------------------------|---------------------------------------------------------------------------------|
| AT+CGREG=[<n>]         | OK<br>Or<br>ERROR                                                               |
| Maximum Response Time  | 300 ms                                                                          |
| Characteristics        | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>GSM 07.07 |                                                                                 |

## Parameter

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

### NOTE

Parameter **<stat>** only supports option 0 and 1.

## Example

```

AT+CGATT=0
NO CARRIER

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

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

```

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

## 9.10. AT+CGSMS Select Service for MO SMS Messages

| AT+CGSMS Select Service for MO SMS Messages        |                                                                                       |
|----------------------------------------------------|---------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CGSMS=?</b>                  | Response<br><b>+CGSMS:</b> (list of currently available <service>s)<br><br><b>OK</b>  |
| Read Command<br><b>AT+CGSMS?</b>                   | Response<br><b>+CGSMS:</b> <service><br><br><b>OK</b>                                 |
| Write Command<br><b>AT+CGSMS=[&lt;service&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                              | 300 ms                                                                                |
| Characteristics                                    | This command takes effect immediately.<br>The configurations will not be saved.       |
| Reference<br>GSM 07.07                             |                                                                                       |

### Parameter

|           |                                                                          |
|-----------|--------------------------------------------------------------------------|
| <service> | Integer type. 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) |
| <err>     | Error codes. See <b>Chapter 15.7</b> for details.                        |

#### NOTE

The circuit switched service route is the default method.

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

| AT+QGPCLASS Change GPRS Multi-slot Class          |                                                                                              |
|---------------------------------------------------|----------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QGPCLASS=?</b>              | Response<br><b>MULTISLOT CLASS:</b> (list of supported <class>s)<br><br><b>OK</b>            |
| Read Command<br><b>AT+QGPCLASS?</b>               | Response<br><b>MULTISLOT CLASS:</b> <class><br><br><b>OK</b>                                 |
| Write Command<br><b>AT+QGPCLASS=&lt;class&gt;</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                                  |
| Maximum Response Time                             | 300 ms                                                                                       |
| Characteristics                                   | This command takes effect after rebooting<br>The configurations will be saved automatically. |
| Reference<br>Quectel                              |                                                                                              |

### Parameter

|         |                                                                      |
|---------|----------------------------------------------------------------------|
| <class> | Integer type. GPRS multi-slot class. Range: 1–12. Default value: 12. |
|---------|----------------------------------------------------------------------|

# 10 TCP/IP Commands

## 10.1. AT+QIOPEN Start Up TCP or UDP Connection

| AT+QIOPEN Start Up TCP or UDP Connection                                                                       |                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIOPEN=?</b>                                                                             | Response<br><b>+QIOPEN:</b> (list of supported <b>&lt;mode&gt;s</b> ), <b>&lt;IP_addr&gt;</b> ,(list of supported <b>&lt;port&gt;s</b> )<br><b>&lt;CR&gt;&lt;LF&gt;+QIOPEN:</b> (list of supported <b>&lt;mode&gt;s</b> ), <b>&lt;domain_name&gt;</b> ,(list of supported <b>&lt;port&gt;s</b> )<br><br><b>OK</b>                                                              |
| Write Command<br><b>AT+QIOPEN=[&lt;index&gt;,&lt;mode&gt;,&lt;IP_addr&gt;/&lt;domain_name&gt;,&lt;port&gt;</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b><br><br>If the connection has already existed:<br><b>ALREADY CONNECT</b><br><br>And then if connection is successful,<br>1) When <b>AT+QIMODE=0</b> :<br><b>[&lt;index&gt;,&lt;mode&gt;] CONNECT OK</b><br><br>2) When <b>AT+QIMODE=1</b> :<br><b>CONNECT</b><br><br>Otherwise:<br><b>[&lt;index&gt;,&lt;mode&gt;] CONNECT FAIL</b> |
| Maximum Response Time                                                                                          | 75 s, determined by network.                                                                                                                                                                                                                                                                                                                                                   |
| Characteristics                                                                                                | This command takes effect immediately.                                                                                                                                                                                                                                                                                                                                         |
| Reference                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                |
| Quectel                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                |

## Parameter

|               |                                                                                                                                                                                                                                                                                                           |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <index>       | Integer type. Indicates which socket opens the connection. MC65, M65 and M95-R modules support at most 6 sockets at the same time. This parameter is necessary only if <b>AT+QIMUX</b> was set to 1 (refer to <b>AT+QIMUX</b> ). When <b>AT+QIMUX</b> was set to 0, the parameter <b>MUST</b> be omitted. |
| <mode>        | String type. The connection type.<br>"TCP" Establish a TCP connection<br>"UDP" Establish a UDP connection                                                                                                                                                                                                 |
| <IP_addr>     | String type. The address of the remote server in dotted decimal style.                                                                                                                                                                                                                                    |
| <port>        | Integer type. The port of the remote server. Range: 0–65535.                                                                                                                                                                                                                                              |
| <domain_name> | String type. The domain name address of the remote server.                                                                                                                                                                                                                                                |

### NOTE

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 to 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.

## 10.2. AT+QISEND Send Data through TCP or UDP Connection

| AT+QISEND Send Data through TCP or UDP Connection                                                                                        |                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISEND=?</b>                                                                                                       | Response<br><b>+QISEND: &lt;length&gt;</b><br><br><b>OK</b>                                                                                                                                                                                                          |
| Execution Command<br><b>AT+QISEND</b><br>After > is responded, tap <b>CTRL+Z</b> to send data.<br>Tap <b>ESC</b> to cancel the operation | Response<br>This command is used to send changeable length data.<br>If connection is not established or disconnected:<br><b>ERROR</b><br><br>If the length data is sent successfully:<br><b>SEND OK</b><br><br>If the length data fails to send:<br><b>SEND FAIL</b> |
| Write Command                                                                                                                            | Response                                                                                                                                                                                                                                                             |

|                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) When <b>AT+QIMUX=0</b><br/><b>AT+QISEND=&lt;length&gt;</b></p> <p>2) When <b>AT+QIMUX=1</b><br/><b>AT+QISEND=&lt;index&gt;[,&lt;length&gt;]</b></p> | <p>This command is used to send fixed-length data or send data on the given socket (defined by <b>&lt;index&gt;</b>).</p> <p>If connection is not established or disconnected:<br/><b>ERROR</b></p> <p>If the fixed-length data or data on the given socket is sent successfully:<br/><b>SEND OK</b></p> <p>If the fixed-length data or data on the given socket fails to send:<br/><b>SEND FAIL</b></p> |
| Maximum Response Time                                                                                                                                     | 300 ms                                                                                                                                                                                                                                                                                                                                                                                                   |
| Characteristics                                                                                                                                           | This command takes effect immediately.                                                                                                                                                                                                                                                                                                                                                                   |
| Reference<br>Quectel                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                          |

## Parameter

|                       |                                                                                                                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;index&gt;</b>  | Integer type. The index of the socket for sending data. Necessary only if <b>AT+QIMUX</b> is set to 1 (refer to <b>AT+QIMUX</b> ). When <b>AT+QIMUX</b> is set to 0, the parameter MUST be omitted. |
| <b>&lt;length&gt;</b> | Integer type. The length of data to be sent, it MUST be less than 1460.                                                                                                                             |

### NOTE

1. This command is used to send data on the TCP or UDP connection that has been established. **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. Data can only be sent at the status of connection, otherwise **ERROR** is responded.
4. **SEND OK** means the data has been sent through the send window rather than it has received 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 query through **AT+QISACK**.

### 10.3. AT+QICLOSE Close TCP or UDP Connection

| AT+QICLOSE Close TCP or UDP Connection           |                                                                                                                                                               |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QICLOSE=?</b>              | Response<br><b>OK</b>                                                                                                                                         |
| Execution Command<br><b>AT+QICLOSE</b>           | Response<br>If TCP or UDP connection is closed successfully:<br><b>CLOSE OK</b><br><br>If TCP or UDP connection fails to close:<br><b>ERROR</b>               |
| Write Command<br><b>AT+QICLOSE=&lt;index&gt;</b> | Response<br>If TCP or UDP connection is closed successfully:<br><b>&lt;index&gt;,CLOSE OK</b><br><br>If TCP or UDP connection fails to close:<br><b>ERROR</b> |
| Maximum Response Time                            | 300 ms                                                                                                                                                        |
| Characteristics                                  | This command takes effect immediately.                                                                                                                        |
| Reference<br>Quectel                             |                                                                                                                                                               |

#### Parameter

|                      |                                                                                                                                                                                                     |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;index&gt;</b> | Integer type. The index of the socket for sending data. Necessary only if <b>AT+QIMUX</b> is set to 1 (refer to <b>AT+QIMUX</b> ). When <b>AT+QIMUX</b> is set as 0, the parameter MUST be omitted. |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### NOTE

- For Execution Command **AT+QICLOSE**:
  - If **AT+QISRV=1** (please refer to **AT+QISRV**) and **AT+QIMUX=0** (please refer to **AT+QIMUX**), this command will close the connection in which the module is used as a client.
  - If **AT+QISRV=1** and **AT+QIMUX=1**, it will return **ERROR**.
  - If **AT+QISRV=2**, **AT+QIMUX=0**, and 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 **AT+QISRV=2**, **AT+QIMUX=0** and the module is in listening state without any client, this command will cause the module to quit the listening state.
  - If **AT+QISRV=2**, **AT+QIMUX=1** and the module is used as a server, this command will close all the incoming connection and cause the module to quit the listening state.

2. For Write Command **AT+QICLOSE=<index>**:
  - This command is valid only if **AT+QIMUX=1**.
  - If **AT+QISRVC=1** and **AT+QIMUX=1**, this command will close the corresponding connection according to **<index>** and the module used as a client in the connection.
  - If **AT+QISRVC=2** and **AT+QIMUX=1**, this command will close the incoming connection according to **<index>**.
3. If **AT+QISRVC=1** and **AT+QIMUX=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**.

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

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

|                                        |                                                                                                                                                                |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIDEACT=?</b>    | Response<br><b>OK</b>                                                                                                                                          |
| Execution Command<br><b>AT+QIDEACT</b> | Response<br>If the deactivation of GPRS/CSD PDP context succeeds:<br><b>DEACT OK</b><br><br>If the deactivation of GPRS/CSD PDP context fails:<br><b>ERROR</b> |
| Maximum Response Time                  | 40 s, determined by network.                                                                                                                                   |
| Characteristics                        | This command takes effect immediately.                                                                                                                         |
| Reference<br>Quectel                   |                                                                                                                                                                |

#### NOTE

1. **AT+QIDEACT** can be executed to deactivate GPRS/CSD PDP context except for the status of **IP INITIAL**. After closing the connection, the status switches to **IP INITIAL**.
2. Currently CSD context is not supported.

## 10.5. AT+QILPORT Set Local Port

This command sets the port for listening.

| AT+QILPORT Set Local Port                                    |                                                                                         |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QILPORT=?</b>                          | Response<br><b>+QILPORT:</b> (list of supported <b>&lt;port&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QILPORT?</b>                           | Response<br><b>&lt;mode&gt;: &lt;port&gt;</b><br><br>...<br><br><b>OK</b>               |
| Write Command<br><b>AT+QILPORT=&lt;mode&gt;,&lt;port&gt;</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                             |
| Maximum Response Time                                        | 300 ms                                                                                  |
| Characteristics                                              | This command takes effect immediately.<br>The configurations will not be saved.         |
| Reference<br>Quectel                                         |                                                                                         |

### Parameter

|                     |                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | A string parameter which indicates the connection type.<br>"TCP" TCP local port<br>"UDP" UDP local port |
| <b>&lt;port&gt;</b> | Integer type. The local port. Range: 0–65535.                                                           |

## 10.6. AT+QIREGAPP Start TCP/IP Task and Set APN, User Name and Password

| AT+QIREGAPP Start TCP/IP Task and Set APN, User Name and Password                                |                                                                                              |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIREGAPP=?</b>                                                             | Response<br><b>+QIREGAPP: "APN","USER","PWD"</b><br><br><b>OK</b>                            |
| Read Command<br><b>AT+QIREGAPP?</b>                                                              | Response<br><b>+QIREGAPP: &lt;APN&gt;,&lt;username&gt;,&lt;password&gt;</b><br><br><b>OK</b> |
| Write Command<br><b>AT+QIREGAPP=&lt;APN&gt;,&lt;username&gt;,&lt;password&gt;[,&lt;rate&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error, response:<br><b>ERROR</b>                |
| Execution Command<br><b>AT+QIREGAPP</b>                                                          | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                                  |
| Maximum Response Time                                                                            | 300 ms                                                                                       |
| Characteristics                                                                                  | This command takes effect immediately.                                                       |
| Reference<br>Quectel                                                                             |                                                                                              |

### Parameter

|                         |                                                                    |
|-------------------------|--------------------------------------------------------------------|
| <b>&lt;APN&gt;</b>      | String type. The GPRS access point name or the call number of CSD. |
| <b>&lt;username&gt;</b> | String type. The GPRS/CSD user name.                               |
| <b>&lt;password&gt;</b> | String type. The GPRS/CSD password.                                |
| <b>&lt;rate&gt;</b>     | Integer type. The speed of data transmission for CSD.              |

### NOTE

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 which kind of bearer (GPRS or CSD)

the parameters are used for.

3. Currently CSD function and related configuration are not supported.

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

### AT+QIACT Activate GPRS/CSD Context

|                                      |                                             |
|--------------------------------------|---------------------------------------------|
| Test Command<br><b>AT+QIACT=?</b>    | Response<br><b>OK</b>                       |
| Execution Command<br><b>AT+QIACT</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b> |
| Maximum Response Time                | 150 s, determined by network.               |
| Characteristics                      | This command takes effect immediately.      |
| Reference<br>Quectel                 |                                             |

#### NOTE

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

## 10.8. AT+QILOCIP Get Local IP Address

### AT+QILOCIP Get Local IP Address

|                                        |                                                 |
|----------------------------------------|-------------------------------------------------|
| Test Command<br><b>AT+QILOCIP=?</b>    | Response<br><b>OK</b>                           |
| Execution Command<br><b>AT+QILOCIP</b> | Response<br>If execution succeeds:<br><IP_addr> |

|                       |                                        |
|-----------------------|----------------------------------------|
|                       | If there is any error:<br><b>ERROR</b> |
| Maximum Response Time | 300 ms                                 |
| Characteristics       | This command takes effect immediately. |
| Reference<br>Quectel  |                                        |

## Parameter

<IP\_addr> String type. The IP address assigned from GPRS or CSD network.

### NOTE

1. Only at the following status: IP GPRSACT, IP STATUS, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE can local IP address be obtained by **AT+QILOCIP**; otherwise responds **ERROR**. And if the status before executing the command is IP GPRSACT, the status will switch to IP STATUS after the command.
2. Currently CSD function is not supported.

## 10.9. AT+QISTAT Query Current Connection Status

| AT+QISTAT Query Current Connection Status |                                                                                                                                                                                                                          |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISTAT=?</b>        | Response<br><b>OK</b>                                                                                                                                                                                                    |
| Execution Command<br><b>AT+QISTAT</b>     | Response<br>When <b>AT+QIMUX=0</b> :<br><b>OK</b><br><br><b>STATE: &lt;state&gt;</b><br>When <b>AT+QIMUX=1</b> :<br>List of<br>( <b>+QISTAT: &lt;index&gt;,&lt;mode&gt;,&lt;addr&gt;,&lt;port&gt;</b> )<br><br><b>OK</b> |
| Maximum Response Time                     | 300 ms                                                                                                                                                                                                                   |
| Characteristics                           | /                                                                                                                                                                                                                        |

Reference  
Quectel

## Parameter

|                      |                                                                                                                         |                |
|----------------------|-------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>&lt;state&gt;</b> | The status of the connection.                                                                                           |                |
| "IP INITIAL"         | The TCP/IP stack is in idle state.                                                                                      |                |
| "IP START"           | The TCP/IP 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.                                                                       |                |
| "IP STATUS"          | The local IP address has been gotten by <b>AT+QILOCIP</b> .                                                             |                |
| "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 <b>ATV</b> was set to 0 by <b>ATV0</b> , the TCP/IP 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"                                                                                                             |                |
| <b>&lt;index&gt;</b> | Integer type. The index of the connection. Range: 0–5.                                                                  |                |
| <b>&lt;mode&gt;</b>  | String type. The type of the connection.                                                                                |                |
|                      | "TCP"                                                                                                                   | TCP connection |
|                      | "UDP"                                                                                                                   | UDP connection |
| <b>&lt;addr&gt;</b>  | String type. The IP address of the remote.                                                                              |                |
| <b>&lt;port&gt;</b>  | Integer type. The port of the remote.                                                                                   |                |

### NOTE

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.

