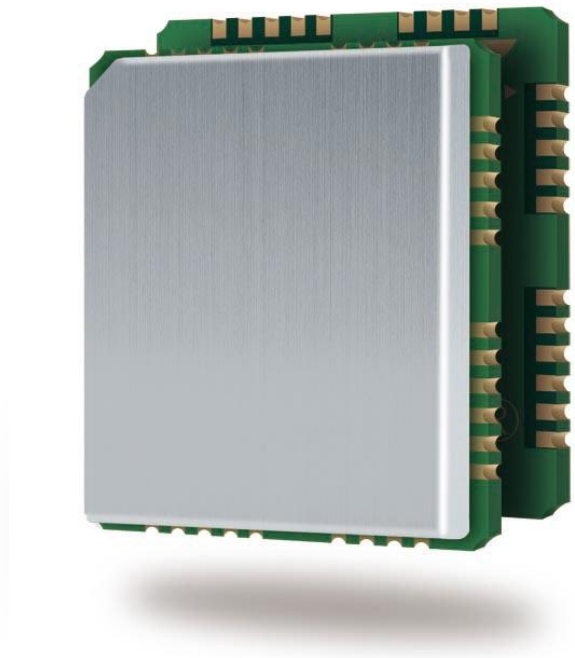
M95

Quectel Cellular Engine

AT Commands Set

M95_ATC_V1.1



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0. Revision history

Revision	Date	Author	Description
1.0	2011-12-30	Jean HU	Initial
1.1	2012-03-20	Vivian WANG	● Modified Flow Control ● Added New Parameters for AT+QNITZ/ AT+QBAND ● Added New AT Commands: AT+QLTS/AT+QLDTMF/AT+QLTONE/AT +QSFR/AT+QSPCH/AT+QMUXC ● Deleted Fax Related commands ● Deleted AT Commands: AT+QECHO/AT+QSIMDET/AT+QECHOE X/AT+QEAUART/AT+QSEDCB/AT+QSIM STAT/AT+QTEMP/AT+AUDLOOP/AT+QL OCKF/AT+EGPAU/AT+QTUNBUF/AT+CR SM/AT+QDISP/AT+QCGTIND

1. Introduction

1.1. Scope of the document

This document presents the AT Commands Set for Quectel cellular engine M95.

1.2. Conventions and abbreviations

In this document, the GSM engines are referred to as the following terms:

- ME (Mobile Equipment)
- MS (Mobile Station)
- TA (Terminal Adapter)
- DCE (Data Communication Equipment)
- Facsimile DCE(FAX modem, FAX board)

In application, controlling device controls the GSM engine by sending AT Command via serial interface. The controlling devices are referred to as the following terms:

- TE (Terminal Equipment)
- DTE (Data Terminal Equipment)

1.3. AT Command syntax

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

The AT Commands Set implemented by M95 is a combination of GSM07.05, GSM07.07 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

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

1.3.1. Combining AT Commands on the same command line

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

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

1.3.2. Entering successive AT Commands on separate lines

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

1.4. Supported character sets

The M95 AT Command interface defaults to the **IRA** character set. The M95 supports the following character sets:

- GSM format
- UCS2
- HEX
- IRA
- PCCP437
- 8859_1

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

1.5. Flow control

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

There are basically two approaches to achieve data flow control: software flow control and hardware flow control. M95 supports both two kinds of flow control.

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

The *default flow control* approach of M95 is closed

1.5.1. Software flow control (XON/XOFF flow control)

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

The def*ault flow control* approach of M95 is closed, to enable software flow control in the DTE interface and within GSM engine, type the following AT command:

AT+IFC=1, 1<CR>

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

Ensure that any communication software package (e.g. ProComm Plus, Hyper Terminal or WinFax Pro) uses software flow control.

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

1.5.2. Hardware flow control (RTS/CTS flow control)

The *default flow control* approach of M95 is closed, to enable hardware flow control (RTS/CTS

flow control) in the DTE interface and within GSM engine, type the following AT command: **AT+IFC=2, 2<CR>.**

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

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

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

1.6. Unsolicited Result Code

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

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

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

2. AT Commands according to V.25TER

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

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

Command	Description
ATA	Answer AN incoming call
ATD	Mobile Originated call to dial A number
ATE	Set Command echo mode
ATH	Disconnect existing connection
ATI	Display product identification information
ATL	Set monitor speaker loudness
ATM	Set monitor speaker mode
+++	Switch form data mode to command mode
ATO	Switch from command mode to data mode
ATP	Select pulse dialling
ATQ	Set result code presentation mode
ATS0	Set number of rings before automatically answering the call
ATS3	Set command line termination character
ATS4	Set response formatting character
ATS5	Set command line editing character
ATS6	Set pause before blind dialling
ATS7	Set number of seconds to wait for connection completion
ATS8	Set number of seconds to wait FOR comma dial modifier
ATS10	Set disconnect delay after indicating the absence of data carrier
ATT	Select tone dialling
ATV	TA response format
ATX	Set connect result code format and monitor call progress
ATZ	Set all current parameters to user defined profile
AT&C	Set DCD function mode
AT&D	Set DTR function mode
AT&F	Set all current parameters to manufacturer defaults
AT&V	Display current configuration
AT&W	Store current parameter to user defined profile
AT+DR	V.42bis data compression reporting control
AT+DS	V.42bis data compression control
AT+GCAP	Request complete TA capabilities list
AT+GMI	Request manufacture identification
AT+GMM	Request TA model identification
AT+GMR	Request TA revision indentification of software release

AT+GOI	Request global object identification
AT+GSN	Request International mobile equipment identity (IMEI)
AT+ICF	Set TE-TA control character framing
AT+IFC	Set TE-TA local data flow control
AT+ILRR	Set TE-TA local data rate reporting mode
AT+IPR	Set TE-TA fixed local rate

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

2.2.1. ATA Answer an incoming call

ATA Answer an incoming call	
Execution Command **ATA**	Response TA sends off-hook to the remote station. *Note1: Any additional commands on the same command line are ignored.* *Note2: This command may be aborted generally by receiving a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.*
	Response in case of data call, if successfully connected **CONNECT<text>** TA switches to data mode. Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0 When TA returns to command mode after call release **OK** Response in case of voice call, if successfully connected **OK** Response if no connection **NO CARRIER**
	Parameter
Reference V.25ter	*Note:* *See also **ATX**.*

2.2.2. ATD Mobile originated call to dial a number

ATD Mobile originated call to dial a number	
Execution Command **ATD<n>[<mgsm**	Response This command can be used to set up outgoing voice, data or FAX calls. It also serves to control supplementary services.

][;]	*Note: This command may be aborted generally by receiving an ATH command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.* 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. *Note: **<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**
	Parameter **<n>** String of dialing digits and optionally V.25ter modifiers dialingdigits: **0-9, * , #, +, A, B, C** Following V.25ter modifiers are ignored: **,(comma), T, P, !, W, @** **Emergency call:** **<n>** Standardized emergency number 112(no SIM needed) **<mgsm>** String of **GSM** modifiers: **I** Actives **CLIR** (Disables presentation of own number to called party) **i** Deactivates **CLIR** (Enable presentation of own number to called party) **G** Activates closed user group invocation for this call only **g** Deactivates closed user group invocation for this call only <;> Only required to set up voice call , return to command state
Reference V.25ter	*Note:* ● *Parameter "I" and "i" only if no *# code is within the dial string.*

	● *<**n**> is default value for last number that can be dialed by **ATDL.*** ● **# codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";".* ● *See **ATX** command for setting result code and call monitoring parameters.* Responses returned after dialing with **ATD** ● For voice call two different responses mode can be determined. **TA** returns "**OK**" immediately either after dialing was completed or after the call was established. The setting is controlled by **AT+COLP**. Factory default is **AT+COLP=0**, which causes the **TA** returns "**OK**" immediately after dialing was completed, otherwise **TA** will returns "**OK**", "**BUSY**", "**NO DIAL TONE**", "**NO CARRIER**". Using **ATD** during an active voice call: ● When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold. ● The current states of all calls can be easily checked at any time by using the **AT+CLCC** command.

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

ATD><n>	**Originate call to phone number in current memory**
Execution Command **ATD><n> [;]**	Response This command can be used to dial a phone number from current phone book memory. *Note: This command may be aborted generally by receiving an ATH command or a character during execution. The aborting is not possible during some states of connection establishment such as handshaking.* If error is related to **ME** functionality **+CME ERROR: <err>** 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 successful and non-voice call.

	CONNECT<text> TA switches to data mode. *Note: **<text>** output only if **ATX<value>** parameter setting with the **<value>** >0* When TA returns to command mode after call release **OK** If connected successfully and voice call **OK**
	Parameter **<n>** Integer type memory location should be in the range of locations available in the memory used **<;>** Only required to set up voice call, return to command state
Reference V.25ter	*Note* ● *Parameter "I" and "i" only if no *# code is within the dial string.* ● **#codes sent with **ATD** are treated as voice calls. Therefore, the command must be terminated with a semicolon ";".* ● *See **ATX** command for setting result code and call monitoring. parameters*

2.2.4. ATE Set command echo mode

ATE Set command echo mode	
Execution Command **ATE<value>**	Response This setting determines whether or not the TA echoes characters received from TE during command state. **OK**
	Parameter **<value>** 0 Echo mode off 1 Echo mode on
Reference V.25ter	

2.2.5. ATH Disconnect existing connection

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

	<n>	0	Disconnect from line and terminate call
Reference V.25ter			

2.2.6. ATI Display product identification information

ATI Display product identification information	
Execution Command **ATI**	Response TA issues product information text Example: **Quectel_Ltd** **Quectel_M95** **Revision: M95AR01A01** **OK**
Reference V.25ter	

2.2.7. ATL Set monitor speaker loudness

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

2.2.8. ATM Set monitor speaker mode

ATM Set Monitor Speaker Mode			
Execution Command **ATM<value>**	Response **OK**		
	Parameter		
	<value>	0	Speaker is always off

	1	Speaker is on until TA inform TE that carrier has been detected
	2	Speaker is always on when TA is off-hook
Reference V.25ter	*Note:* *The two commands ATL and ATM are implemented only for V.25 compatibility reasons and have no effect.*	

2.2.9. +++ Switch from data mode to command mode

+++ Switch from data mode to command mode	
Execution Command +++	Response This command is only available during TA is in data mode, such as, a CSD call, a GPRS connection and a transparent TCPIP connection. The "+++" character sequence causes the TA to cancel the data flow over the AT interface and switch to command mode. This allows you to enter AT command while maintaining the data connection with the remote server or, accordingly, the GPRS connection. **OK** To prevent the "+++" escape sequence from being misinterpreted as data, it should comply to following sequence: 1. No characters entered for T1 time (0.5 seconds). 2. "+++" characters entered with no characters in between. For CSD call or PPP online mode, the interval between two "+" MUST should be less than 1 second and for a transparent TCPIP connection, the interval MUST should be less than 20 ms. 3. No characters entered for T1 time (0.5 seconds). 4. Switch to command mode, otherwise go to step 1.
Reference V.25ter	*Note:* ● *To return from command mode back to data or PPP online mode: Enter ATO.* ● *Another way to change to command mode is through DTR, see **AT&D** command for the details.*

2.2.10. ATO Switch 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>** *Note: <**text**> only if parameter setting is X>0.*
	Parameter **<n>** 0 Switch from command mode to data mode
Reference V.25ter	

2.2.11. ATP Select pulse dialing

ATP Select pulse dialing	
Execution Command **ATP**	Response **OK** Parameter
Reference V.25ter	*Note:* *No effect in GSM.*

2.2.12. ATQ Set result code presentation mode

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

2.2.13. ATS0 Set number of rings before automatically answering the call

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

2.2.14. ATS3 Set command line termination character

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

2.2.15. ATS4 Set response formatting character

ATS4 Set response formatting character	
Read Command **ATS4?**	Response **<n>**

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

2.2.16. ATS5 Set command line editing character

ATS5 Set command line editing character	
Read Command **ATS5?**	Response **<n>** **OK**
Write Command **ATS5=<n>**	Response This parameter setting determines the character recognized by TA as a request to delete the immediately preceding character from the command line **OK**
	Parameter **<n>** 0-8-127 Response editing character
Reference V.25ter	*Note:* *Default 8 = Backspace.*

2.2.17. ATS6 Set pause before blind dialing

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

2.2.18. ATS7 Set number of seconds to wait for connection completion

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**
	Parameter **<n>** 1-60-255 Number of seconds to wait for connection completion
Reference V.25ter	*Note:* ● *If called party has specified a high value for ATS0=<n>, call setup may fail.* ● *The correlation between ATS7 and ATS0 is important* *Example: Call may fail if ATS7=30 and ATS0=20.* ● *ATS7 is only applicable to data call.*

2.2.19. ATS8 Set the number of seconds to wait for comma dial modifier

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

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

ATS10 Set disconnect delay after indicating the absence of data carrier	
Read Command **ATS10?**	Response **<n>**

	OK
Write Command **ATS10=<n>**	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**
	Parameter **<n>** 1-15-254 Number of delay in 100 ms
Reference V.25ter	

2.2.21. ATT Select tone dialing

ATT Select tone dialing	
Execution Command **ATT**	Response **OK**
	Parameter
Reference V.25ter	*Note:* *No effect in GSM.*

2.2.22. ATV TA response format

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

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

2.2.23. ATX Set CONNECT result code format and monitor call progress

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

V.25ter	

2.2.24. ATZ Set all current parameters to user defined profile

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

2.2.25. AT&C Set DCD function mode

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

2.2.26. AT&D Set DTR function mode

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

	to command mode. During state DTR = OFF auto-answer is off
Reference V.25ter	

2.2.27. AT&F Set all current parameters to manufacturer defaults

AT&F Set all current parameters to manufacturer defaults			
Execution Command **AT&F[<value>]**	Response TA sets all current parameters to the manufacturer defined profile. **OK**		
	Parameter **<value>**	0	Set all TA parameters to manufacturer defaults
Reference V.25ter			

2.2.28. AT&V Display current configuration

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

2.2.29. AT&W Store current parameter to user defined profile

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

2.2.30. AT+DR V.42bis data compression reporting control

AT+DR V.42bis data compression reporting control	
Test Command **AT+DR=?**	Response **+DR:** (list of supported <**value**>s) **OK**
	Parameter See Write Command.
Read Command **AT+DR?**	Response **+DR: <value>** **OK**
	Parameter See Write Command.
Write Command **AT+DR=[<value>]**	Response This parameter setting determines whether or not intermediate result code of the current data compressing is reported by TA to TE after a connection is established. **OK**
	Parameter **<value>** 0 Reporting disabled
Reference V.25ter	

2.2.31. AT+DS V.42bis data compression control

AT+DS V.42bis data compression control	
Test Command **AT+DS=?**	Response **+DS:** (list of supported <**p0**>s), (list of supported <**n**>s), (list of supported <**p1**>s), (list of supported <**p2**>s) **OK**
	Parameter See Write Command.
Read Command **AT+DS?**	Response **+DS: <p0>,<n>,<p1>,<p2>** **OK**
	Parameter See Write Command.
Write Command **AT+DS=[<p0>,[<**	Response This parameter setting determines the possible data compression mode by

n>,[<p1>,[<p2>]]]	TA at the compression negotiation with the remote TA after a call set up. **OK**		
	Parameters		
	<p0>	0	NONE
	<n>	0	Allow negotiation of p0 down
		1	Do not allow negotiation of p0 - disconnect on difference
	<p1>	512-4096	Dictionary size
	<p2>	6-250	Maximum string size (Default value is 6)
Reference V.25ter	*Note:* ● *This command is only for data call.* ● *GSM transmits the data transparently. The remote TA may support this compression.* ● *This command must be used in conjunction with command **AT+CRLP** to enable compression (+CRLP=X,X,X,X,1,X).*		

2.2.32. AT+GCAP Request complete TA capabilities list

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

2.2.33. AT+GMI Request manufacture identification

AT+GMI Request manufacture identification		
Test Command **AT+GMI=?**	Response **OK**	
	Parameter	
Execution	TA reports one or more lines of information text which permit the user to	

Command **AT+GMI**	identify the manufacturer. **Quectel_Ltd** **OK**
	Parameter
Reference V.25ter	

2.2.34. AT+GMM Request TA model identification

AT+GMM Request TA model identification	
Test Command **AT+GMM=?**	Response **OK**
	Parameter
Execution Command **AT+GMM**	TA returns a product model identification text. **Quectel_M95** **OK**
Reference V.25ter	

2.2.35. AT+GMR Request TA revision identification of software release

AT+GMR Request TA revision identification of software release	
Test Command **AT+GMR=?**	Response **OK**
	Parameter
Execution Command **AT+GMR**	TA reports one or more lines of information text which permit the user to identify the revision of software release. **Revision:** <**revision**> **OK**
	Parameter **<revision>** Revision of software release
Reference V.25ter	

2.2.36. AT+GOI Request global object identification

AT+GOI Request global object identification	
Test Command **AT+GOI=?**	Response **OK**
	Parameter
Execution Command **AT+GOI**	Response TA reports one or more lines of information text which permit the user to identify the device, based on the ISO system for registering unique object identifiers. **<Object Id>** **OK**
	Parameter **<Object Id>** Identifier of device type See X.208, 209 for the format of **<Object Id>.**
Reference V.25ter	*Note:* *For example, in M95 wireless module, string "M95" is displayed.*

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

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

2.2.38. AT+ICF Set TE-TA control character framing

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

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

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

	See Write Command.
Read Command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
	Parameter See Write Command.
Write Command **AT+IFC=<dce_by_dte>,<dte_by_dce>**	Response This parameter setting determines the data flow control on the serial interface for data mode. **OK**
	Parameters **<dce_by_dte>** Specifies the method will be used by TE when receiving data from TA 0 None 1 XON/XOFF, don't pass characters on to data stack 2 RTS flow control 3 XON/XOFF, pass characters on to data stack **<dte_by_dce>** Specifies the method will be used by TA when receiving data from TE 0 None 1 XON/XOFF 2 CTS flow control
Reference V.25ter	*Note:* *This flow control is applied for data mode.*

2.2.40. AT+ILRR Set TE-TA local data rate reporting mode

AT+ILRR Set TE-TA local data rate reporting mode	
Test Command **AT+ILRR=?**	Response **+ILRR:** (list of supported <**value**>s) **OK**
	Parameter See Write Command.
Read Command **AT+ILRR?**	Response **+ILRR: <value>** **OK**
	Parameter See Write Command.
Write Command **AT+ILRR=[<val**	Response This parameter setting determines whether or not an intermediate result

ue>]	code of local rate is reported when the connection is established. The rate is applied after the final result code of the connection is transmitted to TE. **OK**
	Parameter **<value>** 0 Disables reporting of local port rate 1 Enables reporting of local port rate
Reference V.25ter	*Note:* ● *If the **<value>** is set to 1, the following intermediate result will come out on connection to indicate the port rate settings.* ***+ILRR:<rate>*** ***<rate>*** *Port rate setting on call connection in Baud per second* 300 1200 2400 4800 9600 14400 19200 28800 38400 57600 115200

2.2.41. AT+IPR Set TE-TA fixed local rate

AT+IPR Set TE-TA fixed local rate	
Test Command **AT+IPR=?**	Response **+IPR:** (list of supported auto detectable <**rate**>s),(list of supported fixed-only<**rate**>s) **OK**
	Parameter See Write Command.
Read Command **AT+IPR?**	Response **+IPR: <rate>** **OK**
	Parameter See Write Command.
Write Command **AT+IPR=<rate>**	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.

