

**UC20**

# AT Commands Manual

**UMTS/HSPA Module Series**

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## About the document

### History

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# 1 Introduction

## 1.1. Scope of the Document

This document presents the AT Commands Set for Quectel cellular engine UC20.

## 1.2. AT Command Syntax

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

The AT Commands Set implemented by UC20 is a combination of 3GPP TS 27.007, 3GPP TS 27.005 and ITU-T recommendation V.25ter and the AT Commands developed by Quectel.

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

- **Basic syntax**

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

- **S parameter syntax**

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

- **Extended syntax**

These commands can be operated in several modes, as following table:

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

<b>Test Command</b>	<b>AT+&lt;x&gt;=?</b>	This command returns the list of parameters and value ranges set by the corresponding Write Command or internal processes.
---------------------	-----------------------	--

<b>Read Command</b>	<b>AT+&lt;x&gt;?</b>	This command returns the currently set value of the parameter or parameters.
<b>Write Command</b>	<b>AT+&lt;x&gt;=&lt;...&gt;</b>	This command sets the user-definable parameter values.
<b>Execution Command</b>	<b>AT+&lt;x&gt;</b>	This command reads non-variable parameters affected by internal processes in the UE

### 1.3. Supported Character Sets

The UC20 AT Command interface defaults to the **GSM** character set. The UC20 supports the following character sets:

- GSM format
- UCS2
- IRA

The character set can be configured and interrogated using the “AT+CSCS” command (3GPP TS 27.007). The character set is defined in 3GPP TS 27.005. The character set affects transmission and reception of SMS and SMS Cell Broadcast Messages, the entry and display of phone book entries text field.

### 1.4. AT Command Interface

The UC20 AT Command interface includes two USB ports (USB MODEM port and USB AT port) and one main UART port. Both the USB MODEM port and the main UART port support AT command and data transfer. The USB AT port only supports AT command.

#### **UART port feature:**

The baud rates of 9600,19200,38400,57600,115200,230400,460800,921600 are supported at present. The default is 115200, and the main UART port does not support autobauding mode.

The main UART port supports hardware flow control lines RTS and CTS. But it is off by default. AT command “AT+IFC=2,2” is used to enable hardware flow control.

## 1.5. Unsolicited Result Code

As an Unsolicited Result Code and a report message, URC is not issued as part of the response related to an executed AT command. URC is issued by the UC20 without being requested by the TE and it is issued automatically when a certain event occurs. Typical events leading to URCs are incoming calls ("RING"), received short messages, high/low voltage alarm, high/low temperature alarm etc. For most of these messages, they will be outputted from USB AT port by default if CMUX function is disabled, and you can configure the interface for URC output by using the AT command "**AT+QURCCFG**" (This command only effects when CMUX function is disabled). If CMUX function is enabled, most of the URCs will be outputted from CMUX2 port by default. While the interface used for URC output is reserved by an active data connection or a long running AT command, URCs are buffered internally and will be issued after the interface becomes idle status.

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## 2 General Commands

### 2.1. ATI Display Product Identification Information

The ATI command delivers a product information text.

#### ATI Display Product Identification Information

Execution Command  
**ATI**

Response  
TA issues product information text

Quectel  
UC20  
Revision: <revision>

OK

Reference  
V.25ter

#### Parameter

<revision>      Revision of software release

#### Example

```
ATI
Quectel
UC20
Revision: UC20EQAR01A01M1024

OK
```

## 2.2. AT+GMI Request Manufacturer Identification

AT+GMI returns a manufacturer identification text. See also: AT+CGMI.

AT+GMI Request Manufacturer Identification	
Test Command <b>AT+GMI=?</b>	Response <b>OK</b>
Execution Command <b>AT+GMI</b>	Response TA reports one or more lines of information text which permit the user to identify the manufacturer. <b>Quectel</b>  <b>OK</b>
Reference V.25ter	

## 2.3. AT+GMM Request TA Model Identification

AT+GMM returns a product model identification text. Command is identical with AT+CGMM.

AT+GMM Request TA Model Identification	
Test Command <b>AT+GMM=?</b>	Response <b>OK</b>
Execution Command <b>AT+GMM</b>	Response TA returns a product model identification text. <b>UC20</b>  <b>OK</b>
Reference V.25ter	

## 2.4. AT+GMR Request TA Revision Identification of Software Release

AT+GMR delivers a product firmware version identification. Command is identical with AT+CGMR.

AT+GMR Request TA Revision Identification of Software Release	
Test Command <b>AT+GMR=?</b>	Response <b>OK</b>

Execution Command <b>AT+GMR</b>	Response TA reports one or more lines of information text which permit the user to identify the revision of software release. <b>Revision: &lt;revision&gt;</b>  <b>OK</b>
Reference V.25ter	

## Parameter

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

## Example

```
AT+GMR
Revision: UC20EQAR01A01M1024
OK
```

## 2.5. AT+CGMI Request Manufacturer Identification

AT+CGMI returns a manufacturer identification text. See also: AT+GMI.

### AT+CGMI Request Manufacturer Identification

Test Command <b>AT+CGMI=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGMI</b>	Response TA returns manufacturer identification text. <b>Quectel</b>  <b>OK</b>
Reference 3GPP TS 27.007	

## 2.6. AT+CGMM Request Model Identification

AT+CGMM returns a product model identification text. Command is identical with AT+GMM.

AT+CGMM Request Model Identification	
Test Command <b>AT+CGMM=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGMM</b>	Response TA returns product model identification text. <b>UC20</b>  <b>OK</b>
Reference 3GPP TS 27.007	

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

AT+CGMR delivers a product firmware version identification. Command is identical with AT+GMR.

AT+CGMR Request TA Revision Identification of Software Release	
Test Command <b>AT+CGMR=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGMR</b>	Response TA returns identification text of product software version. <b>Revision: &lt;revision&gt;</b>  <b>OK</b>
Reference 3GPP TS 27.007	

### Parameter

<revision>	Identification text of product software version
------------	---

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

AT+GSN returns the International Mobile Equipment Identity (IMEI). Command is identical with AT+CGSN.

AT+GSN Request International Mobile Equipment Identity (IMEI)	
Test Command <b>AT+GSN=?</b>	Response <b>OK</b>
Execution Command <b>AT+GSN</b>	Response TA reports the IMEI (International Mobile Equipment Identity) number in information text which permit the user to identify the individual ME device. <b>&lt;IMEI&gt;</b>  <b>OK</b>
Reference V.25ter	

### Parameter

**<IMEI>** IMEI of the telephone

#### NOTE

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

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

AT+CGSN returns International Mobile Equipment Identity (IMEI). Command is identical with: AT+GSN.

AT+CGSN Request Product Serial Number Identification (Identical with +GSN)	
Test Command <b>AT+CGSN=?</b>	Response <b>OK</b>
Execution Command <b>AT+CGSN</b>	Response <b>&lt;IMEI&gt;</b>



	OK
Reference 3GPP TS 27.007	

## 2.10. AT&F Set all Current Parameters to Manufacturer Defaults

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

### AT&F Set all Current Parameters to Manufacturer Defaults

Execution Command <b>AT&amp;F[&lt;value&gt;]</b>	Response TA sets all current parameters to the manufacturer defined profile. <b>OK</b>
Reference V.25ter	

#### Parameter

<value>	<u>0</u>	Set all TA parameters to manufacturer defaults
---------	----------	--

## 2.11. AT&V Display Current Configuration

AT&V 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 <b>AT&amp;V[&lt;n&gt;]</b>	Response TA returns the current parameter setting. <b>&lt;current configurations text&gt;</b> <b>OK</b>
Reference V.25ter	

#### Parameter

<n>	<u>0</u>	Profile number
-----	----------	----------------

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

AT&W stores the current AT command settings to a user defined profile in non-volatile memory.

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

Execution Command <b>AT&amp;W[&lt;n&gt;]</b>	Response TA stores the current parameter settings in the user defined profile. <b>OK</b>
---	--

Reference  
V.25ter

#### Parameter

<n>	<u>0</u>	Profile number to store current parameters to
-----	----------	---

## 2.13. ATZ Set all Current Parameters to User Defined Profile

ATZ restores the current AT command settings to the user defined profile in non-volatile memory, if one was stored with AT&W before. Any additional AT command on the same command line may be ignored. ATZ does not change the current baud rate of UART.

### ATZ Set all Current Parameters to User Defined Profile

Execution Command <b>ATZ[&lt;value&gt;]</b>	Response TA sets all current parameters to the user defined profile. <b>OK</b>
--	--

Reference  
V.25ter

#### Parameter

<value>	<u>0</u>	Reset to profile number 0
---------	----------	---------------------------

## 2.14. ATQ Set Result Code Presentation Mode

ATQ controls whether the result code is transmitted to the CE. Other information text transmitted as response is not affected.

### ATQ Set Result Code Presentation Mode

Execution Command <b>ATQ&lt;n&gt;</b>	Response This parameter setting determines whether or not the TA transmits any result code to the TE. Information text transmitted in response is not affected by this setting. If <n>=0: <b>OK</b> If <n>=1: (none)
Reference V.25ter	

### Parameter

<n>	<u>0</u>	TA transmits result code
	1	Result codes are suppressed and not transmitted

## 2.15. ATV TA Response Format

This command determines the contents of header and trailer transmitted with AT command result codes and information responses.

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

### ATV TA Response Format

Execution Command <b>ATV&lt;value&gt;</b>	Response This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses. When <value>=0 <b>0</b> When <value>=1
--	---

	OK
Reference V.25ter	

## Parameter

<b>&lt;value&gt;</b>	0	Information response: <b>&lt;text&gt;&lt;CR&gt;&lt;LF&gt;</b> Short result code format: <b>&lt;numeric code&gt;&lt;CR&gt;</b>
	1	Information response: <b>&lt;CR&gt;&lt;LF&gt;&lt;text&gt;&lt;CR&gt;&lt;LF&gt;</b> 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                                     //When <value>=1 result code is OK
ATV0                                     //Set <value>=0
0
AT+CSQ
+CSQ: 30,0
0                                     //When <value>=0 result code is 0

```

**Table 2: ATV0&ATV1 Result Codes Numeric Equivalents and Brief Descriptions**

ATV1	ATV0	Description
OK	0	Acknowledges execution of a command
CONNECT	1	A connection has been established; the DCE is moving from command state to online data state
RING	2	The DCE has detected an incoming call signal from network
NO CARRIER	3	The connection has been terminated or the attempt to establish a connection failed
ERROR	4	Command not recognized, command line maximum length exceeded, parameter value invalid, or other problem with processing the command line
NO DIALTONE	6	No dial tone detected

BUSY	7	Engaged (busy) signal detected
NO ANSWER	8	"@" (Wait for Quiet Answer) dial modifier was used, but remote ringing followed by five seconds of silence was not detected before expiration of the connection timer (S7)

## 2.16. ATE Set Command Echo Mode

ATE controls if the module echoes characters received from TE during AT command state.

### ATE Set Command Echo Mode

Execution Command <b>ATE&lt;value&gt;</b>	Response This setting determines whether or not the TA echoes characters received from TE during command state. <b>OK</b>
Reference V.25ter	

#### Parameter

<b>&lt;value&gt;</b>	0	Echo mode off
	1	Echo mode on

## 2.17. A/ Repeat Previous Command Line

A/ repeats previous AT command line, and "/" acts as the line terminating character. In case of using a wrong second character, it is necessary to start again with character "a" or "A".

This command does not work when the serial multiplexer is active.

### A/ Repeat Previous Command Line

Execution Command <b>A/</b>	Response Repeat Previous Command
Reference V.25ter	

## Example

```

ATI
Quectel
UC20
Revision: UC20EQAR01A01M1024

OK
A/                                     // Repeat previous command
Quectel
UC20
Revision: UC20EQAR01A01M1024

OK

```

## 2.18. ATS3 Set Command Line Termination Character

ATS3 determines the character recognized by the module to terminate an incoming command line. It is also generated for result codes and information text, along with character value set via ATS4.

### ATS3 Set Command Line Termination Character

Read Command <b>ATS3?</b>	Response <n>  <b>OK</b>
Write Command <b>ATS3=&lt;n&gt;</b>	Response This parameter setting determines the character recognized by TA to terminate an incoming command line. The TA also returns this character in output. <b>OK</b>
Reference V.25ter	

### Parameter

<n>	0-13-127	Command line termination character (Default 13=<CR>)
-----	----------	--

## 2.19. ATS4 Set Response Formatting Character

ATS4 determines the character generated by the module for result code and information text, along with the command line termination character set via ATS3.

### ATS4 Set Response Formatting Character

Read Command <b>ATS4?</b>	Response <n>  <b>OK</b>
Write Command <b>ATS4=&lt;n&gt;</b>	Response This parameter setting determines the character generated by the TA for result code and information text. <b>OK</b>
Reference V.25ter	

#### Parameter

<n>	0-10-127	Response formatting character (Default 10=<LF>)
-----	----------	---

## 2.20. ATS5 Set Command Line Editing Character

ATS5 determines the character value used by the module to delete the immediately preceding character from the AT command line (i.e. equates backspace key).

### ATS5 Set Command Line Editing Character

Read Command <b>ATS5?</b>	Response <n>  <b>OK</b>
Write Command <b>ATS5=&lt;n&gt;</b>	Response This parameter setting determines the character recognized by TA as a request to delete the immediately preceding character from the command line. <b>OK</b>
Reference V.25ter	

## Parameter

<n>	0-8-127	Response editing character (Default 8=<Backspace>)
-----	---------	--

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

ATX determines whether or not the module transmits particular result codes to the TE. It also controls whether or not the module verifies the presence of a dial tone when it begins dialing, and whether or not engaged tone (busy signal) detection is enabled.

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

Execution Command <b>ATX&lt;value&gt;</b>	Response This parameter setting determines whether or not the TA detected the presence of dial tone and busy signal and whether or not TA transmits particular result codes. <b>OK</b>
Reference V.25ter	

## Parameter

<value>	0	<b>CONNECT</b> result code only returned, dial tone and busy detection are both disabled
	1	<b>CONNECT&lt;text&gt;</b> result code only returned, dial tone and busy detection are both disabled
	2	<b>CONNECT&lt;text&gt;</b> result code returned, dial tone detection is enabled, busy detection is disabled
	3	<b>CONNECT&lt;text&gt;</b> result code returned, dial tone detection is disabled, busy detection is enabled
	<u>4</u>	<b>CONNECT&lt;text&gt;</b> result code returned, dial tone and busy detection are both enabled

## 2.22. AT+CFUN Set Phone Functionality

AT+CFUN controls the functionality level. It can also be used to reset the UE.

### AT+CFUN Set Phone Functionality

Test Command	Response
--------------	----------



<b>AT+CFUN=?</b>	<b>+CFUN:</b> (list of supported <fun>s),(list of supported <rst>s)  <b>OK</b>
Read Command <b>AT+CFUN?</b>	Response <b>+CFUN: &lt;fun&gt;</b>  <b>OK</b>
Write Command <b>AT+CFUN=&lt;fun&gt;[,&lt;rst&gt;]</b>	Response <b>OK</b>  If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<fun>	0	Minimum functionality
	1	Full functionality (Default)
	4	Disable phone both transmit and receive RF circuits
<rst>	0	Do not reset the ME before setting it to <fun> power level. This is default when <rst> is not given.
	1	Reset the ME. The device is fully functional after the reset. This value is available only for <fun> = 1

## Example

```

AT+CFUN=0                                // Switch phone to minimum functionality
OK
AT+COPS?
+COPS: 0                                // No operator is registered

OK
AT+CPIN?
+CME ERROR: 10                          // SIM is not inserted
AT+CFUN=1                                // Switch phone to full functionality
OK

+CPIN: SIM PIN
AT+CPIN=1234
OK

```

```
+CPIN: READY

+QIND: PB DONE

+QIND: SMS DONE
AT+CPIN?
+CPIN: READY

OK
AT+COPS?
+COPS: 0,0," CHN-UNICOM",2           //Operator is registered

OK
```

## 2.23. AT+CMEE Error Message Format

AT+CMEE controls the format of error result codes: "ERROR", error numbers or verbose messages as "+CME ERROR: <err>" and "+CMS ERROR: <err>".

### AT+CMEE Error Message Format

Test Command <b>AT+CMEE=?</b>	Response <b>+CMEE:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+CMEE?</b>	Response <b>+CMEE:</b> <n>  <b>OK</b>
Write Command <b>AT+CMEE=&lt;n&gt;</b>	Response 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. <b>OK</b>
Reference 3GPP TS 27.007	

### Parameter

<n>	0	Disable result code
	<u>1</u>	Enable result code and use numeric values
	2	Enable result code and use verbose values

## Example

```

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

```

## 2.24. AT+CSCS Select TE Character Set

AT+CSCS write command informs the module which character set is used by the TE. This enables the UE to convert character strings correctly between TE and UE character sets.

### AT+CSCS Select TE Character Set

Test Command <b>AT+CSCS=?</b>	Response <b>+CSCS:</b> (list of supported <chset>s)  <b>OK</b>
Read Command <b>AT+CSCS?</b>	Response <b>+CSCS:</b> <chset>  <b>OK</b>
Write Command <b>AT+CSCS=&lt;chset&gt;</b>	Response 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.  <b>OK</b>
Reference 3GPP TS 27.007	

## Parameter

<chset>	"GSM"	GSM default alphabet.
---------	-------	-----------------------

"IRA"	International reference alphabet
"UCS2"	UCS2 alphabet

### Example