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

| AT+QISTATE Query Connection Status of the Current Access |                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISTATE=?</b>                      | Response<br><b>OK</b>                                                                                                                                                                                                                                                                                                                           |
| Execution Command<br><b>AT+QISTATE</b>                   | Response<br>When <b>AT+QIMUX=0</b> :<br><b>OK</b><br><br><b>STATE: &lt;state&gt;</b><br><br>When <b>AT+QIMUX=1</b> :<br><b>OK</b><br><br><b>STATE: &lt;state&gt;</b><br><br><b>+QISTATE:</b><br><b>&lt;index&gt;,&lt;mode&gt;,&lt;addr&gt;,&lt;port&gt;,&lt;socket_state&gt;</b><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b> |
| Maximum Response Time                                    | 300 ms                                                                                                                                                                                                                                                                                                                                          |
| Characteristics                                          | /                                                                                                                                                                                                                                                                                                                                               |
| Reference<br>Quectel                                     |                                                                                                                                                                                                                                                                                                                                                 |

### Parameter

|                      |                                                                        |
|----------------------|------------------------------------------------------------------------|
| <b>&lt;state&gt;</b> | String type. The status of the connection.<br>When <b>AT+QIMUX=0</b> : |
| "IP INITIAL"         | The TCP/IP stack is in idle state.                                     |
| "IP START"           | The TCP/IP stack has been registered.                                  |
| "P 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.                      |
| "IP STATUS"          | The local IP address has been gotten by <b>AT+QILOCIP</b> .            |
| "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.                     |
| When <b>AT+QIMUX=1</b> : |                                                                                 |
| "IP INITIAL"             | The TCP/IP stack is in idle state.                                              |
| "IP START"               | The TCP/IP 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.                               |
| "IP STATUS"              | The local IP address has been gotten by <b>AT+QILOCIP</b> .                     |
| "IP PROCESSING"          | Data phase. Processing the existing connection now.                             |
| "PDP DEACT"              | GPRS/CSD context was deactivated because of unknown reason.                     |
| <index>                  | Integer type. The index of the connection. Range: 0–5.                          |
| <mode>                   | String type. The type of the connection.                                        |
| "TCP"                    | TCP connection                                                                  |
| "UDP"                    | UDP connection                                                                  |
| <addr>                   | String type. The IP address of the remote.                                      |
| <port>                   | Integer type. The port of the remote.                                           |
| <socket_state>           | String type. The status of the access connection, including INITIAL, CONNECTED. |

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

| AT+QISSTAT Query the Current Server Status |                                                                                                                                                                                                                                                  |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISSTAT=?</b>        | Response<br><b>OK</b>                                                                                                                                                                                                                            |
| Execution Command<br><b>AT+QISSTAT</b>     | Response<br>When <b>AT+QIMUX=0</b> :<br><b>OK</b><br><br><b>S: &lt;server_state&gt;</b><br><br>When <b>AT+QIMUX=1</b> :<br><b>OK</b><br><br><b>S: &lt;server_state&gt;</b><br><br><b>C: &lt;index&gt;,&lt;mode&gt;,&lt;addr&gt;,&lt;port&gt;</b> |

|                       |                                        |
|-----------------------|----------------------------------------|
|                       | If there is any error:<br><b>ERROR</b> |
| Maximum Response Time | 300 ms                                 |
| Characteristics       | /                                      |
| Reference<br>Quectel  |                                        |

## Parameter

|                             |                                                                                                                                                                                                                                          |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;server_state&gt;</b> | String type. The status of the connection.<br>"INITIAL"      The TCP/IP stack is in idle state<br>"OPENNING"    The TCP/IP stack has been registered<br>"LISTENING"    Listening to server port<br>"CLOSING"      Closing connection now |
| <b>&lt;index&gt;</b>        | Integer type. The index of the connection. Range: 0–4.                                                                                                                                                                                   |
| <b>&lt;mode&gt;</b>         | String type. The type of the connection<br>"TCP"    TCP connection<br>"UDP"    UDP connection                                                                                                                                            |
| <b>&lt;addr&gt;</b>         | String type. The IP address of the remote.                                                                                                                                                                                               |
| <b>&lt;port&gt;</b>         | Integer type. The port of the remote.                                                                                                                                                                                                    |

## 10.12. AT+QIDNSCFG Configure Domain Name Server

| AT+QIDNSCFG Configure Domain Name Server                            |                                                                                                       |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIDNSCFG=?</b>                                | Response<br><b>OK</b>                                                                                 |
| Read Command<br><b>AT+QIDNSCFG?</b>                                 | Response<br><b>PrimaryDns: &lt;priDNS&gt;</b><br><b>SecondaryDns: &lt;secDNS&gt;</b><br><br><b>OK</b> |
| Write Command<br><b>AT+QIDNSCFG=&lt;priDNS&gt;[,&lt;secDNS&gt;]</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                                           |
| Maximum Response Time                                               | 300 ms                                                                                                |
| Characteristics                                                     | This command takes effect immediately.<br>The configurations will not be saved.                       |

Reference  
Quectel

## Parameter

**<priDNS>** String type. The IP address of the primary domain name server.  
**<secDNS>** String type. The IP address of the secondary domain name server.

### NOTE

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 necessary.
2. Currently CSD function and configuration are not supported.

## 10.13. AT+QIDNSGIP Query the IP Address of Given Domain Name

### AT+QIDNSGIP Query the IP Address of Given Domain Name

|                                                         |                                                                                                                                                                                            |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIDNSGIP=?</b>                    | Response<br><b>OK</b>                                                                                                                                                                      |
| Write Command<br><b>AT+QIDNSGIP=&lt;domain_name&gt;</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b><br><br>If the query succeeds:<br><b>&lt;IP_addr&gt;</b><br><br>If the query fails:<br><b>ERROR: &lt;err&gt;</b><br><b>STATE: &lt;state&gt;</b> |
| Maximum Response Time                                   | 14 s, determined by network.                                                                                                                                                               |
| Characteristics                                         | /                                                                                                                                                                                          |
| Reference<br>Quectel                                    |                                                                                                                                                                                            |

## Parameter

|                            |                                                               |
|----------------------------|---------------------------------------------------------------|
| <b>&lt;domain_name&gt;</b> | String type. The domain name.                                 |
| <b>&lt;IP_addr&gt;</b>     | String type. The IP address corresponding to the domain name. |
| <b>&lt;err&gt;</b>         | Integer type. The error code.                                 |
|                            | 1 DNS not Authorized                                          |
|                            | 2 Invalid parameter                                           |
|                            | 3 Network error                                               |
|                            | 4 No server                                                   |
|                            | 5 Time out                                                    |
|                            | 6 No configuration                                            |
|                            | 7 No memory                                                   |
|                            | 8 Unknown error                                               |
| <b>&lt;state&gt;</b>       | Refer to <b>AT+QISTAT</b> .                                   |

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

| AT+QIDNSIP Connect with IP Address or Domain Name Server |                                                                                           |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIDNSIP=?</b>                      | Response<br><b>+QIDNSIP:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b>   |
| Read Command<br><b>AT+QIDNSIP?</b>                       | Response<br><b>+QIDNSIP:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                         |
| Write Command<br><b>AT+QIDNSIP=&lt;mode&gt;</b>          | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                               |
| Maximum Response Time                                    | 300 ms                                                                                    |
| Characteristics                                          | This command takes effect immediately.<br>The configurations will be saved automatically. |
| Reference<br>Quectel                                     |                                                                                           |

## Parameter

|                     |                                                                                   |
|---------------------|-----------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type. indicates which kind of server format is used when establishing the |
|---------------------|-----------------------------------------------------------------------------------|

connection: IP address server or domain name server.

- |          |                                                                 |
|----------|-----------------------------------------------------------------|
| <u>0</u> | The address of the remote server is a dotted decimal IP address |
| <u>1</u> | The address of the remote server is a domain name               |

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

| AT+QIHEAD Add an IP Header When Receiving Data |                                                                                 |
|------------------------------------------------|---------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIHEAD=?</b>             | Response<br><b>+QIHEAD:</b> (list of supported <mode>s)<br><br><b>OK</b>        |
| Read Command<br><b>AT+QIHEAD?</b>              | Response<br><b>+QIHEAD:</b> <mode><br><br><b>OK</b>                             |
| Write Command<br><b>AT+QIHEAD=&lt;mode&gt;</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                     |
| Maximum Response Time                          | 300 ms                                                                          |
| Characteristics                                | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>Quectel                           |                                                                                 |

### Parameter

|                     |                                                                                     |
|---------------------|-------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type. Indicates whether or not to add an IP header before the received data |
| <u>0</u>            | Do not add IP header                                                                |
| <u>1</u>            | Add a header before the received data, and the format is "IPD(data length):"        |

## 10.16. AT+QIAUTOS Set Auto Sending Timer

| AT+QIAUTOS Set Auto Sending Timer   |                                                                             |
|-------------------------------------|-----------------------------------------------------------------------------|
| Test Command<br><b>AT+QIAUTOS=?</b> | Response<br><b>+QIAUTOS:</b> (list of supported <mode>s),(list of supported |

|                                                                |                                                                                 |
|----------------------------------------------------------------|---------------------------------------------------------------------------------|
|                                                                | <time>s)                                                                        |
|                                                                | OK                                                                              |
| Read Command<br><b>AT+QIAUTOS?</b>                             | Response<br><b>+QIAUTOS: &lt;mode&gt;,&lt;time&gt;</b>                          |
|                                                                | OK                                                                              |
| Write Command<br><b>AT+QIAUTOS=&lt;mode&gt;[,&lt;time&gt;]</b> | Response<br><b>OK</b><br>Or<br><b>ERROR</b>                                     |
| Maximum Response Time                                          | 300 ms                                                                          |
| Characteristics                                                | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>Quectel                                           |                                                                                 |

## Parameter

|                     |                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type. 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 |
| <b>&lt;time&gt;</b> | Integer type. The time in seconds. After the time expires since <b>AT+QISEND</b> , the input data will be sent automatically.                 |

## 10.17. AT+QIPROMPT Set Prompt of ‘>’ When Sending Data

| AT+QIPROMPT Set Prompt of ‘>’ When Sending Data         |                                                                        |
|---------------------------------------------------------|------------------------------------------------------------------------|
| Test Command<br><b>AT+QIPROMPT=?</b>                    | Response<br><b>+QIPROMPT: (list of supported &lt;send_prompt&gt;s)</b> |
|                                                         | OK                                                                     |
| Read Command<br><b>AT+QIPROMPT?</b>                     | Response<br><b>+QIPROMPT: &lt;send_prompt&gt;</b>                      |
|                                                         | OK                                                                     |
| Write Command<br><b>AT+QIPROMPT=&lt;send_prompt&gt;</b> | Response<br><b>OK</b><br>Or                                            |

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
|                       | <b>ERROR</b>                                                                    |
| Maximum Response Time | 300 ms                                                                          |
| Characteristics       | This command takes effect immediately.<br>The configurations will not be saved. |
| Reference<br>Quectel  |                                                                                 |

## Parameter

|                            |                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;send_prompt&gt;</b> | Integer type. Indicates whether or not to echo prompt > after issuing <b>AT+QISEND</b> .<br>0 No prompt > and show <b>SEND OK</b> when sending successfully.<br><u>1</u> Echo prompt > and show <b>SEND OK</b> when sending successfully.<br>2 No prompt and not show <b>SEND OK</b> when sending successfully.<br>3 Echo prompt > and show “socket ID” <b>SEND OK</b> when sending successfully. |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 10.18. AT+QISERVER Configured as Server

| <b>AT+QISERVER Configured as Server</b>                        |                                                                                                                                                                                            |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISERVER=?</b>                           | Response<br><b>OK</b>                                                                                                                                                                      |
| Read Command<br><b>AT+QISERVER?</b>                            | Response<br><b>+QISERVER: &lt;mode&gt;,&lt;num&gt;</b><br><br><b>OK</b>                                                                                                                    |
| Execution Command<br><b>AT+QISERVER</b>                        | Response<br><b>OK</b><br>Or<br><b>ERROR</b><br><br>If it is configured as server successfully:<br><b>SERVER OK</b><br><br>If it fails to be configured as a server:<br><b>CONNECT FAIL</b> |
| Write Command<br><b>AT+QISERVER=&lt;type&gt;[,&lt;max&gt;]</b> | Response<br><b>OK</b><br>Or                                                                                                                                                                |

|                       |                                                                                                                                                               |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <b>ERROR</b><br><br>If it is configured as a server successfully:<br><b>SERVER OK</b><br><br>If it fails to be configured as a server:<br><b>CONNECT FAIL</b> |
| Maximum Response Time | 150 s, determined by network.                                                                                                                                 |
| Characteristics       | This command takes effect immediately.                                                                                                                        |
| Reference<br>Quectel  |                                                                                                                                                               |

## Parameter

|                     |                                                                                                     |
|---------------------|-----------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.<br>0 Not configured as server<br>1 Configured as server                               |
| <b>&lt;num&gt;</b>  | Integer type. The number of clients that have been connected in. Range: 0–5.                        |
| <b>&lt;type&gt;</b> | Integer type. The type of the server.<br>0 TCP server<br>1 UDP server                               |
| <b>&lt;max&gt;</b>  | Integer type. The maximum number of clients allowed to connect in. Range: 0–5.<br>Default value: 1. |

### NOTE

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

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

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

|                                    |                                                                                                                            |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QICSGP=?</b> | Response<br><b>+QICSGP: 0-CSD,DIAL NUMBER,USER NAME,PASSWO<br/>RD,RATE(0-3)<br/>+QICSGP: 1-GPRS,APN,USER NAME,PASSWORD</b> |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                         |                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
|                                                                                                                                                                         | OK                                                                             |
| Read Command<br><b>AT+QICSGP?</b>                                                                                                                                       | Response<br><b>+QICSGP: &lt;mode&gt;</b><br><br>OK                             |
| Write Command<br><b>AT+QICSGP=&lt;mode&gt;[(,&lt;APN&gt;,&lt;user_name&gt;,&lt;password&gt;)/(&lt;dial_number&gt;,&lt;user_name&gt;,&lt;password&gt;,&lt;rate&gt;)]</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>            |
| Maximum Response Time                                                                                                                                                   | 300 ms                                                                         |
| Characteristics                                                                                                                                                         | This command takes effect immediately.<br>The configuration will not be saved. |

## Parameter

|                            |                                                                                                                                                        |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b>        | Integer type. The bearer types.<br>0 Set CSD as the bearer for TCP/IP connection<br>1 Set GPRS as the bearer for TCP/IP connection<br>GPRS parameters: |
| <b>&lt;APN&gt;</b>         | String type. The access point name.                                                                                                                    |
| <b>&lt;user_name&gt;</b>   | String type. The user name.                                                                                                                            |
| <b>&lt;password&gt;</b>    | String type. The password.<br>CSD parameters:                                                                                                          |
| <b>&lt;dial_number&gt;</b> | String type. The CSD dial numbers.                                                                                                                     |
| <b>&lt;user_name&gt;</b>   | String type. The CSD user name.                                                                                                                        |
| <b>&lt;password&gt;</b>    | String type. The CSD password.                                                                                                                         |
| <b>&lt;rate&gt;</b>        | String type. The CSD connection rate.<br>0 2400<br>1 4800<br>2 9600<br>3 14400                                                                         |

### NOTE

CSD configuration is not supported at present.

## 10.20. AT+QISRVC Choose Connection

| AT+QISRVC Choose Connection                          |                                                                                |
|------------------------------------------------------|--------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISRVC=?</b>                   | Response<br><b>+QISRVC:</b> (list of supported <connection>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QISRVC?</b>                    | Response<br><b>+QISRVC:</b> <connection><br><br><b>OK</b>                      |
| Write Command<br><b>AT+QISRVC=&lt;connection&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>            |
| Maximum Response Time                                | 300 ms                                                                         |
| Characteristics                                      | This command takes effect immediately.<br>The configuration will not be saved. |

### Parameter

|                           |                                                    |
|---------------------------|----------------------------------------------------|
| <b>&lt;connection&gt;</b> | Integer type. The chosen connection.               |
| <u>1</u>                  | Choose the connection in which MS used as a client |
| 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.

## 10.21. AT+QISHOWRA Set Whether to Display the Address of Sender

| AT+QISHOWRA Set Whether to Display the Address of Sender |                                                                                |
|----------------------------------------------------------|--------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISHOWRA=?</b>                     | Response<br><b>+QISHOWRA:</b> (list of supported <mode>s)<br><br><b>OK</b>     |
| Read Command<br><b>AT+QISHOWRA?</b>                      | Response<br><b>+QISHOWRA:</b> <mode><br><br><b>OK</b>                          |
| Write Command<br><b>AT+QISHOWRA=&lt;mode&gt;</b>         | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>            |
| Maximum Response Time                                    | 300 ms                                                                         |
| Characteristics                                          | This command takes effect immediately.<br>The configuration will not be saved. |

### Parameter

|        |                                                                                                                                                                                                                                                                                              |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <mode> | Integer type. Whether or not to show the address (including IP address in dotted decimal style of the remote end) when receiving data.<br><u>0</u> Do not show the address.<br>1 Show the address; the format to show the address is like: <b>RECV FROM: &lt;IP ADDRESS&gt;:&lt;PORT&gt;</b> |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 10.22. AT+QIMODE Select TCP/IP Transfer Mode

| AT+QIMODE Select TCP/IP Transfer Mode |                                                                           |
|---------------------------------------|---------------------------------------------------------------------------|
| Test Command<br><b>AT+QIMODE=?</b>    | Response<br><b>+QIMODE:</b> (list of supported <mode>s),<br><br><b>OK</b> |
| Read Command<br><b>AT+QIMODE?</b>     | Response<br><b>+QIMODE:</b> <mode>                                        |

|                                                |                                                                                |
|------------------------------------------------|--------------------------------------------------------------------------------|
|                                                | <b>OK</b>                                                                      |
| Write Command<br><b>AT+QIMODE=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>            |
| Maximum Response Time                          | 300 ms                                                                         |
| Characteristics                                | This command takes effect immediately.<br>The configuration will not be saved. |

## Parameter

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.<br><br>0 Normal mode. In this mode, the data should be sent by the command <b>AT+QISEND</b><br><br>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 <b>ATO</b> can help to switch command mode to data mode. |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 10.23. AT+QITCFG Configure Transparent Transfer Mode

| <b>AT+QITCFG Configure Transparent Transfer Mode</b>                                        |                                                                                                        |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QITCFG=?</b>                                                          | Response<br><b>+QITCFG: (NmRetry:3-8),(WaitTm:2-20),(SendSz:1-1460), (esc:1)</b><br><br><b>OK</b>      |
| Read Command<br><b>AT+QITCFG?</b>                                                           | Response<br><b>+QITCFG: &lt;nmretry&gt;,&lt;waittm&gt;,&lt;sendsz&gt;,&lt;esc&gt;</b><br><br><b>OK</b> |
| Write Command<br><b>AT+QITCFG=&lt;nmretry&gt;,&lt;waittm&gt;,&lt;sendsz&gt;,&lt;esc&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                                    |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Maximum Response Time | 300 ms                                                                         |
| Characteristics       | This command takes effect immediately.<br>The configuration will not be saved. |

## Parameter

|                        |                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>&lt;nmretry&gt;</b> | Integer type. Number of times to retry to send an IP packet. Range: 3-8.                                  |
| <b>&lt;waittm&gt;</b>  | Integer type. Number of 100 ms intervals to wait for serial input before sending the packet. Range: 2-20. |
| <b>&lt;sendsz&gt;</b>  | Integer type. Size in bytes of data block to be received from serial port before sending. Range: 1-1460.  |
| <b>&lt;esc&gt;</b>     | Integer type. Whether to turn on the escape sequence or not.<br><u>1</u> Turn on the escape sequence      |

### NOTE

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 TCP/IP 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 TCP/IP stack will send all the data in the buffer to the remote.
4. This command is invalid when **AT+QIMUX=1**.