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

2.2.41.1. Autobauding

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

- Autobauding synchronization between TE and TA
  - Ensure that TE and TA are correctly synchronized and the baud rate used by the TE is detected by the TA. To allow the baud rate to be synchronized simply use an "**AT**" or "**at**" string. This is necessary after customer activates autobauding or when customer starts up the module with autobauding enabled.
  - It is recommended to wait for 2 to 3 seconds before sending the first "**AT**" or "**at**" string after the module is started up with autobauding enabled. Otherwise undefined characters

might be returned.

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

Note:

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

3. AT Commands according to GSM07.07

3.1. Overview of AT Commands according to GSM07.07

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

AT+CMUX	Multiplexer control
AT+CNUM	Subscriber number
AT+CPOL	Preferred operator list
AT+COPN	Read operator names
AT+CFUN	Set phone functionality
AT+CCLK	Clock
AT+CALM	Alert sound mode
AT+CRSL	Ringer sound level
AT+CLVL	Loud speaker volume level
AT+CMUT	Mute control
AT+CPUC	Price per unit and currency table
AT+CCWE	Call meter maximum event
AT+CBC	Battery charge
AT+CUSD	Unstructured supplementary service data
AT+CSSN	Supplementary service notification
AT+CSNS	Signal number scheme
AT+CMOD	Configure alternating mode calls

3.2. Detailed Descriptions of AT Commands According to GSM07.07

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

AT+CACM Accumulated Call Meter (ACM) reset or query	
Test Command **AT+CACM=?**	Response **OK** Parameter
Read Command **AT+CACM?**	Response TA returns the current value of ACM. **+CACM: <acm>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameter **<acm>** String type; three bytes of the current ACM value in hexa-decimal format (e.g. “00001E” indicates decimal value 30) 000000 - FFFFFF
Write Command **AT+CACM=[<passwd>]**	Parameter **<passwd>** String type: SIM PIN2 Response

	TA resets the advice of charge related Accumulated Call Meter (ACM) value in SIM file EF (ACM). ACM contains the total number of home units for both the current and preceding calls. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Reference GSM 07.07	

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

AT+CAMM Accumulated Call Meter maximum (ACM max) set or query	
Test Command **AT+CAMM=?**	Response **OK** Parameter
Read Command **AT+ CAMM?**	Response TA returns the current value of ACM max. **+CAMM: <acmmax>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters See Write Command.
Write Command **AT+CAMM=[<acmmax>[,<passwd>]]**	Response TA sets the advice of charge related Accumulated Call Meter maximum value in SIM file EF (ACM max). ACM max contains the maximum number of home units allowed to be consumed by the subscriber. **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<acmmax>** String type; three bytes of the max. ACM value in hex-decimal format (e.g. "00001E" indicates decimal value 30) 000000 Disable ACM max feature 000001-FFFFFF **<passwd>** String type SIM PIN2
Reference GSM 07.07	

3.2.3. AT+CAOC Advice of charge

AT+CAOC Advice of charge	
Test Command **AT+CAOC=?**	Response **+CAOC**: (list of supported <**mode**>s) **OK** Parameters See Write Command.
Read Command **AT+CAOC?**	Response **+CAOC: <mode>** **OK** Parameters see Write Command
Write Command **AT+CAOC=<mode>**	Response TA sets the advice of charge supplementary service function mode. If error is related to ME functionality: **+CME ERROR: <err>** If <mode>=0, TA returns the current call meter value **+CAOC: <ccm>** **OK** If **<mode>**=1, TA deactivates the unsolicited reporting of CCM value **OK** If **<mode>**=2. TA activates the unsolicited reporting of CCM value **OK** Parameters **<mode>** 0 Query CCM value 1 Deactivate the unsolicited reporting of CCM value 2 Activate the unsolicited reporting of CCM value **<ccm>** String type; three bytes of the current CCM value in hex-decimal format (e.g. “00001E” indicates decimal value 30); bytes are similarly coded as ACM max value in the SIM 000000-FFFFFF
Reference GSM 07.07	

3.2.4. AT+CBST Select bearer service type

AT+CBST Select bearer service type	
Test Command **AT+CBST=?**	Response **+CBST:** (list of supported **<speed>**s) ,(list of supported **<name>**s) ,(list of supported **<ce>**s) **OK** Parameter See Write Command.
Read Command **AT+CBST?**	Response **+CBST: <speed>,<name>,<ce>** **OK** Parameter See Write Command.
Write Command **AT+CBST=[<speed>][,<name>[,<ce>]]**	Response TA selects the bearer service **<name>** with data rate **<speed>**, and the connection element **<ce>** to be used when data calls are originated. **OK** Parameters **<speed>** 0 Autobauding 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>** 0 Asynchronous modem **<ce>** 0 Transparent 1 Non-transparent 2 Both, transparent preferred 3 Both, non-transparent preferred
Reference GSM 07.07	*Note:* *GSM 02.02: lists the allowed combinations of the sub parameters.*

3.2.5. AT+CCFC Call forwarding number and conditions control

AT+CCFC Call forwarding number and conditions control	
Test Command **AT+CCFC=?**	Response **+CCFC:** (list of supported **<reads>**) **OK**
	Parameters See Write Command.
Write Command **AT+CCFC = <reads>, <mode> [, <number> [, <type> [,<class> [, <subaddr> [,<satype> [,time]]]]]]**	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 **OK** If **<mode>**=2 and command successful (only in connection with **<reads>** 0 –3) For registered call forwarding numbers: **+CCFC: <status>, <class1>[, <number>, <type> [,<subaddr>,<satype>[,<time>]]] [<CR><LF>+CCFC: ....]** **OK** If no call forwarding numbers are registered (and therefore all classes are inactive): **+CCFC: <status>, <class>** **OK** where <**status**>=0 and <**class**>=15 If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<reads>** 0 Unconditional 1 Mobile busy 2 No reply 3 Not reachable 4 All call forwarding (0-3) 5 All conditional call forwarding (1-3) **<mode>** 0 Disable 1 Enable 2 Query status 3 Registration 4 Erasure **<number>** Phone number in string type of forwarding address in format specified by **<type>** **<type>** Type of address in integer format; default value is 145 when

		dialing string includes international access code character "+", otherwise 129	
	<subaddr>	String type sub-address of format specified by **<satype>**	
	<satype>	Type of sub-address in integer	
	<class>	1	Voice
		2	Data
		4	FAX
		7	All telephony except SMS
		8	Short message service
		16	Data circuit sync
		32	Data circuit async
	<time>	1…30	When "no reply" (**<reads>**=no reply) is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value is 20
	<status>	0	Not active
		1	Active
Reference GSM07.07			

3.2.6. AT+CCUG Closed user group control

AT+CCUG Closed user group control			
Read Command **AT+CCUG?**	Response **+CCUG: <n>,<index>,<info>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**		
	Parameter See Write Command.		
Write Command **AT+CCUG=[<n>]** **[,<index>[,<info>]]]**	TA sets the closed user group supplementary service parameters as a default adjustment for all following calls. **OK** If error is related to ME functionality: **+CME ERROR: <err>**		
	Parameters		
	<n>	0	Disable CUG
		1	Enable CUG
	<index>	0...9	CUG index
		10	No index (preferred CUG taken from subscriber data)
	<info>	0	Bo information
		1	Suppress OA (Outgoing Access)
		2	Suppress preferential CUG

	3 Suppress OA and preferential CUG
Reference	

3.2.7. AT+CCWA Call waiting control

AT+CCWA Call waiting control	
Read Command **AT+CCWA?**	Response **+CCWA: <n>** **OK**
Test Command **AT+CCWA=?**	Response **+CCWA:** (list of supported **<n>**s) **OK**
Write Command **AT+CCWA=[<n>]** **[,<mode>[,<class>]]]**	Response TA controls the call waiting supplementary service. Activation, deactivation and status query are supported. If **<mode>**<>2 and command successful **OK** If **<mode>**=2 and command successful **+CCWA:<status>,<class1>[<CR><LF>+CCWA:<status>,<class2>[...]]** **OK** *Note: **<status>**=0 should be returned only if service is not active for any **<class>** i.e. +CCWA: 0, 7 will be returned in this case.* *When **<mode>**=2, all active call waiting classes will be reported. In this mode the command is abortable by pressing any key.* (IS IT NOTE) If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<n>** 0 Disable presentation of an unsolicited result code 1 Enable presentation of an unsolicited result code **<mode>** When **<mode>** parameter is not given, network is not interrogated 0 Disable 1 Enable 2 Query status **<class>** A sum of integers, each interger represents a class of information 1 Voice (telephony) 2 Data (bearer service) 4 FAX(facsimile) 16 Data circuit sync

	32 Data circuit async **<status>** 0 Disable 1 Enable
	Unsolicited result code When the presentation call waiting at the TA is enabled (and call waiting is enabled) and a terminating call set up during an established call, an unsolicited result code is returned: **+CCWA: <number>,<type>,<class>[,<alpha>]**
	Parameters **<number>** Phone number in string type of calling address in format specified by <**type**> **<type>** Type of address octet in integer format 129 Unknown type (IDSN format number) 145 International number type (ISDN format) **<alpha>** Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book
Reference GSM07.07	

3.2.8. AT+CEER Extended error report

AT+CEER Extended error report	
Test Command **AT+CEER=?**	Response **OK**
Execution Command **AT+CEER**	Response TA returns an extended report of the reason for the last call release. **+CEER: <locationID>,<cause>** **OK** Parameter **<locationID>** Location ID as number code. Location IDs are listed in Section 8.3.1. Each ID is related with anther table that contains a list of <cause>s <**cause**> Reason for last call release as number code. The number codes are listed in several tables, sorted by different categories. The tables can be found proceeding from the Location ID given in Section 8.3.1
Reference GSM 07.07	

3.2.9. AT+CGMI Request manufacturer identification

AT+CGMI Request manufacturer identification	
Test Command **AT+CGMI=?**	Response **OK**
Execution Command **AT+CGMI**	Response TA returns manufacturer identification text. **<manufacturer>** **OK** Parameter **<manufacturer>**
Reference GSM 07.07	

3.2.10. AT+CGMM Request model identification

AT+CGMM Request model identification	
Test Command **AT+CGMM=?**	Response **OK**
Execution Command **AT+CGMM**	Response TA returns product model identification text. **<model>** **OK** Parameter **<model>** Product model identification text
Reference GSM 07.07	

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

AT+CGMR Request TA revision identification of software release	
Test Command **AT+CGMR=?**	Response **OK**
Execution Command **AT+CGMR**	Response TA returns product software version identification text. **Revision: <revision>** **OK** Parameter

	<revision> Product software version identification text
Reference GSM 07.07	

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

AT+CGSN Request product serial number identification (Identical with +GSN)	
Test Command **AT+CGSN=?**	Response **OK**
Execution Command **AT+CGSN**	Response **<sn>** **OK** Parameter See **+GSN**.
Reference GSM 07.07	

3.2.13. AT+CSCS Select TE character set

AT+CSCS Select TE character set		
Test Command **AT+CSCS=?**	Response **+CSCS:** (list of supported <**chset**>s) **OK** Parameters	
	<chset> "GSM"	GSM default alphabet.
	"HEX"	Character strings consist only of hexadecimal numbers from 00 to FF
	"IRA"	International reference alphabet
	"PCCP437"	PC character set Code
	"UCS2"	UCS2 alphabet
	"8859-1"	ISO 8859 Latin 1 character set
Read Command **AT+CSCS?**	Response **+CSCS: <chset>** **OK** Parameter See Test Command.	
Write Command **AT+CSCS=<chset>**	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.	

	Parameter See Test Command.
Reference GSM 07.07	

3.2.14. AT+CSTA Select type of address

AT+CSTA Select type of address	
Test Command **AT+CSTA=?**	Response **+CSTA: (129,145, 161,)** **OK**
Read Command **AT+CSTA?**	Response **+CSTA: <type>** **OK** Parameter **< type >** Current address type setting.
Reference GSM 07.07	*Note:* *The ATD command overrides this setting when a number is dialed.* *129Unknown type(IDSN format number)* *161National number type(IDSN format)* *145International number type(ISDN format)*

3.2.15. AT+CHLD Call hold and multiparty

AT+CHLD Call hold and multiparty	
Test Command **AT+CHLD=?**	Response **+CHLD:** (list of supported <**n**>s) **OK**
Write Command **AT+CHLD=[<n>]**	Response TA controls the supplementary services call hold, multiparty and explicit call transfer. Calls can be put on hold, recovered, released, added to conversation and transferred. *Note:* *These supplementary services are only applicable to teleservice 11 (Speech: Telephony).* **OK** If error is related to ME functionality: **+CME ERROR: <err>**

	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 can not 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
Reference	

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

AT+CIMI Request International Mobile Subscriber Identity(IMSI)	
Test Command **AT+CIMI=?**	Response **OK** Parameter
Execution Command **AT+CIMI**	Response TA returns <IMSI>for identifying the individual SIM which is attached to ME. **<IMSI>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameter **<IMSI>** International Mobile Subscriber Identity (string without double quotes)
Reference GSM 07.07	

3.2.17. AT+CLCC List current calls of ME

AT+CLCC List current calls of ME	
Test Command **AT+CLCC=?**	Response **OK** Parameters
Execution	Response

Command **AT+CLCC**	TA returns a list of current calls of ME. *Note:* *If command succeeds but no calls are available, no information response is sent to TE.* **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,** **<number>,<type>[,""]]** **[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,** **<number>,<type>[,""]]** **[...]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<id*x*>** Integer type; call identification number as described in GSM 02.30 sub clause 4.5.5.1; this number can be used in +CHLD Command operations **<dir>** 0 Mobile originated (MO) call 1 Mobile terminated (MT) call **<stat>** State of the call 0 Active 1 Held 2 Dialing (MO call) 3 Alerting (MO call) 4 Incoming (MT call) 5 Waiting (MT call) **<mode>** Bearer/tele service: 0 Voice 1 Data 2 FAX 9 Unknown **<mpty>** 0 Call is not one of multiparty (conference) call parties 1 Call is one of multiparty (conference) call parties **<number>** Phone number in string type in format specified by **<type>** **<type>** Type of address of octet in integer format; 129 Unknown type(IDSN format number) 145 International number type(ISDN format)
Reference GSM 07.07	

3.2.18. AT+CLCK Facility lock

AT+CLCK Facility lock	
Test Command **AT+CLCK=?**	Response **+CLCK:** (list of supported <**fac**>s) **OK**
	Parameter See Write Command.
Write Command **AT+CLCK = <fac>, <mode> ,<passwd> [,<class>]**	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 **OK** If **<mode>**=2 and command is successful **+CLCK: <status>[,<class1>[<CR><LF>** **+CLCK: <status>, class2....]]** **OK**
	Parameters **<fac>** "PS" PH-SIM (lock Phone to SIM card) (ME asks password when other than current SIM card inserted; ME may remember certain amount of previously used cards thus not requiring password when they are inserted) "SC" SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command is issued) "AO" BAOC (Barr All Outgoing Calls) (refer to GSM02.88[6] clause 1) "OI" BOIC (Barr Outgoing International Calls) (refer to GSM02.88[6] clause 1) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer to GSM02.88[6] clause 1) "AI" BAIC (Barr All Incoming Calls) (refer to GSM02.88[6] clause 2) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country) (refer to GSM02.88 [6] clause 2) "AB" All Barring services (refer to GSM02.30[19]) (applicable only for **<mode>**=0) "AG" All out Going barring services (refer to GSM02.30[19]) (applicable only for **<mode>**=0) "AC" All in Coming barring services (refer to GSM02.30[19])

	(applicable only for **<mode>**=0) "FD" SIM fixed dialing memory: If the mobile is locked to "FD", only the phone numbers stored to the "FD" memory can be dialed "PF" Lock Phone to the very first SIM card "PN" Network Personalization (refer to GSM 02.22) "PU" Network subset Personalization (refer to GSM 02.22) "PP" Service Provider Personalization (refer to GSM 02.22) "PC" Corporate Personalization (refer to GSM 02.22) **<mode>** 0 Unlock 1 Lock 2 Query status **<passwd>** Password **<class>** 1 Voice 2 Data 4 FAX 7 All telephony except SMS (Default) 8 Short message service 16 Data circuit sync 32 Data circuit async **<status>** 0 Off 1 On
Reference GSM 07.07	

3.2.19. AT+CLIP Calling line identification presentation

AT+CLIP Calling line identification presentation	
Read Command **AT+CLIP?**	Response **+CLIP: <n>, <m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command.
Test Command **AT+CLIP=?**	Response **+CLIP:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Write Command **AT+CLIP=[<n>]**	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. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<n>** 0 Suppress unsolicited result codes 1 Display unsolicited result codes **<m>** 0 CLIP not provisioned 1 CLIP provisioned 2 Unknown
	Unsolicited result code When the presentation of the CLI at the TE is enabled (and calling subscriber allows), an unsolicited result code is returned after every RING (or +CRING: **<type>**) at a mobile terminating call. **+CLIP: <number>, <type>,"",,<alphaId>,<CLI validity>** Parameters **<number>** Phone number in string type of calling address in format specified by **<type>** **<type>** Type of address octet in integer format; 129 Unknown type (IDSN format number) 145 International number type (ISDN format) **<alphaId>** String type alphanumeric representation of **<number>** corresponding to the entry found in phone book **<CLI validity>** 0 CLI valid 1 CLI has been withheld by the originator 2 CLI is not available due to interworking problems or limitations of originating network
Reference	

3.2.20. AT+CLIR Calling line identification restriction

AT+CLIR Calling line identification restriction	
Read Command **AT+CLIR?**	Response **+CLIR: <n>, <m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command.
Test Command **AT+CLIR=?**	Response **+CLIR:** (list of supported <**n**>s)

	OK
Write Command **AT+CLIR=[<n>]**	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. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<n>** (Parameter sets the adjustment for outgoing calls): 0 presentation indicator is used according to the subscription of the CLIR service 1 CLIR invocation 2 CLIR suppression **<m>**(Parameter shows the subscriber CLIR service status in the network): 0 CLIR not provisioned 1 CLIR provisioned in permanent mode 2 Unknown (e.g. no network, etc.) 3 CLIR temporary mode presentation restricted 4 CLIR temporary mode presentation allowed
Reference	

3.2.21. AT+CMEE Report mobile equipment error

AT+CMEE Report mobile equipment error	
Test Command **AT+CMEE=?**	Response **+CMEE:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CMEE?**	Response **+CMEE: <n>** **OK**
	Parameters See Write Command.