```

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

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

OK

```

## 2.25. AT+QURCCFG Configure URC Indication Option

This command is used to configure the output port of URC.

### AT+QURCCFG Configure URC Indication Option

Test Command <b>AT+QURCCFG=?</b>	Response <b>+QURCCFG: "urcport",("usbat","usbmodem","uart1")</b>  <b>OK</b>
Write Command <b>AT+QURCCFG="urcport",&lt;urcportvalue&gt;</b>	Response <b>OK</b> <b>ERROR</b>
Read Command <b>AT+QURCCFG?</b>	Response Return current configurations: <b>+QURCCFG: "urcport",&lt;urcportvalue&gt;</b>  <b>OK</b>
Reference	

### Parameter

<urcportvalue>:	set URC output port	
	"usbat"	USB AT port (default value)
	"usbmodem"	USB modem port

"uart1"

Main UART

#### NOTES

1. Configuration of URC output port will be saved to NV immediately by default.
2. After configuration of URC output port is set successfully, it will take effect immediately.

#### Example

```
AT+QURCCFG=?  
+QURCCFG: "urcport",("usbat","usbmodem","uart1")  
  
OK  
AT+QURCCFG?  
+QURCCFG: "urcport","usbat"  
  
OK  
AT+QURCCFG="urcport","uart1"  
OK  
AT+QURCCFG?  
+QURCCFG: "urcport","uart1"  
  
OK
```

# 3 Serial Interface Control Commands

## 3.1. AT&C Set DCD Function Mode

AT&C controls the behavior of the UE's DCD line.

### AT&C Set DCD Function Mode

Execution Command <b>AT&amp;C[&lt;value&gt;]</b>	Response This parameter determines how the state of circuit 109(DCD) relates to the detection of received line signal from the distant end. <b>OK</b>
Reference V.25ter	

#### Parameter

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

## 3.2. AT&D Set DTR Function Mode

AT&D determines how the UE responds if DTR line is changed from the ON to the OFF condition during online data mode.

### AT&D Set DTR Function Mode

Execution Command <b>AT&amp;D[&lt;value&gt;]</b>	Response This parameter determines how the TA responds when circuit 108/2(DTR) is changed from the ON to the OFF condition during data mode. <b>OK</b>
Reference V.25ter	

## Parameter

<b>&lt;value&gt;</b>	0	TA ignores status on DTR
	<u>1</u>	ON->OFF on DTR: Change to command mode with remaining the connected call
	2	ON->OFF on DTR: Disconnect data call, change to command mode. During state DTR = OFF, auto-answer is off

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

AT+ICF determines the serial interface character framing format and parity received by TA from TE.

AT+ICF Set TE-TA Control Character Framing	
Test Command <b>AT+ICF=?</b>	Response <b>+ICF:</b> (list of supported <b>&lt;format&gt;s</b> ),(list of supported <b>&lt;parity&gt;s</b> )  <b>OK</b>
Read Command <b>AT+ICF?</b>	Response <b>+ICF:</b> <b>&lt;format&gt;</b> , <b>&lt;parity&gt;</b>  <b>OK</b>
Write Command <b>AT+ICF=[&lt;format&gt;,[&lt;parity&gt;]]</b>	Response This parameter setting determines the serial interface character framing format and parity received by TA from TE. <b>OK</b>
Reference V.25ter	

## Parameter

<b>&lt;format&gt;</b>	<u>3</u>	8 data 0 parity 1 stop
<b>&lt;parity&gt;</b>	0	Odd
	1	Even
	2	Mark (1)
	<u>3</u>	Space (0)

## NOTES

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

## 3.4. AT+IFC Set TE-TA Local Data Flow Control

AT+IFC determines the flow control behavior of the serial port.

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

Test Command <b>AT+IFC=?</b>	Response <b>+IFC:</b> (list of supported <dce_by_dte>s),(list of supported <dte_by_dce>s)  <b>OK</b>
Read Command <b>AT+IFC?</b>	Response <b>+IFC:</b> <dce_by_dte>,<dte_by_dce>  <b>OK</b>
Write Command <b>AT+IFC=&lt;dce_by_dte&gt;,&lt;dte_by_dce&gt;</b>	Response This parameter setting determines the data flow control on the serial interface for data mode. <b>OK</b>
Reference V.25ter	

### Parameter

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

## NOTE

This flow control is applied for data mode.



## Example

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

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

AT+IPR is used to query and set the baud rate of the UART. The default baud rate value (<rate>) is 115200bps. <rate> setting will not be restored with AT&F.

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

Test Command <b>AT+IPR=?</b>	Response <b>+IPR:</b> (list of supported auto detectable <rate>s),(list of supported fixed-only<rate>s)  <b>OK</b>
Read Command <b>AT+IPR?</b>	Response <b>+IPR:</b> <rate>  <b>OK</b>
Write Command <b>AT+IPR=&lt;rate&gt;</b>	Response This parameter setting determines the data rate of the TA on the serial interface. After the delivery of any result code associated with the current command line, the rate of command takes effect.  <b>OK</b>
Reference V.25ter	

## Parameter

<rate>	Baud rate per second
	9600
	38400
	57600
	<u>115200</u>
	230400

460800

921600

#### NOTES

1. If a fixed baud rate is set, make sure that both TE (DTE, usually external processor) and TA (DCE, Quectel module) are configured to the same rate.
2. 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**.
3. 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.
4. 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
OK
AT&W                     // Store current setting, that is, the serial
                           communication speed is 115200 after restarting
                           module
OK
AT+IPR?
+IPR: 115200
OK
```

# 4 Status Control Commands

## 4.1. AT+CPAS Mobile Equipment Activity Status

AT+CPAS execute command queries the module's activity status.

### AT+CPAS Mobile Equipment Activity Status

Test Command  
**AT+CPAS=?**

Response  
**+CPAS:** (list of supported <pas>s)

**OK**

Execution Command  
**AT+CPAS**

Response  
TA returns the activity status of ME.  
**+CPAS:** <pas>

**OK**

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

Reference  
3GPP TS 27.007

### Parameter

<pas>	0	Ready
	3	Ringing
	4	Call in progress or call hold

### Example

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

OK
ATD10086;
OK
AT+CLCC
```

+CLCC: 1,0,3,0,0,"10086",129

OK

AT+CPAS

+CPAS: 3 // Module is ringing

OK

AT+CLCC

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

OK

AT+CPAS

+CPAS: 4 // Call in progress

OK

## 4.2. AT+QINDCFG Enable/Disable URC presentation

AT+QINDCFG controls whether or not presents URCs.

### AT+QINDCFG Enable/Disable URC presentation

Test Command  
AT+QINDCFG=?

Response  
+QINDCFG: "csq",(0,1)  
+QINDCFG: "smsfull",(0,1)

OK

Write Command  
AT+QINDCFG=<type>,<value>

Response  
OK  
ERROR

Write Command  
AT+QINDCFG=<type>

Response  
Return the current setting for <type>:  
+QINDCFG: <type>,<value>

OK

Read Command  
AT+QINDCFG?

Response  
+QINDCFG: "csq",<value>  
+QINDCFG: "smsfull",<value>

OK

---

Reference

---

Parameter

---

<type>	String type	
	"csq"	Signal Quality Report. Displays signal strength and channel bit error rate (similar to <b>AT+CSQ</b> ) in form <b>+QIND: "csq",&lt;rss&gt;,&lt;ber&gt;</b> when values change.
<value>	"smsfull"	Display <b>"+QIND: "smsfull",&lt;storage&gt;"</b> when SMS storage is full.
	0	Disable
	1	Enable

---

# 5 SIM Related Commands

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

AT+CIMI requests the International Mobile Subscriber Identity (IMSI) which is intended to permit the TE to identify the individual SIM card or active application in the UICC (GSM or USIM) which is attached to MT.

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

Test Command <b>AT+CIMI=?</b>	Response <b>OK</b>
Execution Command <b>AT+CIMI</b>	Response TA returns <IMSI>for identifying the individual SIM which is attached to ME. <b>&lt;IMSI&gt;</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

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

### Example

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

## 5.2. AT+CLCK Facility Lock

AT+CLCK is used to lock, unlock or interrogate a MT or a network facility <fac>. The command can be aborted when network facilities are being set or interrogated.

AT+CLCK Facility Lock	
Test Command <b>AT+CLCK=?</b>	Response <b>+CLCK:</b> (list of supported <fac>s)  <b>OK</b>
Write Command <b>AT+CLCK=&lt;fac&gt;,&lt;mode&gt;,&lt;passwd&gt;[,&lt;class&gt;]</b>	Response This command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>.  If <mode> <> 2 and command is successful <b>OK</b> If <mode> = 2 and command is successful <b>+CLCK: &lt;status&gt;[,&lt;class1&gt;[&lt;CR&gt;&lt;LF&gt; +CLCK: &lt;status&gt;, class2....]]</b>  <b>OK</b>
Reference 3GPP TS 27.007	

### Parameter

<fac>	"SC"	SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued)
	"AO"	BAOC (Barr All Outgoing Calls) (refer to 3GPP TS 22.088 clause 1)
	"OI"	BOIC (Barr Outgoing International Calls) (refer to 3GPP TS 22.088 clause 1)
	"OX"	BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to 3GPP TS 22.088 clause 1)
	"AI"	BAIC (Barr All Incoming Calls) (refer to 3GPP TS 22.088 clause 2)
	"IR"	BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to 3GPP TS 22.088 clause 2)
	"AB"	All Barring services (refer 3GPP TS 22.030) (applicable only for <mode>=0)
	"AG"	All outgoing barring services (refer 3GPP TS 22.030) (applicable only for <mode>=0)

	"AC"	All incoming barring services (refer 3GPP TS 22.030) (applicable only for <mode>=0)
	"FD"	SIM card or active application in the UICC (GSM or USIM) fixed dialing memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)
	"PF"	Lock Phone to the very First inserted SIM/UICC card (also referred in the present document as PH-FSIM) (MT asks password when other than the first SIM/UICC card is inserted)
	"PN"	Network Personalization (refer to 3GPP TS 22.022)
	"PU"	Network subset Personalization (refer to 3GPP TS 22.022)
	"PP"	Service Provider Personalization (refer to 3GPP TS 22.022)
	"PC"	Corporate Personalization (refer to 3GPP TS 22.022)
<mode>	0	Unlock
	1	Lock
	2	Query status
<passwd>	Password	
<class>	1	Voice
	2	Data
	4	FAX
	7	All telephony except SMS (Default)
	8	Short message service
	16	Data circuit sync
	32	Data circuit async
<status>	0	Off
	1	On

### Example

```

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

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

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

```



### 5.3. AT+CPIN Enter PIN

AT+CPIN is used to enter a password or query whether or not module requires a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).

AT+CPIN Enter PIN	
Test Command <b>AT+CPIN=?</b>	Response <b>OK</b>
Read Command <b>AT+CPIN?</b>	Response TA returns an alphanumeric string indicating whether or not some password is required. <b>+CPIN: &lt;code&gt;</b>  <b>OK</b>
Write Command <b>AT+CPIN=&lt;pin&gt;[,&lt;new pin&gt;]</b>	Response TA stores a password which is necessary before it can be operated (SIM PIN, SIM PUK, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken and an error message, <b>+CME ERROR</b> , is returned to TE. If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <b>&lt;new pin&gt;</b> , is used to replace the old pin in the SIM. <b>OK</b>
Reference 3GPP TS 27.007	

#### Parameter

<code>	READY	No further entry needed
	SIM PIN	ME is waiting for SIM PIN to be given
	SIM PUK	ME is waiting for SIM PUK to be given
	SIM PIN2	MT is waiting SIM PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure; if PIN2 is not entered right after the failure, it is recommended that MT does not block its operation)
	SIM PUK2	MT is waiting SIM PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure; if PUK2 and new PIN2 are not entered right after the failure, it is recommended that MT does not block its operation)
<pin>	String type; password	
<new pin>	String type; If the PIN required is SIM PUK or SIM PUK2: new password	

## Example

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

OK
AT+CPIN=1234                  // Enter PIN
OK

+CPIN: READY

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

OK

//Enter PUK and PIN
AT+CPIN?
+CPIN: SIM PUK                // Query PUK code is locked

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

+CPIN: READY

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

OK
```

## 5.4. AT+CPWD Change Password

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

### AT+CPWD Change Password

Test Command  
**AT+CPWD=?**

Response

TA returns a list of pairs which present the available facilities and the maximum length of their password.

**+CPWD:** (list of supported <fac>s),(**<pwdlength>**s)

	<b>OK</b>
Write Command <b>AT+CPWD=&lt;fac&gt;,&lt;oldpwd&gt;,&lt;newpwd&gt;</b> <b>&gt;</b>	Response TA sets a new password for the facility lock function.
	<b>OK</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;fac&gt;</b>	<p>"SC" SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued)</p> <p>"AO" BAOC (Barr All Outgoing Calls) (refer to 3GPP TS 22.088 clause 1)</p> <p>"OI" BOIC (Barr Outgoing International Calls) (refer to 3GPP TS 22.088 clause 1)</p> <p>"OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to 3GPP TS 22.088 clause 1)</p> <p>"AI" BAIC (Barr All Incoming Calls) (refer to 3GPP TS 22.088 clause 2)</p> <p>"IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to 3GPP TS 22.088 clause 2)</p> <p>"AB" All Barring services (refer to 3GPP TS 22.030) (applicable only for <b>&lt;mode&gt;=0</b>)</p> <p>"AG" All outgoing barring services (refer to 3GPP TS 22.030) (applicable only for <b>&lt;mode&gt;=0</b>)</p> <p>"AC" All incoming barring services (refer to 3GPP TS 22.030) (applicable only for <b>&lt;mode&gt;=0</b>)</p> <p>"P2" SIM PIN2</p>
<b>&lt;pwdlength&gt;</b>	Integer. max length of password
<b>&lt;oldpwd&gt;</b>	Password specified for the facility from the user interface or with command.
<b>&lt;newpwd&gt;</b>	New password

## Example

**AT+CPIN?**

**+CPIN: READY**

**OK**

**AT+CPWD="SC","1234","4321"**

// Change SIM card password to "4321"

**OK**

// Restart module or re-activate the SIM card

**AT+CPIN?**

Query PIN code is locked

**+CPIN: SIM PIN**

**OK**

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

+CPIN: READY
```

## 5.5. AT+CRSM Restricted SIM Access

AT+CRSM offers easy and limited access to the SIM database. It transmits the SIM <command> and its required parameters to the MT.

### AT+CRSM Restricted SIM Access

Test Command <b>AT+CRSM=?</b>	Response <b>OK</b>
Write Command <b>AT+CRSM=&lt;command&gt;[,&lt;fileId&gt;[,&lt;P1&gt;,&lt;P2&gt;,&lt;P3&gt;[,&lt;data&gt;][,&lt;pathId&gt;]]]</b>	Response <b>+CRSM: &lt;sw1&gt;,&lt;sw2&gt;[,&lt;response&gt;]</b>  <b>OK</b> <b>ERROR</b>
Reference 3GPP	

#### Parameter

<b>&lt;command&gt;</b>	USIM command number 176 READ BINARY 178 READ RECORD 192 GET RESPONSE 214 UPDATE BINARY 220 UPDATE RECORD 242 STATUS
<b>&lt;fileId&gt;</b>	Integer type; Identifier for an elementary data file on USIM, if used by <command>.
<b>&lt;P1&gt;, &lt;P2&gt;, &lt;P3&gt;</b>	Integer type; Parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in 3GPP TS 51.011.
<b>&lt;data&gt;</b>	information which shall be written to the SIM (hexadecimal character format; refer to +CSCS).
<b>&lt;pathId&gt;</b>	Contains the directory path of an elementary file on a UICC in hexadecimal format.
<b>&lt;sw1&gt;, &lt;sw2&gt;</b>	Integer type; information from the SIM about the execution of the actual command. These parameters are delivered to the TE in both cases, on

	successful or failed execution of the command.
<b>&lt;response&gt;</b>	Response of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). 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 3GPP TS 51.011). After READ BINARY, READ RECORD or RETRIEVE DATA command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY, UPDATE RECORD or SET DATA command.

## 5.6. AT+QCCID Show ICCID

AT+QCCID returns the ICCID (Integrated Circuit Card Identifier) number of the SIM card.

AT+QCCID Show ICCID	
Test Command <b>AT+QCCID=?</b>	Response <b>OK</b>
Execution Command <b>AT+QCCID</b>	Response <b>+QCCID: &lt;iccid&gt;</b>  OK ERROR
Reference	

### Example