## 10.24. AT+QISHOWPT Control to Show the Protocol Type

### AT+QISHOWPT Control to Show the Protocol Type

|                                                  |                                                                                          |
|--------------------------------------------------|------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISHOWPT=?</b>             | Response<br><b>+QISHOWPT:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QISHOWPT?</b>              | Response<br><b>+QISHOWPT:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                       |
| Write Command<br><b>AT+QISHOWPT=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:                                      |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
|                       | <b>ERROR</b>                                                                   |
| Maximum Response Time | 300 ms                                                                         |
| Characteristics       | This command takes effect immediately.<br>The configuration will not be saved. |

## Parameter

|                     |                                                                                                                                                 |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.                                                                                                                                   |
| <u>0</u>            | Do not show the transport protocol type at the end of header of the received TCP/UDP data                                                       |
| 1                   | Show the transport protocol type at the end of header of the received TCP/UDP data as the following format: <b>IPD(data length)(TCP/UDP):</b> . |

### NOTE

This command is invalid at **AT+QIHEAD=0**.

## 10.25. AT+QIMUX Control to Enable Multiple TCP/IP Sessions

| <b>AT+QIMUX Control to Enable Multiple TCP/IP Sessions</b> |                                                                                       |
|------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIMUX=?</b>                          | Response<br><b>+QIMUX:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QIMUX?</b>                           | Response<br><b>+QIMUX:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                       |
| Write Command<br><b>AT+QIMUX=&lt;mode&gt;</b>              | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                   |
| Maximum Response Time                                      | 300 ms                                                                                |
| Characteristics                                            | This command takes effect immediately.<br>The configuration will not be saved.        |

## Parameter

|                     |                                                         |
|---------------------|---------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type.                                           |
| <u>0</u>            | Do not enable multiple TCP/IP sessions at the same time |
| 1                   | Enable multiple TCP/IP sessions at the same time        |

## 10.26. AT+QISHOWLA Control to Display Local IP Address

| AT+QISHOWLA Control to Display Local IP Address  |                                                                                          |
|--------------------------------------------------|------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISHOWLA=?</b>             | Response<br><b>+QISHOWLA:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QISHOWLA?</b>              | Response<br><b>+QISHOWLA:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                       |
| Write Command<br><b>AT+QISHOWLA=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                      |
| Maximum Response Time                            | 300 ms                                                                                   |
| Characteristics                                  | This command takes effect immediately.<br>The configuration will not be saved.           |

## Parameter

|                     |                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b> | Integer type. Indicates whether or not to show the destination address before receiving data. |
| <u>0</u>            | Do not show the destination address                                                           |
| 1                   | Show the destination address as format: <b>TO:&lt;IP ADDRESS&gt;</b>                          |

### NOTE

Since MC65, M65 and M95-R can activate two GPRS contexts at the same time, i.e., the modules 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.

## 10.27. AT+QIFGCNT Configure Foreground Context

| AT+QIFGCNT Configure Foreground Context       |                                                                                |
|-----------------------------------------------|--------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIFGCNT=?</b>           | Response<br><b>+QIFGCNT:</b> (list of supported <ID>s)<br><br><b>OK</b>        |
| Read Command<br><b>AT+QIFGCNT?</b>            | Response<br><b>+QIFGCNT:</b> <ID>,<channel><br><br><b>OK</b>                   |
| Write Command<br><b>AT+QIFGCNT=&lt;ID&gt;</b> | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>            |
| Maximum Response Time                         | 300 ms                                                                         |
| Characteristics                               | This command takes effect immediately.<br>The configuration will not be saved. |

### Parameter

|           |                                                                                            |
|-----------|--------------------------------------------------------------------------------------------|
| <ID>      | Integer type. Indicates which context will be set as foreground context. The range is 0–2. |
| <channel> | Integer type. Indicates which channel is controlling the context <ID>.                     |
| 0         | VIRTUAL_UART_1                                                                             |
| 1         | VIRTUAL_UART_2                                                                             |
| 2         | VIRTUAL_UART_3                                                                             |
| 3         | VIRTUAL_UART_4                                                                             |
| 255       | The context is not controlled by any channel.                                              |

#### NOTE

- When **AT+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**.
- <ID>=2 is used only for EPO.

## 10.28. AT+QISACK Query Sending Data Information

| AT+QISACK Query Sending Data Information    |                                                                                         |
|---------------------------------------------|-----------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISACK=?</b>          | Response<br><b>OK</b>                                                                   |
| Execution Command<br><b>AT+QISACK</b>       | Response<br><b>+QISACK: &lt;sent&gt;, &lt;acked&gt;, &lt;nAked&gt;</b><br><br><b>OK</b> |
| Write Command<br><b>AT+QISACK=&lt;n&gt;</b> | Response<br><b>+QISACK: &lt;sent&gt;, &lt;acked&gt;, &lt;nAked&gt;</b><br><br><b>OK</b> |
| Maximum Response Time                       | 300 ms                                                                                  |
| Characteristics                             | This command takes effect immediately.<br>The configuration will not be saved.          |

### Parameter

|                      |                                                                                                   |
|----------------------|---------------------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b>     | Integer type. The index for querying the connection. Range: 0–5.                                  |
| <b>&lt;sent&gt;</b>  | Integer type. The total length of the data that has been sent through the session.                |
| <b>&lt;acked&gt;</b> | Integer type. The total length of the data that has been acknowledged by the remote.              |
| <b>&lt;nAked&gt;</b> | Integer type. The total length of the data that has been sent but not acknowledged by the remote. |

### NOTE

1. Write command is invalid when **AT+QIMUX=0**.
2. This command could be affected by the command **AT+QISRVC**. If **AT+QISRVC** is set to 0, this command is used to query the information of sending data during the session in which MC65&M65&M95-R serve as a client. If **AT+QISRVC** is set to 2, this command is used to query the data information for sending during the session in which MC65, M65 and M95-R serve as a server.

## 10.29. 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><b>AT+QINDI=?</b>                      | Response<br><b>+QINDI:</b> (list of supported <m>s)<br><br><b>OK</b>           |
| Read Command<br><b>AT+QINDI?</b>                       | Response<br><b>+QINDI:</b> <m><br><br><b>OK</b>                                |
| Write Command<br><b>AT+QINDI=&lt;m&gt;</b>             | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>            |
| Maximum Response Time                                  | 300 ms                                                                         |
| Characteristics                                        | This command takes effect immediately.<br>The configuration will not be saved. |

### Parameter

|      |                                                                                                                                                                                                                                                                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <m>  | Integer type. Indicates how the mode handles the received data.                                                                                                                                                                                                                                                                                                   |
|      | 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 <b>AT+QIHEAD</b> , <b>AT+QISHOWRA</b> , <b>AT+QISHOWPT</b> and <b>AT+QISHOWLA</b> .                                                                                                                   |
|      | 1      Output a notification statement <b>+QIRDI: &lt;id&gt;,&lt;sc&gt;,&lt;sid&gt;</b> 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 <b>AT+QIRD</b> .                                                                             |
|      | 2      Output a notification statement <b>+QIRDI: &lt;id&gt;,&lt;sc&gt;,&lt;sid&gt;,&lt;num&gt;,&lt;len&gt;,&lt;tlen&gt;</b> 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 <b>AT+QIRD</b> , sum lengths of all the buffer is no more than 400 K. |
| <id> | Integer type. Points out which context the connection for the received data is based on. Please refer to the parameter <id> in the command <b>AT+QIFGCNT</b> . The range is 0–1.                                                                                                                                                                                  |
| <sc> | Integer type. Points out the role of MC65&M65&M95-R modules in the connection for the received data.                                                                                                                                                                                                                                                              |
|      | 1      The module serves as the client of the connection                                                                                                                                                                                                                                                                                                          |
|      | 2      The module serves as the server of the connection                                                                                                                                                                                                                                                                                                          |

|                     |                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;sid&gt;</b>  | Integer type. The index of the connection for the received data. The range is 0–5. When QIMUX was set as 0 by the command <b>AT+QIMUX=0</b> , this parameter will be always 0. |
| <b>&lt;num&gt;</b>  | The number of packets received in the buffer.                                                                                                                                  |
| <b>&lt;len&gt;</b>  | The length of the current package in the buffer.                                                                                                                               |
| <b>&lt;tlen&gt;</b> | The sum of the length of all packages received in the buffer.                                                                                                                  |

**NOTE**

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

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

| AT+QIRD Retrieve the Received TCP/IP Data                                     |                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QIRD=?</b>                                              | Response<br><b>+QIRD:</b> (list of supported <b>&lt;id&gt;s</b> ),(list of supported <b>&lt;sc&gt;s</b> ),(list of supported <b>&lt;sid&gt;s</b> ),(list of supported <b>&lt;len&gt;s</b> )<br><br><b>OK</b> |
| Write Command<br><b>AT+QIRD=&lt;id&gt;,&lt;sc&gt;,&lt;sid&gt;,&lt;len&gt;</b> | Response<br><b>[+QIRD: &lt;IP_addr&gt;:&lt;port&gt;,&lt;type&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;]</b><br><br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>                          |
| Maximum Response Time                                                         | 300 ms                                                                                                                                                                                                       |
| Characteristics                                                               | This command takes effect immediately.<br>The configuration will not be saved.                                                                                                                               |

### Parameter

|                   |                                                                                                                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;id&gt;</b> | Integer type. Points out which context the connection for the received data is based on. Please refer to the parameter <b>&lt;ID&gt;</b> in the command <b>AT+QIFGCNT</b> . The range is 0–1. |
| <b>&lt;sc&gt;</b> | Integer type. Points out the role of MC65&M65&M95-R modules in the connection for the received data.<br>1           The module serves as the client of the connection                         |

|          |                                                                                                                                                          |                                                   |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
|          | 2                                                                                                                                                        | The module serves as the server of the connection |
| <sid>    | Integer type. Indicates the index of the connection for the received data. The range is 0–5. When <b>AT+QIMUX=0</b> , this parameter will be always 0.   |                                                   |
| <len>    | Integer type. The maximum length of data to be retrieved. The range is 1–1500.                                                                           |                                                   |
| <ipAddr> | The address of the remote end. It is a dotted-decimal IP.                                                                                                |                                                   |
| <port>   | The port of the remote end.                                                                                                                              |                                                   |
| <type>   | An alpha string without quotation marks indicates the transport protocol type.<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.                                                                                                                                      |                                                   |

**NOTE**

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.

## 10.31. AT+QISDE Control to Echo the Data for QISEND

| AT+QISDE Control to Echo the Data for QISEND |                                                                                |
|----------------------------------------------|--------------------------------------------------------------------------------|
| Test Command<br><b>AT+QISDE=?</b>            | Response<br><b>+QISDE:</b> (list of supported <m>s)<br><br><b>OK</b>           |
| Read Command<br><b>AT+QISDE?</b>             | Response<br><b>+QISDE:</b> <m><br><br><b>OK</b>                                |
| Write Command<br><b>AT+QISDE=&lt;m&gt;</b>   | Response<br><b>OK</b><br><br>If there is any error:<br><b>ERROR</b>            |
| Maximum Response Time                        | 300 ms                                                                         |
| Characteristics                              | This command takes effect immediately.<br>The configuration will not be saved. |

## Parameter

|                  |                                                                                |
|------------------|--------------------------------------------------------------------------------|
| <b>&lt;m&gt;</b> | Integer type. Indicates whether or not to echo the data for <b>AT+QISEND</b> . |
| 0                | Do not echo the data                                                           |
| 1                | Echo the data                                                                  |

## 10.32. AT+QPING Ping Remote Server

| AT+QPING Ping Remote Server                                                       |                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QPING=?</b>                                                 | Response<br><b>+QPING: "HOST",</b> (list of supported <b>&lt;timeout&gt;s</b> ),(list of supported <b>&lt;pingnum&gt;s</b> )<br><br><b>OK</b>                                                                                                                                                                                 |
| Write Command<br><b>AT+QPING=&lt;host&gt;[,&lt;timeout&gt;][,&lt;pingnum&gt;]</b> | Response<br><b>OK</b><br><br><b>[+QPING: &lt;result&gt;[&lt;IP_addr&gt;,&lt;bytes&gt;,&lt;time&gt;,&lt;tll&gt;]&lt;CR&gt;&lt;LF&gt;...]&lt;CR&gt;&lt;LF&gt;</b><br><b>+QPING:&lt;finresult&gt;[,&lt;sent&gt;,&lt;rcvd&gt;,&lt;lost&gt;,&lt;min&gt;,&lt;max&gt;,&lt;avg&gt;]</b><br><br>If there is any error:<br><b>ERROR</b> |
| Maximum Response Time                                                             | Depends on <b>&lt;timeout&gt;</b> .                                                                                                                                                                                                                                                                                           |
| Characteristics                                                                   | This command takes effect immediately.<br>The configuration will not be saved.                                                                                                                                                                                                                                                |

## Parameter

|                        |                                                                                                                                           |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;host&gt;</b>    | String type. Host address. It could be a domain name or a dotted decimal IP address.                                                      |
| <b>&lt;timeout&gt;</b> | Integer type. The maximum time to wait for the response of each ping request. Unit: second. Range: 1–255. Default: 1.                     |
| <b>&lt;pingnum&gt;</b> | Integer type. The maximum time of ping request. Range: 1–10. Default: 4.                                                                  |
| <b>&lt;result&gt;</b>  | The result of each ping request.                                                                                                          |
| 0                      | Received the ping response from the server. In the case, it is followed by <b>,&lt;IP_addr&gt;,&lt;bytes&gt;,&lt;time&gt;,&lt;tll&gt;</b> |
| 1                      | Timeout for the ping request. In the case, no other information follows it                                                                |

|                          |                                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;IP_addr&gt;</b>   | The IP address of the remote server. It is a dotted decimal IP.                                                                                       |
| <b>&lt;bytes&gt;</b>     | The length of sending each ping request.                                                                                                              |
| <b>&lt;time&gt;</b>      | The time expended to wait for the response for the ping request. Unit: ms.                                                                            |
| <b>&lt;ttl&gt;</b>       | The value of time to live of the response packet for the ping request.                                                                                |
| <b>&lt;finresult&gt;</b> | The final result of the command.                                                                                                                      |
| 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>. |
| 3                        | The TCP/IP stack is busy now. In the case, no other information follows it.                                                                           |
| 4                        | Do NOT find the host. In the case, no other information follows it.                                                                                   |
| 5                        | Failed to activate PDP context. In the case, no other information follows it.                                                                         |
| <b>&lt;sent&gt;</b>      | Total number of sending the ping requests.                                                                                                            |
| <b>&lt;rcvd&gt;</b>      | Total number of the ping requests that received the response.                                                                                         |
| <b>&lt;lost&gt;</b>      | Total number of the ping requests that were timeout.                                                                                                  |
| <b>&lt;min&gt;</b>       | The minimum response time. Unit: ms.                                                                                                                  |
| <b>&lt;max&gt;</b>       | The maximum response time. Unit: ms.                                                                                                                  |
| <b>&lt;avg&gt;</b>       | The average response time. Unit: ms.                                                                                                                  |

### 10.33. AT+QNTTP Synchronize the Local Time via NTP

| AT+QNTTP Synchronize the Local Time Via NTP                    |                                                                                                          |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QNTTP=?</b>                              | Response<br><b>+QNTTP: "SERVER",(list of supported &lt;port&gt;s)</b><br><br><b>OK</b>                   |
| Read Command<br><b>AT+QNTTP?</b>                               | Response<br><b>+QNTTP: &lt;server&gt;,&lt;port&gt;</b><br><br><b>OK</b>                                  |
| Write Command<br><b>AT+QNTTP=&lt;server&gt;[,&lt;port&gt;]</b> | Response<br><b>OK</b><br><br><b>+QNTTP: &lt;result&gt;</b><br><br>If there is any error:<br><b>ERROR</b> |
| Execution Command<br><b>AT+QNTTP</b>                           | Response<br><b>OK</b><br><br><b>+QNTTP: &lt;result&gt;</b>                                               |
| Maximum Response Time                                          | 120 s, determined by network.                                                                            |

### Characteristics

This command takes effect immediately.  
The configuration will not be saved.