Write Command **AT+CMEE=[<n>]**	Response TA disables or enables the use of result code **+CME ERROR: <err>** as an indication of an error related to the functionality of the ME. **OK**
	Parameters **<n>** 0 Disable result code 1 Enable result code and use numeric values 2 Enable result code and use verbose values
Reference GSM 07.07	

3.2.22. AT+COLP Connected line identification presentation

AT+COLP Connected line identification presentation	
Read Command **AT+COLP?**	Response **+COLP: <n>,<m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command
Test Command **AT+COLP=?**	Response **+COLP:** (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Write Command **AT+COLP=[<n>]**	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. **OK**
	Parameters **<n>** (Parameter sets/shows the result code presentation status in the TA): 0 Disable 1 Enable **<m>**(Parameter shows the subscriber COLP service status in the network): 0 COLP not provisioned 1 COLP provisioned 2 Unknown (e.g. no network, etc.)

	Intermediate result code When enabled (and called subscriber allows), an intermediate result code is returned before any +CR or V.25ter responses: **+COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]]**
	Parameters **<number>** Phone number in string type, format specified by **<type>** **<type>** Type of address octet in integer format 129 Unknown type(IDSN format number) 145 International number type(ISDN format) **<subaddr>** String type sub-address of format specified by **<satype>** **<satype>** Type of sub-address octet in integer format (refer to GSM 04.08 sub clause 10.5.4.8) **<alp<ha>** Optional string type alphanumeric representation of **<number>** corresponding to the entry found in phone book
Reference GSM 07.07	

3.2.23. AT+COPS Operator selection

AT+COPS Operator selection	
Test Command **AT+COPS=?**	Response TA returns a list of quadruplets, each representing an operator present in the network. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM and other networks. **+COPS: (**list of supported<**stat**>, long alphanumeric <**oper**>, short alphanumeric <**oper**>, numeric <**oper**>)s [,,(list of supported <**mode**>s),(list of supported <**format**>s)] **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command.
Read Command **AT+COPS?**	Response TA returns the current mode and the currently selected operator. If no operator is selected, **<format>** and **<oper>** are omitted. **+COPS: <mode>[, <format>[, <oper>]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters See Write Command.

Write Command **AT+COPS = <mode> [,<format>[,<oper>]]**	Response TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected (except **<mode>**=4). The format of selected operator name shall apply to further read commands (**+COPS?**). **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<stat>** 0 Unknown 1 Operator available 2 Operator current 3 Operator forbidden **<oper>** Operator in format as per **<mode>** **<mode>** 0 Automatic mode; **<oper>** field is ignored 1 Manual operator selection; **<oper>** field shall be present 2 Manual deregister from network 3 Set only **<format>** (for read Command **+COPS?**) – not shown in Read Command response 4 Manual/automatic selected; if manual selection fails, automatic mode (**<mode>**=0) is entered **<format>** 0 Long format alphanumeric **<oper>**;can be up to 16 characters long 1 Short format alphanumeric **<oper>** 2 Numeric **<oper>**; GSM Location Area Identification number
Reference GSM 07.07	

3.2.24. AT+CPAS Mobile equipment activity status

AT+CPAS Mobile equipment activity status	
Test Command **AT+CPAS=?**	Response **+CPAS:** (list of supported <**pas**>s) **OK**
	Parameter See Execution Command.
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>**
	Parameter **<pas>** 0 Ready 2 Unknown (ME is not guaranteed to respond to instructions) 3 Ringing 4 Call in progress or call hold
Reference GSM 07.07	

3.2.25. AT+CPBF Find phonebook entries

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

	<number> **<tlength>** Integer type value indicating the maximum length of field **<text>**
Reference GSM 07.07	

3.2.26. AT+CPBR Read current phonebook entries

AT+CPBR Read current phonebook entries	
Test Command **AT+CPBR=?**	Response TA returns location range supported by the current storage as a compound value and the maximum lengths of **<number>** and **<text>** fields. **+CPBR:** (list of supported <**index**>s), <**nlength**>, <**tlength**> **OK**
	Parameters **<index>** Location number **<nlength>** Maximum length of phone number **<tlength>** Maximum length of name for number
Write Command **AT+CPBR=** **<index1>** **[, <index2>]**	Response TA returns phone book entries in location number range **<index1>...<index2>** from the current phone book memory storage selected with **+CPBS**. If **<index2>** is left out, only location **<index1>** is returned. **+CPBR:<index1>,<number>,<type>,<text>[<CR><LF>+CPBR: .....+CPBR: <index2>, <number>, <type>, <text>]** **OK**
	Parameters **<index1>** The first phone book record to read **<index2>** The last phonebook record to read **<number>** Phone number **<type>** Type of number **<text>** Text name for phone number in current TE character set specified by **+CSCS**
Reference GSM 07.07	

3.2.27. AT+CPBS Select phonebook memory storage

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

	OK
	Parameters See Write Command.
Read Command **AT+CPBS?**	Response **+CPBS: <storage>[,<used>,<total>]** **OK**
	Parameters See Write Command.
Write Command **AT+CPBS=<storage>**	Response TA selects current phone book memory storage, which is used by other phone book commands. **OK**
	Parameters **<storage>** "MC" ME missed (unanswered) calls list "RC" ME received calls list "DC" ME dialed calls list(**+CPBW** may not be applicable or this storage)(same as LD) "LA" Last Number All list (LND/LNM/LNR) "ME" ME phonebook "BN" SIM barred dialed number "SD" SIM service dial number "VM" SIM voice mailbox "FD" SIM fix dialing-phone book "LD" SIM last-dialing-phone book "ON" SIM (or ME) own numbers (MSISDNs) list "SM" SIM phonebook **<used>** Integer type value indicating the total number of used locations in selected memory **<total>** Integer type value indicating the total number of locations in selected memory
Reference GSM 07.07	

3.2.28. AT+CPBW Write phonebook entry

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

	OK
	Parameters See Write Command.
Write Command **AT+CPBW=** **<index1>** **[, <number>,** **[<type>,** **[<text>]]]**	Response TA writes phone book entry in location number **<index>** in the current phone book memory storage selected with **+CPBS**. Entry fields written are phone number **<number>** (in the format **<type>**) and text **<text>** associated with the number. If those fields are omitted, phone book entry is deleted. If **<index>** is left out, but **<number>** is given, entry is written to the first free location in the phone book. **OK**
	Parameters <**nlength**> Maximum length of phone number <**tlength**> Maximum length of text for number <**index**> Location number <**number**> Phone number <**type**> Type of number 129 Unknown type(IDSN format number) 145 International number type(ISDN format) <**text**> Text for phone number in current TE character set specified by **+CSCS** *Note:* *The following characters in **<text>** must be entered via the escape sequence:* **GSM char Seq. Seq.(hex) Note** \ \5C 5C 35 43 (backslash) " \22 5C 32 32 (string delimiter) BSP \08 5C 30 38 (backspace) NULL \00 5C 30 30 (GSM null) '0' (GSM null) may cause problems for application layer software when reading string lengths
Reference GSM 07.07	

3.2.29. AT+CPIN Enter PIN

AT+CPIN Enter PIN	
Test Command **AT+CPIN=?**	Response **OK** Parameter See Write Command.
Read Command **AT+CPIN?**	Response TA returns an alphanumeric string indicating whether or not some password is required.

	+CPIN: <code> **OK**
	Parameter READY — No further entry needed SIM PIN — ME is waiting for SIM PIN SIM PUK — ME is waiting for SIM PUK PH_SIM PIN — ME is waiting for phone to SIM card (antitheft) PH_SIM PUK — ME is waiting for SIM PUK (antitheft) SIM PIN2 — PIN2, e.g. it is possible to edit the FDN book only if preceding command was acknowledged with **+CME ERROR:17** SIM PUK2 — Possible only if preceding command was acknowledged with error **+CME ERROR: 18**
Write Command **AT+CPIN=<pin>[, <new pin>]**	Response TA stores a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken and an error message, **+CME ERROR**, is returned to TE. If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, **<new pin>**, is used to replace the old pin in the SIM. **OK**
	Parameters **<pin>** String type; password **<new pin>** String type; If the PIN required is SIM PUK or SIMPUK2: new password
Reference GSM 07.07	

3.2.30. AT+CPWD Change password

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) **OK** Parameters **<fac>** See Write Command, without "FD" **<pwdlength>** Integer. max, length of password

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

3.2.31. AT+CR Service reporting control

AT+CR Service reporting control	
Test Command **AT+CR=?**	Response **+CR: (**list of supported <**mode**>s) **OK**
	Parameter See Write Command.

Read Command **AT+CR?**	Response **+CR: <mode>** **OK**
	Parameters See Write Command.
Write Command **AT+CR=[<mode>]**	Response TA controls whether or not intermediate result code **+CR: <serv>** is returned from the TA to the TE when a call set up. **OK** Parameter **<mode>** 0 Disable 1 Enable
	Intermediate result code 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. **+CR:<serv>** Parameter **<serv>** ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent
Reference GSM 07.07	

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

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

Write Command **AT+CRC=[<mode>]**	Response TA controls whether or not the extended format of incoming call indication is used. OK Parameter **<mode>** 0 Disable extended format 1 Enable extended format
	Unsolicited result code When it is enabled, an incoming call is indicated to the TE with unsolicited result code **+CRING: <type>** instead of the normal **RING**. Parameter **<type>** ASYNC Asynchronous transparent SYNC Synchronous transparent REL ASYNC Asynchronous non-transparent REL SYNC Synchronous non-transparent FAX Facsimile VOICE Voice
Reference GSM 07.07	

3.2.33. AT+CREG Network registration

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

Write Command **AT+CREG=<n>**	Response TA controls the presentation of an unsolicited result code **+CREG: <stat>** when **<n>**=1 and there is a change in the ME network registration status. **OK**
	Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CREG: <stat>** 2 Enable network registration unsolicited result code with location information **<stat>** 0 Not registered, ME is not currently searching a new 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
	Unsolicited result code If **<n>**=1 and there is a change in the ME network registration status **+CREG: <stat>** If **<n>**=2 and there is a change in the ME network registration status or a change of the network cell: **+CREG: <stat>[,<lac>,<ci>]** Parameters See Write Command.
Reference GSM 07.07	

3.2.34. AT+CRLP Select radio link protocol parameter

AT+CRLP Select radio link protocol parameter	
Test Command **AT+CRLP=?**	Response TA returns values supported. RLP (Radio Link Protocol) versions 0 and 1 share the same parameter set. TA returns only one line for this set (where **<ver*x*>** is not present). **+CRLP:** (list of supported <**iws**>s), (list of supported <**mws**>s), (list of supported <**T1**>s), (list of supported <**N2**>s), (list of supported <**ver1**>s),

	(list of supported <**T4**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CRLP?**	Response TA returns current settings for RLP version. RLP versions 0 and 1 share the same parameter set. TA returns only one line for this set (where <verx> is not present). **+CRLP: <iws>,<mws>,<T1>,<N2>,<ver1>,<T4>** **OK**
	Parameters See Write Command.
Write Command **AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]]**	Response TA sets radio link protocol (RLP) parameters used when non-transparent data calls are set up. **OK**
	Parameters **<iws>** 0-61 Interworking window size (IWF to MS) **<mws>** 0-61 Mobile window size(MS to IWF) **<T1>** 39-255 Acknowledgment timer T1 in a unit of 10ms **<N2>** 1-255 Retransmission attempts N2 **<verx>** RLP RLP version number in integer format. When version indication is not present it shall equal 0. **<T4>** 3-255 Re-sequencing period in integer format, in a unit of 10 ms
Reference GSM 07.07	

3.2.35. AT+CSQ Signal quality report

AT+CSQ Signal quality report	
Test Command **AT+CSQ=?**	Response **+CSQ:** (list of supported <**rssi**>s),(list of supported <**ber**>s) **OK**
Execution Command **AT+CSQ**	Response **+CSQ: <rssi>,<ber>** **OK** **+CME ERROR: <err>**

	Execution Command returns received signal strength indication **<rssi>** and channel bit error rate **<ber>** from the ME. Test Command returns values supported by the TA.
	Parameters **<rssi>** 0 -113 dBm or less 1 -111 dBm 2...30 -109... -53 dBm 31 -51 dBm or greater 99 Not known or not detectable **<ber>** (in percent): 0...7 As RXQUAL values in the table in GSM 05.08 subclause 8.2.4 99 Not known or not detectable
Reference GSM 07.07	

3.2.36. AT+VTD Tone duration

AT+VTD Tone duration	
Test Command **AT+VTD=?**	Response **+VTD**: (list of supported <**n**>s) **OK**
	Parameters See Write Command.
Read Command **AT+VTD?**	Response **+VTD: <n>** **OK**
	Parameter See Write Command.
Write Command **AT+VTD = <n>**	Response This command refers to an integer **<n>** that defines the length of tones emitted as a result of the **+VTS** command. This does not affect the D command. **OK**
	Parameter **<n>** 1-255 Duration of the tone in 1/10 seconds
Reference GSM 07.07	

3.2.37. AT+VTS DTMF and tone generation

AT+VTS DTMF and tone generation	
Test Command **AT+VTS=?**	Response **+VTS:** (list of supported <**dtmf**>s), ,(list of supported <**duration**>s) **OK**
	Parameters See Write Command.
Write Command **AT+VTS=<dtmf-string>**	Response This command allows the transmission of DTMF tones and arbitrary tones in voice mode. These tones may be used (for example) when announcing the start of a recording period. *Note: D is used only for dialing.* ***OK*** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<dtmf-string>** It has a max length of 20 characters, must be entered between double quotes (" ") and consists of combinations of the following separated by commas. But a single character does not require quotes. 1) **<dtmf>** A single ASCII characters in the set 0-9, #,*, A-D. T his is interpreted as a sequence of DTMF tones whose duration is set by the **+VTD** command. 2) **{<dtmf>, <duration>}** This is interpreted as a DTMF tone whose duration is determined by **<duration>**. **<duration>** Duration of the tone in 1/10 seconds range :1-255
Reference GSM 07.07	

3.2.38. AT+CMUX Multiplexer control

AT+CMUX Multiplexer control	
Test Command **AT+CMUX=?**	Response **+CMUX:** list of supported (<**mode**>s),(<**subset**>s),(<**port_speed**>s),(<**N1**>s),(<**T1**>s),(<**N2**>s),(<**T2**>s),(<**T3**>s),(<**k**>s) **OK**

	Parameters See Write Command.
Write Command **AT+CMUX=[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]]**	Response **+CME ERROR: <err>**
	Parameters **<mode>** Multiplexer transparency mechanism 0 Basic option **<subset>** The way by which the multiplexer control channel is set up 0 UIH frames used only **<port_speed>** Transmission rate 5 115200bit/s **<N1>** Maximum frame size 127 **<T1>** Acknowledgement timer in a unit of ten milliseconds 10 **<N2>** Maximum number of re-transmissions 3 **<T2>** Response timer for the multiplexer control channel in a unit of ten milliseconds 30 **<T3>** Wake up response timers in seconds 10 **<k>** Window size, for Advanced operation with Error Recovery options 2
Read Command **AT+CMUX?**	Response: **+CMUX: (mode-1),0,5,127,10,3,30,10,2** **OK** **ERROR**
Reference *GSM 07.07*	*Note:* ● *Advanced option with Error Recovery options is not supported.* ● *The multiplexing transmission rate is fixed according to the current serial baud rate. It is recommended to enable multiplexing protocol under 115200 bit/s baud rate.* ● *Multiplexer control channels are listed as follows:* ***Channel Number*** ***Type*** ***DLCI*** *None* *Multiplexer Control* *0* *1* *07.07 and 07.05* *1* *2* *07.07 and 07.05* *2* *3* *07.07 and 07.05* *3* *4* *07.07 and 07.05* *4*

3.2.39. AT+CNUM Subscriber number

AT+CNUM Subscriber number	
Test Command **AT+CNUM=?**	Response **OK**
Execution Command **AT+CNUM**	Response **+CNUM:** **[<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]]** **[<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service> [,<itc>]]** **[...]]** **OK** **+CME ERROR: <err>**
	Parameters **<alpha*x*>** Optional alphanumeric string associated with **<number*x*>**; used character set should be the one selected with command. Select TE character set **+CSCS** **<number*x*>** Phone number in string type of format specified by **<type*x*>** **<type*x*>** Type of address octet in integer format (refer to GSM 04.08subclause 10.5.4.7) **<speed>** As defined by the **+CBST** command **<service>** (Service related to the phone number:) 0 Asynchronous modem 1 Synchronous modem 2 PAD Access (asynchronous) 3 Packet Access (synchronous) 4 Voice 5 FAX **<itc>** (Information transfer capability:) 0 3.1 kHz 1 UDI
Reference GSM 07.07	

3.2.40. AT+CPOL Preferred operator list

AT+CPOL Preferred operator list	
Test Command **AT+CPOL=?**	Response **+CPOL:** (list of supported <**index**>s),(list of supported <**format**>s) **OK**