```

AT+QCCID //Query ICCID of the SIM card
+QCCID: 898600220909A0206023

OK

```

# 6 Network Service Commands

## 6.1. AT+COPS Operator Selection

AT+COPS returns the current operators and their status and allows to set automatic or manual network selection.

### AT+COPS Operator Selection

#### Test Command

**AT+COPS=?**

#### Response

TA returns a set of five 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 order: home network, networks referenced in SIM and other networks.

**+COPS:** (list of supported<stat>, long alphanumeric <oper>, short alphanumeric <oper>, numeric <oper>s)[,< Act>]]s]  
[,,(list of supported <mode>s),(list of supported <format>s )]

**OK**

If error is related to ME functionality:

**+CME ERROR: <err>**

#### Read Command

**AT+COPS?**

#### Response

TA returns the current mode and the currently selected operator. If no operator is selected, <format> , <oper> and <Act> are omitted.

**+COPS:** <mode>[,<format>[,<oper>][,<Act>]]

**OK**

If error is related to ME functionality:

**+CME ERROR: <err>**

#### Write Command

**AT+COPS= <mode>**

**[,<format>[,<oper>[,<Act>]]]**

#### Response

TA forces an attempt to select and register the GSM/UMTS network operator. If the selected operator is not available, no other operator shall be selected (except <mode>=4). The format of selected operator name shall apply to further read commands (**+COPS?**).

	<b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;stat&gt;</b>	0	Unknown
	1	Operator available
	2	Operator current
	3	Operator forbidden
<b>&lt;oper&gt;</b>	Operator in format as per <b>&lt;mode&gt;</b>	
<b>&lt;mode&gt;</b>	0	Automatic mode; <b>&lt;oper&gt;</b> field is ignored
	1	Manual operator selection; <b>&lt;oper&gt;</b> field shall be present and <b>&lt;Act&gt;</b> optionally
	2	Manual deregister from network
	3	Set only <b>&lt;format&gt;</b> (for read Command +COPS?), do not attempt registration/deregistration ( <b>&lt;oper&gt;</b> and <b>&lt;Act&gt;</b> fields are ignored); this value is not applicable in read command response
	4	Manual/automatic selected, <b>&lt;oper&gt;</b> field shall be present; if manual selection fails, automatic mode ( <b>&lt;mode&gt;</b> =0) is entered
<b>&lt;format&gt;</b>	0	Long format alphanumeric <b>&lt;oper&gt;</b> ; can be up to 16 characters long
	1	Short format alphanumeric <b>&lt;oper&gt;</b>
	2	Numeric <b>&lt;oper&gt;</b> ; GSM Location Area Identification number
<b>&lt;Act&gt;</b>	Access technology selected	
	0	GSM
	2	UTRAN

## Example

```

AT+COPS=?                                     //List all current network operators
+COPS:
(2,"CHN-UNICOM","UNICOM","46001",2),(1,"CHN-UNICOM","UNICOM","46001",0),(3,"CHINA
MOBILE","CMCC","46000",0),(0,1,2,3,4),(0,1,2)

OK
AT+COPS?                                     //Query the currently selected network operator
+COPS: 0,0,"CHN-UNICOM",0

OK

```

## 6.2. AT+CREG Network Registration

AT+CREG returns the network registration status. The write command sets whether or not to present URC.

AT+CREG Network Registration	
Test Command <b>AT+CREG=?</b>	<p>Response</p> <p><b>+CREG:</b> (list of supported &lt;n&gt;s)</p> <p><b>OK</b></p>
Read Command <b>AT+CREG?</b>	<p>Response</p> <p>TA returns the status of result code presentation and an integer &lt;stat&gt; which shows whether the network has currently indicated the registration of the ME. Location information elements &lt;lac&gt; and &lt;ci&gt; are returned only when &lt;n&gt;=2 and ME is registered in the network.</p> <p><b>+CREG:</b> &lt;n&gt;,&lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;[,&lt;Act&gt;]]</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CME ERROR:</b> &lt;err&gt;</p>
Write Command <b>AT+CREG=&lt;n&gt;</b>	<p>Response</p> <p>TA controls the presentation of an unsolicited result code <b>+CREG:</b> &lt;stat&gt; when &lt;n&gt;=1 and there is a change in the ME network registration status.</p> <p><b>OK</b></p>
Reference 3GPP TS 27.007	

### Parameter

<n>	0	Disable network registration unsolicited result code
	1	Enable network registration unsolicited result code <b>+CREG:</b> <stat>
	2	Enable network registration unsolicited result code with location information <b>+CREG:</b> <stat>[,<lac>,<ci>[,<Act>]]
<stat>	0	Not registered, ME is not currently searching a new operator to register to
	1	Registered, home network
	2	Not registered, but ME is currently searching a new operator to register to
	3	Registration denied
	4	Unknown
	5	Registered, roaming
<lac>	String type; two byte location area code in hexadecimal format	



<ci>	String type; two byte cell ID in hexadecimal format
<Act>	Access technology selected
0	GSM
2	UTRAN

### Example

```

AT+CREG=1
OK

+CREG: 1 //URC reports that ME has registered
AT+CREG=2 //Activates extended URC mode
OK

+CGREG: 1,"D504","08043799",2 // URC reports that operator has been found with location
                                area code and cell ID

```

## 6.3. AT+CSQ Signal Quality Report

AT+CSQ indicates the received signal strength <rss> and the channel bit error rate <ber>.

### AT+CSQ Signal Quality Report

Test Command <b>AT+CSQ=?</b>	Response <b>+CSQ:</b> (list of supported <rss>s),(list of supported <ber>s)  <b>OK</b>
Execution Command <b>AT+CSQ</b>	Response <b>+CSQ:</b> <rss>,<ber>  <b>OK</b> <b>+CME ERROR:</b> <err> Execution Command returns received signal strength indication <rss> and channel bit error rate <ber> from the ME. Test Command returns values supported by the TA.
Reference 3GPP TS 27.007	

## Parameter

<rss>	0	-113 dBm or less
	1	-111 dBm
	2...30	-109... -53 dBm
	31	-51 dBm or greater
	99	Not known or not detectable
<ber>	Channel bit error rate (in percent)	
	0...7	As RXQUAL values in the table in 3GPP TS 45.008 subclause 8.2.4
	99	Not known or not detectable

## Example

**AT+CSQ=?**

**+CSQ: (0-31,99),(0-7,99)**

OK

**AT+CSQ**

**+CSQ: 28,0**

// Query the current signal strength indication is 28 and  
channel bit error rate is 0

OK

## 6.4. AT+CPOL Preferred Operator List

AT+CPOL edits and queries the list of the preferred operators.

### AT+CPOL Preferred Operator List

Test Command <b>AT+CPOL=?</b>	Response <b>+CPOL:</b> (list of supported <index>s),(list of supported <format>s)  OK
Read Command <b>AT+CPOL?</b>	Response Query the list of the preferred operators: <b>+CPOL:</b> <index1>,<format>,<oper1>[,<GSM_Act1>,<GSM_compact_Act1>,<UTRAN_Act1>] <b>+CPOL:</b> <index2>,<format>,<oper2>[,<GSM_Act2>,<GSM_compact_Act2>,<UTRAN_Act2>]

	[...]]
	OK
Write Command <b>AT+CPOL=</b> <index>[,<format>[,<oper>[<GSM_Actn>,<GSM_compact_Actn>,<UTRAN_Actn>]]]	Response Edit the list of the preferred operators  OK ERROR  If the <index> is given but the <operator> is left out, the entry is deleted.
Reference 3GPP TS 27.007	

## Parameter

<indexn>	Integer type; the order number of operator in the SIM/USIM preferred operator list
<format>	0 Long format alphanumeric <oper> 1 Short format alphanumeric <oper> 2 Numeric <oper>
<opern>	String type; <format> indicates if the format is alphanumeric or numeric (see <b>+COPS</b> )
<GSM_Actn>	GSM access Technology 0 Access Technology not selected 1 Access Technology selected
<GSM_Compact_Actn>	GSM compact access Technology 0 Access Technology not selected 1 Access Technology selected
<UTRAN_Actn>	UTRAN access Technology 0 Access Technology not selected 1 Access Technology selected

## 6.5. AT+COPN Read Operator Names

The AT+COPN command returns the list of operator names from the ME. Each operator code <numericn> that has an alphanumeric equivalent <alphan> in the ME memory is returned.

### AT+COPN Read Operator Names

Test Command <b>AT+COPN=?</b>	Response OK
Execution Command <b>AT+COPN</b>	Response <b>+COPN:</b> <numeric1>,<alpha1>

	<pre>[&lt;CR&gt;&lt;LF&gt;+COPN: &lt;numeric2&gt;,&lt;alpha2&gt; [...]]  OK +CME ERROR: &lt;err&gt;</pre>
Reference 3GPP TS 27.007	

## Parameter

<numeric>	String type: operator in numeric format (see <b>+COPS</b> )
<alphan>	String type: operator in long alphanumeric format (see <b>+COPS</b> )

## 6.6. AT+QNWCFG Configure Network-Related Parameters

AT+QNWCFG is used to configure network-related parameters.

AT+QNWCFG Configure Network-Related Parameters	
Test Command <b>AT+QNWCFG=?</b>	<p>Response</p> <pre>+QNWCFG: "gprsattach",(0,1) +QNWCFG: "nwscanmode",(0,1,2)[,(0,1)] +QNWCFG: "nwscanseq",(0,1,2)[,(0,1)] +QNWCFG: "nwsel",(0,1) +QNWCFG: "roamservice",(1,2,255)[,(0,1)] +QNWCFG: "servicedomain",(0,1,2)[,(0,1)] +QNWCFG: "band",(1-512)[,(0,1)]  OK</pre>
Write command <b>AT+QNWCFG=&lt;type&gt;</b>	<p>Response</p> <p>Return current configuration for the specific &lt;type&gt;:</p> <pre>+QNWCFG: &lt;type&gt;,&lt;value&gt;</pre> <p>OK</p>
Write command <b>AT+QNWCFG =&lt;type&gt;,&lt;value&gt;[,&lt;mode&gt;]</b>	<p>Response</p> <pre>OK ERROR</pre>
Read command <b>AT+QNWCFG?</b>	<p>Response</p> <p>Return current configurations:</p> <pre>+QNWCFG: "gprsattach",&lt;value&gt;</pre>

	<b>+QNWCFG: "nwscanmode",&lt;value&gt;</b> <b>+QNWCFG: "nwscanseq",&lt;value&gt;</b> <b>+QNWCFG: "nwsel",&lt;value&gt;</b> <b>+QNWCFG: "roamservice",&lt;value&gt;</b> <b>+QNWCFG: "servicedomain",&lt;value&gt;</b> <b>+QNWCFG: "band",&lt;value&gt;</b>
	<b>OK</b>
Reference	

## Parameter

If <b>&lt;type&gt;="gprsattach"</b>	PS Auto attach when UE power on	
	<b>&lt;value&gt;</b>	0 PS auto attach when UE power on is disabled. User should manual attach via AT+CGATT=1
		<u>1</u> PS auto attach when UE power on(default value)
	<b>&lt;mode&gt;</b>	Not supported, the <b>&lt;value&gt;</b> takes effect after UE restart
If <b>&lt;type&gt;="nwscanmode"</b>	Prefer Mode Selection	
	<b>&lt;value&gt;</b>	<u>0</u> Auto (default value)
		1 GSM Only
		2 UMTS Only
	<b>&lt;mode&gt;</b>	0 Take effect after UE restart
		<u>1</u> Take effect immediately (default value)
If <b>&lt;type&gt;="nwscanseq"</b>	Prefer Order Selection	
	<b>&lt;value&gt;</b>	0 Auto
		1 Acquisition order is GSM followed by WCDMA
		<u>2</u> Acquisition order is WCDMA followed by GSM(default value)
	<b>&lt;mode&gt;</b>	0 Take effect after UE restart
		<u>1</u> Take effect immediately (default value)
If <b>&lt;type&gt;="nwsel"</b>	Prefer Selection Mode when UE Power On	
	<b>&lt;value&gt;</b>	<u>0</u> Auto registered when UE Power on(default value)
		1 Manual registered when UE Power on
	<b>&lt;mode&gt;</b>	Not supported, the <b>&lt;value&gt;</b> take effect after UE restart
If <b>&lt;type&gt;="roamservice"</b>	Roam Service Selection	
	<b>&lt;value&gt;</b>	1 Disable roam service
		0 Enable roam service
		<u>255</u> Auto (default value)

---

<b>&lt;mode&gt;</b>	0	Take effect after UE restart
	<u>1</u>	Take effect immediately (default value)

**If <type>= "servicedomain" Prefer Domain Service Selection**

<b>&lt;value&gt;</b>	0	CS Only
	1	PS Only
	<u>2</u>	CS & PS(default value)

<b>&lt;mode&gt;</b>	0	Take effect after UE restart
	1	Take effect immediately (default value)

**If <type>= "band" Band selection**

<b>&lt;value&gt;</b>	1	GSM 900
	2	GSM 1800
	4	GSM 850
	8	GSM 1900
	16	WCDMA 2100
	32	WCDMA 1900
	64	WCDMA 850
	128	WCDMA 900
	256	WCDMA 800
	512	Any (default value)

<b>&lt;mode&gt;</b>	0	Take effect after UE restart
	<u>1</u>	Take effect immediately (default value)

---

# 7 Call Related Commands

## 7.1. ATA Answer an Incoming Call

ATA connects the module to an incoming voice or data call indicated by a "RING" URC.

### ATA Answer an Incoming Call

Execution Command

**ATA**

Response

TA sends off-hook to the remote station.

Response in case of data call, if successfully connected

**CONNECT<text>** TA switches to data mode.

Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0.

When TA returns to command mode after call release:

**OK**

Response in case of voice call, if successfully connected:

**OK**

Response if no connection:

**NO CARRIER**

Reference

V.25ter

#### NOTES

1. Any additional commands on the same command line are ignored.
2. This command may be aborted generally by receiving a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.
3. See also **ATX**.

#### Example

**RING**

// A voice call is ringing

**AT+CLCC**

**+CLCC: 1,1,4,0,0,"02154450290",129**

<p>OK ATA OK</p>	<p>// Accept the voice call with <b>ATA</b></p>
--------------------------	---

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

ATD can be used to set up outgoing voice and data calls. Supplementary Services can also be controlled with ATD.

### ATD Mobile Originated Call to Dial a Number

#### Execution Command

**ATD<n>[<mgsms>][:]**

#### Response

This command can be used to set up outgoing voice, data or FAX calls. It also serves to control supplementary services.

If no dial tone and (parameter setting **ATX2** or **ATX4**):

**NO DIALTONE**

If busy and (parameter setting **ATX3** or **ATX4**):

**BUSY**

If a connection cannot be established:

**NO CARRIER**

If connection is successful and non-voice call.

**CONNECT<text>** TA switches to data mode.

**<text>** output only if **ATX<value>** parameter setting with the **<value>** >0

When TA returns to command mode after call release:

**OK**

If connection is successful and voice call:

**OK**

#### Reference

V.25ter

#### Parameter

<p><b>&lt;n&gt;</b></p>	<p>String of dialing digits and optionally V.25ter modifiers</p> <p>Dialing digits: <b>0-9, *, #, +, A, B, C</b></p> <p>Following V.25ter modifiers are ignored:</p>
-------------------------	--



	,(comma), T, P, I, W, @
<mgsm>	String of <b>GSM</b> modifiers:
I	Activates <b>CLIR</b> (Disables presentation of own number to called party)
i	Deactivates <b>CLIR</b> (Enable presentation of own number to called party)
G	Activates closed user group invocation for this call only
g	Deactivates closed user group invocation for this call only
<;>	Only required to set up voice call, return to command state

## NOTES

1. This command may be aborted generally by receiving an **ATH** command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.
2. Parameter "I" and "i" only if no \*# code is within the dial string..
3. See **ATX** command for setting result code and call monitoring parameters.
4. Responses returned after dialing with **ATD**  
For voice call two different responses mode can be determined. TA returns "**OK**" immediately either after dialing was completed or after the call was established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, which causes the TA returns "**OK**" immediately after dialing was completed, otherwise TA will returns "**OK**", "**BUSY**", "**NO DIAL TONE**", "**NO CARRIER**".
5. Using **ATD** during an active voice call:
  - When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold.
  - The current states of all calls can be easily checked at any time by using the **AT+CLCC** command.

## Example

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

## 7.3. ATH Disconnect Existing Connection

**ATH** disconnects circuit switched data calls or voice calls. **AT+CHUP** is also used to disconnect the voice call.

### ATH Disconnect Existing Connection

Execution Command	Response
<b>ATH[n]</b>	Disconnect existing call by local TE from command line and terminate call. <b>OK</b>

Reference  
V.25ter

## Parameter

<n>	0	Disconnect from line and terminate call
-----	---	---

## 7.4. AT+CVHU Voice Hang Up Control

AT+CVHU controls whether ATH can be used to disconnect the voice call.

### AT+CVHU Voice Hang Up Control

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

Reference  
3GPP TS 27.007

## Parameter

<mode>	0	ATH disconnects
	1	ATH ignored but OK response given

## 7.5. AT+CHUP Hang Up Call

AT+CHUP cancels all voice calls in the state of Active, Waiting, Held. For data connections, use ATH.

### AT+CHUP Hang Up Call

Test Command <b>AT+CHUP=?</b>	Response <b>OK</b>
Execution Command <b>AT+CHUP</b>	Response <b>OK</b> <b>ERROR</b>
Reference 3GPP 27.007	

### Example

```

RING                //Incoming call

AT+CHUP             //Hang up call
OK

```

## 7.6. +++ Switch From Data Mode to Command Mode

The +++ character sequence causes the module to switch from data mode to AT command mode. It allows to enter AT command while maintaining the data connection with the remote device.

### +++ Switch From Data Mode to Command Mode

Execution Command <b>+++</b>	Response This command is only available during TA is in data mode. The “+++” character sequence causes the TA to cancel the data flow over the AT interface and switch to command mode. This allows you to enter AT command while maintaining the data connection with the remote server or, accordingly, the GPRS connection.  <b>OK</b>
Reference V.25ter	

### NOTES

- To prevent the “+++” escape sequence from being misinterpreted as data, it should comply to following sequence:
  - No characters entered for T1 time (1000ms).
  - “+++” characters entered with no characters in between. The +++ characters must be entered in quick succession, all within 1000ms.
  - No characters entered for T1 time (1000ms).

- Switch to command mode, otherwise go to step 1.
- 2. To return from command mode back to data mode: Enter **ATO**
  - Another way to change to command mode is through DTR, see **AT&D** command for the details.

## 7.7. ATO Switch From Command Mode to Data Mode

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

### ATO Switch From Command Mode to Data Mode

Execution Command  
**ATO[n]**

Response  
TA resumes the connection and switches back from command mode to data mode.  
If connection is not successfully resumed:  
**NO CARRIER**  
else  
TA returns to data mode from command mode **CONNECT**  
**<text>**

Reference  
V.25ter

#### Parameter

<b>&lt;n&gt;</b>	0	Switch from command mode to data mode
------------------	---	---------------------------------------

#### NOTE

TA returns to data mode from command mode **CONNECT <text>,<text>** only if ATX parameter setting with value>0.

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

ATS0 controls automatic answering mode for the incoming calls.

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

Read Command  
**ATS0?**

Response  
**<n>**

	<b>OK</b>
Write Command <b>ATS0=&lt;n&gt;</b>	Response This parameter setting determines the number of rings before auto-answer. <b>OK</b>
Reference V.25ter	

## Parameter

<b>&lt;n&gt;</b>	<u>0</u>	Automatic answering is disabled
	1-255	Enable automatic answering on the ring number specified

## NOTE

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

## Example

```

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

RING             // Call coming

RING

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

## 7.9. ATS6 Set Pause Before Blind Dialing

ATS6 is implemented for compatibility reasons only, and has no effect.