### Parameter

|                       |                                                                                                        |
|-----------------------|--------------------------------------------------------------------------------------------------------|
| <b>&lt;server&gt;</b> | String type. The address of the time server. It could be a domain name or a dotted decimal IP address. |
| <b>&lt;port&gt;</b>   | Integer type. The port of the time server. Range: 1-65535.                                             |
| <b>&lt;result&gt;</b> | Integer type. The result of time synchronization.                                                      |
| 0                     | Successfully synchronize the local time                                                                |
| 1                     | Failed to synchronize the local time because of unknown reason                                         |
| 2                     | Failed to receive the response from the Time Server                                                    |
| 3                     | The TCP/IP stack is busy now                                                                           |
| 4                     | Do Not find the Time Server                                                                            |
| 5                     | Failed to activate PDP context                                                                         |

### NOTE

The factory time server is provided by Google, whose address is "**216.239.35.0**" and the port is 123.

# 11 Supplementary Service Commands

## 11.1. AT+CCFC Call Forwarding Number and Conditions Control

| AT+CCFC Call Forwarding Number and Conditions Control                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CCFC=?</b>                                                                                                                             | Response<br><b>+CCFC:</b> (list of supported <reads>s)<br><br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Write Command<br><b>AT+CCFC=&lt;reads&gt;,&lt;mode&gt;[,&lt;number&gt;[,&lt;type&gt;[,&lt;class&gt;[,&lt;subaddr&gt;[,&lt;satype&gt;[,&lt;time&gt;]]]]]]</b> | 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 (0,1,2,4)<br><br>If <mode> is not equal to 2 and the command is executed successfully:<br><b>OK</b><br><br>If <mode>=2 and the command is executed successfully (only in connection with <reads>=0, 1, 2, 3):<br><br>For registered call forwarding numbers:<br><b>+CCFC: &lt;status&gt;,&lt;class1&gt;[,&lt;number&gt;,&lt;type&gt;[,&lt;subaddr&gt;,&lt;satype&gt;[,&lt;time&gt;]]] [&lt;CR&gt;&lt;LF&gt;+CCFC: ....]</b><br><br><b>OK</b><br><br>If no call forwarding numbers are registered (and therefore all classes are inactive):<br><b>+CCFC: &lt;status&gt;,&lt;class&gt;</b><br><br><b>OK</b><br>where <status>=0 and <class>=15 |

|                        |                                                                                      |
|------------------------|--------------------------------------------------------------------------------------|
|                        | If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time  | 300 ms                                                                               |
| Characteristics        | This command takes effect immediately.<br>The configuration will not be saved.       |
| Reference<br>GSM 07.07 |                                                                                      |

## Parameter

|                        |                                                                                                                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;reads&gt;</b>   | Integer type.<br>0      Unconditional<br>1      Mobile busy<br>2      No reply<br>3      Not reachable<br>4      All call forwarding (0-3)<br>5      All conditional call forwarding (1-3) |
| <b>&lt;mode&gt;</b>    | Integer type.<br>0      Disable<br>1      Enable<br>2      Query status<br>3      Registration<br>4      Erasure                                                                           |
| <b>&lt;number&gt;</b>  | String type. Phone number of forwarding addresses in format specified by <b>&lt;type&gt;</b> .                                                                                             |
| <b>&lt;type&gt;</b>    | Integer type. Type of address. The default value is 145 when dialing string includes international access code character "+", otherwise 129.                                               |
| <b>&lt;subaddr&gt;</b> | String type. Sub-address of format specified by <b>&lt;satype&gt;</b> .                                                                                                                    |
| <b>&lt;satype&gt;</b>  | Integer type. Type of sub-address octet (refer to <i>GSM 04.08 subclause 10.5.4.8</i> )                                                                                                    |
| <b>&lt;class&gt;</b>   | 1      Voice<br>2      Data<br>4      Fax<br>7      All telephony except SMS<br>8      Short message service<br>16     Data circuit sync<br>32     Data circuit async                      |
| <b>&lt;time&gt;</b>    | Integer type. When "no reply" ( <b>&lt;reads&gt;</b> =no reply) is enabled or queried, this gives the time in seconds to wait before call is forwarded. Range: 1–30. Default value: 20.    |
| <b>&lt;status&gt;</b>  | Integer type.<br>0      Not active<br>1      Active                                                                                                                                        |
| <b>&lt;err&gt;</b>     | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                          |

## 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

+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

```

## 11.2. AT+CCWA Call Waiting Control

| AT+CCWA Call Waiting Control                                               |                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CCWA=?</b>                                           | Response<br><b>+CCWA:</b> (list of supported <n>s)<br><br><b>OK</b>                                                                                                                                                                                                                                                                                                |
| Read Command<br><b>AT+CCWA?</b>                                            | Response<br><b>+CCWA:</b> <n><br><br><b>OK</b>                                                                                                                                                                                                                                                                                                                     |
| Write Command<br><b>AT+CCWA=[&lt;n&gt;][,&lt;mode&gt;][,&lt;class&gt;]</b> | Response<br>TA controls the call waiting supplementary service. Activation, deactivation and status query are supported. If <mode> is not equal to 2 and the command is executed successfully:<br><b>OK</b><br><br>If <mode>=2 and the command is executed successfully:<br><b>+CCWA: &lt;status&gt;,&lt;class1&gt;[&lt;CR&gt;&lt;LF&gt;+CCWA:&lt;status&gt;],</b> |

|                       |                                                                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|                       | <b>&lt;class2&gt;[...]</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time | 300 ms                                                                                                                                  |
| Characteristics       | This command takes effect immediately.<br>The configuration will not be saved.                                                          |
| Reference             |                                                                                                                                         |
| GSM 07.07             |                                                                                                                                         |

## Parameter

|                       |                                                                                                                                                                                                                                 |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b>      | Integer type.<br>0      Disable presentation of an unsolicited result code<br>1      Enable presentation of an unsolicited result code                                                                                          |
| <b>&lt;mode&gt;</b>   | Integer type. When <b>&lt;mode&gt;</b> parameter is not given, network is not interrogated.<br>0      Disable<br>1      Enable<br>2      Query status                                                                           |
| <b>&lt;class&gt;</b>  | Integer type. A sum of integers, each integer represents a class of information.<br>1      Voice (telephony)<br>2      Data (bearer service)<br>4      Fax (facsimile)<br>16     Data circuit sync<br>32     Data circuit async |
| <b>&lt;status&gt;</b> | Integer type.<br>0      Disable<br>1      Enable                                                                                                                                                                                |
| <b>&lt;err&gt;</b>    | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                               |

### NOTE

- <status>**=0 should be returned only if service is not active for any **<class>** i.e. **+CCWA: 0, 7** will be returned in this case.
- When **<mode>**=2, all active call waiting classes will be reported. In this mode the command is available by pressing any key.
- 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 (ISDN 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.

## 11.3. AT+CHLD Call Hold and Multiparty

### AT+CHLD Call Hold and Multiparty

Test Command

**AT+CHLD=?**

Response

**+CHLD:** (list of supported **<n>s**)

**OK**

Write Command

**AT+CHLD=[<n>]**

Response

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.

**OK**

If there is any error related to ME functionality:

**+CME ERROR: <err>**

Maximum Response Time

300 ms

Characteristics

This command takes effect immediately.  
The configuration will not be saved.

Reference

GSM 07.07

## Parameter

|                    |                                                                                                                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b>   | Integer type.                                                                                                                                                                   |
| 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                                                                                                                                           |
| <b>&lt;err&gt;</b> | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                               |

### 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.
+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
    
```

## 11.4. AT+CLIP Calling Line Identification Presentation

| AT+CLIP Calling Line Identification Presentation |                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CLIP=?</b>                 | Response<br><b>+CLIP:</b> (list of supported <n>s)<br><br><b>OK</b>                                                                                                                                                                                                                            |
| Read Command<br><b>AT+CLIP?</b>                  | Response<br><b>+CLIP:</b> <n>,<m><br><br><b>OK</b>                                                                                                                                                                                                                                             |
| Write Command<br><b>AT+CLIP=[&lt;n&gt;]</b>      | 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><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                            | 15s, determined by network.                                                                                                                                                                                                                                                                    |
| Characteristics                                  | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                                                                                                                                                  |
| Reference<br>GSM 07.07                           |                                                                                                                                                                                                                                                                                                |

### Parameter

|     |                                   |
|-----|-----------------------------------|
| <n> | Integer type.                     |
| 0   | Suppress unsolicited result codes |
| 1   | Display unsolicited result codes  |

|       |                                                   |
|-------|---------------------------------------------------|
| <m>   | Integer type.                                     |
| 0     | CLIP not provisioned                              |
| 1     | CLIP provisioned                                  |
| 2     | Unknown                                           |
| <err> | Error codes. See <b>Chapter 15.7</b> for details. |

#### 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>,[<subaddr>],[<satype>],[<alphald>],<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.<br>129 Unknown type (ISDN 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 <i>GSM 04.08 [8] subclause 10.5.4.8</i> ).                                                      |
| <alphald>      | String type alphanumeric representation of <number> corresponding to the entry found in phone book.                                                   |
| <CLI validity> | 0 CLI valid<br>1 CLI has been withheld by the originator<br>2 CLI is not available due to interworking problems or limitations of originating network |

## 11.5. AT+CLIR Calling Line Identification Restriction

### AT+CLIR Calling Line Identification Restriction

|                                             |                                                                          |
|---------------------------------------------|--------------------------------------------------------------------------|
| Test Command<br><b>AT+CLIR=?</b>            | Response<br><b>+CLIR:</b> (list of supported <n>s)<br><br><b>OK</b>      |
| Read Command<br><b>AT+CLIR?</b>             | Response<br><b>+CLIR:</b> <n>,<m><br><br><b>OK</b>                       |
| Write Command<br><b>AT+CLIR=[&lt;n&gt;]</b> | Response<br>TA restricts or enables the presentation of the calling line |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | <p>identity (CLI) to the called party when originating a call. The command overrides the CLIR subscription (default is restricted or allowed) when temporary mode is provisioned as a default adjustment for all following outgoing calls. This adjustment can be revoked by using the opposite Command.</p> <p><b>OK</b></p> <p>If there is any error related to ME functionality:<br/><b>+CME ERROR: &lt;err&gt;</b></p> |
| Maximum Response Time  | 15s, determined by network                                                                                                                                                                                                                                                                                                                                                                                                 |
| Characteristics        | <p>This command takes effect immediately.</p> <p>The configurations will be saved after <b>AT&amp;W</b> is executed.</p>                                                                                                                                                                                                                                                                                                   |
| Reference<br>GSM 07.07 |                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Parameter

|                    |                                                                                    |
|--------------------|------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b>   | Integer type. (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                                                                   |
| <b>&lt;m&gt;</b>   | Integer type. (Parameter shows the subscriber CLIR service status in the network). |
| 0                  | CLIR not provisioned                                                               |
| 1                  | CLIR provisioned in permanent mode                                                 |
| 2                  | Unknown (e.g. no network, etc.)                                                    |
| 3                  | CLIR temporary mode presentation restricted                                        |
| 4                  | CLIR temporary mode presentation allowed                                           |
| <b>&lt;err&gt;</b> | Error codes. See <b>Chapter 15.7</b> for details.                                  |

## 11.6. AT+COLP Connected Line Identification Presentation

| AT+COLP Connected Line Identification Presentation |                                                                                      |
|----------------------------------------------------|--------------------------------------------------------------------------------------|
| <p>Test Command</p> <p><b>AT+COLP=?</b></p>        | <p>Response</p> <p><b>+COLP:</b> (list of supported &lt;n&gt;s)</p> <p><b>OK</b></p> |
| <p>Read Command</p> <p><b>AT+COLP?</b></p>         | <p>Response</p> <p><b>+COLP:</b> &lt;n&gt;,&lt;m&gt;</p>                             |

|                                             |                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <b>OK</b>                                                                                                                                                                                                                                                                                                              |
| Write Command<br><b>AT+COLP=[&lt;n&gt;]</b> | 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><b>OK</b> |
| Maximum Response Time                       | 15 s, determined by network.                                                                                                                                                                                                                                                                                           |
| Characteristics                             | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                                                                                                                                                                          |
| Reference<br>GSM 07.07                      |                                                                                                                                                                                                                                                                                                                        |

## Parameter

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

### 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.

129 Unknown type (ISDN format number)

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 subclause 10.5.4.8*).

**<alpha>** Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book.

## 11.7. AT+CUSD Unstructured Supplementary Service Data

| AT+CUSD Unstructured Supplementary Service Data                        |                                                                                                                   |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CUSD=?</b>                                       | Response<br><b>+CUSD:</b> (list of supported <n>s)<br><br><b>OK</b>                                               |
| Read Command<br><b>AT+CUSD?</b>                                        | Response<br><b>+CUSD:</b> <n><br><br><b>OK</b>                                                                    |
| Write Command<br><b>AT+CUSD=[&lt;n&gt;[,&lt;str&gt;[,&lt;dcs&gt;]]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                  | 120 s, determined by network.                                                                                     |
| Characteristics                                                        | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.     |
| Reference<br>GSM 07.07                                                 |                                                                                                                   |

### Parameter

|       |                                                                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <n>   | Integer type. 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> | Integer type. Cell Broadcast Data Coding Scheme. Default value: 0.                                                                                                                                                                                                  |
| <err> | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                   |

### Example

```
AT+CSCS="UCS2"
OK
AT+CUSD=1,"002A0031003000300023"
+CUSD: 1,"0031002E59296C14000A0032002E65B095FB000A0033002E8BC15238000A0034002E5F
697968000A0035002E751F6D3B000A0036002E5A314E50000A0037002E5E385DDE98CE91C7000A
002A002E900051FA000A",72
```

OK

## 11.8. AT+CSSN Supplementary Services Notification

| AT+CSSN Supplementary Services Notification             |                                                                                                                   |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CSSN=?</b>                        | Response<br><b>+CSSN:</b> (list of supported <n>s),(list of supported <m>s)<br><br><b>OK</b>                      |
| Read Command<br><b>AT+CSSN?</b>                         | Response<br><b>+CSSN:</b> <n>,<m><br><br><b>OK</b>                                                                |
| Write Command<br><b>AT+CSSN=[&lt;n&gt;[,&lt;m&gt;]]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                   | 300 ms                                                                                                            |
| Characteristics                                         | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.     |
| Reference<br>GSM 07.07                                  |                                                                                                                   |

### Parameter

|         |                                                                                                                                                                                                                                                                        |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <n>     | Integer type. Indicates whether to show the <b>+CSSI: &lt;code1&gt;[,&lt;index&gt;]</b> result code presentation status after a mobile originated call setup.<br>0    Disable<br>1    Enable                                                                           |
| <m>     | Integer type. Indicates whether to show the <b>+CSSU: &lt;code2&gt;</b> 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> | Integer type.<br>0    Unconditional call forwarding is active<br>1    Some of the conditional call forwarding are active                                                                                                                                               |

---

|                      |   |                                                        |
|----------------------|---|--------------------------------------------------------|
|                      | 2 | Call has been forwarded                                |
|                      | 3 | Call is waiting                                        |
|                      | 4 | This is a CUG call (also <b>&lt;index&gt;</b> present) |
|                      | 5 | Outgoing calls are barred                              |
|                      | 6 | Incoming calls are barred                              |
|                      | 7 | CLIR suppression rejected                              |
| <b>&lt;index&gt;</b> |   | Integer type. Closed user group index.                 |
| <b>&lt;code2&gt;</b> |   | Integer type.                                          |
|                      | 0 | This is a forwarded call                               |
| <b>&lt;err&gt;</b>   |   | Error codes. See <b>Chapter 15.7</b> for details.      |

---

# 12 Audio Commands

## 12.1. AT+VTD Tone Duration

| AT+VTD Tone Duration                                                        |                                                                                                                                                                                |
|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+VTD=?</b>                                             | Response<br><b>+VTD:</b> (list of supported <b>&lt;internal_duration&gt;s</b> ), (list of supported <b>&lt;duration&gt;s</b> )<br><br><b>OK</b>                                |
| Read Command<br><b>AT+VTD?</b>                                              | Response<br><b>+VTD:</b> <b>&lt;internal_duration&gt;</b> , <b>&lt;duration&gt;</b><br><br><b>OK</b>                                                                           |
| Write Command<br><b>AT+VTD=&lt;internal_duration&gt;[,&lt;duration&gt;]</b> | Response<br>This command refers to an integer <b>&lt;internal_duration&gt;</b> that defines the length of tones emitted as a result of the <b>AT+VTS</b> command.<br><b>OK</b> |
| Maximum Response Time                                                       | 300 ms                                                                                                                                                                         |
| Characteristics                                                             | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                                  |
| Reference<br>GSM 07.07                                                      |                                                                                                                                                                                |

### Parameter

|                                  |                                                                                   |
|----------------------------------|-----------------------------------------------------------------------------------|
| <b>&lt;internal_duration&gt;</b> | Integer type. Duration between two tones. Range: 1–255. Default: 1. Unit: 100 ms. |
| <b>&lt;duration&gt;</b>          | Integer type.                                                                     |
| <u>0</u>                         | Do not set duration of every single tone.                                         |
| 1–100000                         | Duration of every single tone. Unit: 1 ms.                                        |