	Parameters See Write Command.
Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1>** **[<CR><LF>+CPOL: <index2>,<format>,<oper2>** **[…]]** **OK** **+CME ERROR: <err>**
	Parameters See Write Command.
Write Command **AT+CPOL=<index>[,<format>[,<oper>]]**	Response **+CME ERROR: <err>**
	Parameters **<index>** I Integer type: order number of operator in SIM preferred operator list **<format>** 0 Long format alphanumeric **<oper>** 1 Short format alphanumeric **<oper>** 2 Numeric **<oper>** **<oper>** String type: **<format>** indicates either alphanumeric or numeric format is used (see **+COPS** command)
Reference GSM 07.07	

3.2.41. AT+COPN Read operator names

AT+COPN Read operator names	
Test Command **AT+COPN=?**	Response **OK**
Execution Command **AT+COPN**	Response **+COPN: <numeric1>,<alpha1 >** **[<CR><LF>+COPN: <numeric2>,<alpha2>** **[…]]** **OK** **+CME ERROR: <err>**
	Parameters **<numericn>** String type: operator in numeric format (see **+COPS**) **<alphan>** String type: operator in long alphanumeric format (see **+COPS**)
Reference GSM 07.07	

3.2.42. AT+CFUN Set phone functionality

AT+CFUN Set phone functionality	
Test Command **AT+CFUN=?**	Response **+CFUN:** (list of supported <**fun**>s), (list of supported <**rst**>s) **OK** **+CME ERROR: <err>**
	Parameters See Write Command.
Read Command **AT+CFUN?**	Response **+CFUN: <fun>** **OK** **+CME ERROR: <err>**
	Parameters See Write Command.
Write Command **AT+CFUN=<fun>，[<rst>]**	Response **OK** **+CME ERROR: <err>**
	Parameters <**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 before setting it to <**fun**> power level
Reference GSM 07.07	

3.2.43. AT+CCLK Clock

AT+CCLK Clock	
Test Command **AT+CCLK=?**	Response **OK**
	Parameters
Read Command **AT+CCLK?**	Response **+CCLK: <time>** **OK** **+CME ERROR: <err>**

	Parameter See Write Command.
Write Command **AT+CCLK=<time>**	Response **OK** **+CME ERROR: <err>**
	Parameter **<time>** String type value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits),month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -48...+48). E.g. May 6th, 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
Reference GSM 07.07	

3.2.44. AT+CSIM Generic SIM access

AT+CSIM Generic SIM access	
Test Command **AT+CSIM=?**	Response **OK**
	Parameter
Write Command **AT+CSIM=<operation>,<file_index>,<offset>,<record_id>,<length>,<data>**	Response **+CSIM: <command>,<response>** **OK** **ERROR**
	Parameters **<operation>** 0 Read operation 1 Write operation **<file_index>** Integer type: SIM elementary file ID **<offset>** Integer type: offset for reading and writing SIM **<length>** Integer type: length of parameter **<data>** String type: hex format: parameter is sent or received from the ME to the SIM
Reference GSM 07.07	

3.2.45. AT+CALM Alert sound mode

AT+CALM Alert sound mode	
Test Command	Response

AT+CALM=?	**+CALM:** (list of supported <**mode**>s) **OK** **+CME ERROR:** <err>
	Parameter See Write Command.
Read Command **AT+CALM?**	Response **+CALM: <mode>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CALM=<mode>**	Response **OK** **+CME ERROR: <err>**
	Parameter **<mode>** 0 Normal mode 1 Silent mode (all sounds from ME are prevented)
Reference GSM 07.07	

3.2.46. AT+CRSL Ringer sound level

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

l>	Parameter **<level>** Integer type value(0-100) with manufacturer specific range (Smallest value represents the lowest sound level)
Reference GSM 07.07	

3.2.47. AT+CLVL Loud speaker volume level

AT+CLVL Loud speaker volume level	
Test Command **AT+CLVL=?**	Response **+CLVL:** (list of supported <**level**>s) **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Read Command **AT+CLVL?**	Response **+CLVL: <level>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command
Write Command **AT+CLVL=<level>**	Response **+CME ERROR: <err>**
	Parameter **<level>** Integer type value (0-100) with manufacturer specific range (Smallest value represents the lowest sound level)
Reference GSM 07.07	

3.2.48. AT+CMUT Mute control

AT+CMUT Mute control	
Test Command **AT+CMUT=?**	Response **+CMUT:** (list of supported <**n**>s) **OK**
	Parameter See Write Command.

Read Command **AT+CMUT?**	Response **+CMUT: <n>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CMUT=<n>**	Response **+CME ERROR: <err>**
	Parameter **<n>** 0 Mute off 1 Mute on
Reference GSM 07.07	

3.2.49. AT+CPUC Price per unit and currency table

AT+CPUC Price per unit and currency table	
Test Command **AT+CPUC=?**	Response **OK**
	Parameters See Write Command.
Read Command **AT+CPUC?**	Response **+CPUC: <currency>,<ppu>** **OK** **+CME ERROR: <err>**
	Parameters See Write Command.
Write Command **AT+CPUC=<currency>,<ppu>[,<passwd>]**	Response **+CME ERROR: <err>**
	Parameters **<currency>** String type; three-character currency code (e.g. "GBP", "DEM"); character set as specified by command select TE character set **+CSCS** **<ppu>** String type; price per unit; dot is used as a decimal Separator (e.g. "2.66") **<passwd>** String type; SIM PIN2
Reference GSM 07.07	

3.2.50. AT+CCWE Call meter maximum event

AT+CCWE Call meter maximum event	
Test Command AT+CCWE=?	Response **+CCWE:** (list of supported <**mode**>s) **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Read Command **AT+CCWE?**	Response **+CCWE: <mode>** **OK** **+CME ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+CCWE=[<mode>]**	Response **OK** **+CME ERROR: <err>**
	Parameter **<mode>** 0 Disable call meter warning event 1 Enable call meter warning event
	Unsolicited result codes supported: **+CCWV** Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code **+CCWV** will be sent, if enabled by this command. The warning is issued approximately when 5 seconds call time remains. It is also issued when starting a call if less than 5s call time remains.
Reference GSM 07.07	

3.2.51. AT+CBC Battery charge

AT+CBC Battery charge	
Test Command **AT+CBC=?**	Response **+CBC:** (list of supported < **bcs** >s),(list of supported < **bcl** >s),(**voltage**) **OK**
	Parameters See Execution Command.

Execution Command **AT+CBC**	Response **+CBC: < bcs >, < bcl >,<voltage>** **OK** **+CME ERROR: <err>**
	Parameters **<bcs>** 0 **<bcl>** Battery connection level 1...100 battery has 1-100 percent of capacity remaining vent **<voltage>** Battery voltage(mV)
Reference GSM 07.07	

3.2.52. AT+CUSD Unstructured supplementary service data

AT+ CUSD Unstructured supplementary service data	
Test Command **AT+CUSD=?**	Response **+CUSD:** (<**n**>s) **OK**
	Parameter See Write Command.
Read Command **AT+CUSD?**	Response **+CUSD: <n>** **OK**
	Parameter See Write Command.
Write Command **AT+CUSD=[<n>** **[,<str>[,<dcs>]]**	Response **OK** **ERROR**
	Parameters **<n>** A numeric parameter which indicates control of the unstructured supplementary service data 0 Disable the result code presentation in the TA 1 Enable the result code presentation in the TA 2 Cancel session (not applicable to read command response) **<str>** String type USSD-string **<dcs>** Cell Broadcast Data Coding Scheme in integer format (default 0)
Reference GSM 03.38	

3.2.53. AT+CSSN Supplementary services notification

AT+CSSN Notification for Supplementary services	
Test Command **AT+CSSN=?**	Response **+CSSN:** (list of supported <**n**>s), (list of supported <**m**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CSSN?**	Response **+CSSN: <n>,<m>** **OK**
	Parameters See Write Command.
Write Command **AT+CSSN=[<n>[,<m>]]**	Response **OK** **ERROR**
	Parameters **<n>** A numeric parameter which indicates whether to show the **+CSSI:<code1>[,<index>]** result code presentation status after a mobile originated call setup 0 Disable 1 Enable **<m>** A numeric parameter which indicates whether to show the **+CSSU:<code2>** result code presentation status during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received. 0 Disable 1 Enable **<code1>** 0 Unconditional call forwarding is active 1 Some of the conditional call forwarding are active 2 Call has been forwarded 3 Call is waiting 4 This is a CUG call (also **<index>** present) 5 Outgoing calls are barred 6 Incoming calls are barred 7 CLIR suppression rejected **<index>** Closed user group index **<code2>** 0 This is a forwarded call
Reference	

3.2.54. AT+CSNS Single numbering scheme

AT+CSNS Single numbering scheme	
Test Command **AT+CSNS =?**	Response **+CSNS:** (list of supported <**mode**>s) **OK**
	Parameter
Read Command **AT+CSNS?**	Response **+CSNS: <mode>** **OK**
	Parameter
Write Command **AT+CSNS=[<mode>]**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Voice 1 Alternating voice/FAX, voice first 2 FAX 3 Alternating voice/data, voice first 4 Data 5 Alternating voice/FAX, FAX first 6 Alternating voice/data, data first 7 Voice followed by data
Reference	

3.2.55. AT+CMOD Configure alternating mode calls

AT+CMOD Configure alternating mode calls	
Test Command **AT+CMOD =?**	Response **+CMOD:** (0-3) **OK**
	Parameter
Write Command **AT+CMOD=[<mode>]**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Single mode

	1	Alternating voice/FAX
	2	Alternating voice/data
	3	Voice followed by data
Reference		

4. AT Commands according to GSM07.05

The GSM 07.05 commands aim to perform SMS and CBS related operations. Quectel wireless modules support both text and PDU modes.

4.1. Overview of AT Commands according to GSM07.05

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

4.2. Detailed descriptions of AT Commands according to GSM07.05

4.2.1. AT+CMGD Delete SMS message

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

	If error is related to ME functionality: **+CMS ERROR:<err>**
	Parameter **<index>** Integer type; value in the range of location numbers supported by the associated memory
Reference GSM 07.05	

4.2.2. AT+CMGF Select SMS message format

AT+CMGF Select SMS message format	
Read Command **AT+CMGF?**	Response **+CMGF: <mode>** **OK**
	Parameter See Write Command.
Test Command **AT+CMGF=?**	Response **+CMGF:** (list of supported <**mode**>s) **OK**
Write Command **AT+CMGF=[<mode>]**	Response TA sets parameter to denote which kind of I/O format of messages is used. **OK**
	Parameter **<mode>** 0 PDU mode 1 Text mode
Reference GSM 07.05	

4.2.3. AT+CMGL List SMS messages from preferred store

AT+CMGL List SMS messages from preferred store	
Test Command **AT+CMGL=?**	Response **+CMGL:** (list of supported <**stat**>s) **OK**
	Parameters See Write Command.
Write Command **AT+CMGL=<stat>[,<mode>]**	Parameters 1) If text mode: **<stat>** "REC UNREAD" Received unread messages

	"REC READ" Received read messages "STO UNSENT" Stored unsent messages "STO SENT" Stored sent messages "ALL" All messages <**mode**> 0 Normal(default) 1 Not change status of the specified SMS record 2) If PDU mode: **<stat>** 0 Received unread messages 1 Received read messages 2 Stored unsent messages 3 Stored sent messages 4 All messages **<mode>** 0 Normal(default) 1 Not change status of the specified SMS record
	Response TA returns messages with status value **<stat>** from message storage **<mem1>** to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'. 1) If text mode (**+CMGF=1**) and command successful: for SMS-SUBMITs and/or SMS-DELIVERs: **+CMGL:** **<index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[<CR><LF>** **+CMGL:** **<index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<tooa/toda>,<length>]<CR><LF><data>[...]]** for SMS-STATUS-REPORTs: **+CMGL:** **<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[<CR><LF>** **+CMGL:** **<index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>[...]]** for SMS-COMMANDs: **+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>** **+CMGL: <index>,<stat>,<fo>,<ct>[...]]** for CBM storage: **+CMGL:<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[<CR><LF>** **+CMGL:** **<index>,<stat>,<sn>,<mid>,<page>,<pages><CR><LF><data>[...]]** **OK** 2) If PDU mode (**+CMGF=0**) and Command successful: **+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu><CR><L**

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

3)If error is related to ME functionality:
+CMS ERROR: <err>
Parameters

<alpha>	String type alphanumeric representation of **<da>** or **<oa>** corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command select TE character set **+CSCS** (see definition of this command in TS 07.07)
<da>	GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command **+CSCS** in TS 07.07); type of address given by <**toda**>
<data>	In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format: - if <**dcs**> indicates that GSM 03.38 default alphabet is used and <**fo**> indicates that GSM 03.40 TPUser-Data-Header-Indication is not set: - if TE character set other than "HEX" (refer to Command Select TE character set **+CSCS** in TS 07.07):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character P (GSM 23) is presented as 17 (IRA 49 and 55)) - if <**dcs**> indicates that 8-bit or UCS2 data coding scheme is used, or <**fo**> indicates that GSM 03.40 TP-User-Data-Header-Indication is set: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)) In the case of CBS: GSM 03.41 CBM Content of Message in text mode responses; format: - if <**dcs**> indicates that GSM 03.38 default alphabet is used: - if TE character set other than "HEX" (refer to Command **+CSCS** in GSM 07.07): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long

		hexadecimal number - if **<dcs>** indicates that 8-bit or UCS2 data coding scheme is used: ME/TA converts each 8-bit octet into two IRA character long hexadecimal number
	<length>	Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	<index>	Integer type; value in the range of location numbers supported by the associated memory
	<oa>	GSM 03.40 TP-Originating-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (refer to command **+CSCS** in TS 07.07); type of address given by **<tooa>**
	<pdu>	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format.
	<scts>	GSM 03.40 TP-Service-Center-Time-Stamp in time-string format (refer to **<dt>**)
	<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129)
	<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (refer to **<toda>**)
Reference GSM 07.05		

4.2.4. AT+CMGR Read SMS message

AT+CMGR Read SMS message		
Test Command **AT+CMGR=?**	Response **OK**	
Write Command **AT+CMGR=<index>[,<mode>]**	Parameters	
	<index>	Integer type; value in the range of location numbers supported by the associated memory
	<mode>	0 Normal 1 Not change the status of the specified SMS record
	Response TA returns SMS message with location value **<index>** from message	

storage **<mem1>** to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'.

1) If text mode (**+CMGF=1**) and command is executed successfully:

for SMS-DELIVER:

+CMGR:

<stat>,<oa>,[<alpha>],<scts>*[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*<CR><LF><data>

for SMS-SUBMIT:

+CMGR:

<stat>,<da>,[<alpha>]*[,<toda>,<fo>,<pid>,<dcs>,[<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>,<dcs>,<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>

Parameters

<alpha>	String type alphanumeric representation of **<da>** or **<oa>** corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific
<da>	GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>**
<data>	In the case of SMS: GSM 03.40 TP-User-Data in text mode responses; format: - if **<dcs>** indicates that GSM 03.38 default alphabet is used and **<fo>** indicates that GSM 03.40 TPUser-Data-Header-Indication is not set: - if TE character set other than "HEX" (refer to command select TE character set **+CSCS** in TS 07.07):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A - if TE character set is "HEX": ME/TA converts each 7-bit character of GSM alphabet into two IRA character long

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

		format.
	<pid>	GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0)
	<sca>	GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<tosca>**
	<scts>	GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer to **<dt>**)
	<stat>	0 "REC UNREAD" Received unread messages 1 "REC READ" Received read messages 2 "STO UNSENT" Stored unsent messages 3 "STO SENT" Stored sent messages 4 "ALL" All messages
	<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default is 129)
	<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer to **<toda>**)
	<tosca>	GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer to **<toda>**)
	<vp>	Depending on SMS-SUBMIT **<fo>** setting: GSM 03.40 TP-Validity-Period either in integer format (default value is 167) or in time-string format (refer to **<dt>**)
Reference GSM 07.05		

4.2.5. AT+CMGS Send SMS message

AT+CMGS Send SMS message		
Test Command **AT+CMGS=?**	Response **OK**	
Write Command 1) If text mode (**+CMGF=1**): **+CMGS=<da>[,<toda>]**<CR> **text is entered** <ctrl-Z/ESC> ESC quits without sending 2) If PDU mode	Parameters **<da>** **<toda>** **<length>**	GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129) Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in

(**+CMGF=0**): **+CMGS=<length>**<CR> **PDU is given** <ctrl-Z/ESC>	characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) Response TA sends message from a TE to the network (SMS-SUBMIT). Message reference value **<mr>** is returned to the TE on successful message delivery. Optionally (when **+CSMS <service>** value is 1 and network supports) **<scts>** is returned. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode (**+CMGF=1**) and sent successfully: **+CMGS: <mr>** **OK** 2) If PDU mode (**+CMGF=0**) and sent successfully: **+CMGS: <mr>** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>** Parameter **<mr>** GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05	

4.2.6. AT+CMGW Write SMS message to memory

AT+CMGW Write SMS message to memory	
Test Command **AT+CMGW=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **AT+CMGW=<oa/da>[,<tooa/toda>[,<stat>]]** <CR> **text is entered** <ctrl-Z/ESC> <ESC> quits without sending	Response 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. If writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
2) If PDU mode (+CMGF=0):	Parameters **<oa>** GSM 03.40 TP-Originating-Address Address-Value field in

AT+CMGW=<length>[,<stat>]<CR> **PDU is given** <ctrl-Z/ESC>		string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07);type of address given by **<tooa>**
	<da>	GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>**
	<tooa>	GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer to **<toda>**)
	<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129) 129 Unknown type(IDSN format number) 145 International number type(ISDN format)
	<length>	Integer type value indicating in the text mode (**+CMGF=1**) the length of the message body **<data>** (or **<cdata>**) in characters; or in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	<pdu>	In the case of SMS: GSM 04.11 SC address followed by GSM 03.40 TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65)). In the case of CBS: GSM 03.41 TPDU in hexadecimal format.
	<index>	Index of message in selected storage **<mem2>**
Reference GSM 07.05		

4.2.7. AT+CMSS Send SMS message from storage

AT+CMSS Send SMS message from storage	
Test Command **AT+CMSS=?**	Response **OK**
Write Command **AT+CMSS=<index>[,<da>[,<toda>]]**	Response TA sends message with location value **<index>** from message storage **<mem2>** to the network (SMS-SUBMIT). If new recipient address **<da>** is given, it shall be used instead of the one stored with the message. Reference value **<mr>** is returned to the TE on successful message delivery. Values can be used to identify message upon unsolicited delivery status report result code.