### ATS6 Set Pause Before Blind Dialing

Read Command <b>ATS6?</b>	Response <b>&lt;n&gt;</b>  <b>OK</b>
Write Command <b>ATS6=&lt;n&gt;</b>	Response <b>OK</b>

Reference  
V.25ter

## Parameter

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

## 7.10. ATS7 Set Number of Seconds to Wait for Connection Completion

ATS7 specifies the amount of time to wait for the connection completion in case of answering or originating a call. If no connection is established during this time, the module disconnects from the line.

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

Read Command  
**ATS7?**

Response  
<n>

**OK**

Write Command  
**ATS7=<n>**

Response  
This parameter setting determines the amount of time to wait for the connection completion in case of answering or originating a call.

**OK**

Reference  
V.25ter

## Parameter

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

### NOTES

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

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

ATS8 is implemented for compatibility reasons only, and has no effect.

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

Read Command <b>ATS8?</b>	Response <n>  OK
Write Command <b>ATS8=&lt;n&gt;</b>	Response OK
Reference V.25ter	

#### Parameter

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

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

ATS10 determines the amount of time, which the UE remains connected in absence of a data carrier.

### ATS10 Set Disconnect Delay After Indicating the Absence of Data Carrier

Read Command <b>ATS10?</b>	Response <n>  OK
Write Command <b>ATS10=&lt;n&gt;</b>	Response This parameter setting determines the amount of time that the TA will remain connected in absence of data carrier. If the data carrier is once more detected before disconnection, the TA remains connected. OK
Reference V.25ter	

## Parameter

**<n>** 1-15-254 Number of tenths of seconds to wait before disconnecting after UE has indicated the absence of received line signal

## 7.13. AT+CBST Select Bearer Service Type

AT+CBST write command selects the bearer service <name>, the data rate <speed> and the connection element <ce> to be used when data calls are originated.

AT+CBST Select Bearer Service Type	
Test Command <b>AT+CBST=?</b>	Response <b>+CBST:</b> (list of supported <speed>s) ,(list of supported <name>s) ,(list of supported <ce>s)  <b>OK</b>
Read Command <b>AT+CBST?</b>	Response <b>+CBST:</b> <speed>,<name>,<ce>  <b>OK</b>
Write Command <b>AT+CBST=[&lt;speed&gt;[,&lt;name&gt;[,&lt;ce&gt;]]]</b>	Response TA selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated.  <b>OK</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;speed&gt;</b>	0	Adaptive baud
	4	2400 bps(V.22bis)
	5	2400 bps(V.26ter)
	6	4800 bps(V.32)
	7	9600 bps(V.32)
	12	9600 bps(V.34)
	14	14400 bps(V.34)
	68	2400 bps(V.110 or X.31 flag stuffing)
	70	4800 bps(V.110 or X.31 flag stuffing)
	71	9600 bps(V.110 or X.31 flag stuffing)



	75	14400 bps(V.110 or X.31 flag stuffing)
<name>	<u>0</u>	Asynchronous modem
<ce>	0	Transparent
	<u>1</u>	Non-transparent
	2	Both, transparent preferred
	3	Both, non-transparent preferred

#### NOTE

3GPP TS 22.002 lists the allowed combinations of the sub parameters.

## 7.14. AT+CSTA Select Type of Address

AT+CSTA write command selects the type of number for further dialing commands ATD according to 3GPP Technical Specifications. Test command returns values supported a compound value.

AT+CSTA Select Type of Address	
Test Command <b>AT+CSTA=?</b>	Response <b>+CSTA:</b> (list of supported <type>s)  <b>OK</b>
Read Command <b>AT+CSTA?</b>	Response <b>+CSTA:</b> <type>  <b>OK</b>
Write Command <b>AT+CSTA=&lt;type&gt;</b>	Response <b>OK</b>
Reference 3GPP TS 27.007	

### Parameter

<type>	Current address type setting.
<u>129</u>	Unknown type(ISDN format number)
145	International number type(ISDN format )

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

The execution command returns list of all current calls. If the command is successful, but no calls are available, no information response is sent to the TE.

### AT+CLCC List Current Calls of ME

Test Command <b>AT+CLCC=?</b>	Response <b>OK</b>
Execution Command <b>AT+CLCC</b>	<p>Response</p> <p>TA returns a list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.</p> <p><b>[+CLCC: &lt;id1&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;[,&lt;number&gt;,&lt;type&gt;[,""]]</b>  <b>[&lt;CR&gt;&lt;LF&gt;+CLCC: &lt;id2&gt;,&lt;dir&gt;,&lt;stat&gt;,&lt;mode&gt;,&lt;mpty&gt;[,&lt;number&gt;,&lt;type&gt;[,""]]</b>  <b>[...]]]</b></p> <p><b>OK</b></p> <p>If error is related to ME functionality:  <b>+CME ERROR: &lt;err&gt;</b></p>
Reference 3GPP TS 27.007	

### Parameter

<b>&lt;idx&gt;</b>	Integer type; call identification number as described in 3GPP TS 22.030 sub clause 4.5.5.1; this number can be used in <b>+CHLD</b> Command operations
<b>&lt;dir&gt;</b>	<p>0 Mobile originated (MO) call</p> <p>1 Mobile terminated (MT) call</p>
<b>&lt;stat&gt;</b>	<p>State of the call</p> <p>0 Active</p> <p>1 Held</p> <p>2 Dialing (MO call)</p> <p>3 Alerting (MO call)</p> <p>4 Incoming (MT call)</p> <p>5 Waiting (MT call)</p>
<b>&lt;mode&gt;</b>	<p>Bearer/tele service</p> <p>0 Voice</p> <p>1 Data</p> <p>2 FAX</p>

<empty>	0	Call is not one of multiparty (conference) call parties
	1	Call is one of multiparty (conference) call parties
<number>	Phone number in string type in format specified by <type>	
<type>	Type of address of octet in integer format	
	129	Unknown type(ISDN format number)
	145	International number type(ISDN format )

### Example

**AT+CLCC**

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

**OK**

## 7.16. AT+CR Service Reporting Control

AT+CR controls the module whether or not to transmit an intermediate result code +CR: <serv> to the TE when a call is being set up.

If it is enabled, an intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before any final result code (e.g. **CONNECT**) is transmitted.

### AT+CR Service Reporting Control

Test Command <b>AT+CR=?</b>	Response <b>+CR:</b> (list of supported <mode>s)  <b>OK</b>
Read Command <b>AT+CR?</b>	Response <b>+CR:</b> <mode>  <b>OK</b>
Write Command <b>AT+CR=[&lt;mode&gt;]</b>	Response TA controls whether or not intermediate result code <b>+CR:</b> <serv> is returned from the TA to the TE when a call set up. <b>OK</b>
Reference 3GPP TS 27.007	

## Parameter

<mode>	0	Disable
	1	Enable
<serv>	ASYNCR	Asynchronous transparent
	SYNCR	Synchronous transparent
	RELASYNCR	Asynchronous non-transparent
	REL SYNCR	Synchronous non-transparent
	GPRS	GPRS

## 7.17. AT+CRRC Set Cellular Result Codes for Incoming Call Indication

AT+CRRC controls whether or not to use the extended format of incoming call indication.

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

AT+CRRC Set Cellular Result Codes for Incoming Call Indication	
Test Command <b>AT+CRRC=?</b>	Response <b>+CRRC:</b> (list of supported <mode>s)  <b>OK</b>
Read Command <b>AT+CRRC?</b>	Response <b>+CRRC: &lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+CRRC=[&lt;mode&gt;]</b>	Response TA controls whether or not the extended format of incoming call indication is used.  <b>OK</b>
Reference 3GPP TS 27.007	

## Parameter

<mode>	0	Disable extended format
	1	Enable extended format
<type>	ASYNCR	Asynchronous transparent
	SYNCR	Synchronous transparent
	RELASYNCR	Asynchronous non-transparent

REL SYNC	Synchronous non-transparent
FAX	Facsimile
VOICE	Voice

### Example

```

AT+CRC=1                                // Enable extended format
OK

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

RING                                     // Indicates incoming call to the TE
ATH
OK

```

## 7.18. AT+CRLP Select Radio Link Protocol Parameter

AT+CRLP write command sets radio link protocol (RLP) parameters used when non-transparent data calls are originated.

### AT+CRLP Select Radio Link Protocol Parameter

Test Command <b>AT+CRLP=?</b>	<p>Response</p> <p>TA returns values supported. RLP (Radio Link Protocol) versions 0 and 1 share the same parameter set. TA returns only one line for this set (where <b>&lt;verx&gt;</b> is not present).</p> <p><b>+CRLP:</b> (list of supported <b>&lt;iws&gt;</b>s),(list of supported <b>&lt;mws&gt;</b>s),(list of supported <b>&lt;T1&gt;</b>s),(list of supported <b>&lt;N2&gt;</b>s),(list of supported <b>&lt;ver1&gt;</b>s),(list of supported <b>&lt;T4&gt;</b>s)</p> <p><b>OK</b></p>
Read Command <b>AT+CRLP?</b>	<p>Response</p> <p>TA returns current settings for RLP version. RLP versions 0 and 1 share the same parameter set. TA returns only one line for this set (where <b>&lt;verx&gt;</b> is not present).</p> <p><b>+CRLP:</b> <b>&lt;iws&gt;</b>,<b>&lt;mws&gt;</b>,<b>&lt;T1&gt;</b>,<b>&lt;N2&gt;</b>,<b>&lt;ver1&gt;</b>,<b>&lt;T4&gt;</b></p>

	<b>OK</b>
Write Command <b>AT+CRLP=[&lt;iws&gt;[,&lt;mws&gt;[,&lt;T1&gt;[,&lt;N2&gt;[,&lt;ver&gt;[,&lt;T4&gt;]]]]]]</b>	Response TA sets radio link protocol (RLP) parameters used when non-transparent data calls are set up. <b>OK</b>
Reference 3GPP 27.07.07	

## Parameter

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

# 8 SMS Commands

## 8.1. AT+CSMS Select Message Service

AT+CSMS selects messaging service <service> and returns the types of messages supported by the ME.

AT+CSMS Select Message Service	
Test Command <b>AT+CSMS=?</b>	Response <b>+CSMS:</b> (list of supported <service>s)  <b>OK</b>
Read Command <b>AT+CSMS?</b>	Response <b>+CSMS:</b> <service>,<mt>,<mo>,<bm>  <b>OK</b>
Write Command <b>AT+CSMS=&lt;service&gt;</b>	Response <b>+CSMS:</b> <mt>,<mo>,<bm>  <b>OK</b> If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.005	

### Parameter

<service>	Type of Message service
	0 3GPP TS 23.040 and 3GPP TS 23.041 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0; Phase 2+ features which do not require new command syntax may be supported, e.g. correct routing of messages with new Phase 2+ data coding schemes).
	1 3GPP TS 23.040 and 3GPP TS 23.041 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+ version; the requirement of <service> setting 1 is mentioned under corresponding command descriptions).
<mt>	Mobile Terminated Messages

	0	Type not supported
	1	Type supported
<b>&lt;mo&gt;</b>	Mobile Originated Messages	
	0	Type not supported
	1	Type supported
<b>&lt;bm&gt;</b>	Broadcast Type Messages	
	0	Type not supported
	1	Type supported

### Example

```

AT+CSMS=?                                // Test command
+CSMS: (0-1)

OK
AT+CSMS=1                                // Set type of message service is 1
+CSMS: 1,1,1

OK
AT+CSMS?                                // Read command
+CSMS: 1,1,1,1

OK

```

## 8.2. AT+CMGF Select SMS Message Format

The AT+CMGF command specifies the input and output format of the short messages. <mode> indicates the format of messages used with send, list, read and write commands and unsolicited result codes resulting from received messages.

Mode can be either PDU mode (entire TP data units used) or text mode (headers and body of the messages given as separate parameters). Text mode uses the value of parameter <chset> specified by command +CSCS to inform the character set to be used in the message body in the TA-TE interface.

### AT+CMGF Select SMS Message Format

Test Command <b>AT+CMGF=?</b>	Response <b>+CMGF:</b> (list of supported <mode>s)  <b>OK</b>
Read Command <b>AT+CMGF?</b>	Response <b>+CMGF:</b> <mode>



	<b>OK</b>
Write Command <b>AT+CMGF=[&lt;mode&gt;]</b>	Response TA sets parameter to denote which kind of I/O format of messages is used. <b>OK</b>
Reference 3GPP TS 27.005	

## Parameter

<b>&lt;mode&gt;</b>	<u>0</u>	PDU mode
	1	Text mode

## 8.3. AT+CSCA SMS Service Center Address

AT+CSCA write command updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, the setting is used by send and write commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into the <pdu> parameter equals zero.

The command writes the parameters in NON-VOLATILE memory.

### AT+CSCA SMS Service Center Address

Test Command <b>AT+CSCA=?</b>	Response <b>OK</b>
Read Command <b>AT+CSCA?</b>	Response <b>+CSCA: &lt;sca&gt;,&lt;tosca&gt;</b>  <b>OK</b>
Write Command <b>AT+CSCA=&lt;sca&gt;[,&lt;tosca&gt;]</b>	Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by sending and writing commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into <pdu> parameter equals zero. <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference	

3GPP TS 27.005

## Parameter

<b>&lt;sca&gt;</b>	Service Center Address. 3GPP TS 24.011 RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command +CSCS in 3GPP TS 27.007 ); type of address given by <tosca>.
<b>&lt;tosca&gt;</b>	Type of Service Center Address. 3GPP TS 24.011 RP SC address Type-of-Address octet in integer format (default refer <toda>).

## Example

```

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

```

## 8.4. AT+CPMS Preferred SMS Message Storage

At+CPMS write command selects memory storages <mem1>, <mem2>, <mem3> to be used for reading, writing, etc.

### AT+CPMS Preferred SMS Message Storage

Test Command <b>AT+CPMS=?</b>	Response <b>+CPMS:</b> (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)  <b>OK</b>
Read Command <b>AT+CPMS?</b>	Response <b>+CPMS:</b> <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3>  <b>OK</b>
Write Command	Response

<b>AT+CPMS=&lt;mem1&gt;[,&lt;mem2&gt;[,&lt;mem3&gt;]]</b>	<p>TA selects memory storages &lt;mem1&gt;, &lt;mem2&gt; and &lt;mem3&gt; to be used for reading, writing, etc.</p> <p><b>+CPMS:</b> &lt;used1&gt;,&lt;total1&gt;,&lt;used2&gt;,&lt;total2&gt;,&lt;used3&gt;,&lt;total3&gt;</p> <p><b>OK</b></p> <p>If error is related to ME functionality:</p> <p><b>+CMS ERROR: &lt;err&gt;</b></p>
<p>Reference 3GPP TS 27.005</p>	

## Parameter

<p><b>&lt;mem1&gt;</b></p> <p>"SM"      SIM message storage</p> <p>"ME"      Mobile Equipment message storage</p> <p>"MT"      Same as "ME" storage</p> <p>"SR"      STATUS-PEPORT SMS message storage</p>	<p>Messages to be read and deleted from this memory storage</p>
<p><b>&lt;mem2&gt;</b></p> <p>"SM"      SIM message storage</p> <p>"ME"      Mobile Equipment message storage</p> <p>"MT"      Same as "ME" storage</p> <p>"SR"      STATUS-PEPORT SMS message storage</p>	<p>Messages will be written and sent to this memory storage</p>
<p><b>&lt;mem3&gt;</b></p> <p>"SM"      SIM message storage</p> <p>"ME"      Mobile Equipment message storage</p> <p>"MT"      Same as "ME" storage</p> <p>"SR"      STATUS-PEPORT SMS message storage</p>	<p>Received messages will be placed in this memory storage if routing to PC is not set ("<b>+CNMI</b>")</p>
<p><b>&lt;usedx&gt;</b></p>	<p>Integer type; Number of messages currently in <b>&lt;memx&gt;</b></p>
<p><b>&lt;totalx&gt;</b></p>	<p>Integer type; Total number of messages which can be stored in <b>&lt;memx&gt;</b></p>
<p><b>&lt;totalx&gt;</b></p>	<p>Integer type; Number of messages storable in <b>&lt;memx&gt;</b></p>

## Example

```

AT+CPMS="SM","SM","SM"           // Set SMS message storage as "SM"
+CPMS: 0,50,0,50,0,50

OK

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

OK

```

## 8.5. AT+CMGD Delete SMS Message

At+CMGD write command deletes a short message from the preferred message storage <mem1> location <index>. If <delflag> is present and not set to 0 then the ME shall ignore <index> and follow the rules for <delflag> shown below.