## 12.2. AT+VTS DTMF and Tone Generation

| AT+VTS DTMF and Tone Generation                    |                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+VTS=?</b>                    | Response<br><b>+VTS:</b> (list of supported <b>&lt;DTMF&gt;</b> s),(list of supported <b>&lt;duration&gt;</b> s)<br><br><b>OK</b>                                                                                                                                                                 |
| Write Command<br><b>AT+VTS=&lt;DTMF_string&gt;</b> | 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><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                              | Depends on the length of <b>&lt;DTMF_string&gt;</b> .                                                                                                                                                                                                                                             |
| Characteristics                                    | This command takes effect immediately.<br>The configuration will not be saved.                                                                                                                                                                                                                    |
| Reference<br>GSM 07.07                             |                                                                                                                                                                                                                                                                                                   |

### Parameter

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;DTMF_string&gt;</b> | String type. 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) <b>&lt;DTMF&gt;</b> A single ASCII characters in the set <b>0-9, #, *, A-D</b> . This is interpreted as a sequence of DTMF tones whose duration is set by the <b>AT+VTD</b> command<br>2) <b>{&lt;DTMF&gt;,&lt;duration&gt;}</b> This is interpreted as a DTMF tone whose duration is determined by <b>&lt;duration&gt;</b> |
| <b>&lt;duration&gt;</b>    | Integer type. Duration of the tone. Unit: 100 ms. Range: 1–255.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>&lt;err&gt;</b>         | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### Example

```

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

```

## 12.3. AT+CALM Alert Sound Mode

| AT+CALM Alert Sound Mode                     |                                                                                                                   |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CALM=?</b>             | Response<br><b>+CALM:</b> (list of supported <mode>s)<br><br><b>OK</b>                                            |
| Read Command<br><b>AT+CALM?</b>              | Response<br><b>+CALM:</b> <mode><br><br><b>OK</b>                                                                 |
| Write Command<br><b>AT+CALM=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                        | 300 ms                                                                                                            |
| Characteristics                              | This command takes effect immediately.<br>The configuration will not be saved.                                    |
| Reference<br>GSM 07.07                       |                                                                                                                   |

### Parameter

|        |                                                   |
|--------|---------------------------------------------------|
| <mode> | Integer type.                                     |
|        | 0 Normal mode                                     |
|        | 1 Silent mode (all sounds from ME are prevented)  |
| <err>  | Error codes. See <b>Chapter 15.7</b> for details. |

## 12.4. AT+CRSL Ringer Sound Level

| AT+CRSL Ringer Sound Level       |                                                                         |
|----------------------------------|-------------------------------------------------------------------------|
| Test Command<br><b>AT+CRSL=?</b> | Response<br><b>+CRSL:</b> (list of supported <level>s)<br><br><b>OK</b> |

|                                               |                                                                                                                   |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Read Command<br><b>AT+CRSL?</b>               | Response<br><b>+CRSL: &lt;level&gt;</b><br><br><b>OK</b>                                                          |
| Write Command<br><b>AT+CRSL=&lt;level&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                         | 300 ms                                                                                                            |
| Characteristics                               | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.     |
| Reference<br>GSM 07.07                        |                                                                                                                   |

### Parameter

|                      |                                                                                                                               |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;level&gt;</b> | Integer type. Manufacturer specific range. Range: 0–100. Default value: 55. Smallest value represents the lowest sound level. |
| <b>&lt;err&gt;</b>   | Error codes. See <b>Chapter 15.7</b> for details.                                                                             |

## 12.5. AT+CLVL Loud Speaker Volume Level

| <b>AT+CLVL Loud Speaker Volume Level</b>      |                                                                                                                   |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CLVL=?</b>              | Response<br><b>+CLVL: (list of supported &lt;level&gt;s)</b><br><br><b>OK</b>                                     |
| Read Command<br><b>AT+CLVL?</b>               | Response<br><b>+CLVL: &lt;level&gt;</b><br><br><b>OK</b>                                                          |
| Write Command<br><b>AT+CLVL=&lt;level&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                         | 300 ms                                                                                                            |

|                        |                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------|
| Characteristics        | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed. |
| Reference<br>GSM 07.07 |                                                                                                               |

### Parameter

|                      |                                                                                                                                                                                                                                       |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;level&gt;</b> | Integer type. Manufacturer specific range. Range: 0–100. (Smallest value represents the lowest sound level). The default values are 60, 40 and 35 for normal audio channel, headset audio channel and loudspeaker audio respectively. |
| <b>&lt;err&gt;</b>   | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                     |

## 12.6. AT+CMUT Mute Control

| AT+CMUT Mute Control                      |                                                                                                               |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CMUT=?</b>          | Response<br><b>+CMUT:</b> (list of supported <n>s)<br><br><b>OK</b>                                           |
| Read Command<br><b>AT+CMUT?</b>           | Response<br><b>+CMUT:</b> <n><br><br><b>OK</b>                                                                |
| Write Command<br><b>AT+CMUT=&lt;n&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR:</b> <err>   |
| Maximum Response Time                     | 300 ms                                                                                                        |
| Characteristics                           | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed. |
| Reference<br>GSM 07.07                    |                                                                                                               |

### Parameter

|                  |               |
|------------------|---------------|
| <b>&lt;n&gt;</b> | Integer type. |
| 0                | Mute off      |
| 1                | Mute on       |

<err> Error codes. See **Chapter 15.7** for details.

**NOTE**

This command is to mute the uplink.

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

| AT+QSIDET Change the Side Tone Gain Level            |                                                                                                                                                                                                           |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QSIDET=?</b>                   | Response<br><b>+QSIDET:</b> (list of supported <gain_level>s)<br><br><b>OK</b>                                                                                                                            |
| Read Command<br><b>AT+QSIDET?</b>                    | Response<br>(1) If <b>AT+QAUDCH=0</b> :<br><b>+QSIDET(NORMAL_AUDIO):</b> <gain_level><br><br><b>OK</b><br><br>(2) If <b>AT+QAUDCH=1</b> :<br><b>+QSIDET(HEADSET_AUDIO):</b> <gain_level><br><br><b>OK</b> |
| Write Command<br><b>AT+QSIDET=&lt;gain_level&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b>                                                                                         |
| Maximum Response Time                                | 300 ms                                                                                                                                                                                                    |
| Characteristics                                      | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.                                                                                             |

### Parameter

<gain\_level> Integer type. Gain level. Range: 0–255. Default value: 80.  
<err> Error codes. See **Chapter 15.7** for details.

**NOTE**

<gain\_level> value is related to specific channels.

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

### AT+QMIC Change the Microphone Gain Level

|                                                                    |                                                                                                                          |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QMIC=?</b>                                   | Response<br><b>+QMIC:</b> (list of supported <channel>s), (list of supported <gain_level>s)<br><br><b>OK</b>             |
| Read Command<br><b>AT+QMIC?</b>                                    | Response<br><b>+QMIC:</b> <gain_level(normalMIC)>,<gain_level(headsetMIC)>,<gain_level(LoudspeakerMIC)><br><br><b>OK</b> |
| Write Command<br><b>AT+QMIC=&lt;channel&gt;,&lt;gain_level&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b>        |
| Maximum Response Time                                              | 300 ms                                                                                                                   |
| Characteristics                                                    | This command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.            |

### Parameter

|              |                                                                                             |
|--------------|---------------------------------------------------------------------------------------------|
| <channel>    | Integer type.<br>0 Normal microphone<br>2 Loudspeaker microphone                            |
| <gain_level> | Integer type. Gain level. Range: 0–15. The default values are 4, 9, and 8 for each channel. |
| <err>        | Error codes. See <b>Chapter 15.7</b> for details.                                           |

## 12.9. AT+QLDTMF Generate Local DTMF Tones

| AT+QLDTMF Generate Local DTMF Tones                                        |                                                                                                                   |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QLDTMF=?</b>                                         | Response<br><b>+QLDTMF:</b> (list of supported < durations>s),(list of supported <DTMF_string>s)<br><br><b>OK</b> |
| Write Command<br><b>AT+QLDTMF=&lt; durations&gt;[,&lt;DTMF_string&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Execution Command<br><b>AT+QLDTMF</b>                                      | Response<br><b>OK</b>                                                                                             |
| Maximum Response Time                                                      | Depends on the length of <DTMF_string>.                                                                           |
| Characteristics                                                            | This command takes effect immediately.<br>The configuration will not be saved.                                    |
| Reference<br>Quectel                                                       |                                                                                                                   |

### Parameter

|               |                                                                                                                            |
|---------------|----------------------------------------------------------------------------------------------------------------------------|
| < durations>  | Integer type. The duration of all DTMF tones in <DTMF_string> in 1/10 seconds. Range: 1–1000.                              |
| <DTMF_string> | String type. The maximum length of 20 DTMF characters (single ASCII chars in the set 0-9, #, *, A-D), separated by commas. |
| <err>         | Error codes. See <b>Chapter 15.7</b> for details.                                                                          |

#### NOTE

This command aborts any DTMF tones that are generated currently and any DTMF tones sequence.

## 12.10. AT+QAUDCH Swap the Audio Channels

| AT+QAUDCH Swap the Audio Channels             |                                                                                                                   |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QAUDCH=?</b>            | Response<br><b>+QAUDCH:</b> (list of supported <n>s)<br><br><b>OK</b>                                             |
| Read Command<br><b>AT+QAUDCH?</b>             | Response<br><b>+QAUDCH:</b> <n><br><br><b>OK</b>                                                                  |
| Write Command<br><b>AT+QAUDCH=[&lt;n&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                         | 300 ms                                                                                                            |
| Characteristics                               | This command takes effect immediately.<br>The configuration will not be saved.                                    |

### Parameter

|       |                                                                          |
|-------|--------------------------------------------------------------------------|
| <n>   | Integer type.<br>0 Normal audio channel (default)<br>2 Loudspeaker audio |
| <err> | Error codes. See <b>Chapter 15.7</b> for details.                        |

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

| AT+QAUDLOOP Audio Channel Loop Back Test                         |                                                                                                         |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QAUDLOOP=?</b>                             | Response<br><b>+QAUDLOOP:</b> (list of supported <state>s),(list of supported <type>s)<br><br><b>OK</b> |
| Write Command<br><b>AT+QAUDLOOP=&lt;state&gt;[,&lt;type&gt;]</b> | Response<br><b>OK</b>                                                                                   |

|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
|                       | If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time | 300 ms                                                                               |
| Characteristics       | This command takes effect immediately.<br>The configuration will not be saved.       |

## Parameter

|                      |                                                                                                            |
|----------------------|------------------------------------------------------------------------------------------------------------|
| <b>&lt;state&gt;</b> | Integer type.<br>0      The test is off<br>1      The test is on                                           |
| <b>&lt;type&gt;</b>  | Integer type.<br>0    Normal audio channel<br>1    Headset audio channel<br>2    Loudspeaker audio channel |
| <b>&lt;err&gt;</b>   | Error codes. See <b>Chapter 15.7</b> for details.                                                          |

### NOTE

M65 supports normal audio channel and headset audio channel. MC65 supports normal audio channel and loudspeaker audio channel. M95-R supports headset audio channel and loudspeaker audio channel.

## 12.12. AT+QLTONE Generate Local Specific Tone

### AT+QLTONE Generate Local Specific Tone

|                                                                                                                                        |                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QLTONE=?</b>                                                                                                     | Response<br><b>+QLTONE:</b> (list of supported <b>&lt;mode&gt;s</b> ),(list of supported <b>&lt;frequency&gt;s</b> ),(list of supported <b>&lt;period_on&gt;s</b> ),(range of supported <b>&lt;period_off&gt;s</b> ),(list of supported <b>&lt;duration&gt;s</b> )<br><br><b>OK</b> |
| Write Command<br><b>AT+QLTONE=&lt;mode&gt;,&lt;frequency&gt;,&lt;period_on&gt;,&lt;period_off&gt;,&lt;duration&gt;[,&lt;level&gt;]</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b>                                                                                                                                                                   |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Maximum Response Time | Depends on the content of the play.                                            |
| Characteristics       | This command takes effect immediately.<br>The configuration will not be saved. |

### Parameter

|                           |                                                                                               |
|---------------------------|-----------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b>       | Integer type.<br>0 Stop playing tone<br>1 Start playing tone                                  |
| <b>&lt;frequency&gt;</b>  | Integer type. The frequency of tone to be generated. Unit: Hz. Values are: 425,950,1400,1800. |
| <b>&lt;period_on&gt;</b>  | Integer type. The period of generating tone, unit: ms. Range: 1–25500.                        |
| <b>&lt;period_off&gt;</b> | Integer type. The period of stopping tone, unit: ms. Range: 0–25500.                          |
| <b>&lt;duration&gt;</b>   | Integer type. Duration of tones in milliseconds, unit: ms. Range: 1–25500.                    |
| <b>&lt;level&gt;</b>      | Integer type. Volume level. Range: 0–100.                                                     |
| <b>&lt;err&gt;</b>        | Error codes. See <b>Chapter 15.7</b> for details.                                             |

#### NOTE

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

## 12.13. AT+QTDMOD Set Tone Detection Mode

| AT+QTDMOD Set Tone Detection Mode                                                           |                                                                                                                                                        |
|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br>AT+QTDMOD=?                                                                 | Response<br><b>+QTDMOD:</b> (list of supported <b>&lt;operate_funtion&gt;s</b> ),(list of supported <b>&lt;function_status&gt;s</b> )<br><br><b>OK</b> |
| Read Command<br>AT+QTDMOD?                                                                  | Response<br><b>+QTDMOD:</b> <b>&lt;operate_funtion&gt;</b> , <b>&lt;function_status&gt;</b><br><br><b>OK</b>                                           |
| Write Command<br>AT+QTDMOD= <b>&lt;operate_funtion&gt;</b> , <b>&lt;function_status&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR:</b> <b>&lt;err&gt;</b>                               |

|                       |                                                                                |
|-----------------------|--------------------------------------------------------------------------------|
| Maximum Response Time | 300 ms                                                                         |
| Characteristics       | This command takes effect immediately.<br>The configuration will not be saved. |
| Reference             | Quectel                                                                        |

## Parameter

|                                |                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;operate_funtion&gt;</b> | Integer type. Operation function.<br>1 Set detection range<br>2 Set detection mode                                                                                                                                                                                                                                                                     |
| <b>&lt;function_status&gt;</b> | Integer type. Function status.<br>0 When <b>&lt;operate_funtion&gt;</b> =1, detect all DTMF, including 1400 Hz and 2300 Hz handshake signal. When <b>&lt;operate_funtion&gt;</b> =2, detect DTMF tone by normal arithmetic.<br>1 When <b>&lt;operate_funtion&gt;</b> =1, only detect 1400 Hz and 2300 Hz handshake signal by using optimal arithmetic. |
| <b>&lt;err&gt;</b>             | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                      |

### NOTE

1. Set **AT+QTDMOD=1,0**, detect all DTMF, including 1400 Hz and 2300 Hz handshake signal.
2. Set **AT+QTDMOD=1,1**, only detect 1400 Hz and 2300 Hz handshake signal by using optimal arithmetic.
3. Set **AT+QTDMOD=2,0**, detect DTMF tone by using normal arithmetic.
4. See **AT+QONEDET** for more information.

## 12.14. AT+QONEDET Detect DTMF

| AT+QONEDET Detect DTMF              |                                                                                         |
|-------------------------------------|-----------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QONEDET=?</b> | Response<br><b>+QONEDET:</b> (list of supported <b>&lt;mode&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QONEDET?</b>  | Response<br><b>+QONEDET:</b> <b>&lt;mode&gt;</b><br><br><b>OK</b>                       |

|                                                 |                                                                                                                                                                                                                                   |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Write Command<br><b>AT+QTONEDT=&lt;mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b><br><br>Tone detection is opened after a successful DTMF tone is detected:<br><b>+QTONEDT: &lt;DTMF_code&gt;</b> |
| Maximum Response Time                           | 300 ms                                                                                                                                                                                                                            |
| Characteristics                                 | This command takes effect immediately.<br>The configuration will not be saved.                                                                                                                                                    |

## Parameter

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b>      | Integer type. Mode function.<br><div> <div>0</div> <div>Close tone detection</div> </div> <div> <div>1</div> <div>Open tone detection</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>&lt;DTMF_code&gt;</b> | Integer type. DTMF tone code corresponding ASCII.<br><div> <div>48</div> <div>DTMF '0'</div> </div> <div> <div>49</div> <div>DTMF '1'</div> </div> <div> <div>50</div> <div>DTMF '2'</div> </div> <div> <div>51</div> <div>DTMF '3'</div> </div> <div> <div>52</div> <div>DTMF '4'</div> </div> <div> <div>53</div> <div>DTMF '5'</div> </div> <div> <div>54</div> <div>DTMF '6'</div> </div> <div> <div>55</div> <div>DTMF '7'</div> </div> <div> <div>56</div> <div>DTMF '8'</div> </div> <div> <div>57</div> <div>DTMF '9'</div> </div> <div> <div>65</div> <div>DTMF 'A'</div> </div> <div> <div>66</div> <div>DTMF 'B'</div> </div> <div> <div>67</div> <div>DTMF 'C'</div> </div> <div> <div>68</div> <div>DTMF 'D'</div> </div> <div> <div>42</div> <div>DTMF '*'</div> </div> <div> <div>35</div> <div>DTMF '#'</div> </div> |
| <b>&lt;err&gt;</b>       | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