	1) If text mode (**+CMGF=1**) and sent successfully: **+CMSS: <mr> [,<scts>]** **OK** 2) If PDU mode(**+CMGF=0**) and sent successfully; **+CMSS: <mr> [,<ackpdu>]** **OK** 3) If error is related to ME functionality: **+CMS ERROR: <err>**	
	Parameters	
	<index>	Integer type; value in the range of location numbers supported by the associated memory
	<da>	GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>**
	<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129)
	<mr>	GSM 03.40 TP-Message-Reference in integer format
Reference GSM 07.05		

4.2.8. AT+CMGC Send SMS command

AT+CMGC Send SMS command		
Test Command **AT+CMGC=?**	Response **OK**	
Write Command 1) If text mode (**+CMGF=1**): **AT+CMGC=<fo>[,<ct><pid>,<mn>,<da>,<toda>]<CR>** text is entered <ctrl-Z/ESC> ESC quits without sending 2) If PDU mode (**+CMGF**=0):	Parameters	
	<fo>	First octet of GSM 03.40 SMS-COMMAND (default value is 2) in integer format
	<ct>	GSM 03.40 TP-Command-Type in integer format (default value is 0)
	<pid>	GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0)
	<mn>	GSM 03.40 TP-Message-Number in integer format
	<da>	GSM 03.40 TP-Destination-Address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<toda>**
	<toda>	GSM 04.11 TP-Destination-Address Type-of-Address octet

AT+CMGC=<length><CR> **PDU is given** <ctrl-Z/ESC>		in integer format (when first character of **<da>** is + (IRA 43) default value is 145, otherwise default value is 129) 129 Unknown type(IDSN format number) 145 International number type(ISDN format)
	<length>	Integer type value indicating in PDU mode (**+CMGF=0**), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
	Response TA transmits SMS command message from a TE to the network (SMS-COMMAND). Message reference value **<mr>** is returned to the TE on successful message delivery. Value can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(**+CMGF=1**) and sent successfully: **+CMGC: <mr> [,<scts>]** **OK** 2) If PDU mode(**+CMGF=0**) and sent successfully: **+CMGC: <mr> [,<ackpdu>]** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>** Parameters **<mr>** GSM 03.40 TP-Message-Reference in integer format	
Reference GSM 07.05		

4.2.9. AT+CNMI New SMS message indications

AT+CNMI New SMS message indications	
Test Command **AT+CNMI=?**	Response **+CNMI:** (list of supported <**mode**>s),(list of supported <**mt**>s),(list of supported <**bm**>s),(list of supported <**ds**>s),(list of supported <**bfr**>s) **OK**
	Parameters See Write Command.
Read Command **AT+CNMI?**	Response **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** **OK**
	Parameters See Write Command.

Write Command **AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]**	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 GSM 03.38. **OK** If error is related to ME functionality: **ERROR**

Parameters

<mode> 0 Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.

1 Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.

2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.

3 Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.

<mt> (The rules for storing received SMS depend on its data coding scheme (refer to GSM 03.38 [2]), preferred memory storage (**+CPMS**) setting and this value):

0 No SMS-DELIVER indications are routed to the TE.

1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE by using unsolicited result code: **+CMTI: <mem>,<index>**

2 SMS-DELIVERs (except class 2) are routed directly to the TE using unsolicited result code: **+CMT: [<alpha>],<length><CR><LF><pdu>** (PDU mode enabled) or **+CMT: <oa>, [<alpha>],<scts>** ***[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]*** **<CR><LF><data>**

(Text mode enabled; about parameters in italics, refer to Command Show Text Mode Parameters **+CSDH**). Class 2 messages result in indication as defined in **<mt>**=1.

3 Class 3 SMS-DELIVERs are routed directly to TE by using unsolicited result codes defined in **<mt>**=2. Messages of other classes result in indication as defined in **<mt>**=1.

<bm> (The rules for storing received CBMs depend on its data coding scheme (refer to GSM 03.38 [2]), the setting of Select CBM Types (**+CSCB**) and this value):

0 No CBM indications are routed to the TE.

2 New CBMs are routed directly to the TE by using unsolicited result code: **+CBM: <length><CR><LF><pdu>** (PDU mode enabled) or

			+CBM: **<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>** (Text mode enabled).
		3	Class 3 CBMs are routed directly to TE by using unsolicited result codes defined in <**bm**>=2. If CBM storage is supported, messages of other classes result in indication as defined in <**bm**>=1.
	<ds>	0	No SMS-STATUS-REPORTs are routed to the TE.
		1	SMS-STATUS-REPORTs are routed to the TE by using unsolicited result code: **+CDS:** **<length><CR><LF><pdu>** (PDU mode enabled) or **+CDS:** **<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>** (Text mode enabled)
	<bfr>	0	TA buffer of unsolicited result codes defined in this command is flushed to the TE when **<mode>** 1...3 is entered (**OK** response shall be given before flushing the codes).
	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		
Reference GSM 07.05			

4.2.10. AT+CPMS Preferred SMS message storage

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

	See Write Command.
Write Command **AT+CPMS=[<mem1>,<mem2>,<mem3>]**	Response TA selects memory storages **<mem1>**, **<mem2>** and **<mem3>** to be used for reading, writing, etc. **+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3>** **OK** If error is related to ME functionality: **ERROR**
	Parameters **<mem1>** Messages to be read and deleted from this memory storage "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages **<mem2>** Messages will be written and sent to this memory storage "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages **<mem3>** Received messages will be placed in this memory storage if routing to PC is not set ("**+CNMI**") "SM" SIM message storage "ME" Mobile Equipment message storage "MT" Sum of "SM" and "ME" storages **<usedx>** Integer type; Number of messages currently in **<memx>** **<totalx>** Integer type; Number of messages storable in **<memx>**
Reference GSM 07.05	

4.2.11. AT+CRES Restore SMS settings

AT+CRES Restore SMS settings	
Test Command **AT+CRES=?**	Response **+CRES:** (list of supported <**profile**>s) **OK**
Write Command **AT+CRES=[<profile>]**	Response TA restores SMS settings from non-volatile memory to active memory. A TA can contain several profiles of settings. Settings specified in commands service centre address **+CSCA**, set message parameters **+CSMP** and select cell broadcast message types **+CSCB** (if implemented) are restored. Certain settings may not be supported by the storage (e.g. SIM SMS parameters) and therefore can not be restored. **OK** If error is related to ME functionality:

	ERROR
	Parameter **<profile>**0-3 Manufacturer specific profile number where settings are to be stored
Reference GSM 07.05	

4.2.12. AT+CSAS Save SMS settings

AT+CSAS Save SMS settings	
Test Command **AT+CSAS=?**	Response **+CSAS:** (list of supported <**profile**>s) **OK**
Write Command **AT+CSAS=[<profile>]**	Response TA saves active message service settings to non-volatile memory. A TA can contain several profiles of settings. Settings specified in commands service centre address +CSCA, Set Message Parameters **+CSMP** and Select cell broadcast message Types **+CSCB** (if implemented) are saved. Certain settings may not be supported by the storage (e.g. SIM SMS parameters) and therefore can not be saved **OK** If error is related to ME functionality: **ERROR**
	Parameter **<profile>** 0-3 Manufacturer specific profile number where settings are to be stored
Reference GSM 07.05	

4.2.13. AT+CSCA SMS service center address

AT+CSCA SMS service center address	
Read Command **AT+CSCA?**	Response **+CSCA: <sca>,<tosca>** **OK**
	Parameters See Write Command.
Test Command **AT+CSCA=?**	Response **OK**
Write Command	Response

AT+CSCA = <sca>[,<tosca>]	TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by sending and writing commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address coded into **<pdu>** parameter equals zero. *Note:* *The Command writes the parameters in NON-VOLATILE memory.* **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameters **<sca>** GSM 04.11 RP SC address Address-Value field in string format; BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by **+CSCS** in TS 07.07); type of address given by **<tosca>** **< tosca>** Service center address format GSM 04.11 RP SC address Type-of-Address octet in integer format (default refer to **<toda>**)
Reference GSM 07.05	

4.2.14. AT+CSCB Select cell broadcast SMS messages

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

	Parameters **<mode>** 0 Message types specified in **<mids>** and **<dcss>** are accepted 1 Message types specified in **<mids>** and **<dcss>** are not accepted **<mids>** String type; all different possible combinations of CBM message identifiers (refer to **<mid>**) (default is empty string); e.g. "0,1,5,320-478,922". **<dcss>** String type; all different possible combinations of CBM data coding schemes (refer to **<dcs>**) (default is empty string); e.g. "0-3,5"
Reference GSM 07.05	

4.2.15. AT+CSDH Show SMS text mode parameters

AT+CSDH Show SMS text mode parameters	
Read Command **AT+CSDH?**	Response **+CSDH: <show>** **OK**
	Parameters See Write Command.
Test Command **AT+CSDH=?**	Response **+CSDH:** (list of supported <**show**>s) **OK**
	Parameter See Write Command.
Write Command **AT+CSDH=[<show>]**	Response TA determines whether detailed header information is shown in text mode result codes. **OK**
	Parameter **<show>** 0 Do not show header values defined in commands **+CSCA** and **+CSMP** (**<sca>**, **<tosca>**, **<fo>**, **<vp>**, **<pid>** and **<dcs>**) nor **<length>**, **<toda>** or **<tooa>** in **+CMT**, **+CMGL**, **+CMGR** result codes for SMS-DELIVERs and SMS-SUBMITs in text mode 1 Show the values in result codes
Reference GSM 07.05	

4.2.16. AT+CSMP Set SMS text mode parameters

AT+CSMP Set SMS text mode parameters	
Read Command **AT+CSMP?**	Response **+CSMP: <fo>,<vp>,<pid>,<dcs>** **OK**
	Parameters See Write Command.
Test Command **AT+CSMP=?**	Response **+CSMP:** (list of supported <**fo**>s), (list of supported <**vp**>s), (list of supported <**pid**>s), (list of supported <**dcs**>s) **OK**
	Parameters See Write Command.
Write Command **AT+CSMP=[<fo>[<vp>[,pid>[,<dcs>]]]]**	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 (**+CMGF=1**). It is possible to set the validity period starting from when the SM is received by the SMSC (**<vp>** is in range 0... 255) or define the absolute time of the validity period termination (**<vp>** is a string). *Note:* *The Command writes the parameters in NON-VOLATILE memory.* ***OK***
	Parameters **<fo>** Depending on the Command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default value is 17), SMS-STATUS-REPORT, or SMS-COMMAND (default value is 2) in integer format. SMS status report is supported under text mode if **<fo>** is set to 49 **<vp>** Depending on SMS-SUBMIT **<fo>** setting: GSM 03.40 TP-Validity-Period either in integer format (default 167) or in time-string format (refer to **<dt>**) **<pid>** GSM 03.40 TP-Protocol-Identifier in integer format (default value is 0) **<dcs>** GSM 03.38 SMS Data Coding Scheme in Integer format
Reference GSM 07.05	

4.2.17. AT+CSMS Select message service

AT+CSMS Select message service	
Read Command **AT+CSMS?**	Response **+CSMS: <service>,<mt>,<mo>,<bm>** **OK**
	Parameters See Write Command.
Test Command **AT+CSMS=?**	Response **+CSMS:** (list of supported <**service**>s) **OK**
	Parameters See Write Command.
Write Command **AT+CSMS=** **<service>**	Response **+CSMS: <mt>,<mo>,<bm>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameters **<service>** 0 GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with GSM 07.05 Phase 2 version 4.7.0; Phase 2+ features which do not require new command syntax may be supported (e.g. correct routing of messages with new Phase 2+ data coding schemes)) 128 SMS PDU mode - TPDU only used for sending/receiving SMSs. **<mt>** Mobile Terminated Messages: 0 Type not supported 1 Type supported **<mo>** Mobile Originated Messages: 0 Type not supported 1 Type supported **<bm>** Broadcast Type Messages: 0 Type not supported 1 Type supported

5. AT Commands for GPRS support

5.1. Overview of AT Commands for GPRS support

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

5.2. Detailed descriptions of AT Commands for GPRS support

5.2.1. AT+CGATT Attach to/detach from GPRS service

AT+CGATT Attach to/detach from GPRS service	
Test Command **AT+CGATT=?**	Response **+CGATT:** (list of supported <**state**>s) **OK** Parameter See Write Command.
Read Command **AT+CGATT?**	Response **+CGATT: <state>** **OK** Parameter See Write Command.
Write Command **AT+CGATT=<state>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameter **<state>** Indicates the state of GPRS attachment 0 Detached

	1 Attached Other values are reserved and will result in an **ERROR** response to the Write Command
Reference GSM07.07	

5.2.2. AT+CGDCONT Define PDP context

AT+CGDCONT	**Define PDP context**
Test Command **AT+CGDCONT=?**	Response **+CGDCONT:** (range of supported <**cid**>s), <**PDP_type**>, <**APN**>, <**PDP_addr**>, (list of supported <**data_comp**>s), (list of supported <**head_comp**>s) **OK** Parameters See Write Command.
Read Command **AT+CGDCONT?**	Response **+CGDCONT:** **<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>** **<CR><LF>+CGDCONT:** **<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>** **…** **OK** Parameters See Write Command.
Write Command **AT+CGDCONT=<cid>[,<PDP_type>,[APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]**	Response **OK** **ERROR** Parameters **<cid>** (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command. **<PDP_type>** (Packet Data Protocol type) a string parameter which specifies the type of packet data protocol X25 ITU-T/CCITT X.25 layer 3 IP Internet Protocol (IETF STD 5) OSPIH Internet Hosted Octet Stream Protocol PPP Point to Point Protocol (IETF STD 51) **<APN>** (Access Point Name) a string parameter that is a logical name that is used to select the GGSN or the external packet

		data network. If the value is null or omitted, then the subscription value will be requested.
	<PDP_addr>	A string parameter identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The allocated address may be read using the **+CGPADDR** command.
	<d_comp>	A numeric parameter that controls PDP data compression 0 off (default if value is omitted) Other values are reserved
	<h_comp>	A numeric parameter that controls PDP header compression 0 off (default if value is omitted) Other values are reserved
Reference GSM07.07		

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

AT+CGQMIN	**Quality of service profile (Minimum acceptable)**	
Test Command **AT+CGQMIN=?**	Response **+CGQMIN:** <**PDP_type**>, (list of supported <**precedence**>s), (list of supported <**delay**>s), (list of supported <**reliability**>s), (list of supported <**peak**>s), (list of supported <**mean**>s) **OK** Parameters See Write Command.	
Read Command **AT+CGQMIN?**	Response **+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **<CR><LF>+CGQMIN:** **<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **…** **OK** Parameters See Write Command.	
Write Command **AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters	
	<cid>	A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command)
	The following parameter are defined in GSM 03.60	

	<precedence>	A numeric parameter which specifies the precedence class
	<delay>	A numeric parameter which specifies the delay class
	<reliability>	A numeric parameter which specifies the reliability class
	<peak>	A numeric parameter which specifies the peak throughput class
	<mean>	A numeric parameter which specifies the mean throughput class
Reference GSM07.07		

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

AT+CGQREQ	**Quality of service profile (Requested)**
Test Command **AT+CGQREQ=?**	Response **+CGQREQ:** <**PDP_type**>, (list of supported <**precedence**>s), (list of supported <**delay**>s), (list of supported <**reliability**>s), (list of supported <**peak**>s), (list of supported <**mean**>s) **OK** Parameters See Write Command.
Read Command **AT+CGQREQ?**	Response **+CGQREQ: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>** **<CR><LF>+CGQMIN:** **<cid>,<precedence>,<delay>,<reliability>,<peak >,<mean>** **…** **OK** Parameters See Write Command.
Write Command **AT+CGQREQ=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command) The following parameter are defined in GSM 03.60 **<precedence>** A numeric parameter which specifies the precedence class **<delay>** A numeric parameter which specifies the delay class **<reliability>** A numeric parameter which specifies the reliability class **<peak>** A numeric parameter which specifies the peak throughput class

	<mean>	A numeric parameter which specifies the mean throughput class
Reference GSM07.07		

5.2.5. AT+CGACT PDP context activate or deactivate

AT+CGACT Activate or deactivate PDP context	
Test Command **AT+CGACT=?**	Response **+CGACT:** (list of supported <**state**>s) **OK** Parameter See Write Command.
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid><state>…]** **OK**
Write Command **AT+CGACT=<state>,<cid>**	Response **OK** **NO CARRIER** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<state>** Indicates the state of PDP context activation 0 Deactivated 1 Activated Other values are reserved and will result in an ERROR response to the Write Command. **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command)
Reference GSM07.07	*Note:* *If context is deactivated successfully, **NO CARRIER** is returned.*

5.2.6. AT+CGDATA Enter data state

AT+CGDATA Enter data state	
Test Command **AT+CGDATA=?**	Response **+CGDATA:** list of supported <**L2P**>s **OK** Parameter

	See Write Command.
Write Command **AT+CGDATA=<L2P>[,<cid>[,<cid>[,…]]]**	Response **OK** **NO CARRIER** If error is related to ME functionality: **+CME ERROR: <err>** Parameters **<L2P>** 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 **ERROR** response to the execution command **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command)
Reference GSM07.07	

5.2.7. AT+CGPADDR Show PDP address

AT+CGPADDR	**Show PDP address**
Test Command **AT+CGPADDR=?**	Response **+CGPADDR:** (list of defined <**cid**>s) **OK** Parameter See Write Command.
Write Command **AT+CGPADDR=<cid>**	Response **+CGPADDR: <cid>,<PDP_addr>** **OK** **ERROR** Parameters **<cid>** A numeric parameter which specifies a particular PDP context definition (see **+CGDCONT** command) **<PDP_addr>** A string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the **+CGDCONT** command when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to **<cid>**. **<PDP_ address>** is omitted if none is available
Reference GSM07.07	*Note:* *This command dictates the behavior of PPP in the ME but not that of any*

	other GPRS-enabled foreground layer, e.g. browser.