### AT+CMGD Delete SMS Message

Test Command <b>AT+CMGD=?</b>	Response <b>+CMGD:</b> (list of supported <index>s),(list of supported <delflag>s)  <b>OK</b>
Write Command <b>AT+CMGD=&lt;index&gt;[,&lt;delflag&gt;]</b>	Response TA deletes message from preferred message storage <mem1> location <index>. <b>OK</b> <b>ERROR</b>  If error is related to ME functionality: <b>+CMS ERROR:&lt;err&gt;</b>
Reference 3GPP TS 27.005	

### Parameter

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

### Example

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

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

AT+CMGL write command returns messages with status value <stat> from preferred message storage <mem1> to the TE. If the status of the message is 'received unread', the status in the storage changes to 'received read'.

When execution command **AT+CMGL** without status value <stat>, it will report the list of SMS with “REC UNREAD” status.

### AT+CMGL List SMS Messages From Preferred Storage

Test Command <b>AT+CMGL=?</b>	<p>Response</p> <p><b>+CMGL:</b> (list of supported &lt;stat&gt;s)</p> <p>OK</p>
Write Command <b>AT+CMGL=&lt;stat&gt;</b>	<p>Response</p> <p>TA returns messages with status value &lt;stat&gt; from message storage &lt;mem1&gt; to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'.</p> <p>1) If text mode (<b>+CMGF=1</b>) and command successful: for SMS-SUBMITs and/or SMS-DELIVERs: <b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;oa/da&gt;,[&lt;alpha&gt;],[&lt;scts&gt;][,&lt;tooa/toda&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;[&lt;CR&gt;&lt;LF&gt; <b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;da/oa&gt;,[&lt;alpha&gt;],[&lt;scts&gt;][,&lt;tooa/toda&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;[...]] for SMS-STATUS-REPORTs: <b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;fo&gt;,&lt;mr&gt;,[&lt;ra&gt;],[&lt;tora&gt;],&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;[&lt;CR&gt;&lt;LF&gt; <b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;fo&gt;,&lt;mr&gt;,[&lt;ra&gt;],[&lt;tora&gt;],&lt;scts&gt;,&lt;dt&gt;,&lt;st&gt;[...]] for SMS-COMMANDs:</p>

	<p><b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;fo&gt;,&lt;ct&gt;[&lt;CR&gt;&lt;LF&gt;  <b>+CMGL:</b> &lt;index&gt;,&lt;stat&gt;,&lt;fo&gt;,&lt;ct&gt;[...]]  for CBM storage:  <b>+CMGL:</b>&lt;index&gt;,&lt;stat&gt;,&lt;sn&gt;,&lt;mid&gt;,&lt;page&gt;,&lt;pages&gt;&lt;CR&gt;  &gt;&lt;LF&gt;&lt;data&gt;[&lt;CR&gt;&lt;LF&gt;  <b>+CMGL:</b>  &lt;index&gt;,&lt;stat&gt;,&lt;sn&gt;,&lt;mid&gt;,&lt;page&gt;,&lt;pages&gt;&lt;CR&gt;&lt;LF&gt;&lt;d  ata&gt;[...]]  <b>OK</b></p> <p>2) If PDU mode (<b>+CMGF=0</b>) and Command successful:  <b>+CMGL:</b>&lt;index&gt;,&lt;stat&gt;,[&lt;alpha&gt;],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pd  u&gt;&lt;CR&gt;&lt;LF&gt;  <b>+CMGL:</b>  &lt;index&gt;,&lt;stat&gt;,[alpha],&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;[...]]  <b>OK</b></p> <p>3) If error is related to ME functionality:  <b>+CMS ERROR:</b> &lt;err&gt;</p>
Execution Command <b>AT+CMGL</b>	<p>Response</p> <p>List all messages with "received unread" status from message storage &lt;mem1&gt;, then status in the storage changes to 'received read'.</p>
Reference 3GPP TS 27.005	

## Parameter

<b>&lt;stat&gt;</b>	<p>1) If text mode:</p> <p>"REC UNREAD"    Received unread messages</p> <p>"REC READ"       Received read messages</p> <p>"STO UNSENT"     Stored unsent messages</p> <p>"STO SENT"        Stored sent messages</p> <p>"ALL"              All messages</p> <p>2) If PDU mode:</p> <p>0                   Received unread messages</p> <p>1                   Received read messages</p> <p>2                   Stored unsent messages</p> <p>3                   Stored sent messages</p> <p>4                   All messages</p>
<b>&lt;index&gt;</b>	Integer type; value in the range of location numbers supported by the associated memory
<b>&lt;da&gt;</b>	Destination Address.3GPP TS 23.040 TP-Destination-Address Address-Value field in

	string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in 3GPP TS 27.007 ); type of address given by <b>&lt;toda&gt;</b> .
<b>&lt;oa&gt;</b>	Originating Address. 3GPP TS 23.040 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in TS 27.007); type of address given by <b>&lt;tooa&gt;</b> .
<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>+CSCS</b> (see definition of this command in 3GPP TS 27.007 )
<b>&lt;scts&gt;</b>	Service Centre Time Stamp. 3GPP TS 23.040 TP-Service-Centre-Time-Stamp in time-string format (refer <b>&lt;dt&gt;</b> ).
<b>&lt;toda&gt;</b>	Type of Recipient Address. 3GPP TS 24.011 TP-Recipient-Address Type-of-Address octet in integer format.
<b>&lt;tooa&gt;</b>	Type of Originating Address. 3GPP TS 24.011 TP-Originating-Address Type-of-Address octet in integer format (default refer <b>&lt;toda&gt;</b> ).
<b>&lt;length&gt;</b>	Message Length. integer type value indicating in the text mode ( <b>+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>+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;data&gt;</b>	<p>In the case of SMS: 3GPP TS 23.040 TP-User-Data in text mode responses; format:</p> <ul style="list-style-type: none"> <li>- if <b>&lt;dc&gt;</b> indicates that 3GPP TS 23.038 GSM 7 bit default alphabet is used and <b>&lt;fo&gt;</b> indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set <ul style="list-style-type: none"> <li>- if TE character set other than "HEX" (refer command Select TE Character Set <b>+CSCS</b> in 3GPP TS 27.007 ): 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 7 bit default alphabet into two IRA character long hexadecimal number (e.g. character <b>Π</b> (GSM 7 bit default alphabet 23) is presented as 17 (IRA 49 and 55))</li> </ul> </li> <li>- if <b>&lt;dc&gt;</b> indicates that 8-bit or UCS2 data coding scheme is used, or <b>&lt;fo&gt;</b> indicates that 3GPP TS 23.040 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: 3GPP TS 23.041 CBM Content of Message in text mode responses; format:</p> <ul style="list-style-type: none"> <li>- if <b>&lt;dc&gt;</b> indicates that 3GPP TS 23.038 GSM 7 bit default alphabet is used: <ul style="list-style-type: none"> <li>- if TE character set other than "HEX" (refer command <b>+CSCS</b> in 3GPP TS 27.007 ): 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 the GSM 7 bit default alphabet into two IRA character long hexadecimal number</li> </ul> </li> <li>- if <b>&lt;dc&gt;</b> indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts</li> </ul>

each 8-bit octet into two IRA character long hexadecimal number

**<pdu>** In the case of SMS: 3GPP TS 24.011 SC address followed by 3GPP TS 23.040 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)) 3GPP TS 27.007

### Example

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

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

OK
```

## 8.7. AT+CMGR Read SMS Message

AT+CMGR write 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 SMS Message

Test Command <b>AT+CMGR=?</b>	Response <b>OK</b>
Write Command <b>AT+CMGR=&lt;index&gt;</b>	<p>Response</p> <p>TA returns SMS message with location value &lt;index&gt; from message storage &lt;mem1&gt; to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'.</p> <p>1) If text mode (+CMGF=1) and command is executed successfully: for SMS-DELIVER:</p> <p><b>+CMGR:</b> &lt;stat&gt;,&lt;oa&gt;,&lt;[alpha]&gt;,&lt;scts&gt;,&lt;[tooa]&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcsc&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</p>



for SMS-SUBMIT:

**+CMGR:**

<stat>,<da>,[<alpha>],[<toda>,<fo>,<pid>,<dcsc>,<vp>],<sca>,<tosca>,<length>]<CR><LF><data>

for SMS-STATUS-REPORTs:

**+CMGR:**

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

for SMS-COMMANDs:

**+CMGR:**

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

for CBM storage:

**+CMGR:**

<stat>,<sn>,<mid>,<dcsc>,<page>,<pages><CR><LF><data>

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

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

**OK**

3) If error is related to ME functionality:

**+CMS ERROR:** <err>

Reference  
3GPP TS 27.005

## Parameter

<b>&lt;index&gt;</b>	Integer type; value in the range of location numbers supported by the associated memory		
<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
<b>&lt;alpha&gt;</b>	String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set +CSCS (see definition of this command in 3GPP TS 27.007 )		
<b>&lt;da&gt;</b>	Destination Address.3GPP TS 23.040 TP-Destination-Address Address-Value field in		

	string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in 3GPP TS 27.007 ); type of address given by <b>&lt;toda&gt;</b> .
<b>&lt;oa&gt;</b>	Originating Address. 3GPP TS 23.040 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in TS 27.007); type of address given by <b>&lt;tooa&gt;</b> .
<b>&lt;scts&gt;</b>	Service Centre Time Stamp. 3GPP TS 23.040 TP-Service-Centre-Time-Stamp in time-string format (refer <b>&lt;dt&gt;</b> ).
<b>&lt;fo&gt;</b>	First Octet. Depending on the command or result code: First octet of 3GPP TS 23.040 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND in integer format. If a valid value has been entered once, parameter can be omitted.
<b>&lt;pid&gt;</b>	Protocol Identifier. 3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0).
<b>&lt;dc&gt;</b>	Data Coding Scheme. Depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format.
<b>&lt;vp&gt;</b>	Validity Period. Depending on SMS-SUBMIT <b>&lt;fo&gt;</b> setting: 3GPP TS 23.040 TP-Validity-Period either in integer format or in time-string format (refer <b>&lt;dt&gt;</b> ).
<b>&lt;mn&gt;</b>	Message Number. 3GPP TS 23.040 TP-Message-Number in integer format.
<b>&lt;mr&gt;</b>	Message Reference. 3GPP TS 23.040 TP-Message-Reference in integer format.
<b>&lt;ra&gt;</b>	Recipient Address. 3GPP TS 23.040 TP-Recipient-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command <b>AT+CSCS</b> .); type of address given by <b>&lt;tora&gt;</b> .
<b>&lt;tora&gt;</b>	Type of Recipient Address. 3GPP TS 24.011 TP-Recipient-Address Type-of-Address octet in integer format (default refer <b>&lt;toda&gt;</b> ).
<b>&lt;toda&gt;</b>	Type of Recipient Address. 3GPP TS 24.011 TP-Recipient-Address Type-of-Address octet in integer format.
<b>&lt;tooa&gt;</b>	Type of Originating Address. 3GPP TS 24.011 TP-Originating-Address Type-of-Address octet in integer format (default refer <b>&lt;toda&gt;</b> ).
<b>&lt;sca&gt;</b>	Service Center Address. 3GPP TS 24.011 RP SC address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in 3GPP TS 27.007 ); type of address given by <b>&lt;tosca&gt;</b> .
<b>&lt;tosca&gt;</b>	Type of Service Center Address. 3GPP TS 24.011 RP SC address Type-of-Address octet in integer format (default refer <b>&lt;toda&gt;</b> ).
<b>&lt;length&gt;</b>	Message Length. integer type value indicating in the text mode (+CMGF=1) the length of the message body <b>&lt;data&gt;</b> (or <b>&lt;cdata&gt;</b> ) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length).
<b>&lt;data&gt;</b>	In the case of SMS: 3GPP TS 23.040 TP-User-Data in text mode responses; format: <ul style="list-style-type: none"> <li>- if <b>&lt;dc&gt;</b> indicates that 3GPP TS 23.038 GSM 7 bit default alphabet is used and <b>&lt;fo&gt;</b> indicates that 3GPP TS 23.040 TP-User-Data-Header-Indication is not set:</li> <li>- if TE character set other than "HEX" (refer command Select TE Character Set</li> </ul>

+CSCS in 3GPP TS 27.007 ): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A

- if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 7 bit default alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 7 bit default alphabet 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 3GPP TS 23.040 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: 3GPP TS 23.041 CBM Content of Message in text mode responses; format:

- if <dc> indicates that 3GPP TS 23.038 GSM 7 bit default alphabet is used:
  - if TE character set other than "HEX" (refer command +CSCS in 3GPP TS 27.007 ): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A
  - if TE character set is "HEX": ME/TA converts each 7-bit character of the GSM 7 bit default 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

<pdu>

In the case of SMS: 3GPP TS 24.011 SC address followed by 3GPP TS 23.040 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)) 3GPP TS 27.007

## Example

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

## 8.8. AT+CMGS Send SMS Message

AT+CMGS write command sends a short message from TE to network (SMS-SUBMIT). After invoking the write command, wait for the prompt ">" and then start to write the message. Then enter **<CTRL-Z>** to indicate the ending of PDU and begin to send the message.

Sending can be cancelled by giving <ESC> character. Abortion is acknowledged with "OK", though the message will not be sent.

The message reference <mr> is returned to the TE on successful message delivery. The value can be used to identify message upon unsolicited delivery status report result code.

## AT+CMGS Send SMS Message

Test Command <b>AT+CMGS=?</b>	Response <b>OK</b>
Write Command 1) If text mode ( <b>+CMGF=1</b> ): <b>AT+CMGS=&lt;da&gt;[,&lt;toda&gt;]&lt;CR&gt;</b> <b>text is entered</b> <ctrl-Z/ESC> ESC quits without sending  2) If PDU mode ( <b>+CMGF=0</b> ): <b>AT+CMGS=&lt;length&gt;&lt;CR&gt;</b> <b>PDU is given</b> <ctrl-Z/ESC>	Response TA sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when <b>+CSMS</b> <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode ( <b>+CMGF=1</b> ) and sent successfully: <b>+CMGS: &lt;mr&gt;</b>  <b>OK</b> 2) If PDU mode ( <b>+CMGF=0</b> ) and sent successfully: <b>+CMGS: &lt;mr&gt;</b>  <b>OK</b> 3) If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.005	

## Parameter

<da>	Destination Address. 3GPP TS 23.040 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in 3GPP TS 27.007 ); type of address given by <toda>.
<toda>	Type of Recipient Address. 3GPP TS 24.011 TP-Recipient-Address Type-of-Address octet in integer format.
<length>	Message Length. Integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> (or <cdata>) in characters; or in PDU mode (+CMGF=0),

the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length).

**<mr>** Message Reference. 3GPP TS 23.040 TP-Message-Reference in integer format.

### Example

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

## 8.9. AT+CMGW Write SMS Message to Memory

AT+CMGW write and execution commands store a short message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given.

The entering of text is done similarly as specified in command Send Message +CMGS.

### AT+CMGW Write SMS Message to Memory

Test Command	Response
AT+CMGW=?	<b>OK</b>
Write Command	Response
1) If text mode (+CMGF=1): <b>AT+CMGW=&lt;oa/da&gt;[,&lt;tooa/toda&gt;[,&lt;stat&gt;]]</b> <CR> <b>text is entered</b> <ctrl-Z/ESC> <ESC> quits without sending	TA transmits SMS message (either SMS-DELIVER or SMS-SUBMIT) from TE to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> also allows other status values to be given.
2) If PDU mode (+CMGF=0): <b>AT+CMGW=&lt;length&gt;[,&lt;stat&gt;]&lt;CR&gt;</b> <b>PDU is given &lt;ctrl-Z/ESC&gt;</b>	If writing is successful: <b>+CMGW: &lt;index&gt;</b>  <b>OK</b>

	If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.005	

## Parameter

<b>&lt;da&gt;</b>	Destination Address.3GPP TS 23.040 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in 3GPP TS 27.007 ); type of address given by <b>&lt;toda&gt;</b> .
<b>&lt;oa&gt;</b>	Originating Address.3GPP TS 23.040 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in TS 27.007); type of address given by <b>&lt;tooa&gt;</b> .
<b>&lt;tooa&gt;</b>	Type of Originating Address.3GPP TS 24.011 TP-Originating-Address Type-of-Address octet in integer format (default refer <toda>).
<b>&lt;toda&gt;</b>	Type of Recipient Address. 3GPP TS 24.011 TP-Recipient-Address Type-of-Address octet in integer format.
<b>&lt;length&gt;</b>	Message Length. Integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length).
<b>&lt;pdu&gt;</b>	In the case of SMS: 3GPP TS 24.011 SC address followed by 3GPP TS 23.040 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)).
<b>&lt;index&gt;</b>	Index of message in selected storage <mem2>.

## Example