### NOTE

1. This command is available during voice call.
2. See **AT+QTDMOD** for more information.

## 12.15. AT+QWDTMF Play DTMF Tone During a Call

| AT+QWDTMF Play DTMF Tone During a Call                                                                                                                                  |                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QWDTMF=?</b>                                                                                                                                      | Response<br><b>+QWDTMF:</b> (list of supported <UL_volume>s),(list of supported <DL_volume>s),("&<DTMF_code>,<continuance_time>,<mute_time>"),(list of supported <channel>s),(list of supported <mode>s)<br><br><b>OK</b>                                                                                |
| Write Command<br><b>AT+QWDTMF=&lt;UL_volume&gt;,&lt;DL_volume&gt;,"(&lt;DTMF_code&gt;,&lt;continuance_time&gt;,&lt;mute_time&gt;")[,&lt;channel&gt;][,&lt;mode&gt;]</b> | Response<br>If the success is related to ME functionality:<br><b>+QWDTMF: 5</b><br><br><b>OK</b><br><br>If the failure is related to ME functionality:<br><b>+QWDTMF: &lt;play_code&gt;</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                                                                                                                                                   | Depends on the content of the play.                                                                                                                                                                                                                                                                      |
| Characteristics                                                                                                                                                         | This command takes effect immediately.<br>The configuration will not be saved.                                                                                                                                                                                                                           |

### Parameter

|             |                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <UL_volume> | Integer type. Uplink channel of the volume. Range: 0–7.                                                                                             |
| <dl_volume> | Integer type. Downlink channel of the volume. Range: 0–7. It is recommended to be set as 0.                                                         |
| <DTMF_code> | String type. The DTMF tone strings.<br>'0' DTMF 0<br>'1' DTMF 1<br>'2' DTMF 2<br>'3' DTMF 3<br>'4' DTMF 4<br>'5' DTMF 5<br>'6' DTMF 6<br>'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 1400 Hz                                      |
|                    | 'F' Frequency of 2300 Hz                                      |
|                    | 'G' Frequency of 1 kHz                                        |
| <continuance_time> | Duration of each DTMF tone. Unit: ms.                         |
| <mute_time>        | Mute time. Unit: ms.                                          |
| <channel>          | Integer type.                                                 |
|                    | 0 Normal audio channel                                        |
|                    | 1 Headset audio channel                                       |
|                    | 2 Loudspeaker audio                                           |
| <mode>             | Integer type.                                                 |
|                    | 0 Algorithm 1 (Default)                                       |
|                    | 1 Algorithm 2                                                 |
| <play_code>        | Integer type. Indicate status of sending DTMF.                |
|                    | If <play_code> is 5, it means sending DTMF successfully       |
|                    | If <play_code> is not 5, it means sending DTMF unsuccessfully |
| <err>              | Error codes. See <b>Chapter 15.7</b> for details.             |

#### NOTE

1. **AT+QWDTMF=7,0,"0A5,50,50,1,55,50,23,100,50"**  
Send DTMF '0' for 50 ms, mute 50 ms; send DTMF 'A' for 50 ms, mute 50 ms; send DTMF '5' for 50 ms, mute 50 ms; send DTMF '1' for 55 ms, mute 50 ms; send DTMF '2' for 100 ms, mute 50 ms; send DTMF '3' for 100 ms, mute 50 ms.
2. <channel> is not available during a call.

# 13 Hardware Related Commands

## 13.1. AT+CCLK Clock

| AT+CCLK Clock                                |                                                                                                                   |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CCLK=?</b>             | Response<br><b>OK</b>                                                                                             |
| Read Command<br><b>AT+CCLK?</b>              | Response<br><b>+CCLK: &lt;time&gt;</b><br><br><b>OK</b>                                                           |
| Write Command<br><b>AT+CCLK=&lt;time&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                        | 300 ms                                                                                                            |
| Characteristics                              | The command takes effect immediately.<br>The configuration will not be saved.                                     |
| Reference<br>GSM 07.07                       |                                                                                                                   |

### Parameter

|                     |                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;time&gt;</b> | String type. The format is "yy/MM/dd,hh:mm:ss±zz", indicating 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 to +48). For example, May 6 <sup>th</sup> , 1994, 22:10:00 GMT+2 hours equal to "94/05/06,22:10:00+08". |
| <b>&lt;err&gt;</b>  | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                      |

### Example

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

OK

## 13.2. AT+CBC Battery Charge

| AT+CBC Battery Charge              |                                                                                                                                                                                                               |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+CBC=?</b>    | Response<br><b>+CBC:</b> (list of supported <b>&lt;bcs&gt;s</b> ),(list of supported <b>&lt;bcl&gt;s</b> ), <b>&lt;voltage&gt;</b><br><br><b>OK</b>                                                           |
| Execution Command<br><b>AT+CBC</b> | Response<br><b>+CBC:</b> <b>&lt;bcs&gt;</b> , <b>&lt;bcl&gt;</b> , <b>&lt;voltage&gt;</b><br><br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR:</b> <b>&lt;err&gt;</b> |
| Maximum Response Time              | 300 ms                                                                                                                                                                                                        |
| Characteristics                    | The command takes effect immediately.<br>The configuration will not be saved.                                                                                                                                 |
| Reference<br>GSM 07.07             |                                                                                                                                                                                                               |

### Parameter

|                        |                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>&lt;bcs&gt;</b>     | Integer type. Battery charge status.<br>0 ME is not charging<br>1 ME is charging<br>2 Charging has finished |
| <b>&lt;bcl&gt;</b>     | Integer type. Battery charge level.<br>0–100 Battery has 0-100 percent of capacity remaining                |
| <b>&lt;voltage&gt;</b> | Battery voltage. Unit: mV.                                                                                  |
| <b>&lt;err&gt;</b>     | Error codes. See <b>Chapter 15.7</b> for details.                                                           |

#### NOTE

As MC65&M65&M95-R do not support battery charge, **<bcs>** and **<bcl>** are invalid while **<voltage>** still represents the correct voltage of VBATT.

### 13.3. AT+QADC Read ADC Value

| AT+QADC Read ADC Value               |                                                                                                       |
|--------------------------------------|-------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QADC=?</b>     | Response<br><b>+QADC:</b> (list of supported <status>s),(list of supported <value>s)<br><br><b>OK</b> |
| Execution Command<br><b>AT+QADC?</b> | Response<br><b>+QADC:</b> <status>,<value><br><br><b>OK</b>                                           |
| Maximum Response Time                | 300 ms                                                                                                |
| Characteristics                      | The command takes effect immediately.<br>The configuration will not be saved.                         |
| Reference<br>Quectel                 |                                                                                                       |

#### Parameter

|          |                                                                                  |
|----------|----------------------------------------------------------------------------------|
| <status> | Integer type. Whether the ADC value is read successfully.<br>0 Fail<br>1 Success |
| <value>  | Integer type. The voltage of ADC. Range: 0–2800. Unit: mV.                       |

### 13.4. AT+QSCLK Configure Slow Clock

| AT+QSCLK Configure Slow Clock     |                                                                      |
|-----------------------------------|----------------------------------------------------------------------|
| Test Command<br><b>AT+QSCLK=?</b> | Response<br><b>+QSCLK:</b> (list of supported <n>s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QSCLK?</b>  | Response<br><b>+QSCLK:</b> <n><br><br><b>OK</b>                      |

|                                            |                                                                                                          |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Write Command<br><b>AT+QSCLK=&lt;n&gt;</b> | Response<br><b>OK</b>                                                                                    |
| Maximum Response Time                      | 300 ms                                                                                                   |
| Characteristics                            | The command takes effect immediately.<br>The configurations will be saved after <b>AT+W</b> is executed. |
| Reference<br>Quectel                       |                                                                                                          |

## Parameter

|                  |                                                                                                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b> | Integer type.                                                                                                                  |
| 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 mode. Otherwise, it will exit from sleep mode. |

### NOTE

When **<n>=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 is suggested to send an extra AT command to wake up the module first, and then continue to send other commands.

## 13.5. AT+QLEDMODE Configure the Network Indication LED Patterns

### AT+QLEDMODE Configure the Network Indication LED Patterns

|                                                      |                                                                                                                   |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QLEDMODE=?</b>                 | Response<br><b>+QLEDMODE:</b> (list of supported <b>&lt;LED_mode&gt;s</b> )<br><br><b>OK</b>                      |
| Read Command<br><b>AT+QLEDMODE?</b>                  | Response<br><b>+QLEDMODE:</b> <b>&lt;LED_mode&gt;</b><br><br><b>OK</b>                                            |
| Write Command<br><b>AT+QLEDMODE=&lt;LED_mode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |

|                       |                                                                                         |
|-----------------------|-----------------------------------------------------------------------------------------|
| Maximum Response Time | 300 ms                                                                                  |
| Characteristics       | The command takes effect immediately.<br>The configuration will be saved automatically. |
| Reference<br>Quectel  |                                                                                         |

## Parameter

|                         |                                                                                                                                                                                                                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;LED_mode&gt;</b> | Integer type.<br>0 Network Indication LED flashes rapidly when a call is ringing<br><u>1</u> No effect on the Network Indication LED when a call is ringing<br>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 |
| <b>&lt;err&gt;</b>      | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                |

## 13.6. AT+QVBATT Configure the Threshold of Voltage

### AT+QVBATT Configure the Threshold of Voltage

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QVBATT=?</b>                                                           | Response<br><b>+QVBATT: 0</b> ,(list of supported <b>&lt;threshold&gt;</b> s),(list of supported <b>&lt;state&gt;</b> s)<br><b>+QVBATT: 1</b> ,(list of supported <b>&lt;threshold&gt;</b> s),(list of supported <b>&lt;state&gt;</b> s)<br><b>+QVBATT: 2</b> ,(list of supported <b>&lt;threshold&gt;</b> s),(list of supported <b>&lt;state&gt;</b> s)<br><b>+QVBATT: 3</b> ,(list of supported <b>&lt;threshold&gt;</b> s),(list of supported <b>&lt;state&gt;</b> s)<br><br><b>OK</b> |
| Read Command<br><b>AT+QVBATT?</b>                                                            | Response<br><b>+QVBATT: 0</b> , <b>&lt;threshold&gt;</b> , <b>&lt;state&gt;</b><br><b>+QVBATT: 1</b> , <b>&lt;threshold&gt;</b> , <b>&lt;state&gt;</b><br><b>+QVBATT: 2</b> , <b>&lt;threshold&gt;</b> , <b>&lt;state&gt;</b><br><b>+QVBATT: 3</b> , <b>&lt;threshold&gt;</b> , <b>&lt;state&gt;</b><br><br><b>OK</b>                                                                                                                                                                     |
| Write Command<br><b>AT+QVBATT=&lt;threshold_type&gt;[,&lt;threshold&gt;[,&lt;state&gt;]]</b> | Response<br>If format is correct:<br><b>OK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                       |                                                                                                                                                                                                                                                                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <p>If <b>&lt;threshold&gt;</b> is omitted and <b>&lt;threshold_type&gt;</b> is legal, query the value of the corresponding parameter:<br/> <b>+QVBATT: &lt;threshold_type&gt;,&lt;threshold&gt;,&lt;state&gt;</b></p> <p><b>OK</b></p> <p>If there is any error related to ME functionality:<br/> <b>+CME ERROR: &lt;err&gt;</b></p> |
| Maximum Response Time | 300 ms                                                                                                                                                                                                                                                                                                                               |
| Characteristics       | <p>This command takes effect immediately.</p> <p>The configurations will be saved after <b>AT&amp;W</b> is executed.</p>                                                                                                                                                                                                             |
| Reference<br>Quectel  |                                                                                                                                                                                                                                                                                                                                      |

## Parameter

|                               |                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;threshold_type&gt;</b> | <p>Integer type. Type of configuring voltage threshold.</p> <p>0      The threshold of low voltage warning</p> <p>1      The threshold of low voltage shutdown</p> <p>2      The threshold of high voltage warning</p> <p>3      The threshold of high voltage shutdown</p>                                                                                                                             |
| <b>&lt;threshold&gt;</b>      | <p>Voltage threshold. Unit: mV.</p> <p>When <b>threshold_type</b>=0, the range of <b>&lt;threshold&gt;</b> is 3451–3600;</p> <p>When <b>threshold_type</b>=1, the range of <b>&lt;threshold&gt;</b> is 3100–3450;</p> <p>When <b>threshold_type</b>=2, the range of <b>&lt;threshold&gt;</b> is 4300–4550;</p> <p>When <b>threshold_type</b>=3, the range of <b>&lt;threshold&gt;</b> is 4551–4730.</p> |
| <b>&lt;state&gt;</b>          | <p>Integer type. The corresponding function of <b>&lt;threshold_type&gt;</b> is enabled or disabled.</p> <p>The default low voltage warning and low voltage shutdown function is enabled.</p> <p>The default high voltage warning and high voltage shutdown function is disabled</p> <p>0      The function is disabled</p> <p>1      The function is enabled</p>                                       |
| <b>&lt;err&gt;</b>            | Error codes. See <b>Chapter 15.7</b> for details.                                                                                                                                                                                                                                                                                                                                                       |

### NOTE

When the battery voltage reaches the setting threshold, report the URC as follows:

- **UNDER\_VOLTAGE WARNING**
- **UNDER\_VOLTAGE POWER DOWN**
- **OVER\_VOLTAGE WARNING**
- **OVER\_VOLTAGE POWER DOWN**

## Example

```

AT+QVBATT=?                                     //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 voltage warning threshold as 3490 mV.
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 function of the low voltage shutdown is disabled.
OK
AT+QVBATT=1                                     //Query the threshold of the low voltage shutdown and the
                                                state.
+QVBATT: 1,3300,0                                //1 means the function type of the low voltage shutdown;
                                                3300 is the threshold of the low voltage shutdown; 0
                                                means that the function of low voltage shutdown is
                                                disabled.

OK

```

## 13.7. AT+QTEMP Query the Current Voltage and Temperature

| AT+QTEMP Query the Current Voltage and Temperature                         |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QTEMP=?</b>                                          | <p>Response</p> <p><b>+QTEMP:</b> (list of supported <b>&lt;mode&gt;</b>s),(list of supported <b>&lt;tick&gt;</b>s),(list of supported <b>&lt;count&gt;</b>s)</p> <p><b>OK</b></p>                                                                                                                                                                                                                                                      |
| Read Command<br><b>AT+QTEMP?</b>                                           | <p>Response</p> <p><b>+QTEMP:</b> <b>&lt;mode&gt;</b>,<b>&lt;voltage&gt;</b>,<b>&lt;temperature&gt;</b></p> <p><b>OK</b></p>                                                                                                                                                                                                                                                                                                            |
| Write Command<br><b>AT+QTEMP=&lt;mode&gt;[,&lt;tick&gt;,&lt;count&gt;]</b> | <p>Response</p> <p>If <b>&lt;mode&gt;</b>=1 and the command is executed successfully, response:</p> <p><b>OK</b></p> <p>If <b>&lt;mode&gt;</b>=2 and the command is executed successfully, response:</p> <p><b>OK</b></p> <p><b>+QTEMP:</b> <b>&lt;mode&gt;</b>,<b>&lt;voltage&gt;</b>,<b>&lt;temperature&gt;</b></p> <p>...</p> <p>If there is any error related to ME functionality:</p> <p><b>+CME ERROR:</b> <b>&lt;err&gt;</b></p> |
| Maximum Response Time                                                      | 300 ms                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Characteristics                                                            | <p>The command takes effect immediately.</p> <p>The configuration will not be saved.</p>                                                                                                                                                                                                                                                                                                                                                |

### Parameter

|                      |                                                                                                                  |
|----------------------|------------------------------------------------------------------------------------------------------------------|
| <b>&lt;mode&gt;</b>  | Integer type.                                                                                                    |
|                      | 0      Disable                                                                                                   |
|                      | 1      Enable                                                                                                    |
|                      | 2      Sample and report circularly                                                                              |
| <b>&lt;tick&gt;</b>  | Integer type. Sampling period, which only takes effect when <b>&lt;mode&gt;</b> =2. Range: 1–65535. Default: 40. |
| <b>&lt;count&gt;</b> | Integer type. Sampling times, which only takes effect when <b>&lt;mode&gt;</b> =2.                               |

---

|               |                                                                                        |
|---------------|----------------------------------------------------------------------------------------|
|               | Range: 1–254. Default: 1.                                                              |
| <voltage>     | Integer type. The current voltage of the temperature sensitive resistor. Unit: mV.     |
| <temperature> | Integer type. The current temperature of the temperature sensitive resistor. Unit: °C. |
| <err>         | Error codes. See <b>Chapter 15.7</b> for details.                                      |

---

#### NOTE

1. When <tick> and <count> are omitted in the Write Command, their default values will be used if they have not been set yet; otherwise, their previous values will be used.
  2. URC interval time is approximately equal to  $\text{<count> * (<tick> * 4.615 + 6)}$  milliseconds when <mode>=2.
-