5.2.8. AT+CGCLASS GPRS mobile station class

AT+CGCLASS	**GPRS mobile station class**
Test Command **AT+CGCLASS=?**	Response **+CGCLASS:** (list of supported <**class**>s) **OK** Parameter See Write Command.
Read Command **AT+CGCLASS?**	Response **+CGCLASS: <class>** **OK** Parameter See Write Command.
Write Command **AT+CGCLASS=<class>**	Response **OK** **ERROR** If error is related to ME functionality: **+CME ERROR: <err>** Parameter **<class>** A string parameter which indicates the GPRS mobile class (Functionality in descending order) "B" Class B "CG" Class C in GPRS only mode "CC" Class C in circuit switched only mode
Reference GSM07.07	

5.2.9. AT+CGEREP Control unsolicited GPRS event reporting

AT+CGEREP	**Control unsolicited GPRS event reporting**
Test Command **AT+CGEREP=?**	Response **+CGEREP:** (list of supported <**mode**>s) **OK** Parameter See Write Command.
Read Command	Response

AT+CGEREP?	**+CGEREP: <mode>** **OK** Parameter See Write Command.
Write Command **AT+CGEREP=<mode>**	Response **OK** **ERROR** Parameter **<mode>** 0 Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE. 1 Discard unsolicited result codes when MT-TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE Unsolicited Result Codes supported: **+CGEV: NW DEACT <PDP_type>, <PDP_addr>[,<cid>]** **+CGEV: ME DEACT <PDP_type>, <PDP_addr>[,<cid>]** **+CGEV: NW DETACH** **+CGEV: ME CLASS <class>** Parameters **<PDP_type>** Packet Data Protocol type (see **+CGDCONT** command) **<PDP_addr>** Packet Data Protocol address (see **+CGDCONT** command) **<cid>** Context ID (see **+CGDCONT** command) **<class>** GPRS mobile class (see **+CGCLASS** command)
Reference GSM07.07	

5.2.10. AT+CGREG Network registration status

AT+CGREG Network registration status	
Test Command **AT+CGREG=?**	Response **+CGREG:** (list of supported <**n**>s) **OK** Parameter See Write Command.
Read Command **AT+CGREG?**	Response **+CGREG: <n>,<stat>[,<lac>,<ci>]** **OK**

	+CME ERROR: <err> Parameter See Write Command.
Write Command **AT+CGREG=[<n>]**	Response **OK** **ERROR** Parameters **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code **+CGREG:<stat>** 2 Enable network registration and location information unsolicited result code **+CGREG: <stat>[,<lac>,<ci>]** **<stat>** 0 Not registered, ME is not currently searching a new operator to register to 1 Registered, home network 2 Not registered, but ME is currently searching a new operator to register to 3 Registration denied 4 Unknown 5 Registered, roaming **<lac>** String type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** String type; two bytes cell ID in hexadecimal format
Reference GSM07.07	*Note:* *For parameter state, options 0 and 1 are supported only.*

5.2.11. AT+CGSMS Select service for MO SMS messages

AT+CGSMS Select service for MO SMS messages	
Test Command **AT+CGSMS=?**	Response **+CGSMS:** (list of currently available <**service**>s) **OK** Parameter See Write Command.
Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK** Parameter See Write Command.
Write Command *AT+CGSMS=[<s*	Response OK

ervice>]	If error is related to ME functionality: +CME ERROR: <err> Parameter <service> A numeric parameter which indicates the service or service preference to be used 0 GPRS 1 Circuit switch 2 GPRS preferred (use circuit switched if GPRS not available) 3 Circuit switch preferred (use GPRS if circuit switched not available)
Reference *GSM07.07*	*Note:* *The circuit switched service route is the default method.*

6. AT Commands special for Quectel

6.1. Overview

Command	Description
AT+QSIDET	Change the side tone gain level
AT+QPOWD	Power off
AT+QTRPIN	Times remain to input SIM PIN/PUK
AT+QMIC	Change the microphone gain level
AT+QRSTCB	Reset cell broadcast
AT+QINDRI	Indic ATE RI when using URC
AT+QLDTMF	Generate local DTMF tones
AT+QSPN	Get service provider name from SIM
AT+QBAND	Get and set mobile operation band
AT+QAUDCH	Swap the audio channels
AT+QSCLK	Configure chow clock
AT+QCLASS0	Store Class 0 SMS to SIM when received Class 0 SMS
AT+QCCID	Show ICCID
AT+QMGDA	Delete all SMS
AT+QLTONE	Generate local specific tone
AT+QGID	Get SIM card group identifier
AT+QSIMVOL	Select SIM card operating voltage
AT+QMOSTAT	Show state of mobile originated call
AT+QGPCLASS	Change GPRS Muti-solt class
AT+QMGHEX	Enable to send Non-ASCII character SMS
AT+QSMSCODE	Configure SMS code mode
AT+QIURC	Enable or disable initial or URC presentation
AT+QEXTUNSOL	Enable/disable propriety unsolicited indications
AT+QSFR	Preference speech coding
AT+QSPCH	Speech channel type report
AT+QINISTAT	Query state of initialization
AT+QNSTATUS	Query GSM network status
AT+QNITZ	Network time synchronization
AT+QLTS	Obtain latest Network time synchronized
AT+CTZU	Network time synchronization and update the RTC time
AT+CTZR	Network time synchronization report
AT+QRIMODE	Set RI time
AT+QDISH	Disable ATH
AT+QMUXC	Turnoff MUX PSC command

6.2. Detailed descriptions of Commands

6.2.1. AT+QSIDET Change the side tone gain level

AT+QSIDET Change the side tone gain level	
Test Command **AT+QSIDET=?**	Response **+QSIDET:** (<**gainlevel**>) **OK**
	Parameter See Write Command.
Read Command **AT+QSIDET?**	Response: **+QSIDET(NORMAL_AUDIO): <gainlevel>** **OK** **+QSIDET(HEADSET_AUDIO): <gainlevel>** **OK**
	Parameter See Write Command.
Write Command **AT+QSIDET=<** **gainlevel >**	Response **OK** **ERROR**
	Parameter **<gainlevel>** Range is 0 - 255
Reference	*Note:* *<gainlevel> value is related to specific channel.*

6.2.2. AT+QPOWD Power off

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

6.2.3. AT+QTRPIN Times remain to input SIM PIN/PUK

AT+QTRPIN Times remain to input SIM PIN/PUK		
Execution Command **AT+QTRPIN**	Response Times remain to input SIM PIN **+QTRPIN: <chv1>,<chv2>,<puk1>,<puk2>** **OK**	
	Parameters	
	<chv1>	Times remain to input chv1
	<chv2>	Times remain to input chv2
	<puk1>	Times remain to input puk1
	<puk2>	Times remain to input puk2
Reference		

6.2.4. AT+QMIC Change the microphone gain level

AT+QMIC Change the microphone gain level		
Test Command **AT+QMIC=?**	Response **+QMIC:** (list of supported <**channel**>s）, (list of supported <**gainlevel**>s) **OK**	
	Parameters See Write Command.	
Read Command **AT+QMIC?**	Response **+ QMIC: < gainlevel(Normal_Mic) >, <gainlevel(Headset_Mic)> , <gainlevel(Loudspeaker_Mic)>** **OK**	
	Parameters See Write Command.	
Write Command **AT+QMIC=<channel>,<gainlevel>**	Response : **OK** **ERROR**	
	Parameters	
	<channel>	0 Normal microphone
		2 Loudspeaker microphone
	<gainlevel>	Range is 0 - 15
Reference		

6.2.5. AT+QRSTCB Reset cell broadcast

AT+QRSTCB	Reset cell broadcast
Execution Command **AT+QRSTCB**	Response **OK**
	Parameter
Reference	*Note:* *Reset the CB module.*

6.2.6. AT+QINDRI Indicate RI when using URC

AT+QINDRI	Indicate RI when using URC
Read Command **AT+ QINDRI?**	Response **+QINDRI: <status>** **OK**
	Parameter See Write Command.
Write Command **AT+QINDRI=<status>**	Response **OK** **ERROR**
	Parameter **<status>** 0 Off 1 On
Reference	

6.2.7. AT+QLDTMF Generate local DTMF tones

AT+ QLDTMF	Generate local DTMF tones
Write Command **AT+QLDTMF=<n>[,<DTMF string>]**	Response **OK** **ERROR**
	Parameters **<n>** A numeric parameter(1-1000) which indicates the duration of all DTMF tones in **<DTMF -string>** in 1/10 seconds **<DTMF-string>** A string parameter which has a max length of 20 DTMF characters (single ASCII chars in the set 0-9,#,*,A-D),

	separated by commas.
Execution Command **AT+QLDTMF**	Response **OK** Aborts any DTMF tones that are generated currently and any DTMF tones sequence.
Reference GSM07.07	

6.2.8. AT+QSPN Get service provider name from SIM

AT+QSPN Get service provider name from SIM	
Read Command **AT+QSPN?**	Response **+QSPN: <spn>,<display mode>** **OK** **+CME ERROR: <err>**
	Parameters **<spn>** String type; service provider name on SIM **<display mode>** 0 Don't display PLMN. Already registered on PLMN 1 Display PLMN
Reference	*Note:* *CME errors are possible if SIM is not inserted or PIN is not entered.*

6.2.9. AT+QBAND Get and set mobile operation band

AT+QBAND Get and set mobile operation band	
Test Command **AT+QBAND=?**	Response **+QBAND:** (list of supported <**op_band**>s) **OK**
	Parameter See Write Command.
Read Command **AT+QBAND?**	Response **+QBAND: <op_band>** **OK**
	Parameter See Write Command.
Write Command **AT+QBAND=<o**	Response **OK**

p_band>	If error is related to ME functionality: **+CMS ERROR: <err>**
	Parameter **<op_band>** "EGSM_MODE" "DCS_MODE" "PCS_MODE" "GSM850_MODE" "EGSM_DCS_MODE" "GSM850_PCS_MODE" "GSM850_EGSM_DCS_PCS_MODE"
Reference	*Note:* The following radio setting to be updated is stored in non-volatile memory.

6.2.10. AT+QAUDCH Swap the audio channels

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

6.2.11. AT+QSCLK Configure slow clock

AT+ QSCLK Configure slow clock	
Test Command **AT+QSCLK=?**	Response **+QSCLK: (0,1)** **OK**

	Parameter See Write Command.
Read Command **AT+QSCLK?**	Response **+QSCLK: <n>** **OK**
	Parameter See Write Command
Write Command **AT+QSCLK** **=<n>**	Response **OK** **ERROR**
	Parameter **<n>** 0 Disable slow clock 1 Enable slow clock
Reference	

6.2.12. AT+QENG Report cell description in engineering mode

AT+QENG Report cell description in engineering mode	
Test Command **AT+QENG=?**	Response TA returns the list of supported modes. **+QENG:** (list of supported <**mode**>s), (list of supported **<dump>**s) **OK**
	Parameters See Write Command.
Read Command **AT+QENG?**	Response This command can be used to retrieve the parameters of the main cell and of up to six neighboring cells. The corresponding information is reported selectively according to **<dump>**: **+QENG: <mode>,<dump** Main cell description: **+QENG:** **0,<mcc>,<mnc>,<lac>,<cellid>,<bcch>,<bsic>,<dbm>,<c1>,<c2>,<txp>,<rla>,<tch>,<ts>,<maio>,<hsn><ta>,<rxq_sub>,<rxq_full>** Neighbour 1 to neighbour 6 cells description: **[+QENG: 1,**list of (**<ncell>,<bcch>,<dbm>,<bsic>,<c1>,<c2>,<mcc>,<mnc>,<lac>,<cellid>**)s**]** **OK**
	Parameters

	See Write Command.
Write Command **AT+QENG =<mode>[,<dump>]**	Response TA attempt to switch on or off engineering mode for retrieving detailed cell environment description. These are two possible methods to ascertain these cell parameters: one request by read command or automatically report. **OK** **ERROR**
	Unsolicited result code TA controls the presentation of an unsolicited result code when **<mode>**=2. The corresponding information is reported selectively according to **<dump>**. Main cell description: **+QENG: 0,<mcc>,<mnc>,<lac>,<cellid>,<bcch>,<bsic>,<dbm>,<c1>,<c2>,<txp>,<rla>,<tch>,<ts>,<maio>,<hsn><ta>,<rxq_sub>,<rxq_full>** Neighbour 1 to neighbour 6 cells description: **[+QENG: 1,**list of **(<ncell>,<bcch>,<dbm>,<bsic>,<c1>,<c2>,<mcc>,<mnc>,<lac>,<cellid>**)s**]**
	Parameters **<mode>** 0 Switch off engineering mode and stop detailed reporting. Parameter **<dump>** is ignored. 1 Switch on engineering mode for reading detailed reporting 2 Switch on engineering mode, and automatically report Unsolicited Result Code **<dump>** 0 Report main cell description only 1 Report main cell and neighbour 1-6 cells description **<mcc>** Mobile country code **<mnc>** Mobile network code **<lac>** Location area code, hexadecimal digits **<cellid>** Cell ID, hexadecimal digits **<bcch>** ARFCN of the BCCH carrier **<bsic>** Base station identity code **<dbm>** Receiving level in dBm **<c1>** C1 value **<c2>** C2 value **<txp>** Maximum TX power level when accessing on a CCH **<rla>** Minimum receiving level permitted to access the system **<ts>** Timeslot number **<maio>** MAIO value **<hsn>** HSN value **<tch>** ARFCN of the TCH carrier. ‘h’ indicates frequency hopping

	<ts> Timeslot number **<maio>** MAIO value **<hsn>** HSN value **<ta>** Timing advance, range is 0 - 63 **<rxq_sub>** Receiving quality (sub), range is 0 - 7 **<rxq_full>** Receiving quality (full), range is 0 - 7 **<ncell>** 1-6 index of neighbour 1 to neighbour 6 cells
Reference	*Note:* ● *The automatic URC is reported about every 5 seconds when* ***<mode>****=2.* ● *The parameter* ***<lac>*** *and* ***<cellid>*** *are presented as hexadecimal digits; the remaining parameters are composed of decimal digits.* ● *If a field cannot be measured, the parameter is filled with character 'x'.* ● *If not in dedicated mode,* ***<tch>****,* ***<ts>****,* ***<maio>****,* ***<hsn>****,* ***<ta>****,* ***<rxq_sub>****,* ***<rxq_full>*** *are invalid and are displayed as "x".* ● *If the network supports frequency hopping during a connection, the TCH channel is not stable. This mode is indicated by* ***<tch>*** *= 'h'.* ● *In dedicated mode, the parameters* ***<c1>*** *and* ***<c2>*** *of main cell can not be updated and are displayed as an invalid value '-1'. At the same time, the parameters* ***<txp>*** *and* ***<rla>*** *cannot be updated under certain conditions and remain the value of idle mode. This is because the ME does not update the cell selection and reselection parameters in this mode which are not relevant for operation. When the connection ends, and the mobile is back to idle mode, correct values will be given.* ● *If TA reports neighbouring cells description, the information of 6 cells are presented and if some cells can not be measured, 'x' is filled in the parameters of these cells.* ● *In dedicated mode, the parameters* ***<c1>*** *and* ***<c2>*** *of neighbour cells may be measured and reported with a meaningless value, and the parameters* ***<mcc>****,* ***<mnc>****,* ***<lac>*** *and* ***<cellid>*** *of neighbour cells can not be measured, 'x' is filled in these parameters of all the 6 neighbour cells.* ● *The command does not report receiving level and reserving quality, and* ***AT+CSQ*** *can be used to retrieve the two parameters.* ● ***AT+QSPCH*** *can be used to retrieve the speech channel type (FR, HR, EFR, AMR_FR, AMR_HR) when a call is in progress.*
Example	Main cell description: Idle mode: **+QENG: 0,460,00,1806,2602,64,46,-72,119,119,5,8,x,x,x,x,x,x,x** Dedicated mode: **+QENG: 0,460,00,1806,2031,17,41,-73,-1,-1,5,8,h,7,0,24,1,0,1** Neighbour 1 to neighbour 6 cells description:

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

6.2.13. AT+QCLASS0 Store Class 0 SMS to SIM when receiving Class 0 SMS

AT+QCLASS0 Store Class 0 SMS to SIM when receiving Class 0 SMS		
Test Command **AT+QCLASS0=?**	Response **+QCLASS0: (0, 1)** **OK**	
	Parameter See Write Command.	
Read Command **AT+QCLASS0?**	Response **+QCLASS0: <mode>** **OK**	
	Parameter See Write Command.	
Write Command **AT+QCLASS0=<mode>**	Response **OK** **ERROR**	
	Parameter **<mode>**	0 Disable to store Class 0 SMS when receiving Class 0 SMS 1 Enable to store Class 0 SMS when receiving Class 0 SMS
Reference		

6.2.14. AT+QCCID Show ICCID

AT+QCCID Show ICCID	
Test Command **AT+QCCID =?**	Response **OK**
Execution Command **AT+ QCCID**	Response **ccid data** [ex. 898600E20911F5004842] **OK**
	Parameter

Reference	

6.2.15. AT+QMGDA Delete all SMS

AT+QMGDA Delete all SMS	
Test Command **AT+QMGDA=?**	Response **+QMGDA:** (listed of supported <**type**>s) **OK** **+CMS ERROR: <err>**
	Parameter See Write Command.
Write Command **AT+QMGDA=<type>**	Response **OK** **ERROR** **+CMS ERROR: <err>**
	Parameter 1) If text mode: "DEL READ" Delete all read messages "DEL UNREAD" Delete all unread messages "DEL SENT" Delete all sent SMS "DEL UNSENT" Delete all unsent SMS "DEL INBOX" Delete all received SMS "DEL ALL" Delete all SMS 2) If PDU mode: 1 Delete all read messages 2 Delete all unread messages 3 Delete all sent SMS 4 Delete all unsent SMS 5 Delete all received SMS 6 Delete all SMS
Reference	

6.2.16. AT+QLTONE Generate local specific tone

AT+QLTONE Generate local specific tone	
Test Command **AT+QLTONE=?**	Response **+QLTONE: (0-1), (0-50000), (0-1000), (0-1000), (0-15300000)** **OK**

	Parameters See Write Command.
Write Command **AT+QLTONE =<mode>,< frequency >,< periodOn >,< periodOff >,< duration >**	Response **OK** **ERROR**
	Parameters **<mode>** 0 Stop playing tone 1 Start playing tone **<frequency >** The frequency of tone to be generated **<periodon>** The period of generating tone **<periodoff>** The period of stopping tone **<duration>** Duration of tones in milliseconds
Reference	*Note:* *When playing tone, module will continuously play for <**periodon**>, then stop playing for <**periodoff**> in a cycle. The total time of cycles is <**duration**>.*