```

AT+CMGF=1                                // Set SMS message format as text mode
OK
AT+CSCS="GSM"                             // Set character set as GSM which is used by the TE
OK
AT+CMGW="15021012496"
> This is a test from Quectel              // Enter in text, <CTRL+Z> write message, <ESC> quits
                                           without sending
+CMGW: 4
OK
AT+CMGF=0                                // Set SMS message format as pdu mode

```

```
OK
AT+CMGW=18
> 0051FF00000008000A0500030002016D4B8BD5

+CMGW: 5

OK
```

## 8.10. AT+CMSS Send SMS Message From Storage

AT+CMSS write command sends message with location value <index> from message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message.

### AT+CMSS Send SMS Message From Storage

Test Command <b>AT+CMSS=?</b>	Response <b>OK</b>
Write Command <b>AT+CMSS=&lt;index&gt;[,&lt;da&gt;[,&lt;toda&gt;]]</b>	<p>Response</p> <p>TA sends message with location value &lt;index&gt; from message storage &lt;mem2&gt; to the network (SMS-SUBMIT). If new recipient address &lt;da&gt; is given, it shall be used instead of the one stored with the message. Reference value &lt;mr&gt; is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code.</p> <p>1) If text mode (+CMGF=1) and sent successfully: <b>+CMSS: &lt;mr&gt;[,&lt;scts&gt;]</b></p> <p><b>OK</b></p> <p>2) If PDU mode(+CMGF=0) and sent successfully; <b>+CMSS: &lt;mr&gt; [,&lt;ackpdu&gt;]</b></p> <p><b>OK</b></p> <p>3) If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b></p>
Reference 3GPP TS 27.005	



## 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>	Destination Address. 3GPP TS 23.040 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set (refer command <b>+CSCS</b> in 3GPP TS 27.007 ); type of address given by <b>&lt;toda&gt;</b> .
<b>&lt;toda&gt;</b>	Type of Recipient Address. 3GPP TS 24.011 TP-Recipient-Address Type-of-Address octet in integer format.
<b>&lt;mr&gt;</b>	Message Reference. 3GPP TS 23.040 TP-Message-Reference in integer format.
<b>&lt;scts&gt;</b>	Service Centre Time Stamp. 3GPP TS 23.040 TP-Service-Centre-Time-Stamp in time-string format (refer <b>&lt;dt&gt;</b> ).
<b>&lt;ackpdu&gt;</b>	Format is same for <b>&lt;pdu&gt;</b> in case of SMS, but without 3GPP TS 24.011 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter.

## Example

```

AT+CMGF=1           // Set SMS message format as text mode
OK
AT+CSCS="GSM"       // Set character set as GSM which is used by the TE
OK
AT+CMGW="15021012496"
> Hello             // Enter in text, <CTRL+Z> send message, <ESC> quits
                        without sending
+CMGW: 4
OK
AT+CMSS=4            // Send the message of index is 4 from memory storage.
+CMSS: 54
OK

```

## 8.11. AT+CNMI SMS Event Reporting Configuration

AT+CNMI write command selects the procedure, how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in 3GPP TS 23.038.

### AT+CNMI SMS Event Reporting Configuration



Test Command <b>AT+CNMI=?</b>	Response <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> )  <b>OK</b>
Read Command <b>AT+CNMI?</b>	Response <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 <b>AT+CNMI=[&lt;mode&gt;[,&lt;mt&gt;[,&lt;bm&gt;[,&lt;ds&gt;[,&lt;bfr&gt;]]]]]</b>	Response TA selects the procedure on how the received new messages from the network are indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), receiving message should be done as specified in 3GPP TS 23.038.  <b>OK</b> If error is related to ME functionality: <b>ERROR</b>
Reference 3GPP TS 27.005	

## Parameter

<b>&lt;mode&gt;</b>	0	Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.
	1	Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.
	2	Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.
<b>&lt;mt&gt;</b>	The rules for storing received SMS depend on its data coding scheme (refer 3GPP TS 23.038 ), preferred memory storage (+CPMS) setting and this value:	
	0	No SMS-DELIVER indications are routed to the TE.
	1	If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: <b>+CMTI: &lt;mem&gt;,&lt;index&gt;</b>
	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 enabled) or <b>+CMT: &lt;oa&gt; , [&lt;alpha&gt;],&lt;scts&gt; [&lt;tooa&gt;,&lt;fo&gt;,&lt;pid&gt;,&lt;dcs&gt;,&lt;sca&gt;,&lt;tosca&gt;,&lt;length&gt;]&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b>

	(Text mode enabled; about parameters in italics, refer to Command Show Text Mode Parameters <b>+CSDH</b> ). Class 2 messages result in indication as defined in <b>&lt;mt&gt;=1</b> .
3	Class 3 SMS-DELIVERs are routed directly to TE by using unsolicited result codes defined in <b>&lt;mt&gt;=2</b> . Messages of other classes result in indication as defined in <b>&lt;mt&gt;=1</b> .
<b>&lt;bm&gt;</b>	The rules for storing received CBMs depend on its data coding scheme (refer 3GPP TS 23.038), the setting of Select CBM Types ( <b>+CSCB</b> ) and this value:
0	No CBM indications are routed to the TE.
2	New CBMs are routed directly to the TE using unsolicited result code: <b>+CBM: &lt;length&gt;&lt;CR&gt;&lt;LF&gt;&lt;pdu&gt;</b> (PDU mode); or <b>+CBM: &lt;sn&gt;,&lt;mid&gt;,&lt;dcs&gt;,&lt;page&gt;,&lt;pages&gt;&lt;CR&gt;&lt;LF&gt;&lt;data&gt;</b> (text mode)
<b>&lt;ds&gt;</b>	0 No SMS-STATUS-REPORTs are routed to the TE. 1 SMS-STATUS-REPORTs are routed directly to the TE. 2 SMS-STATUS-REPORTs are stored and routed to the TE.
<b>&lt;bfr&gt;</b>	0 TA buffer of unsolicited result codes defined within this command is flushed to the TE when <b>&lt;mode&gt; 1...3</b> is entered (OK response shall be given before flushing the codes). 1 TA buffer of unsolicited result codes defined within this command is cleared when <b>&lt;mode&gt; 1...3</b> is entered.
<b>&lt;mode&gt;</b>	1...3 is entered.

## NOTES

Unsolicited result code

**+CMTI: <mem>,<index>**

Indicates that new message has been received

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

Short message is output directly

**+CBM: <length><CR><LF><pdu>**

Cell broadcast message is output directly

## Example

```

AT+CMGF=1           // Set SMS message format as text mode
OK
AT+CSCS="GSM"       // Set character set as GSM which is used by the TE
OK
AT+CNMI=1,2,0,1,0   // Set SMS-DELIVERs are routed directly to the TE
OK

+CMT: "+8615021012496", "13/03/18,17:07:21+32",145,4,0,0,"+8613800551500",145,28
This is a test from Quectel.           // Short message is output directly

```

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

AT+CSCB write command selects which types of CBMs are to be received by the ME. The Command writes the parameters in NON-VOLATILE memory.

AT+CSCB Select Cell Broadcast SMS Messages	
Test Command <b>AT+CSCB=?</b>	Response It returns supported modes as a compound value. <b>+CSCB:</b> (list of supported <b>&lt;mode&gt;</b> s)  <b>OK</b>
Read Command <b>AT+CSCB?</b>	Response <b>+CSCB:</b> <b>&lt;mode&gt;</b> , <b>&lt;mids&gt;</b> , <b>&lt;dcss&gt;</b>  <b>OK</b>
Write Command <b>AT+CSCB=&lt;mode&gt;[,&lt;mids&gt;[,&lt;dcss&gt;]]</b>	Response TA selects which types of CBMs are to be received by the ME. <b>OK</b> If error is related to ME functionality: <b>+CMS ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.005	

### Parameter

<b>&lt;mode&gt;</b>	0	Message types specified in <b>&lt;mids&gt;</b> and <b>&lt;dcss&gt;</b> are accepted
	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 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 empty string) e.g. "0-3,5"	

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

AT+CSDH write command controls whether or not detailed header information is shown in text mode result codes.

### AT+CSDH Show SMS Text Mode Parameters

Test Command <b>AT+CSDH=?</b>	Response <b>+CSDH:</b> (list of supported <b>&lt;show&gt;</b> s)  <b>OK</b>
Read Command <b>AT+CSDH?</b>	Response <b>+CSDH:</b> <b>&lt;show&gt;</b>  <b>OK</b>
Write Command <b>AT+CSDH=[&lt;show&gt;]</b>	Response TA determines whether detailed header information is shown in text mode result codes. <b>OK</b>
Reference 3GPP TS 27.005	

### Parameter

<b>&lt;show&gt;</b>	<u>0</u>	Do not show header values defined in commands <b>+CSCA</b> and <b>+CSMP</b> ( <b>&lt;sca&gt;</b> , <b>&lt;tosca&gt;</b> , <b>&lt;fo&gt;</b> , <b>&lt;vp&gt;</b> , <b>&lt;pid&gt;</b> and <b>&lt;dcs&gt;</b> ) nor <b>&lt;length&gt;</b> , <b>&lt;toda&gt;</b> or <b>&lt;tooa&gt;</b> 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=2
+CMGR: "STO UNSENT", "",
This is a test from Quectel

OK
AT+CSDH=1
OK
AT+CMGR=2
+CMGR: "STO UNSENT", "",,128,17,0,27,143,"+8613800551500",145,18
```

This is a test from Quectel

OK

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

AT+CSMP is used to set values for additional parameters needed when a short message is sent to the network or placed in a storage in text mode.

### AT+CSMP Set SMS Text Mode Parameters

Test Command <b>AT+CSMP=?</b>	Response <b>+CSMP:</b> (list of supported <b>&lt;fo&gt;s</b> ), (list of supported <b>&lt;vp&gt;s</b> ), (list of supported <b>&lt;pid&gt;s</b> ), (list of supported <b>&lt;dc&gt;s</b> )  <b>OK</b>
Read Command <b>AT+CSMP?</b>	Response <b>+CSMP:</b> <b>&lt;fo&gt;</b> , <b>&lt;vp&gt;</b> , <b>&lt;pid&gt;</b> , <b>&lt;dc&gt;</b>  <b>OK</b>
Write Command <b>AT+CSMP=[&lt;fo&gt;[,&lt;vp&gt;[,&lt;pid&gt;[,&lt;dc&gt;]]]</b>	Response 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>+CMGF=1</b> ). It is possible to set the validity period starting from when the SM is received by the SMSC ( <b>&lt;vp&gt;</b> is in range 0... 255) or define the absolute time of the validity period termination ( <b>&lt;vp&gt;</b> is a string).  <b>OK</b>
Reference 3GPP TS 27.005	

### Parameter

<b>&lt;fo&gt;</b>	First Octet. Depending on the command or result code: First octet of 3GPP TS 23.040 SMS-DELIVER, SMS-SUBMIT(default 17), SMS-STATUS-REPORT,SMS-COMMAND in integer format. If a valid value has been entered once, parameter can be omitted.
<b>&lt;vp&gt;</b>	Validity Period. Depending on SMS-SUBMIT <b>&lt;fo&gt;</b> setting: 3GPP TS 23.040 TP-Validity-Period either in integer format or in time-string format (refer to <b>&lt;dt&gt;</b> ).
<b>&lt;pid&gt;</b>	Protocol Identifier. 3GPP TS 23.040 TP-Protocol-Identifier in integer format (default 0).
<b>&lt;dc&gt;</b>	Data Coding Scheme. Depending on the command or result code: 3GPP TS 23.038 SMS Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format.

# 9 Packet Domain Commands

## 9.1. AT+CGATT PS Attach or Detach

The AT+CGATT write command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. If the requested state cannot be achieved, an ERROR or +CME ERROR response is returned.

AT+CGATT PS Attach or Detach	
Test Command <b>AT+CGATT=?</b>	Response <b>+CGATT:</b> (list of supported <state>s)  <b>OK</b>
Read Command <b>AT+CGATT?</b>	Response <b>+CGATT:</b> <state>  <b>OK</b>
Write Command <b>AT+CGATT=&lt;state&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

<state> Indicates the state of PS attachment

- 0 Detached
- 1 Attached

Other values are reserved and will result in an **ERROR** response to the Write Command

### Example

```
AT+CGATT=1           //Attach to PS service
OK
```

```

AT+CGATT=0           //Detach from PS service
OK
AT+CGATT?            //Query the current PS service state
+CGATT: 0
OK

```

## 9.2. AT+CGDCONT Define PDP Context

AT+CGDCONT specifies PDP context parameters for a specific context <cid>. A special form of the write command (AT+CGDCONT=<cid>) causes the values for context <cid> to become undefined. It is not allowed to change the definition of an already activated context.

The AT+CGDCONT read command returns the current settings for each defined PDP context.

### AT+CGDCONT Define PDP Context

Test Command <b>AT+CGDCONT=?</b>	Response <b>+CGDCONT:</b> (range of supported <cid>s), <PDP_type>, <APN>, <PDP_addr>, (list of supported <data_comp>s), (list of supported <head_comp>s)  <b>OK</b>
Read Command <b>AT+CGDCONT?</b>	Response <b>+CGDCONT:</b> <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp> <b>&lt;CR&gt;&lt;LF&gt;+CGDCONT:</b> <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp> ...  <b>OK</b>
Write Command <b>AT+CGDCONT=&lt;cid&gt;[,&lt;PDP_type&gt;[,&lt;APN&gt;[,&lt;PDP_addr&gt;[,&lt;d_comp&gt;[,&lt;h_comp&gt;]]]]]</b>	Response <b>OK</b> <b>ERROR</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;cid&gt;</b>	(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command
<b>&lt;PDP_type&gt;</b>	(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol "IP"                      IPV4
<b>&lt;APN&gt;</b>	(Access Point Name) a string parameter that is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested
<b>&lt;PDP_addr&gt;</b>	A string parameter identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The allocated address may be read using the <b>+CGPADDR</b> command
<b>&lt;d_comp&gt;</b>	a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer to 3GPP TS 44.065) 0    Off (default if value is omitted) 1    On (manufacturer preferred compression) 2    V.42bis 3    V.44
<b>&lt;h_comp&gt;</b>	A numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 and 3GPP TS 25.323) 0    Off 1    On 2    RFC1144 3    RFC2507

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

AT+CGQREQ allows the TE to specify a Quality of Service Profile that is used when the MT activates a PDP Context.

The write command specifies a profile for the context <cid>. A special form of the write command, AT+CGQREQ=<cid> causes the requested profile for context number <cid> to become undefined. The read command returns the current settings for each defined context.

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

Test Command	Response
AT+CGQREQ=?	+CGQREQ: <PDP_type>,(list of supported <precedence>s),



	(list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s)
	<b>OK</b>
Read Command <b>AT+CGQREQ?</b>	Response <b>+CGQREQ:</b> <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean> > <b>&lt;CR&gt;&lt;LF&gt;+CGQREQ:</b> <cid>,<precedence>,<delay>,<reliability>,<peak>,>,<mean> > ...
	<b>OK</b>
Write Command <b>AT+CGQREQ=&lt;cid&gt;[,&lt;precedence&gt;[,&lt;delay&gt;,&lt;reliability&gt;[,&lt;peak&gt;[,&lt;mean&gt;]]]]]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<cid>	A numeric parameter which specifies a particular PDP context definition (see <b>+CGDCONT</b> command) The following parameter are defined in 3GPP TS 23.107
<precedence>	A numeric parameter which specifies the precedence class
<delay>	A numeric parameter which specifies the delay class
<reliability>	A numeric parameter which specifies the reliability class
<peak>	A numeric parameter which specifies the peak throughput class
<mean>	A numeric parameter which specifies the mean throughput class

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

AT+CGQMIN allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile when the PDP context is activated.

The write command specifies a profile for the context identified by the context identification parameter, <cid>.

A special form of the write command, AT+CGQMIN=<cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

The read command returns the current settings for each defined context.

<b>AT+CGQMIN Quality of Service Profile (Minimum Acceptable)</b>	
Test Command <b>AT+CGQMIN=?</b>	Response <b>+CGQMIN:</b> <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s), (list of supported <peak>s), (list of supported <mean>s)  <b>OK</b>
Read Command <b>AT+CGQMIN?</b>	Response <b>+CGQMIN:</b> <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> > <CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean> > ... <b>OK</b>
Write Command <b>AT+CGQMIN=&lt;cid&gt;[,&lt;precedence&gt;[,&lt;delay&gt;[,&lt;reliability&gt;[,&lt;peak&gt;[,&lt;mean&gt;]]]]]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<cid>	A numeric parameter which specifies a particular PDP context definition (see <b>+CGDCONT</b> command)
	The following parameter are defined in 3GPP TS 23.107
<precedence>	A numeric parameter which specifies the precedence class
<delay>	A numeric parameter which specifies the delay class
<reliability>	A numeric parameter which specifies the reliability class
<peak>	A numeric parameter which specifies the peak throughput class
<mean>	A numeric parameter which specifies the mean throughput class

## 9.5. AT+CGEQREQ 3G Quality of Service Profile (requested)

AT+CGEQREQ allows the TE to specify a UMTS Quality of Service Profile that is used when the MT activates a PDP context.