# 14 Others Commands

## 14.1. A/ Re-issue the Last Command Given

### A/ Re-issue the Last Command Given

|                                |                                           |
|--------------------------------|-------------------------------------------|
| Execution Command<br><b>A/</b> | Response<br>Re-issue the previous command |
| Maximum Response Time          | 300 ms                                    |
| Characteristics                | /                                         |
| 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

```

## 14.2. ATE Set Command Echo Mode

### ATE Set Command Echo Mode

|                                                |                                                                                                                    |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Execution Command<br><b>ATE[&lt;value&gt;]</b> | Response<br>This setting determines whether the TA echoes characters received from TE or not during command state. |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|

|                       |                                                                               |
|-----------------------|-------------------------------------------------------------------------------|
|                       | <b>OK</b>                                                                     |
| Maximum Response Time | 300 ms                                                                        |
| Characteristics       | The command takes effect immediately.<br>The configuration will not be saved. |
| Reference<br>V.25ter  |                                                                               |

### Parameter

|                      |                                      |
|----------------------|--------------------------------------|
| <b>&lt;value&gt;</b> | Integer type. Set command echo mode. |
| 0                    | Echo mode off                        |
| <u>1</u>             | Echo mode on                         |

## 14.3. ATS3 Set Command Line Termination Character

### ATS3 Set Command Line Termination Character

|                                        |                                                                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Read Command<br><b>ATS3?</b>           | Response<br><b>&lt;n&gt;</b><br><br><b>OK</b>                                                                                                                          |
| Write Command<br><b>ATS3=&lt;n&gt;</b> | Response<br>This parameter determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output.<br><b>OK</b> |
| Maximum Response Time                  | 300 ms                                                                                                                                                                 |
| Characteristics                        | The command takes effect immediately.<br>The configuration will not be saved.                                                                                          |
| Reference<br>V.25ter                   |                                                                                                                                                                        |

### Parameter

|                  |                                                                                                   |
|------------------|---------------------------------------------------------------------------------------------------|
| <b>&lt;n&gt;</b> | Integer type. Command line termination character. Range: 0–127 (Default 13 = <b>&lt;CR&gt;</b> ). |
|------------------|---------------------------------------------------------------------------------------------------|

## 14.4. ATS4 Set Response Formatting Character

| ATS4 Set Response Formatting Character |                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Read Command<br><b>ATS4?</b>           | Response<br><n><br><br><b>OK</b>                                                                                       |
| Write Command<br><b>ATS4=&lt;n&gt;</b> | Response<br>This parameter determines the character generated by TA for result code and information text.<br><b>OK</b> |
| Maximum Response Time                  | 300 ms                                                                                                                 |
| Characteristics                        | The command takes effect immediately.<br>The configuration will not be saved.                                          |
| Reference<br>V.25ter                   |                                                                                                                        |

### Parameter

<n> Integer type. Response formatting character. Range: 0–127 (Default 10 = <LF>).

## 14.5. ATS5 Set Command Line Editing Character

| ATS5 Set Command Line Editing Character |                                                                                                                                                                     |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Read Command<br><b>ATS5?</b>            | Response<br><n><br><br><b>OK</b>                                                                                                                                    |
| Write Command<br><b>ATS5=&lt;n&gt;</b>  | Response<br>This parameter determines the character recognized by TA as a request to delete the immediately preceding character from the command line.<br><b>OK</b> |
| Maximum Response Time                   | 300 ms                                                                                                                                                              |
| Characteristics                         | The command takes effect immediately.                                                                                                                               |

|                      |                                      |
|----------------------|--------------------------------------|
|                      | The configuration will not be saved. |
| Reference<br>V.25ter |                                      |

## Parameter

|     |                                                                                   |
|-----|-----------------------------------------------------------------------------------|
| <n> | Integer type. Response editing character. Range: 0–127 (Default 8 = <Backspace>). |
|-----|-----------------------------------------------------------------------------------|

## 14.6. AT+QRIMODE Set RI Time

| AT+QRIMODE Set RI Time                              |                                                                                                                   |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Test Command<br><b>AT+QRIMODE=?</b>                 | Response<br><b>+QRIMODE:</b> (list of supported <time_mode>s)<br><br><b>OK</b>                                    |
| Read Command<br><b>AT+QRIMODE?</b>                  | Response<br><b>+QRIMODE:</b> <timemode><br><br><b>OK</b>                                                          |
| Write Command<br><b>AT+QRIMODE=&lt;timemode&gt;</b> | Response<br><b>OK</b><br><br>If there is any error related to ME functionality:<br><b>+CME ERROR: &lt;err&gt;</b> |
| Maximum Response Time                               | 300 ms                                                                                                            |
| Characteristics                                     | The command takes effect immediately.<br>The configurations will be saved after <b>AT&amp;W</b> is executed.      |
| Reference<br>Quectel                                |                                                                                                                   |

**Parameter**

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|                         |                                                                                                                        |
|-------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>&lt;timemode&gt;</b> | Integer type. Time mode.                                                                                               |
| <u>0</u>                | When a SMS is received, RI changes to LOW and holds low level for 120 ms; RI holds low level for 120 ms for other URC. |
| 1                       | When a SMS is received, RI changes to LOW and holds low level for 120 ms; RI holds low level for 50 ms for other URC.  |
| 2                       | When a SMS is received, RI changes to LOW and holds low level for 120 ms; Other URC RI take no effect.                 |
| <b>&lt;err&gt;</b>      | Error codes. See <b>Chapter 15.7</b> for details.                                                                      |

---

# 15 Appendix References

## 15.1. Related Documents

Table 4: Related Documents

| Document Name                            |
|------------------------------------------|
| [1] V.25ter                              |
| [2] GSM 07.07                            |
| [3] GSM 07.05                            |
| [4] GSM 07.10                            |
| [5] Quectel_GSM_TCP(IP)_Application_Note |
| [6] Quectel_GSM_MUX_Application_Note     |
| [7] Quectel_GSM_SMS_Application_Note     |
| [8] Quectel_MC65_Hardware_Design         |
| [9] Quectel_M65_Hardware_Design          |
| [10] Quectel_M95-R_Hardware_Design       |

## 15.2. Terms and Abbreviations

Table 5: Terms and Abbreviations

| Abbreviation | Description                        |
|--------------|------------------------------------|
| 3GPP         | 3rd Generation Partnership Project |

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|       |                                                    |
|-------|----------------------------------------------------|
| ACL   | Asynchronous Connection-Less                       |
| ACM   | Adaptive Coding and Modulation                     |
| ADC   | Analog To Digital Converter                        |
| AMR   | Adaptive Multi-Rate                                |
| AID   | Application Identifier                             |
| APDU  | Application Protocol Data Unit                     |
| APN   | Access Point Name                                  |
| ARFCN | Absolute Radio-Frequency Channel Number            |
| ASCII | American Standard Code for Information Interchange |
| BA    | BCCH Allocation                                    |
| BAIC  | Bar All Incoming Calls                             |
| BAOC  | Bar All Outgoing Calls                             |
| BC    | Broadcast                                          |
| BCCH  | Broadcast Control Channel                          |
| BCD   | Binary Coded Decimal                               |
| BOIC  | Bar Outgoing International Calls                   |
| BSIC  | Base Station Identity Code                         |
| CA    | Carrier Aggregation                                |
| CBM   | Cell Broadcast Message                             |
| CBS   | Cell Broadcast Service                             |
| CCH   | Control Channel                                    |
| CFU   | Call Forwarding Unconditional                      |
| CHV   | Card Holder Verification                           |
| CLA   | Class                                              |
| CLI   | Calling Line Identity                              |

---

|       |                                            |
|-------|--------------------------------------------|
| CLIP  | Calling Line Identification Presentation   |
| CLIR  | Calling Line Identification Restriction    |
| CMNET | China Mobile Net                           |
| COL   | Connected Line                             |
| COLP  | Connected Line Identification Presentation |
| COLR  | Connected Line Identification Restriction  |
| CP    | Control Plane                              |
| CPOL  | Clock Polarity                             |
| CS    | Circuit Switch                             |
| CSCS  | Select Character Set                       |
| CSD   | Circuit Switch Data                        |
| CUG   | Closed User Group                          |
| DCD   | Dynamic Content Delivery                   |
| DCE   | Data Communication Equipment               |
| DL    | Downlink                                   |
| DNS   | Domain Name Server                         |
| DTE   | Data Terminal Equipment                    |
| DTMF  | Dual-Tone Multifrequency                   |
| DTR   | Data Terminal Ready                        |
| FR    | Full Rate                                  |
| GGSN  | Gateway GPRS Support Node                  |
| GID   | Group Identifier                           |
| GMT   | Greenwich Mean Time                        |
| GNSS  | Global Navigation Satellite System         |
| GPIO  | General-Purpose Input/Output               |

|      |                                                  |
|------|--------------------------------------------------|
| GPRS | General Packet Radio Service                     |
| GSM  | Global System for Mobile Communications          |
| HLR  | Home Location Register                           |
| HR   | Half Rate                                        |
| HSN  | Hopping sequence number                          |
| ID   | Mostly refers to Identifier in terms of software |
| IDSN | Integrated Services Digital Network              |
| IE   | Information Element                              |
| IMEI | International Mobile Equipment Identity          |
| IMSI | International Mobile Subscriber Identity         |
| IP   | Internet Protocol                                |
| IPCP | Internet Protocol Control Protocol               |
| IRA  | International Reference Alphabet                 |
| LA   | Location Area                                    |
| LCP  | Link Control Protocol                            |
| LED  | Light Emitting Diode                             |
| LLC  | Logical Link Control                             |
| MAC  | Medium Access Control                            |
| MAIO | Mobile allocation index offset                   |
| ME   | Mobile Equipment                                 |
| MM   | Mobility Management                              |
| MO   | Mobile Original                                  |
| MS   | Mobile Station                                   |
| MT   | Mobile Terminal                                  |
| MTI  | Mobile Terminal Identity                         |

|         |                                                             |
|---------|-------------------------------------------------------------|
| NITZ    | Network Identity and Time Zone / Network Informed Time Zone |
| NVRAM   | Non-Volatile Random Access Memory                           |
| PDP     | Packet Data Protocol                                        |
| PDU     | Protocol Data Unit                                          |
| PIN     | Personal Identification Number                              |
| PLMN    | Public Land Mobile Network                                  |
| PPP     | Point to Point Protocol                                     |
| PS      | Protocol Stack                                              |
| PSC     | Primary Synchronization Code                                |
| PUK     | PIN Unlock Key                                              |
| PW      | Propagating Wave                                            |
| QOS     | Quality of Service                                          |
| RE      | Root Explorer                                               |
| RF      | Radio Frequency                                             |
| RR      | Road Runner                                                 |
| RP      | Relay Protocol                                              |
| RPLMN   | Registered PLMN                                             |
| RTS/CTS | Request to Send/Clear to Send                               |
| RXQUAL  | Receive Quality                                             |
| SC      | Service Center                                              |
| SLIC    | Subscriber Line Interface Circuit                           |
| SM      | Session Management                                          |
| SME     | Small and Medium Enterprises                                |
| SMS     | Short Message Service                                       |
| SMSAL   | Short Message Service Application Layer                     |

|        |                                             |
|--------|---------------------------------------------|
| SMSC   | Short Message Service Center                |
| TA     | Terminal Adapter                            |
| TCH    | Traffic Channel                             |
| TCP    | Transmission Control Protocol               |
| TE     | Terminal Equipment                          |
| TFT    | Traffic Flow Template                       |
| TPDU   | Transport Protocol Data Unit                |
| TX     | Transmit/Transmission                       |
| UART   | Universal Asynchronous Receiver/Transmitter |
| UCS2   | Universal Character Set (UCS-2) Format      |
| UDP    | User Datagram Protocol                      |
| UDUB   | User Determined User Busy                   |
| UICC   | Universal Integrated Circuit Card           |
| UIH    | Unnumbered Information with Header Check    |
| URC    | Unsolicited Result Code                     |
| (U)SIM | (Universal) Subscriber Identity Module      |
| USSD   | Unstructured Supplementary Service Data     |
| VLR    | Visitor Location Register                   |

## 15.3. 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                                                                                                  |
| ATV       | <value>                     | 1                                                                                                  |
| ATX       | <value>                     | 4                                                                                                  |
| AT&C      | <value>                     | 1                                                                                                  |
| AT&D      | <value>                     | 0                                                                                                  |
| AT+CREG   | <n>                         | 0                                                                                                  |
| AT+CCWA   | <n>                         | 0                                                                                                  |
| AT+CSCS   | <chset>                     | "GSM"                                                                                              |
| AT+CLIP   | <n>                         | 0                                                                                                  |
| AT+CLIR   | <n>                         | 0                                                                                                  |
| AT+CMEE   | <n>                         | 1                                                                                                  |
| AT+COLP   | <n>                         | 0                                                                                                  |
| AT+CRSL   | <level>                     | 55                                                                                                 |
| AT+CLVL   | <level>                     | When AT+QAUDCH=0, the default value <level>=60;<br>When AT+QAUDCH=2, the default value <level>=35; |
| AT+CUSD   | <n>                         | 0                                                                                                  |
| AT+CSSN   | <n>,<m>                     | 0,0                                                                                                |
| 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 | <gain_level>                | When AT+QAUDCH=0, the default value <gain_level>=80;                                               |

|             |                                      |                                                       |
|-------------|--------------------------------------|-------------------------------------------------------|
|             |                                      | When AT+QAUDCH=2, the default value <gain_level>=144. |
| AT+QMIC     | <channel>, <gain_level>              | 4,9,8                                                 |
| AT+QSCLK    | <n>                                  | 0                                                     |
| AT+QRIMODE  | <timemode>                           | 0                                                     |
| AT+QSIMDET  | <enable>,<insert_level>,<pin_choice> | 0,0,0                                                 |
| AT+QSIMSTAT | <enable>                             | 0                                                     |

## 15.4. 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               |
| 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               |
| AT+IPR     | <rate>                    | Yes               |

|             |                                      |     |
|-------------|--------------------------------------|-----|
| AT+CREG     | <n>                                  | Yes |
| AT+CCWA     | <n>                                  | Yes |
| AT+CSCS     | <chset>                              | Yes |
| AT+CLIP     | <n>                                  | Yes |
| AT+CLIR     | <n>                                  | Yes |
| AT+CMEE     | <n>                                  | Yes |
| AT+COLP     | <n>                                  | Yes |
| AT+CRSL     | <level>                              | No  |
| AT+CLVL     | <level>                              | No  |
| AT+CUSD     | <n>                                  | Yes |
| AT+CMGF     | <mode>                               | Yes |
| AT+CNMI     | <mode>,<mt>,<bm>,<ds>,<bfr>          | Yes |
| AT+CSDH     | <show>                               | Yes |
| AT+QSIDET   | <gain_level>                         | Yes |
| AT+QMIC     | <channel>, <gain_level>              | Yes |
| AT+QSCLK    | <n>                                  | No  |
| AT+QRIMODE  | <timemode>                           | No  |
| AT+QSIMDET  | <enable>,<insert_level>,<pin_choice> | Yes |
| AT+QSIMSTAT | <enable>                             | Yes |

## 15.5. 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                                                                                                  |
| ATV     | <value>                     | 1                                                                                                  |
| ATX     | <value>                     | 4                                                                                                  |
| AT&C    | <value>                     | 1                                                                                                  |
| AT&D    | <value>                     | 0                                                                                                  |
| AT+CREG | <n>                         | 0                                                                                                  |
| AT+CCWA | <n>                         | 0                                                                                                  |
| AT+CSCS | <chset>                     | "GSM"                                                                                              |
| AT+CLIP | <n>                         | 0                                                                                                  |
| AT+CLIR | <n>                         | 0                                                                                                  |
| AT+CMEE | <n>                         | 1                                                                                                  |
| AT+COLP | <n>                         | 0                                                                                                  |
| AT+CRSL | <level>                     | 55                                                                                                 |
| AT+CLVL | <level>                     | When AT+QAUDCH=0, the default value <level>=60;<br>When AT+QAUDCH=2, the default value <level>=35; |
| AT+CUSD | <n>                         | 0                                                                                                  |
| AT+CSSN | <n>,<m>                     | 0,0                                                                                                |
| 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   | <gain_level>                         | When AT+QAUDCH=0, the default value <gainlevel>=80;<br>When AT+QAUDCH=2, the default value <gainlevel>=144. |
| AT+QMIC     | <channel>, <gain_level>              | 4,9,8                                                                                                       |
| AT+QSCLK    | <n>                                  | 0                                                                                                           |
| AT+QRIMODE  | <timemode>                           | 0                                                                                                           |
| AT+QSIMDET  | <enable>,<insert_level>,<pin_choice> | 0,0,0                                                                                                       |
| AT+QSIMSTAT | <enable>                             | 0                                                                                                           |

## 15.6. 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>,<dc>,<sc a>,<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>,<dc>,<page>,<pages>,<CR>,<LF><data>                                     | New CBM is received and output directly to TE (Text mode)           | AT+CNMI=2,2 |
| 6     | +CDS: <length><CR><LF><pdu>                                                              | New CDS is received and output directly (PDU mode)                  | AT+CNMI=2,2 |
| 7     | +CDS: <fo>,<mr>,<ra>,<tor a>,<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>                                                                | GPRS ME detach                                                      | AT+CGEREP=1 |

|    |                                                                           |                                                                                                                                        |              |
|----|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------|
|    | e>,<PDP_addr>[,<cid>]                                                     |                                                                                                                                        |              |
| 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 | RING                                                                      | Indicates incoming call                                                                                                                | -            |