6.2.17. AT+QSIMVOL Select SIM card operating voltage

AT+QSIMVOL	**Select SIM card operating voltage**
Test Command **AT+QSIMVOL=?**	Response **+QSIMVOL: (0-2)** **OK**
Read Command **AT+QSIMVOL?**	Response **+QSIMVOL: <mode>** **OK**
Write Command **AT+QSIMVOL=<mode>**	Response **OK** **ERROR** **+CMS ERROR: <err>**
	Parameter **<mode>** 0 Recognize 1.8V and 3.0V SIM card (Default) 1 Recognize 1.8V SIM card only 2 Recognize 3.0V SIM card only
Reference	*Note:* ***AT+QSIMVOL** can take effect only when the command is set successfully and the module is restarted.*

6.2.18. AT+QGID Get SIM card group identifier

AT+QGID	Get SIM card group identifier
Execution Command **AT+ QGID**	Response **+QGID: <gid1> <gid2>** **OK** **ERROR**
	Parameters **<gid1>** Integer type of SIM card group identifier 1 **<gid2>** Integer type of SIM card group identifier 2
Reference	*Note:* *If the SIM supports GID files, the GID values are retuned. Otherwise 0xff is retuned.*

6.2.19. AT+QMOSTAT Show state of mobile originated call

AT+QMOSTAT	Show state of mobile originated call		
Test Command **AT+QMOSTAT =?**	Response **+QMOSTAT: (0,1)** **OK**		
	Parameters See Write Command.		
Read Command **AT+QMOSTAT ?**	Response **+QMOSTAT: <mode>** **OK**		
Write Command **AT+QMOSTAT =<mode>**	Response **OK** **ERROR**		
	Parameters		
	<mode>	0	DO Not show call state of mobile originated call
		1	Show call state of mobile originated call. After dialing call numbers, the URC strings of **MO RING** will be sent if the other call side is alerted and the URC strings of **MO CONNECTED** will be sent if the call is established
Reference			

6.2.20. AT+QGPCLASS Change GPRS multi-slot class

AT+QGPCLASS	Change GPRS multi-slot class
Test Command **AT+QGPCLASS=?**	Response **MULTISLOT CLASS: (1-12)** **OK**
Read Command **AT+QGPCLASS?**	Response **MULTISLOT CLASS: <class>** **OK**
	Parameter See Write Command.
Write Command **AT+QGPCLASS=<class>**	Response **OK** **ERROR**
	Parameter **<class>** GPRS multi-slot class
Reference	*Note:* *Need to reboot for the change of GPRS multi-slot classs to take effect.*

6.2.21. AT+QMGHEX Enable to send non-ASCII character SMS

AT+QMGHEX	Enable to send non-ASCII character SMS
Test Command **AT+QMGHEX=?**	Response **+QMGHEX: (0,1)** **OK**
Read Command **AT+QMGHEX?**	Response **+QMGHEX: <mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QMGHEX=<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Send SMS in ordinary way 1 Enable to send SMS varying from 0x00 to 0x7f except 0x1a and 0x1b under text mode and GSM character set
Reference	*Note:* *Only be available in text mode and **+CSCS="GSM"**.*

6.2.22. AT+QSMSCODE Configure SMS code mode

AT+QSMSCODE Configure SMS code mode	
Test Command **AT+QSMSCODE=?**	Response **+QSMSCODE:(0,1)** **OK**
Read Command **AT+QSMSCODE?**	Response **+QSMSCODE:<mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QSMSCODE=** **<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Code mode according with NOKIA 1 Code mode according with SIEMENS
Reference	*Note:* *Default value is 0.*

6.2.23. AT+QIURC Enable or disable initial URC presentation

AT+QIURC Enable or disable initial URC presentation	
Test Command **AT+QIURC=?**	Response **+QIURC: (0,1)** **OK**
Read Command **AT+QIURC?**	Response **+QIURC:<mode>** **OK**
	Parameter See Write Command.
Write Command **AT+QIURC=** **<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Disable URC presentation. 1 Enable URC presentation
Reference	*Note:* *When the module powers on and initialization procedure is over. URC "**Call***

	***Ready**" will be presented if <**mode**> is 1.*

6.2.24. AT+QCSPWD Change PS super password

AT+QCSPWD Change PS super password	
Write Command **AT+QCSPWD=<oldpwd>,<newpwd>**	Response **OK** **ERROR**
	Parameters **<oldpwd>** String type. Old password and length should be 8. **<newpwd>** String type. New password and length should be 8.
Reference	*Note:* ● *Default value of <**oldpwd**> is "12345678".* ● *If the module is locked to a specific SIM card through **+CLCK** and password lost or SIM state is PH-SIM PUK, you can use the super password to unlock it.*

6.2.25. AT+QEXTUNSOL Enable/disable proprietary unsolicited indications

AT+QEXTUNSOL Enable/disable proprietary unsolicited indications	
Test Command **AT+QEXTUNSOL =?**	Response **+QEXTUNSOL:**(list of supported <**exunsol**>s) **OK**
	Parameters See Write Command.
Write Command **AT+QEXTUNSOL=<exunsol> ,<**	Response **OK** **ERROR**

mode>	Parameters **<exunsol>** String type. Values currently reserved by the present document "SQ" Signal Quality Report. Displays signal strength and channel bit error rate (similar to **AT+CSQ**) in form **+CSQN: <rssi>, <ber>**when values change. "FN" Forbidden network available only. When returning to a non-registered state, this indicates whether all the available PLMNs are forbidden. "MW" SMS Message waiting. On receiving an SMS (as indicated by the **+CMTI** indication) the SMS is decoded and checked to see if it contains one or more of the message waiting indications (i.e. voicemail, email, fax etc). If so, an unsolicited indication is shown in the form for each message type: **+QMWT: <store>,<index>,<voice>,<fax>, <email>,<other>. Where <store>** is the message store containing the SM, index is the message index and **<voice>**, **<email>**, **<fax>**, **<other>** contain the number of waiting messages (with '0' defined as clear indication, non-zero for one or more waiting messages) or blank for not specified in this message. "UR" Unsolicited result code. Produces an unsolicited indication in the following call state transition. Multiple notifications may occur for the same transition **+QGURC: <event>**. Where **<event>** describes the current call state: **<event>:** 0 Terminated active call, at least one held call remaining 1 Attempt to make an Mobile Originated call 2 Mobile Originated Call has failed for some reason 3 Mobile Originated call is ringing 4 Mobile Terminated call is queued (Call waiting) 5 Mobile Originated Call now has been connected 6 Mobile Originated or Mobile Terminated call has been disconnected 7 Mobile Originated or Mobile Terminated call hung up. 8 Mobile Originated call dialed a non-emergency number in emergency mode 9 No answer for mobile Originated call 10 Remote number busy for Mobile Originated call

		"BC"	Battery Charge. Displays battery connection status and battery charge level (similar to **AT+CBC**) in form **+CBCN:<bcs>,<bcl>** when values change.
		"BM"	Band mode. Displays band mode (similar to **AT+QBAND**) in form **+QBAND: <band>**when value changes.
		"SM"	Additional SMS Information. Displays additional information about SMS events in the form of Unsolicited messages of the following format **+TSMSINFO: <CMS error info>** where **<CMS error info>** is a standard CMS error in the format defined by the **AT+CMEE** command i.e. either a number or a string.
		"CC"	Call information. Displays the disconnected call ID and the remaining call numbers after one of the call is disconnected. **+CCINFO: <Call id disconnected>,<Remain calls>**
	<mode>	0	Disable
		1	Enable
		2	Query
Reference			

6.2.26. AT+QSFR Preference speech coding

AT+QSFR Preference speech coding	
Test Command **AT+QSFR=?**	Response **+QSFR: (0-15)** **OK**
Read Command **AT+QSFR?**	Response **+QSFR:<mode>** **OK**
	Parameter See Write Command.

6.2.27. AT+QSPCH Speech channel type report

AT+QSPCH Speech channel type report	
Test Command **AT+QSPCH=?**	Response **+QSPCH: (0,1)**

	OK
Read Command **AT+QSPCH?**	Response **+QSPCH:<mode>,<speech channel>** **OK**
	Parameter See Write Command.
Write Command **AT+QSPCH=<mode>**	Response **OK** **ERROR**
	Parameter **<mode>** 0 Disable report speech channel type. 1 Enable report speech channel type **<speech channel>** Speech channel type 0 NO SPEECH TCH 1 FR 2 HR 3 EFR 4 AMR_FR 5 AMR_HR

6.2.28. AT+QINISTAT Query state of initialization

AT+QINISTAT	**Query state of initialization**
Test Command **AT+QINISTAT=?**	Response **OK**
Execution Command **AT+QINISTAT**	Response **+QINISTAT:<state>** **OK**
	Parameter <state> 0 No initialization 1 Ready to execute AT command 2 Phonebook has finished initialization 3 SMS has finished initialization
Reference	*Note:* *When <**state**> is 3, it also means initialization of SIM card related functions has finished.*

6.2.29. AT+QNSTATUS Query GSM network status

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

6.2.30. AT+QNITZ Network time synchronization

AT+QNITZ	Network time synchronization		
Test Command **AT+QNITZ=?**	Response **OK**		
Write Command **AT+QNITZ=<enable>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**		
	Parameter		
	<**enable**>	0	Disable to synchronize time from GSM network
		1	Enable to synchronize time from GSM network. If the function is enabled, on receiving network time message, an unsolicited indication is shown in the form: "**+QNITZ: <time>,<ds>**".
	<time>		String type value. Format is "yy/MM/dd,hh:mm:ss±zz,ds", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -48...+48). E.g. 6th of May 2004, 22:10:00

	GMT+2 hours .. **<ds>** Daylight Saving Time. It is zero equals to "04/05/06,22:10:00+08,0".
Reference	*Note:* *This function needs support of local GSM network. And the unsolicited also can be read by **AT-QLTS** command later.*

6.2.31. AT+QLTS Obtain latest Network time synchrozed

AT+QLTS Get latest time for Network synchronization	
Test Command **AT+ QLTS=?**	Response **OK**
Execution Command **AT+QLTS**	Response **+QLTS: <time>,<ds>** **OK** If error is related to ME functionality: **+CME ERROR: <err>** Execution Command returns latest time for Network synchronization.
	Parameter **<time>** String type value. Format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -48...+48). E.g. 6th of May 2004, 22:10:00 GMT+2 hours. **<ds>** Daylight Saving Time. It is zero equals to "04/05/06,22:10:00+08,0"
Reference	

6.2.32. AT+CTZU Network time synchronization and update the RTC time

AT+CTZU Network time synchronization and update the RTC time	
Test Command **AT+CTZU=?**	Response **+CTZU: (0,1,2)** **OK**
Write Command **AT+CTZU=<mode>**	Response **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter 0: Disable automatically to update RTC time via NITZ. 1: Enable automatically to update RTC time via NITZ, and do not care the daytime saving parameter 2: Enable automatically to update time zone via NITZ, and according to the daytime saving parameter, adjust the NITZ time which to be written into RTC.
Reference	*Note:* *This function needs support of local GSM network. After setting the **AT+CTZU**, the value will be automatically saved into flash. After the module is restarted, it can also take effect.*

6.2.33. AT+CTZR Network time synchronization report

AT+CTZR Network time synchronization report	
Test Command **AT+CTZR=?**	Response **+CTZR: (0,1,2)** **OK**
Write Command **AT+CTZR=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Mode 0: Disable time zone change event reporting. 1: Enable time zone change event reporting by unsolicited result code +CTZV: <tz>. 2: Enable extended time zone reporting by unsolicited result code +CTZE: <tz>,<dst>,[<time>]. Parameter **<tz>** String type value representing the sum of the local time zone (difference between the local time and GMT expressed in quarters of an hour) plus daylight saving time. The format is "±zz", expressed as a fixed width, two digit integer with the range -48 ... +48. To maintain a fixed width, numbers in the range -9 ... +9 are expressed with a leading zero, e.g."-09", "+00" and "+09". <**dst**> Integer type value indicating whether <tz> includes daylight savings adjustment;

	0 <tz> includes no adjustment for Daylight Saving Time 1 <tz> includes +1 hour (equals 4 quarters in <tz>) adjustment for daylight saving time 2 <tz> includes +2 hours (equals 8 quarters in <tz>) adjustment for daylight saving time <**time**> String type value representing the local time. The format is "YY/MM/DD,hh:mm:ss", expressed as integers representing year (YY), month (MM), date (DD), hour (hh), minute (mm) and second (ss). This parameter can be provided by the network at the time of delivering time zone information and will be present in the extended time zone reporting unsolicited result code if provided by the network.
Reference	*Note:* *This function needs support of local GSM network. After setting the **AT+CTZU**, the value will be automatically saved into flash. After the module is restarted, it can take effect.*

6.2.34. AT+QRIMODE Set RI time

AT+QRIMODE	**Set RI time**
Test Command **AT+QRIMODE=?**	Response **+QRIMODE: (0-1)** **OK**
	Parameter See Write Command
Read Command **AT+QRIMODE?**	Response **+QRIMODE: <timemode>** **OK**
	Parameter See Write Command.
Write Command **AT+QRIMODE=<timemode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<timemode>** time mode 0 Receive SMS, RI 120ms low pulse, other URC RI 120ms low pulse. 1 Receive SMS, RI 120ms low pulse, other URC RI 50ms low pulse.
Reference	

6.2.35. AT+QDISH Disable ATH

AT+QDISH Disable ATH	
Test Command **AT+QDISH =?**	Response **+QDISH: (0-1)** **OK**
	Parameter See Write Command
Read Command **AT+QDISH?**	Response **+QDISH: <disableath>** **OK**
	Parameter See Write Command.
Write Command **AT+QDISH** **=<disableath>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<disableath>** Disable ATH 0 Enable ATH command 1 Disable ATH command
Reference	

6.2.36. AT+QMUXC Turnoff MUX PSC command

AT+QMUXC Turnoff MUX PSC command	
Test Command **AT+QMUXC=?**	Response **+QMUXC: (0,1)** **OK**
	Parameter See Write Command
Read Command **AT+QMUXC?**	Response **+QMUXC: <turnoffPSC>** **OK**
	Parameter See Write Command.
Write Command **AT+QMUXC=<t**	Response **OK**

urnoffPSC>	If error is related to ME functionality: **+CME ERROR: <err>**
	Parameter **<turnoffPSC>** Turnoff MUX PSC command 0 Turn off PSC command 1 Turn on PSC command
Reference	***Note:*** *After setting **AT+QMUXC=1**, when the module MUX wants to enter sleep mode, the module will send PSC command to peer first.*

7. AT Commands for TCPIP application toolkit

7.1. Overview

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

7.2. Detailed descriptions of Commands

7.2.1. AT+QIOPEN Start up TCP or UDP connection

AT+QIOPEN Start up TCP or UDP connection	
Test Command **AT+QIOPEN=?**	Response **+QIOPEN:** (list of supported <**mode**>)**,(IP address range)**,(**port range**) <CR><LF>**+QIOPEN:** (list of supported <**mode**>),(**domain name**),(**port range**) **OK** Parameters See Write Command
Write Command **AT+QIOPEN=[<index>,]<mode>,<IP address>/<domain name>,<port>**	Response If format is right, respond **OK** Otherwise respond **ERROR** And then if connection is successful, respond **[<index>,] CONNECT OK** Otherwise respond **[<index>,] CONNECT FAIL** Parameters <**index**> A numeric indicates which socket opens the connection. M95 supports at most 6 sockets at the same time. This parameter is necessary only if **AT+QIMUX** was set as 1 (refer to **AT+QIMUX**). When **AT+QIMUX** was set as 0, the parameter MUST be omitted. **<mode>** A string parameter which indicates the connection type **"TCP"** Establish a TCP connection **"UDP"** Establish a UDP connection **<IP address>** A string parameter that gives the address of the remote server in dotted decimal style. **<port>** The port of the remote server **<domain name>** A string parameter which represents the domain name address of the remote server.
Reference	*Note:* ● *This command is allowed to establish a TCP/UDP connection only when the state is IP INITIAL or IP STATUS or IP CLOSE. So it is necessary to process "**AT+QIDEACT**" or "**AT+QICLOSE**" before establishing a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS or IP CLOSE.* ● *If **AT+QIMUX** was set as 0 and the current state is CONNECT OK, which means*

	*the connection channel is used, it will reply "**ALREADY CONNECT**" after issuing the Write command.*

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

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

	• *Only send data at the status of connection, otherwise respond with **ERROR*** • ***SEND OK** means the data have been put into the send window to send rather than it has received the ACK message for the data from the remote node. To check whether the data has been sent to the remote note, it is necessary to execute the command **AT+QISACK** to query it.*

7.2.3. AT+QICLOSE Close TCP or UDP connection

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

Reference	*Note:* *If QISRVC is 1 and QIMUX is 0,* ***AT+QICLOSE*** *only closes the connection when the statue is CONNECTING or CONNECT OK, otherwise respond with* ***ERROR****. After closing the connection, the status is* ***IP CLOSE****.*

7.2.4. AT+QIDEACT Deactivate GPRS/CSD PDP context

AT+QIDEACT	**Deactivate GPRS/CSD PDP context**
Test Command **AT+QIDEACT=?**	Response **OK**
Execution Command **AT+QIDEACT**	Response If close succeeds: **DEACT OK** If close fails: **ERROR** *Note:* *Except at the status of IP INITIAL, you can deactivate GPRS/CSD PDP context by* ***AT+QIDEACT****. After closing the connection, the status becomes to IP INITIAL.*
Reference	CSD context is not supported at present.