### AT+CGEQREQ 3G quality of service profile (requested)

Test Command  
**AT+CGEQREQ=?**

Response  
+CGEQREQ: <PDP\_type>,(list of supported <Traffic class>s),(list of supported <Maximum bitrate UL>s),(list of supported <Maximum bitrate DL>s),(list of supported <Guaranteed bitrate UL>s),(list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s),(list of supported <Maximum SDU size>s),(list of supported <SDU error ratio>s),(list of supported <Residual bit error ratio>s),(list of supported <Delivery of erroneous SDUs>s),(list of supported <Transfer delay>s),(list of supported <Traffic handling priority>s),(list of supported <Source statistics descriptor>s),(list of supported <Signalling indication>s)  
  
OK

Read Command  
**AT+CGEQREQ?**

Response  
[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>]  
[+CGEQREQ: <cid>,<Traffic class>,<Maximum bitrate UL>,<Maximum bitrate DL>,<Guaranteed bitrate UL>,<Guaranteed bitrate DL>,<Delivery order>,<Maximum SDU size>,<SDU error ratio>,<Residual bit error ratio>,<Delivery of erroneous SDUs>,<Transfer delay>,<Traffic handling priority>,<Source statistics descriptor>,<Signalling indication>]  
[...]  
...  
  
OK

Write Command	Response
AT+CGEQREQ=[,<cid>[,<Traffic class>[,<Maximum bitrate UL>[,<Maximum bitrate DL>[,<Guaranteed bitrate UL>[,<Guaranteed bitrate DL>[,<Delivery order>[,<Maximum SDU size>[,<SDU error ratio>[,<Residual bit error ratio>[,<Delivery of erroneous SDUs>[,<Transfer delay>[,<Traffic handling priority>[,<Source statistics descriptor>[,<Signalling indication>]]]]]]]]]]]	OK ERROR
Reference	
3GPP TS 27.007	

## Parameter

<b>&lt;cid&gt;</b>	(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command
<b>&lt;PDP_type&gt;</b>	(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol "IP"                      IPV4
<b>&lt;Traffic class&gt;</b>	Integer type; indicates the type of application for which the UMTS bearer service is optimised (refer 3GPP TS 24.008 subclause 10.5.6.5). If the Traffic class is specified as conversational or streaming, then the Guaranteed and Maximum bitrate parameters should also be provided. 0                      Conversational 1                      Streaming 2                      Interactive 3                      Background 4                      Subscribed value
<b>&lt;Maximum bitrate UL&gt;</b>	Integer type; indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=...,32, ...).
<b>&lt;Maximum bitrate DL&gt;</b>	Integer type; indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=...,32, ...).
<b>&lt;Guaranteed bitrate UL&gt;</b>	Integer type; indicates the guaranteed number of kbits/s delivered to UMTS

	(up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. T+CGEQREQ=...,32, ...). If the parameter is set to '0' the subscribed value will be requested.								
<b>&lt;Guaranteed bitrate DL&gt;</b>	Integer type; indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=...,32, ...). If the parameter is set to '0' the subscribed value will be requested.								
<b>&lt;Delivery order&gt;</b>	Integer type; indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (refer 3GPP TS 24.008 subclause 10.5.6.5). <table> <tr><td>0</td><td>No</td></tr> <tr><td>1</td><td>Yes</td></tr> <tr><td>2</td><td>Subscribed value</td></tr> </table>	0	No	1	Yes	2	Subscribed value		
0	No								
1	Yes								
2	Subscribed value								
<b>&lt;Maximum SDU size&gt;</b>	Integer type; (1,2,3,...) indicates the maximum allowed SDU size in octets. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 subclause 10.5.6.5).								
<b>&lt;SDU error ratio&gt;</b>	String type; indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of $5 \cdot 10^{-3}$ would be specified as "5E3" (e.g. AT+CGEQREQ=..., "5E3",...). "0E0" means subscribed value (refer 3GPP TS 24.008 subclause 10.5.6.5).								
<b>&lt;Residual bit error ratio&gt;</b>	String type; indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example a target residual bit error ratio of $5 \cdot 10^{-3}$ would be specified as "5E3" (e.g. AT+CGEQREQ=..., "5E3",...). "0E0" means subscribed value (refer 3GPP TS 24.008 subclause 10.5.6.5).								
<b>&lt;Delivery of erroneous SDUs&gt;</b>	Integer type; indicates whether SDUs detected as erroneous shall be delivered or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). <table> <tr><td>0</td><td>no</td></tr> <tr><td>1</td><td>yes</td></tr> <tr><td>2</td><td>no detect</td></tr> <tr><td>3</td><td>subscribed value</td></tr> </table>	0	no	1	yes	2	no detect	3	subscribed value
0	no								
1	yes								
2	no detect								
3	subscribed value								
<b>&lt;Transfer delay&gt;</b>	Integer type; (0,1,2,...) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 subclause 10.5.6.5).								
<b>&lt;Traffic handling priority&gt;</b>	Integer type; (1,2,3,...) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).								
<b>&lt;Source Statistics Descriptor&gt;</b>	Integer type; specifies characteristics of the source of the submitted SDUs for a PDP context. <table> <tr><td>0</td><td>Characteristics of SDUs is unknown</td></tr> </table>	0	Characteristics of SDUs is unknown						
0	Characteristics of SDUs is unknown								

1	Characteristics of SDUs corresponds to a speech source
<b>&lt;Signalling Indication&gt;</b> : Integer type; indicates signalling content of submitted SDUs for a PDP context.	
0	PDP context is not optimized for signalling
1	PDP context is optimized for signaling <PDP_type>

## 9.6. AT+CGEQMIN 3G Quality of Service Profile (minimum acceptable)

AT+CGEQMIN allows the TE to specify a minimum acceptable profile, which is checked by the MT against the negotiated profile returned in the PDP context establishment and PDP context modification procedures.

### AT+CGEQMIN 3G Quality of Service Profile (Minimum Acceptable)

Test Command <b>AT+CGEQMIN=?</b>	<p>Response</p> <p>+CGEQMIN: &lt;PDP_type&gt;,(list of supported &lt;Traffic class&gt;s),(list of supported &lt;Maximum bitrate UL&gt;s),(list of supported &lt;Maximum bitrate DL&gt;s),(list of supported &lt;Guaranteed bitrate UL&gt;s),(list of supported &lt;Guaranteed bitrate DL&gt;s),(list of supported &lt;Delivery order&gt;s),(list of supported &lt;Maximum SDU size&gt;s),(list of supported &lt;SDU error ratio&gt;s),(list of supported &lt;Residual bit error ratio&gt;s),(list of supported &lt;Delivery of erroneous SDUs&gt;s),(list of supported &lt;Transfer delay&gt;s),(list of supported &lt;Traffic handling priority&gt;s),(list of supported &lt;Source statistics descriptor&gt;s),(list of supported &lt;Signalling indication&gt;s)</p> <p>OK</p>
Read Command <b>AT+CGEQMIN?</b>	<p>Response</p> <p>[+CGEQMIN: &lt;cid&gt;,&lt;Traffic class&gt;,&lt;Maximum bitrate UL&gt;,&lt;Maximum bitrate DL&gt;,&lt;Guaranteed bitrate UL&gt;,&lt;Guaranteed bitrate DL&gt;,&lt;Delivery order&gt;,&lt;Maximum SDU size&gt;,&lt;SDU error ratio&gt;,&lt;Residual bit error ratio&gt;,&lt;Delivery of erroneous SDUs&gt;,&lt;Transfer delay&gt;,&lt;Traffic handling priority&gt;,&lt;Source statistics descriptor&gt;,&lt;Signalling indication&gt;]  [+CGEQMIN: &lt;cid&gt;,&lt;Traffic class&gt;,&lt;Maximum bitrate UL&gt;,&lt;Maximum bitrate DL&gt;,&lt;Guaranteed bitrate UL&gt;,&lt;Guaranteed bitrate DL&gt;,&lt;Delivery order&gt;,&lt;Maximum SDU size&gt;,&lt;SDU error ratio&gt;,&lt;Residual bit error ratio&gt;,&lt;Delivery of erroneous SDUs&gt;,&lt;Transfer delay&gt;,&lt;Traffic handling priority&gt;,&lt;Source statistics descriptor&gt;,&lt;Signalling indication&gt;]</p>

### Parameter

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- specified as '32' (e.g. AT+CGEQREQ=...,32, ...).
- <Guaranteed bitrate UL>** Integer type; indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. T+CGEQREQ=...,32, ...). If the parameter is set to '0' the subscribed value will be requested.
- <Guaranteed bitrate DL>** Integer type; indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=...,32, ...). If the parameter is set to '0' the subscribed value will be requested.
- <Delivery order>** Integer type; indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not (refer 3GPP TS 24.008 subclause 10.5.6.5).
- |   |                  |
|---|------------------|
| 0 | No               |
| 1 | Yes              |
| 2 | Subscribed value |
- <Maximum SDU size>** Integer type; (1,2,3,...) indicates the maximum allowed SDU size in octets. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 subclause 10.5.6.5).
- <SDU error ratio>** String type; indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of  $5 \cdot 10^{-3}$  would be specified as "5E3" (e.g. AT+CGEQREQ=..., "5E3", ...). "0E0" means subscribed value (refer 3GPP TS 24.008 subclause 10.5.6.5).
- <Residual bit error ratio>** String type; indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as "mEe". As an example a target residual bit error ratio of  $5 \cdot 10^{-3}$  would be specified as "5E3" (e.g. AT+CGEQREQ=..., "5E3", ...). "0E0" means subscribed value (refer 3GPP TS 24.008 subclause 10.5.6.5).
- <Delivery of erroneous SDUs>**: Integer type; indicates whether SDUs detected as erroneous shall be delivered or not (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
- |   |                  |
|---|------------------|
| 0 | no               |
| 1 | yes              |
| 2 | no detect        |
| 3 | subscribed value |
- <Transfer delay>** Integer type; (0,1,2,...) indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 subclause 10.5.6.5).
- <Traffic handling priority>**: Integer type; (1,2,3,...) specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).
- <Source Statistics Descriptor>** Integer type; specifies characteristics of the source of the submitted



	SDUs for a PDP context.	
	0	Characteristics of SDUs is unknown
	1	Characteristics of SDUs corresponds to a speech source
<Signalling Indication>: Integer type; indicates signalling content of submitted SDUs for a PDP context.		
	0	PDP context is not optimized for signalling
	1	PDP context is optimized for signaling <PDP_type>

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

The AT+CGACT write command is used to activate or deactivate the specified PDP context(s). After the command has completed, the MT remains in V.250 command state. If any PDP context is already in the requested state, the state for that context remains unchanged. If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and then attempts to activate the specified contexts. If no <cid>s are specified the activation/deactivation form of the command activates/deactivates all defined contexts.

AT+CGACT PDP Context Activate or Deactivate	
Test Command <b>AT+CGACT=?</b>	Response <b>+CGACT:</b> (list of supported <state>s)  <b>OK</b>
Read Command <b>AT+CGACT?</b>	Response <b>+CGACT:</b> <cid>,<state>[<CR><LF>+CGACT: <cid><state>...]  <b>OK</b>
Write Command <b>AT+CGACT=&lt;state&gt;,&lt;cid&gt;</b>	Response <b>OK</b> <b>NO CARRIER</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

<state>	Indicates the state of PDP context activation	
	0	Deactivated
	1	Activated
	Other values are reserved and will result in an <b>ERROR</b> response to the Write Command	

<b>&lt;cid&gt;</b>	A numeric parameter which specifies a particular PDP context definition (see <b>+CGDCONT</b> command)
--------------------	---

### Example

```

AT+CGDCONT=1,"IP","UNINET"      // Define PDP context
OK
AT+CGACT=1,1                      // Activated PDP
OK
AT+CGACT=0,1                      // Deactivated PDP
OK

```

## 9.8. AT+CGDATA Enter Data State

The AT+CGDATA write command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types. This may include per-forming a PS attach and one or more PDP context activations. Commands following the AT+CGDATA command in the AT command line will not be processed by the MT.

If the <L2P> parameter value is unacceptable to the MT, the MT shall return an ERROR or +CME ERROR response. Otherwise, the MT issues the intermediate result code CONNECT and enters V.250 online data state. After data transfer is complete, and the layer 2 protocol termination procedure has completed successfully, the command state is reentered and the MT returns the final result code OK.

### AT+CGDATA Enter Data State

Test Command <b>AT+CGDATA=?</b>	Response <b>+CGDATA:</b> (list of supported <L2P>s)  <b>OK</b>
Write Command <b>AT+CGDATA=&lt;L2P&gt;[,&lt;cid&gt;[,&lt;cid&gt;[,...]]]</b>	Response <b>CONNECT</b>  <b>ERROR</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

<b>&lt;L2P&gt;</b>	A string parameter that indicates the layer 2 protocol to be used between the TE and MT:
--------------------	--

	PPP – Point to Point protocol for a PDP such as IP Other values are not supported and will result in an <b>ERROR</b> response to the execution command
<b>&lt;cid&gt;</b>	A numeric parameter which specifies a particular PDP context definition (see <b>+CGDCONT</b> command)

## 9.9. AT+CGPADDR Show PDP Address

The AT+CGPADDR write command returns a list of PDP addresses for the specified context identifiers. If no <cid> is specified, the addresses for all defined contexts are returned.

AT+CGPADDR Show PDP Address	
Test Command <b>AT+CGPADDR=?</b>	Response <b>+CGPADDR:</b> (list of defined <cid>s)  <b>OK</b>
Write Command <b>AT+CGPADDR[=&lt;cid&gt;[,&lt;cid&gt;[,...]]]</b>	Response <b>+CGPADDR:</b> <cid>,<PDP_addr> [<CR><LF>+CGPADDR: <cid>,<PDP_addr>[...]]  <b>OK</b> <b>ERROR</b> <b>OK</b>
Reference 3GPP TS 27.007	

### Parameter

<b>&lt;cid&gt;</b>	A numeric parameter which specifies a particular PDP context definition (see <b>+CGDCONT</b> command)
<b>&lt;PDP_addr&gt;</b>	A string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the <b>+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

### Example

```

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

```

## 9.10. AT+CGCLASS GPRS Mobile Station Class

AT+CGCLASS is used to set the MT to operate according to the specified mode of operation, see 3GPP TS 23.060.

### AT+CGCLASS GPRS Mobile Station Class

Test Command <b>AT+CGCLASS=?</b>	Response <b>+CGCLASS:</b> (list of supported <b>&lt;class&gt;s</b> )  <b>OK</b>
Read Command <b>AT+CGCLASS?</b>	Response <b>+CGCLASS:</b> <b>&lt;class&gt;</b>  <b>OK</b>
Write Command <b>AT+CGCLASS=&lt;class&gt;</b>	Response <b>OK</b> <b>ERROR</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

<b>&lt;class&gt;</b>	A string parameter which indicates the GPRS mobile class (Functionality in descending order) "A"      Class A
----------------------	--

## 9.11. AT+CGREG Network Registration Status

The AT+CGREG command queries the network registration status and controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status in GERAN/UTRAN, or unsolicited result code +CGREG: <stat>[,<lac>],<ci>[,<Act>],<rac>]] when <n>=2 and there is a change of the network cell in GERAN/UTRAN.

### AT+CGREG Network Registration Status

Test Command <b>AT+CGREG=?</b>	Response <b>+CGREG:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+CGREG?</b>	Response <b>+CGREG:</b> <n>,<stat>[,<lac>,<ci>[,<Act>]]  <b>OK</b>
Write Command <b>AT+CGREG=&lt;n&gt;</b>	Response <b>OK</b> <b>ERROR</b>
Reference 3GPP TS 27.007	

### Parameter

<n>	0	Disable network registration unsolicited result code
	1	Enable network registration unsolicited result code <b>+CGREG:&lt;stat&gt;</b>
	2	Enable network registration and location information unsolicited result code <b>+CGREG: &lt;stat&gt;[,&lt;lac&gt;,&lt;ci&gt;[,&lt;Act&gt;]]</b>
<stat>	0	Not registered, MT is not currently searching an operator to register to .The UE is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED.The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user.
	1	Registered, home network .The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED INITIATED on the home PLMN.
	2	Not registered, but MT is currently trying to attach or searching an operator to register to. The UE is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available.
	3	Registration denied. The UE is in GMM state GMM-NULL. The GPRS service is disabled, the UE is not allowed to attach for GPRS if requested by the user.
	4	Unknown

	5	Registered, roaming <lac> String type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<lac>		String type; two byte location area code in hexadecimal format
<ci>		String type; two byte cell ID in hexadecimal format
<Act>		Access technology selected
	0	GSM
	2	UTRAN

### Example

```
AT+CGATT=0
```

```
OK
```

```
+CGREG: 2
```

```
AT+CGATT=1
```

```
OK
```

```
+CGREG: 1,"D504","080428B5",2
```

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

AT+CGSMS specifies the service or service preference that the MT will use to send MO (mobile originated) SMS messages.