| 18 | Call Ready                                                                | Device is ready to make/receive calls                                                                                                  | -            |
| 19 | UNDER_VOLTAGE POWER DOWN                                                  | Under voltage shutdown indication                                                                                                      | -            |
| 20 | UNDER_VOLTAGE WARNING                                                     | Under voltage warning                                                                                                                  | -            |
| 21 | OVER_VOLTAGE POWER DOWN                                                   | Over voltage shutdown indication                                                                                                       | -            |
| 22 | OVER_VOLTAGE WARNING                                                      | Over voltage warning                                                                                                                   | -            |
| 23 | NORMAL POWER DOWN                                                         | Normal power down                                                                                                                      | -            |
| 24 | +COLP: <number>,<type>[,<subaddr>,<satype>[,<alpha>]]                     | The presentation of the COL (connected line) at the TE for a mobile originated call                                                    | AT+COLP=1    |
| 25 | +CLIP: <number>,<type>,"[<subaddr>]",<satype>,"[<alpha>]>",<CLI validity> | Mobile terminating call indication                                                                                                     | AT+CLIP=1    |
| 26 | +CREG: <stat>                                                             | Indicate registration status of the ME                                                                                                 | AT+CREG=1    |
| 27 | +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    |
| 28 | +CCWA: <number>,<type>,<class>[,<alpha>]                                  | Call waiting indication                                                                                                                | AT+CCWA=1,1  |
| 29 | RDY                                                                       | ME initialization is successful                                                                                                        | -            |

|    |                |                                     |              |
|----|----------------|-------------------------------------|--------------|
| 30 | +CFUN: 1       | All function of the ME is available | -            |
| 31 | +CPIN: <state> | (U)SIM card pin state               | -            |
| 32 | MO RING        | MO call ringing                     | AT+QMOSTAT=1 |
| 33 | MO CONNECTED   | MO call connected                   | AT+QMOSTAT=1 |

## 15.7. 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        |
| 8             | PH_SIM_PUK_REQUIRED         |
| 10            | (U)SIM not inserted         |
| 11            | (U)SIM PIN required         |

|    |                                               |
|----|-----------------------------------------------|
| 12 | (U)SIM PUK required                           |
| 13 | (U)SIM failure                                |
| 14 | (U)SIM busy                                   |
| 15 | (U)SIM wrong                                  |
| 16 | Incorrect password                            |
| 17 | (U)SIM PIN2 required                          |
| 18 | (U)SIM PUK2 required                          |
| 20 | Memory full                                   |
| 21 | Invalid index                                 |
| 22 | Not found                                     |
| 23 | Memory failure                                |
| 24 | Text string too long                          |
| 25 | Invalid characters in text string             |
| 26 | Dial string too long                          |
| 27 | Invalid characters in dial string             |
| 30 | No network service                            |
| 31 | Network timeout                               |
| 32 | Network not allowed - emergency calls only    |
| 40 | Network personalization PIN required          |
| 41 | Network personalization PUK required          |
| 42 | Network subset personalization PIN required   |
| 43 | Network subset personalization PUK required   |
| 44 | Service provider personalization PIN required |
| 45 | Service provider personalization PUK required |
| 46 | Corporate personalization PIN required        |

|     |                                           |
|-----|-------------------------------------------|
| 47  | Corporate personalization PUK required    |
| 48  | Long dial-number storage is full          |
| 100 | Unknow                                    |
| 103 | Illegal MS                                |
| 106 | Illegal ME                                |
| 107 | GPRS services not allowed                 |
| 111 | PLMN not allowed                          |
| 112 | Location area not allowed                 |
| 113 | Roaming not allowed in this location area |
| 132 | Service option not supported              |
| 133 | Requested service option not subscribed   |
| 134 | Service option temporarily out of order   |
| 148 | Unspecified GPRS error                    |
| 149 | PDP authentication failure                |
| 150 | Invalid mobile class                      |
| 151 | Link NS SP person PIN required            |
| 152 | Link NS SP person PUK required            |
| 153 | Link SIM C person PIN required            |
| 154 | Link SIM C person PUK required            |
| 302 | Command conflict                          |
| 600 | No Error                                  |
| 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 disconnects                   |
| 3513 | Unread records on SIM                 |
| 3515 | PS busy                               |
| 3516 | Couldn't read SMS parameters from SIM |
| 3517 | SM not ready                          |
| 3518 | Invalid parameter                     |
| 3519 | Incomplete concatenate SMS            |
| 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 | (U)SIM powered down                   |
| 3773 | Invalid CFUN state                    |
| 3774 | Invalid ARFCN                         |
| 3775 | The pin is not in GPIO mode           |
| 3777 | Invalid sms character                 |
| 3778 | The length of SMS is zero             |
| 3779 | No enough length for sc               |
| 3780 | Incorrect data length                 |

|      |                           |
|------|---------------------------|
| 3790 | Empty destination address |
| 3791 | Call is in progress       |

## 15.8. 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        |
| 305           | Invalid text mode       |
| 310           | (U)SIM not inserted     |
| 311           | (U)SIM pin necessary    |
| 312           | PH (U)SIM pin necessary |
| 313           | (U)SIM failure          |
| 314           | (U)SIM busy             |
| 315           | (U)SIM wrong            |
| 316           | (U)SIM PUK required     |
| 317           | (U)SIM PIN2 required    |

|      |                                          |
|------|------------------------------------------|
| 318  | (U)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  | (U)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 allowed                    |
| 530  | GPRS is suspended                        |
| 531  | ME storage full                          |
| 3513 | Unread records on SIM                    |
| 3515 | PS busy                                  |
| 3516 | Couldn't read SMS parameters from SIM    |
| 3517 | SM not ready                             |
| 3518 | Invalid parameter                        |
| 3742 | Incorrect <oper> format                  |
| 3765 | Invalid input value                      |
| 3769 | Unable to get control of required module |

|      |                                      |
|------|--------------------------------------|
| 3771 | Call setup in progress               |
| 3772 | (U)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          |

## 15.9. Summary of Cause for Extended Error Report

### 15.9.1. 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                            |

### 15.9.2. Cause for Protocol Stack (PS) Layer

Table 13: Cause for Protocol Stack (PS) Layer

| Cause           | Description             |
|-----------------|-------------------------|
| <b>CM Cause</b> |                         |
| 0               | Radio link fail         |
| 1               | Unassigned number       |
| 3               | No route to destination |
| 6               | Channel unacceptable    |

|    |                                           |
|----|-------------------------------------------|
| 8  | Operator determined barring               |
| 10 | Call barred                               |
| 11 | Reserved                                  |
| 16 | Normal call clearing                      |
| 17 | User busy                                 |
| 18 | No user responding                        |
| 19 | User alerting, no answer                  |
| 21 | Call rejected                             |
| 22 | Number changed                            |
| 25 | Pre-emption                               |
| 26 | Non-selected user clearing                |
| 27 | Destination out of order                  |
| 28 | Invalid number format (incomplete number) |
| 29 | Facility rejected                         |
| 30 | Response to STATUS ENQUIRY                |
| 31 | Normal, unspecified                       |
| 34 | No circuit/channel available              |
| 38 | Network out of order                      |
| 41 | Temporary failure                         |
| 42 | Switching equipment congestion            |
| 43 | Access information discarded              |
| 44 | Requested circuit/channel not available   |
| 47 | Resource unavailable, unspecified         |
| 49 | Quality of service unavailable            |
| 50 | Requested facility not subscribed         |

|     |                                                                    |
|-----|--------------------------------------------------------------------|
| 55  | Incoming calls barred within the CUG                               |
| 57  | Bearer capability not authorized                                   |
| 58  | Bearer capability not presently available                          |
| 63  | Service or option not available, unspecified                       |
| 65  | Bearer service not implemented                                     |
| 68  | ACM equal or greater than ACM maximum                              |
| 69  | Requested facility not implemented                                 |
| 70  | Only restricted digital information bearer capability is available |
| 79  | Service or option not implemented, unspecified                     |
| 81  | Invalid transaction identifier value                               |
| 87  | User not member of CUG                                             |
| 88  | Incompatible destination                                           |
| 91  | Invalid transit network selection                                  |
| 95  | Semantically incorrect message                                     |
| 96  | Invalid mandatory information                                      |
| 97  | Message type non-existent or not implemented                       |
| 98  | Message type not compatible with protocol state                    |
| 99  | Information element non-existent or not implemented                |
| 100 | Conditional information element error                              |
| 101 | Message not compatible with protocol                               |
| 102 | Recovery on timer expiry                                           |
| 111 | Protocol error, unspecified                                        |
| 127 | Interworking, unspecified                                          |
| 128 | Telematic interworking not supported                               |
| 129 | Short message Type 0 not supported                                 |

|     |                                             |
|-----|---------------------------------------------|
| 130 | Cannot replace short message                |
| 143 | Unspecified TP-PID error                    |
| 144 | Data coding scheme (alphabet) not supported |
| 145 | Message class not supported                 |
| 159 | Unspecified TP-DCS error                    |
| 160 | Command cannot be acted                     |
| 161 | Command unsupported                         |
| 175 | Unspecified TP-Command error                |
| 176 | TPDU not supported                          |
| 192 | SC busy                                     |
| 193 | No SC subscription                          |
| 194 | SC system failure                           |
| 195 | Invalid SME address                         |
| 196 | Destination SME barred                      |
| 197 | SM Rejected-Duplicate SM                    |
| 198 | TP-VPF not supported                        |
| 199 | TP-VP not supported                         |
| 208 | (U)SIM SMS storage full                     |
| 209 | No SMS storage capability in SIM            |
| 210 | Error in MS                                 |
| 211 | Memory Capacity Exceeded                    |
| 212 | (U)SIM Application Toolkit Busy             |
| 213 | (U)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 | (U)SIM failure                                     |
| 320 | Memory failure                                     |
| 321 | Invalid memory index                               |
| 322 | Memory full                                        |
| 330 | SMSC address unknown                               |
| 340 | No +CNMA acknowledgement expected                  |
| 500 | Unknown error                                      |
| 512 | SMS no error                                       |
| 513 | Message length exceeds maximum length              |
| 514 | Invalid request parameters                         |
| 515 | ME storage failure                                 |
| 516 | Invalid bearer service                             |
| 517 | Invalid service mode                               |
| 518 | Invalid storage type                               |
| 519 | Invalid message format                             |
| 520 | Too many MO concatenated messages                  |
| 521 | SMSAL not ready                                    |
| 522 | SMSAL no more service                              |
| 523 | Not support TP-Status-Report&TP-Command in storage |
| 524 | Reserved MTI                                       |
| 525 | No free entity in RL layer                         |

|                 |                                                                                     |
|-----------------|-------------------------------------------------------------------------------------|
| 526             | The port number is already registered                                               |
| 527             | There is no free entity for port number                                             |
| 528             | More Message to Send state error                                                    |
| 529             | MO SMS is not allowed                                                               |
| 530             | GPRS is suspended                                                                   |
| 531             | ME storage full                                                                     |
| 532             | Doing (U)SIM refresh                                                                |
| <b>CC Cause</b> |                                                                                     |
| 768             | Command not allowed                                                                 |
| 769             | Illegal card ID                                                                     |
| 770             | Call allocation fail                                                                |
| 771             | BC fill fail                                                                        |
| 772             | Call RE EST                                                                         |
| 773             | Illegal DTMF tone                                                                   |
| 774             | Illegal BC                                                                          |
| 775             | Modify actual mode                                                                  |
| 776             | Data action fail                                                                    |
| 777             | No response from network                                                            |
| 778             | Call accepts 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                                 |
| <b>SS Cause</b> |                                                                                     |
| 1024            | Cause none                                                                          |
| 1025            | Unknown subscriber                                                                  |

|      |                                 |
|------|---------------------------------|
| 1033 | Illegal subscriber              |
| 1034 | Bearer service not provisioned  |
| 1035 | Tele service not provisioned    |
| 1036 | Illegal equipment               |
| 1037 | Call barred                     |
| 1040 | Illegal SS operation            |
| 1041 | SS error status                 |
| 1042 | SS not available                |
| 1043 | SS subscription violation       |
| 1044 | SS incompatibility              |
| 1045 | Facility not supported          |
| 1051 | Absent subscriber               |
| 1053 | Short term denial               |
| 1054 | Long term denial                |
| 1058 | System failure                  |
| 1059 | Data missing                    |
| 1060 | Unexpected data value           |
| 1061 | PW registration failure         |
| 1062 | Negative PW check               |
| 1067 | Number of PW attempts violation |
| 1078 | Position method failure         |
| 1095 | Unknown alphabet                |
| 1096 | USSD busy                       |
| 1145 | Rejected by user                |
| 1146 | Rejected by network             |

|                 |                                                     |
|-----------------|-----------------------------------------------------|
| 1147            | Deflection to served subscriber                     |
| 1148            | Special service code                                |
| 1149            | Invalid deflection to number                        |
| 1150            | Max number of MPTY participants exceeded            |
| 1151            | Resources not available                             |
| 1152            | General problem, unrecognized component             |
| 1153            | General problem, mistyped component                 |
| 1154            | General problem, badly structured component         |
| 1155            | Invoke problem, duplicate invoked                   |
| 1156            | Invoke problem, unrecognized operation              |
| 1157            | Invoke problem, mistyped parameter                  |
| 1158            | Invoke problem, resource limitation                 |
| 1159            | Invoke problem, initiating release                  |
| 1160            | Invoke problem, unrecognized linked ID              |
| 1161            | Invoke problem, linked resource unexpected          |
| 1162            | Invoke problem, unexpected linked operation         |
| 1163            | Return result problem, RR unrecognized invoked      |
| 1164            | Return result problem, RR, return result unexpected |
| 1165            | Return result problem, RR mistyped parameter        |
| 1166            | Return error problem, RE, unrecognized invoked      |
| 1167            | Return error problem, RE return error unexpected    |
| 1168            | Return error problem, RE unrecognized error         |
| 1169            | Return error problem, RE unexpected error           |
| 1170            | Return error problem, RE mistyped parameter         |
| <b>MM Cause</b> |                                                     |

|      |                                     |
|------|-------------------------------------|
| 2048 | Cause none                          |
| 2050 | IMSI unknown in HLR                 |
| 2051 | Illegal MS                          |
| 2052 | IMSI unknown in VLR                 |
| 2053 | IMEI not accepted                   |
| 2054 | Illegal ME                          |
| 2055 | GPRS not allowed                    |
| 2056 | None GPRS not allowed               |
| 2057 | MS ID not derived by network        |
| 2058 | Implicit detach                     |
| 2059 | PLMN not allowed                    |
| 2060 | Location area not allowed           |
| 2061 | Roaming area not allowed            |
| 2062 | GPRS not allowed in PLMN            |
| 2063 | No suitable cells in LA             |
| 2064 | MSC temp not reachable              |
| 2065 | Network failure                     |
| 2068 | MAC failure                         |
| 2069 | Sync failure                        |
| 2070 | Congestion                          |
| 2080 | Serve option not supported          |
| 2081 | Request serve option not subscribed |
| 2082 | Serve option temp out of order      |
| 2086 | Call cannot be identified           |
| 2088 | No PDP context activated            |

|      |                                               |
|------|-----------------------------------------------|
| 2096 | Retry upon entry into a new cell              |
| 2111 | Retry upon entry into a new cell              |
| 2143 | Semantically incorrect message                |
| 2144 | Invalid MM info                               |
| 2145 | Message type non existent                     |
| 2146 | Message type incompatible with protocol state |
| 2147 | IE not implemented                            |
| 2148 | Conditional MM IE error                       |
| 2149 | Message not compatible with protocol state    |
| 2159 | Protocol error unspecified                    |
| 2160 | Access barred                                 |
| 2161 | Assignment rejects                            |
| 2162 | Random access failure                         |
| 2163 | RR no service                                 |
| 2164 | PLMN search reject emergency                  |
| 2165 | RR connection release                         |
| 2166 | Authentication failure                        |
| 2167 | IMSI detach                                   |
| 2168 | Abort by network                              |
| 2169 | Connection timeout                            |
| 2170 | Enqueue fail                                  |
| 2171 | Not updated                                   |
| 2172 | State not allowed                             |
| 2173 | Emergency not allowed                         |
| 2174 | No service                                    |

|                  |                             |
|------------------|-----------------------------|
| 2175             | Access class barred         |
| <b>SIM Cause</b> |                             |
| 2560             | Command success             |
| 2561             | Command fails               |
| 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                  |
| <b>SM Cause</b>  |                             |
| 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 rejects          |
| 3104             | Unsupported service option  |

|                  |                                          |
|------------------|------------------------------------------|
| 3105             | Unsubscribed service option              |
| 3106             | Out of order service option              |
| 3108             | Regular deactivation                     |
| 3109             | QOS not accepted                         |
| 3110             | Network fail                             |
| 3111             | Reactivation required                    |
| 3112             | Unsupported network context activation   |
| 3113             | Semantic error in TFT operation          |
| 3114             | Syntactical error in TFT operation       |
| 3115             | Unknown PDP context                      |
| 3116             | Semantic error in packet filter          |
| 3117             | Syntax error in packet filter            |
| 3118             | PDP context WO TFT already act           |
| 3153             | Invalid TI                               |
| 3167             | Incorrect message                        |
| 3168             | Invalid MAND info                        |
| 3169             | Unimplemented message type               |
| 3170             | Incompatible message type protocol state |
| 3171             | Unimplemented IE                         |
| 3172             | Conditional IE error                     |
| 3173             | Incompatible message protocol state      |
| 3183             | Unspecified                              |
| 3184             | Startup failure                          |
| <b>ABM Cause</b> |                                          |
| 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     |
| <b>TCM Cause</b> |                            |
| 3372             | Invalid parameter          |
| 3373             | NSAPI not in use           |
| 3374             | ACL action not allowed     |
| 3375             | ACL (U)SIM file full       |
| 3376             | ACL add entry failed       |
| 3377             | ACL del entry failed       |
| 3378             | ACL set entry failed       |
| 3379             | ACL (U)SIM read failed     |
| 3380             | ACL (U)SIM write failed    |

### 15.9.3. 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   | (U)SIM inserted               |
| 118   | (U)SIM removed                |
| 119   | (U)SIM absent                 |
| 120   | (U)SIM invalid for PS         |
| 121   | (U)SIM invalid for CS         |
| 122   | (U)SIM invalid for PS and CS  |
| 123   | Low layer fail                |
| 124   | Connection in progress        |
| 125   | Not updated                   |
| 126   | Connection establish failure  |
| 127   | Connection abort              |
| 128   | Connection failure            |
| 129   | Emergency not allowed         |
| 130   | No GPRS coverage              |
| 131   | Abnormal LU                   |
| 132   | Abnormal LU less than 4 times |

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|     |                         |
|-----|-------------------------|
| 133 | Same LAI IMSI attaching |
|-----|-------------------------|

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#### 15.9.4. 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 detects                             |
| 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         |