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

Test Command <b>AT+CGSMS=?</b>	Response <b>+CGSMS:</b> (list of currently available <service>s)  <b>OK</b>
Read Command <b>AT+CGSMS?</b>	Response <b>+CGSMS:</b> <service>  <b>OK</b>
Write Command <b>AT+CGSMS=[&lt;service&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

---

<b>&lt;service&gt;</b>	A numeric parameter which indicates the service or service preference to be used
0	GPRS
1	Circuit switch
2	GPRS preferred (use circuit switched if GPRS not available)
3	Circuit switch preferred (use GPRS if circuit switched not available)

---

### NOTE

The circuit switched service route is the default method.

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# 10 Supplementary Service Commands

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

AT+CCFC allows control of the call forwarding supplementary service according to 3GPP TS 22.082. Registration, erasure, activation, deactivation and status query are supported.

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

Test Command <b>AT+CCFC=?</b>	Response <b>+CCFC:</b> (list of supported <reads>s)  <b>OK</b>
Write Command <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 TA controls the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported. Only , <reads> and <mode> should be entered with mode (0-2,4) If <mode><>2 and command successful <b>OK</b> If <mode>=2 and command successful (only in connection with <reads> 0 –3) For registered call forwarding numbers: <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>  <b>OK</b> If no call forwarding numbers are registered (and therefore all classes are inactive): <b>+CCFC: &lt;status&gt;, &lt;class&gt;</b>  <b>OK</b> where <status>=0 and <class>=15 If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>



Reference  
3GPP TS 27.007

## Parameter

<b>&lt;reads&gt;</b>	0	Unconditional
	1	Mobile busy
	2	No reply
	3	Not reachable
	4	All call forwarding (0-3)
	5	All conditional call forwarding (1-3)
<b>&lt;mode&gt;</b>	0	Disable
	1	Enable
	2	Query status
	3	Registration
	4	Erase
<b>&lt;number&gt;</b>	Phone number in string type of forwarding address in format specified by <b>&lt;type&gt;</b>	
<b>&lt;type&gt;</b>	Type of address in integer format; 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>	Type of sub-address in integer	
<b>&lt;class&gt;</b>	1	Voice
	2	Data
	4	FAX
	7	All telephony except SMS
	8	Short message service
	16	Data circuit sync
	32	Data circuit async
<b>&lt;time&gt;</b>	1...30	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, default value is 20
<b>&lt;status&gt;</b>	0	Not active
	1	Active

## Example

```

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

## 10.2. AT+CCWA Call Waiting Control

The AT+CCWA command allows control of the Call Waiting supplementary service according to 3GPP TS 22.083. Activation, deactivation and status query are supported.

AT+CCWA Call Waiting Control	
Test Command <b>AT+CCWA=?</b>	Response <b>+CCWA:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+CCWA?</b>	Response <b>+CCWA:</b> <n>  <b>OK</b>
Write Command <b>AT+CCWA=[&lt;n&gt;][,&lt;mode&gt;][,&lt;class&gt;]</b>	Response TA controls the call waiting supplementary service. Activation, deactivation and status query are supported. If <mode><2 and command successful <b>OK</b> If <mode>=2 and command successful <b>+CCWA:&lt;status&gt;,&lt;class1&gt;[&lt;CR&gt;&lt;LF&gt;+CCWA:&lt;status&gt;,&lt;class2&gt;[...]]</b>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

<n>	0	Disable presentation of an unsolicited result code
	1	Enable presentation of an unsolicited result code
<mode>	When <mode> parameter is not given, network is not interrogated	
	0	Disable

	1	Enable
	2	Query status
<b>&lt;class&gt;</b>	A sum of integers, each integer represents a class of information	
	1	Voice (telephony)
	2	Data (bearer service)
	4	FAX(facsimile)
	16	Data circuit sync
	32	Data circuit async
<b>&lt;status&gt;</b>	0	Disable
	1	Enable
<b>&lt;number&gt;</b>	Phone number in string type of calling address in format specified by <b>&lt;type&gt;</b>	
<b>&lt;type&gt;</b>	Type of address octet in integer format	
	129	Unknown type (ISDN format number)
	145	International number type (ISDN format )
<b>&lt;alpha&gt;</b>	Optional string type alphanumeric representation of <b>&lt;number&gt;</b> corresponding to the entry found in phone book	

#### NOTES

1. **<status>=0** should be returned only if service is not active for any **<class>** i.e. +CCWA: 0, 7 will be returned in this case.
2. When **<mode>=2**, all active call waiting classes will be reported. In this mode the command is abortable by pressing any key.
3. Unsolicited result code:  
When the presentation call waiting at the TA is enabled (and call waiting is enabled) and a terminating call set up during an established call, an unsolicited result code is returned:  
**+CCWA: <number>,<type>,<class>[,<alpha>]**

#### 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

```

### 10.3. AT+CHLD Call Related Supplementary Services

The AT+CHLD command allows the control of the following call related services:

- A call can be temporarily disconnected from the MT but the connection is retained by the network;

- Multiparty conversation (conference calls);
- The served subscriber who has two calls (one held and the other either active or alerting) can connect the other parties and release the served subscriber's own connection.

Calls can be put on hold, recovered, released and added to a conversation, and transferred similarly as defined in 3GPP TS 22.030.

This is based on the GSM/UMTS supplementary services HOLD (Call Hold; refer 3GPP TS 22.083 clause 2), MPTY (MultiParty; refer 3GPP TS 22.084) and ECT (Explicit Call Transfer; refer 3GPP TS 22.091). The interaction of this command with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standards. Call Hold, MultiParty and Explicit Call Transfer are only applicable to teleservice 11.

### AT+CHLD Call Related Supplementary Services

Test Command <b>AT+CHLD=?</b>	Response <b>+CHLD:</b> (list of supported <n>s)  <b>OK</b>
Write Command <b>AT+CHLD=[&lt;n&gt;]</b>	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. <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

<n>		
0		Terminate all held calls or UDUB (User Determined User Busy) for a waiting call. If a call is waiting, terminate the waiting call. Otherwise, terminate all held calls (if any)
1		Terminate all active calls (if any) and accept the other call (waiting call or held call). It cannot terminate active call if there is only one call
1X		Terminate the specific call number X (X= 1-7)( active, waiting or held)
2		Place all active calls on hold (if any) and accept the other call (waiting call or held call) as the active call
2X		Place all active calls except call X (X= 1-7) on hold
3		Add the held call to the active calls

### 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 be 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 be 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

```

## 10.4. AT+CLIP Calling Line Identification Presentation

AT+CLIP refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call.

### AT+CLIP Calling Line Identification Presentation

Test Command	Response
AT+CLIP=?	+CLIP: (list of supported <n>s)

	<b>OK</b>
Read Command <b>AT+CLIP?</b>	Response <b>+CLIP: &lt;n&gt;,&lt;m&gt;</b>
	<b>OK</b>
Write Command <b>AT+CLIP=[&lt;n&gt;]</b>	Response 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. <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;n&gt;</b>	0	Suppress unsolicited result codes
	1	Display unsolicited result codes
<b>&lt;m&gt;</b>	0	CLIP not provisioned
	1	CLIP provisioned
	2	Unknown
<b>&lt;number&gt;</b>	Phone number in string type of calling address in format specified by <b>&lt;type&gt;</b>	
<b>&lt;type&gt;</b>	Type of address octet in integer format;	
	129	Unknown type (ISDN format number)
	145	International number type (ISDN format )
<b>&lt;alphan&gt;</b>	String type alphanumeric representation of <b>&lt;number&gt;</b> corresponding to the entry found in phone book	
<b>&lt;CLI validity&gt;</b>	0	CLI valid
	1	CLI has been withheld by the originator
	2	CLI is not available due to interworking problems or limitations of originating network

## NOTES

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>,"",<alphan>,<CLI validity>**

## Example

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

RING

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

## 10.5. AT+CLIR Calling Line Identification Restriction

AT+CLIR refers to the CLIR supplementary service (Calling Line Identification Restriction) according to 3GPP TS 22.081 and the OIR supplementary service (Originating Identification Restriction) according to 3GPP TS 24.607) that allows a calling subscriber to enable or disable the presentation of the calling line identity (CLI) to the called party when originating a call.

### AT+CLIR Calling Line Identification Restriction

Test Command <b>AT+CLIR=?</b>	Response <b>+CLIR:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+CLIR?</b>	Response <b>+CLIR:</b> <n>,<m>  <b>OK</b>
Write Command <b>AT+CLIR=[&lt;n&gt;]</b>	Response TA restricts or enables the presentation of the calling line 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. <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;n&gt;</b>	(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>	(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

## 10.6. AT+COLP Connected Line Identification Presentation

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

### AT+COLP Connected Line Identification Presentation

Test Command <b>AT+COLP=?</b>	Response <b>+COLP:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+COLP?</b>	Response <b>+COLP:</b> <n>,<m>  <b>OK</b>
Write Command <b>AT+COLP=[&lt;n&gt;]</b>	Response 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. Intermediate result code is returned from TA to TE before any +CR or V.25ter responses. <b>OK</b>
Reference 3GPP TS 27.007	



## Parameter

<b>&lt;n&gt;</b>	(Parameter sets/shows the result code presentation status in the TA)
<u>0</u>	Disable
1	Enable
<b>&lt;m&gt;</b>	(Parameter shows the subscriber COLP service status in the network)
0	COLP not provisioned
1	COLP provisioned
2	Unknown (e.g. no network, etc.)
<b>&lt;number&gt;</b>	Phone number in string type, format specified by <b>&lt;type&gt;</b>
<b>&lt;type&gt;</b>	Type of address octet in integer format
129	Unknown type(ISDN format number)
145	International number type(ISDN format )
<b>&lt;subaddr&gt;</b>	String type sub-address of format specified by <b>&lt;satype&gt;</b>
<b>&lt;satype&gt;</b>	Type of sub-address octet in integer format (refer to 3GPP TS 24.008 sub clause 10.5.4.8 )
<b>&lt;alpha&gt;</b>	Optional string type alphanumeric representation of <b>&lt;number&gt;</b> corresponding to the entry found in phone book

## NOTES

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>]]**

## Example

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

# 11 Audio Commands

## 11.1. AT+CLVL Loud Speaker Volume Level

AT+CLVL is used to select the volume of the internal loudspeaker of the MT.

### AT+CLVL Loud Speaker Volume Level

Test Command <b>AT+CLVL=?</b>	Response <b>+CLVL:</b> (list of supported <level>s)  <b>OK</b>
Read Command <b>AT+CLVL?</b>	Response <b>+CLVL:</b> <level>  <b>OK</b>
Write Command <b>AT+CLVL=&lt;level&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

### Parameter

<level>	Integer type value (0-7) with manufacturer specific range (Smallest value represents the lowest sound level)
---------	--

## 11.2. AT+QAUDMOD Set Audio mode

AT+QAUDMOD set the audio mode required for the connected device.

### AT+QAUDMOD Set Audio mode

Test Command <b>AT+QAUDMOD=?</b>	Response <b>+QAUDMOD:</b> (0-2)  <b>OK</b>
-------------------------------------	---

Read command <b>AT+QAUDMOD?</b>	Response <b>+QAUDMOD: &lt;mode&gt;</b>  <b>OK</b>
Write Command <b>AT+QAUDMOD=&lt;mode&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference	

## Parameter

<b>&lt;mode&gt;</b>	<u>0</u>	Echo canceller, noise suppressor, digital gain and calibration parameter for Handset.
	1	Echo canceller, noise suppressor, digital gain and calibration parameter for Headset.
	2	Echo canceller, noise suppressor, digital gain and calibration parameter for Speaker.

## 11.3. AT+QDAI Digital Audio Interface configure

AT+QDAI command is used to configure the digital audio interface. While <io>=1, user can define the PCM mode (master/slave mode) by themselves; while <io>=2, and the external codec chip linked with PCM interface is the NAU8814 model through the I2C, the module can be used directly and set by the default configurations.

### AT+QDAI Digital Audio Interface configure

Test Command <b>AT+QDAI=?</b>	Response <b>+QDAI: (1-2)[,(0-1),(0-1),(0-5)]</b>  <b>OK</b>
Read command <b>AT+QDAI?</b>	Response <b>+QDAI: &lt;io&gt;,&lt;mode&gt;,&lt;fsync&gt;,&lt;clock&gt;</b>  <b>OK</b>
Write Command <b>AT+QDAI=&lt;io&gt;[,&lt;mode&gt;,&lt;fsync&gt;,&lt;clock&gt;]</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference	

## Parameter

<io>	1	Digital PCM output (customer defined).
	2	Analog output (for our default audio codec).
<mode>	0	Master mode
	1	Slave mode
<fsync>	0	Primary mode(short-sync)
	1	Auxiliary mode(long-sync)
<clock>	0	128K
	1	256K
	2	512K
	3	1024K
	4	2048K
	5	4096K

## 11.4. AT+CMUT Mute Control

The AT+CMUT command is used to enable and disable the uplink voice muting during a voice call.

AT+CMUT Mute Control	
Test Command <b>AT+CMUT=?</b>	Response <b>+CMUT:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+CMUT?</b>	Response <b>+CMUT:</b> <n>  <b>OK</b>
Write Command <b>AT+CMUT=&lt;n&gt;</b>	Response <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<n>	0	Mute off
-----	---	----------

---

1	Mute on
---	---------

---

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# 12 Hardware Related Commands

## 12.1. AT+QPOWD Power Off

The command AT+QPOWD is used to shutdown the module. The UE will return OK immediately when the command is executed. Then the UE deactivates the network. After it is completed, the UE outputs message "POWERED DOWN" and sets the STATE pin low to enter the shutdown state. The maximum time for unregistering network is 60 seconds. The UE is not allowed to turn off the power before the module STATE pin is set low or the URC "POWERED DOWN" is output to avoid data loss.

### AT+QPOWD Power Off

Execute Command <b>AT+QPOWD</b>	Response OK
Reference	

## 12.2. AT+CCLK Clock

AT+CCLK sets and queries the real time clock (RTC) of the module. The current setting is retained until the module is totally disconnected from power.

### AT+CCLK Clock

Test Command <b>AT+CCLK=?</b>	Response OK
Read Command <b>AT+CCLK?</b>	Response <b>+CCLK: &lt;time&gt;</b>  OK
Write Command <b>AT+CCLK=&lt;time&gt;</b>	Response OK If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;time&gt;</b>	String type value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits),month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -48...+48). E.g. May 6 <sup>th</sup> , 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
---------------------	--

## Example

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

## 12.3. AT+CBC Battery Charge

AT+CBC returns battery connection status <bcs> and battery charge level <bcl> of the MT.

### AT+CBC Battery Charge

Test Command <b>AT+CBC=?</b>	Response <b>+CBC:</b> (list of supported <bcs>s),(list of supported <bcl>s),(voltage)  <b>OK</b>
Execution Command <b>AT+CBC</b>	Response <b>+CBC:</b> <bcs>,<bcl>,<voltage>  <b>OK</b> If error is related to ME functionality: <b>+CME ERROR: &lt;err&gt;</b>
Reference 3GPP TS 27.007	

## Parameter

<b>&lt;bcs&gt;</b>	Charge status
0	ME is not charging
1	ME is charging
2	Charging has finished
<b>&lt;bcl&gt;</b>	Battery connection level

	1...100	Battery has 1-100 percent of capacity remaining vent
<voltage>	Battery voltage(mV)	

## 12.4. AT+QSCLK Configure Slow Clock

AT command "AT+QSCLK" is used to control the module's low clock. If low clock is disabled, the module will not enter low clock under no circumstances. If low clock is enabled, the module will enter low clock while inactive. The module will be awakened by some temporarily network interaction messages (such as regularly listening to paging messages from the base station). It will also be awakened if the DTR pin is pulled low.

### AT+QSCLK Configure Slow Clock

Test Command <b>AT+QSCLK=?</b>	Response <b>+QSCLK:</b> (list of supported <n>s)  <b>OK</b>
Read Command <b>AT+QSCLK?</b>	Response <b>+QSCLK:</b> <n>  <b>OK</b>
Write Command <b>AT+QSCLK=&lt;n&gt;</b>	Response <b>OK</b>
Reference	

### Parameter

<n>	<u>0</u>	Disable slow clock
	1	Enable slow clock, it is controlled by DTR



# 13 Appendix A Reference

**Table 3: Related Documents**

SN	Document name	Remark
[1]	V.25ter	Serial asynchronous automatic dialling and control
[2]	3GPP TS 27.007	Digital cellular telecommunications (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; AT command set for User Equipment (UE)
[3]	3GPP TS 27.005	Digital cellular telecommunications (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Use of Data Terminal Equipment - Data Circuit terminating Equipment (DTE- DCE) interface for Short Message Service (SMS) and Cell Broadcast Service (CBS)

**Table 4: Terms and Abbreviations**

Abbreviation	Description
AMR	Adaptive Multi-Rate
ME	Mobile Equipment
TA	Terminal Adapter
MS	Mobile Station
DCE	Data Communication Equipment
TE	Terminal Equipment
DTE	Data Terminal Equipment
RTS/CTS	Request To Send/Clear To Send
GPRS	General Packet Radio Service
DCD	Dynamic Content Delivery

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DTR	Data Terminal Ready
CSD	Circuit Switch Data
PSC	Primary Synchronization Code
PDP	Packet Data Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol

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