7.2.5. AT+QILPORT Set local port

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

	Parameters **<mode>** A string parameter which indicates the connection type "TCP" TCP local port "UDP" UDP local port **<port>** 0-65535 A numeric parameter which indicates the local port
Reference	*Note:* *This command is used to set the port for listening.*

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

AT+QIREGAPP	**Start TCPIP task and set APN, user name and password**
Test Command **AT+QIREGAPP=?**	Response **+QIREGAPP: "APN","USER","PWD"** **OK**
Read Command **AT+QIREGAPP?**	Response **+QIREGAPP: <apn>,<user name>,<password>** **OK** Parameters See Write Command.
Write Command **AT+QIREGAPP=<apn>,<user name>,<password>[,<rate>]**	Response **OK** **ERROR** Parameters **<apn>** A string parameter which indicates the GPRS access point name or the call number of CSD **<user name>**A string parameter which indicates the GPRS/CSD user name **<password>** A string parameter which indicates the GPRS/CSD password **<rate>** The speed of data transmit for CSD
Execution Command **AT+QIREGAPP**	Response **OK** **ERROR**
Reference	*Note:* ● *The write command and execution command of this command is valid only at the status of IP INITIAL. After operating this command, the status will become to IP START.* ● *The value of QICSGP (please refer to **AT+QICSGP**) defines what kind of bearer (GPRS or CSD) the parameters are used for.* ● *CSD function and related configuration are not supported at present.*

7.2.7. AT+QIACT Activate GPRS/CSD context

AT+QIACT Activate GPRS/CSD context	
Execution Command **AT+QIACT**	Response **OK** **ERROR**
Reference	*Note:* ● ***AT+QIACT*** *only activates GPRS/CSD context at the status of IP START. After operating this command, the status will become to IP CONFIG. If TA accepts the activated operation, the status will become to IP IND; after GPRS/CSD context is activated successfully, the status will become to IP GPRSACT, respond wirth* ***OK****, and otherwise respond with* ***ERROR****.* ● *CSD context is not supported at present.*

7.2.8. AT+QILOCIP Get local IP address

AT+QILOCIP Get local IP address	
Read Command **AT+QILOCIP?**	Response **OK**
Execution Command **AT+QILOCIP**	Response **<IP address>** **ERROR** Parameter **<IP address>** A string parameter which indicates the IP address assigned from GPRS or CSD network
Reference	*Note:* ● *Only at the following status: IP GPRSACT, IP STATUS, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE can get local IP address by* ***AT+QILOCIP****, otherwise respond ERROR. And if the status before executing the command is IP GPRSACT, the status will become to IP STATUS after the command.* ● *CSD function is not supported at present.*

7.2.9. AT+QISTAT Query current connection status

AT+QISTAT Query current connection status	
Test Command **AT+QISTAT=?**	Response **OK**
Execution	Response

Command **AT+QISTAT**	**OK** **STATE**: **<state>** Or **List of (+QISTAT: <index>, <mode>, <addr>, <port><CR><LF>)** **OK** Parameter **<state>** A string parameter to indicate the status of the connection. "IP INITIAL" The TCPIP stack is in idle state. "IP START" The TCPIP stack has been registered. "IP CONFIG" It has been start-up to activate GPRS/CSD context. "IP IND" It is activating GPRS/CSD context. "IP GPRSACT" GPRS/CSD context has been activated successfully. "IP STATUS" The local IP address has been gotten by the command **AT+QILOCIP**. "TCP CONNECTING" It is trying to establish a TCP connection. "UDP CONNECTING" It is trying to establish a UDP connection. "IP CLOSE" The TCP/UDP connection has been closed. "CONNECT OK" The TCP/UDP connection has been established successfully. "PDP DEACT" GPRS/CSD context was deactivated because of unknown reason. If **ATV** was set to 0 by the command **ATV0**, the TCPIP stack gives the following numeric to indicate the former status. 0 "IP INITIAL" 1 "IP START" 2 "IP CONFIG" 3 "IP IND" 4 "IP GPRSACT" 5 "IP STATUS" 6 "TCP CONNECTING" or "UDP CONNECTING" 7 "IP CLOSE" 8 "CONNECT OK" 9 "PDP DEACT" **<index>** The index of the connection, the range is (0-5)

	<mode> The type of the connection "TCP" TCP connection "UDP" UDP connection **<addr>** The IP address of the remote **<port>** The port of the remote *Note:* *Display former style of response when **QIMUX=0** and the later style of response when **QIMUX=1**.*
Reference	CSD context is not supported at present.

7.2.10. AT+QIDNSCFG Configure domain name server

AT+QIDNSCFG	**Configure domain name server**
Test Command **AT+QIDNSCFG=?**	Response **OK**
Read command **AT+QIDNSCFG?**	Response **PrimaryDns: <pri_dns>** **SecondaryDns: <sec_dns>** **OK**
Write Command **AT+QIDNSCFG=<pri_dns>[,<sec_dns>]**	Response **OK** **ERROR** Parameters **<pri_dns>** A string parameter which indicates the IP address of the primary domain name server **<sec_dns>** A string parameter which indicates the IP address of the secondary domain name server
Reference	*Note:* ● *Because TA will negotiate to get the DNS server from GPRS/CSD network automatically when activating GPRS/CSD context, it is STRONGLY suggested to configure the DNS server at the status of IP GPRSACT, IP STATUS, CONNECT OK and IP CLOSE if it is necessary.* ● *CSD function and configuration are not supported currently.*

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

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

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

AT+QIDNSIP	Connect with IP address or domain name server
Test Command **AT+QIDNSIP=?**	Response **+QIDNSIP:** (list of supported <**mode**>s) **OK** Parameter See Write Command.

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

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

AT+QIHEAD Add an IP header when receiving data	
Test Command **AT+QIHEAD=?**	Response **+QIHEAD:** (list of supported <**mode**>s) **OK** Parameter See Write Command.
Read Command **AT+QIHEAD?**	Response **+QIHEAD: <mode>** **OK** Parameter See Write Command.
Write Command **AT+QIHEAD=<mode>**	Response **OK** **ERROR** Parameter **<mode>** A numeric parameter which indicates whether or not to add an IP header before the received data. 0 DO Not add IP header 1 Add a header before the received data, and the format is "**IPD(data length):**"
Reference	

7.2.14. AT+QIAUTOS Set auto sending timer

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

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

AT+QIPROMPT	Set prompt of '>' when sending data
Test Command **AT+QIPROMPT=?**	Response **+QIPROMPT:** (<**send prompt**>s) **OK** Parameter See Write Command.
Read Command **AT+QIPROMPT?**	Response **+QIPROMPT: <send prompt>** **OK** Parameter See Write Command
Write Command **AT+QIPROMPT**	Response **OK**

=<send prompt>	**ERROR** Parameter **<send prompt>** A numeric parameter which indicates whether or not to echo prompt ">" after issuing **AT+QISEND** Command 0 No prompt ">" and show "SEND OK" when sending successes. 1 Echo prompt ">" and show "SEND OK" when sending successes. 2 No prompt and not show "SEND OK" when sending successes.
Reference	

7.2.16. AT+QISERVER Configure as server

AT+QISERVER	**Configure as server**
Read Command **AT+QISERVER?**	Response +**QISERVER**: <**mode**>, <**num**> **OK** Parameter **<mode>** 0 NOT configured as server 1 Configured as server **<num>** The number of clients that have been connected in. The range is 1~5.
Execution Command **AT+QISERVER**	Response **OK** **ERROR** If configured as server successfully, return: **SERVER OK** If configured as server unsuccessfully, return: **CONNECT FAIL** *Note:* *This command configures the module as a TCP server and the maximum allowed client is 1.*
Write Command **AT+QISERVER =<type>[,<max>]**	Response **OK** **ERROR** If configured as server successfully, return: **SERVER OK** If configured as server unsuccessfully, return: **CONNECT FAIL** Parameter

	<type> A numeric indicates the type of the server 0 TCP server 1 UDP server **<max>** The maximum number of clients allowed to connect in. The default value is 1. The range is 1-5. *Note:* *The parameter **<max>** is excluded when QIMUX is 0.*
Reference	

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

AT+QICSGP Select CSD or GPRS as the bearer	
Test Command **AT+QICSGP=?**	Response **+QICSGP:0-CSD,DIALNUMBER,USER NAME,PASSWORD,RATE(0,3)** **+QICSGP: 1-GPRS,APN,USER NAME,PASSWORD** **OK** Parameters See Write Command.
Read Command **AT+QICSGP?**	Response **+QICSGP: <mode>** **OK** Parameter See Write Command.
Write Command **AT+QICSGP=<mode>,[(<apn>,<user name >,<password>)/(<dial number>,<user name>,<password>,<rate>)]**	Response **OK** **ERROR** Parameters **<mode>** A numeric parameter which indicates the bearer type 0 Set CSD as the bearer for TCPIP connection 1 Set GPRS as the bearer for TCPIP connection GPRS parameters: **<apn>** A string parameter which indicates the access point name **<user name>** A string parameter which indicates the user name **<password>** A string parameter which indicates the password CSD parameters: **<dial number>** A string parameter which indicates the CSD dial numbers **<user name>** A string parameter which indicates the CSD user name **<password>** A string parameter which indicates the CSD password

	<rate>	A numeric parameter which indicates the CSD connection rate 0 2400 1 4800 2 9600 3 14400
Reference	CSD configuration is not supported at present.	

7.2.18. AT+QISRVC Choose connection

AT+QISRVC Choose connection	
Test Command **AT+QISRVC=?**	Response **+QISRVC**: (list of supported <**connection**>s) **OK** Parameter See Write Command.
Read Command **AT+QISRVC?**	Response **+QISRVC: <connection>** **OK** Parameter See Write Command.
Write Command **AT+QISRVC=<connection>**	Response **OK** **ERROR** Parameter **<connection>** A numeric parameter which indicates the chosen connection 1 Choose the connection in which MS used as a client. 2 Choose the connection in which MS used as a server. *Note:* *There could be two connections at one time: one connection is that MS connects with a remote server as a client; the other connection is that MS accepts a remote client as a server. Using this Command to specify which connection data will be sent through.*
Reference	

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

AT+QISHOWRA Set whether to display the address of sender	
Test Command **AT+QISHOWR**	Response **+QISHOWRA:** (list of supported <**mode**>s)

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

7.2.20. AT+QISCON Save TCPIP application context

AT+QISCON Save TCPIP application context	
Read Command **AT+QISCON?**	Response TA returns TCPIP application context, which consists of the following AT command parameters. **SHOW APPTCPIP CONTEXT** **+QIDNSIP:<mode>** **+QIPROMPT:< sendprompt>** **+QIHEAD:<iphead>** **+QISHOWRA:<srip>** **+QICSGP:<csgp>** **Gprs Config APN:<apn>** **Gprs Config UserId:<gusr>** **Gprs Config Password:<gpwd>** **Gprs Config inactivityTimeout:<timeout>** **CSD Dial Number:<cnum>** **CSD Config UserId:<cusr>** **CSD Config Password:<cpwd>** **CSD Config rate:<crate>** **App Tcpip Mode:<mode>** **In Transparent Transfer Mode**

	Number of Retry:<nmRetry> **Wait Time:<waitTm>** **Send Size:<sendSz>** **esc:<esc>** **OK**
	Parameters **<mode>** See **AT+QIDNSIP** **<sendprompt>** See **AT+QIPROMPT** **<iphead>** See **AT+QIHEAD** **<srip>** See **AT+QISHOWRA** **<csgp>** See **AT+QICSGP** **<apn>** See **AT+QICSGP** **<gusr>** See **AT+QICSGP** **<gpwd>** See **AT+QICSGP** **<timeout>** See **AT+QICSGP** **<cnum>** See **AT+QICSGP** **<cusr>** See **AT+QICSGP** **<cpwd>** See **AT+QICSGP** **<crate>** See **AT+QICSGP** The following four parameters are only for transparent transfer mode. **<nmRetry>** See **AT+QITCFG** **<waitTm>** See **AT+QITCFG** **<sendSz>** See **AT+QITCFG** **<esc>** See **AT+QITCFG**
Execution Command **AT+QISCON**	Response TA saves TCPIP Application Context which consist of the following AT Command parameters, and when system is rebooted, the parameters will be loaded automatically: **AT+QIDNSIP**, **AT+QIPROMPT**, **AT+QIHEAD**, **AT+QISHOWRA**, **AT+QICSGP**, **AT+QITCFG** **OK**
	Parameter
Reference	*Note:* ● *The execution command only save the corresponding parameters of the foreground context (refer to **AT+QIFGCNT**).* ● *CSD configuration is not supported at present.*

7.2.21. AT+QIMODE Select TCPIP transfer mode

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

7.2.22. AT+QITCFG Configure transparent transfer mode

AT+QITCFG	Configure transparent transfer mode
Test Command **AT+QITCFG=?**	Response **+QITCFG: (NmRetry:3-8),(WaitTm:2-10),(SendSz:256-1024),(esc:0,1)** **OK**
Read Command **AT+QITCFG?**	Response **+QITCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>** **OK** Parameters See Write Command.
Write Command **AT+QITCFG=<NmRetry>,<Wai**	Response **OK** **ERROR**

tTm>,<SendSz>, <esc>	Parameters **<NmRetry>** Number of times to retry to send an IP packet. **<WaitTm>** Number of 100ms intervals to wait for serial input before sending the packet. **<SendSz>** Size in bytes of data block to be received from serial port before sending. **<esc>** Whether turn on the escape sequence or not, default is TRUE.
Reference	*Note:* ● ***<WaitTm>*** *and* ***<SendSz>*** *are two conditions to send data packet.* ● *Firstly, if the length of the input data from UART is greater than or equal to* ***<SendSz>****, the TCPIP stack will send the data by length* ***<SendSz>*** *to the remote.* ● *Secondly, if the length of the input data from UART is less than* ***<SendSz>****, and the idle time keeps beyond the time defined by* ***<WaitTm>****, the TCPIP stack will send all the data in the buffer to the remote.*

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

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

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

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

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

AT+QISHOWLA Control whether to display local IP address	
Test Command **AT+QISHOWLA=?**	Response **+QISHOWLA:** (list of supported <**mode**>s) **OK** Parameter See Write Command.
Read Command **AT+QISHOWLA?**	Response **+QISHOWLA**: **<mode>** **OK** Parameter See Write Command.
Write Command **AT+QISHOWLA=<mode>**	Response **OK** **ERROR** Parameter **<mode>** A numeric parameter indicates whether to show the destination address before the received data or not.

	0 DO NOT show the destination address 1 Show the destination address: **TO:<IP ADDRESS>** *Note:* *Because M95 supports to activate two GPRS contexts at the same time, i.e. M95 could get two local IP addresses, it is necessary to point out the destination of the received data when two GPRS contexts have been activated at the same time.*
Reference	

7.2.26. AT+QIFGCNT Select a context as foreground context

AT+QIFGCNT	**Select a context as foreground context**
Test Command **AT+QIFGCNT=?**	Response **+QIFGCNT:** (list of supported <**id**>s) **OK** Parameter See Write Command.
Read Command **AT+QIFGCNT?**	Response **+QIFGCNT**: <**id**>,<**channel**> **OK** Parameter See Write Command.
Write Command **AT+QIFGCNT=<id>**	Response **OK** **ERROR** Parameter **<id>** A numeric indicates which context will be set as foreground context. The range is 0-1 <**channel**> A numeric indicates which channel is controlling the context **<id>** 0 VIRTUAL_UART_1 1 VIRTUAL_UART_2 2 VIRTUAL_UART_3 3 VIRTUAL_UART_4 255 The context is not controlled by any channel *Note:* *When CMUX is opened, if the status of the context defined by **<id>** is not IP_INITIAL and the context is controlled by the other channel, it will return ERROR.*
Reference	

7.2.27. AT+QISACK Query the data information for sending

AT+QISACK Query the data information for sending	
Test Command **AT+QISACK=?**	Response **OK**
Execution Command **AT+QISACK**	Response **+QISACK**: **<sent>, <acked>, <nAcked>** **OK** Parameter See Write Command.
Write Command **AT+QISACK=<n>**	Response **+QISACK**: **<sent>, <acked>, <nAcked>** **OK** Parameter **<n>** The index for querying the connection. **<sent>** A numeric indicates the total length of the data that has been sent through the session. **<acked>** A numeric indicates the total length of the data that has been acknowledged by the remote. **<nAcked>** A numeric indicates the total length of the data that has been sent but not acknowledged by the remote. *Note:* *This command is invalid when QIMUX was set as 0 by the command **AT+QIMUX=0**.*
Reference	*Note:* *This command could be affected by the command **AT+QISRVC**. If the QISRVC was set as 1, this command is used to query the information of sending data during the session in which M95 serves as a client. If the QISRVC was set as 2, this command is used to query the data information for sending during the session in which M95 serves as a server.*

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

AT+QINDI Set the method to handle received TCP/IP data	
Test Command **AT+QINDI=?**	Response **+QINDI: (0,1)** **OK**
Read Command **AT+QINDI?**	Response **+QINDI**: **<m>**

	OK Parameter See Write Command.
Write Command **AT+QINDI=<m>**	Response **OK** Parameter **<m>** A numeric indicates how the mode handles the received data. **0** Output the received data through UART directly. In the case, it probably includes header at the beginning of a received data packet. Please refer to the commands. **AT+QIHEAD**, **AT+QISHOWRA**, **AT+QISHOWPT**, **AT+QISHOWLA**. **1** Output a notification statement "**+QIRDI: <id>,<sc>,<sid>**" through UART. This statement will be displayed only one time until all the received data from the connection (defined by **<id>,<sc>,<sid>**) has been retrieved by the command **AT+QIRD**. **<id>** A numeric points out which context the connection for the received data is based on. Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. The range is 0-1. **<sc>** A numeric points out the role of M95 in the connection for the received data. **1** The module serves as the client of the connection. **2** The module serves as the server of the connection. **<sid>** A numeric indicates the index of the connection for the received data. The range is 0-5. When QIMUX was set as 0 by the command **AT+QIMUX=0**, this parameter will be always 0.
Reference	

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

AT+QINDI Retrieve the received TCP/IP data	
Test Command **AT+QIRD=?**	Response **+QIRD: (0,1),(1,2),(0-5),(1-1500)** **OK** Parameter See Write Command.
Write Command **AT+QIRD=<id>,<sc>,<sid>,<len>**	Response **[+QIRD: <ipAddr>:<port>,<type>,<length><CR><LF><data>]** **OK** Or **ERROR**

	Parameter **<id>** A numeric points out which context the connection for the received data is based on. Please refer to the parameter **<id>** in the command **AT+QIFGCNT**. The range is 0-1. **<sc>** A numeric points out the role of M95 in the connection for the received data. **1** The module serves as the client of the connection. **2** The module serves as the server of the connection. **<sid>** A numeric indicates the index of the connection for the received data. The range is 0-5. When QIMUX was set as 0 by the command **AT+QIMUX=0**, this parameter will be always 0. **<len>** The maximum length of data to be retrieved. The range is 1-1500. **<ipAddr>** The address of the remote end. It is a dotted-decimal IP. **<port>** The port of the remote end. **<type>** An alpha string without quotation marks indicates the transport protocol type. **TCP** the transport protocol is TCP. **UDP** the transport protocol is UDP. **<length>** The real length of the retrieved data. **<data>** The retrieved data.
Reference	*Note:* ● ***<id>**, **<sc>** and **<sid>** are the same as the parameters in the statement "**+QIRDI: <id>,<sc>,<sid>**".* ● *If it replies only **OK** for the write command, it means there is no received data in the buffer of the connection.*

7.2.30. AT+QISDE Control whether or not to echo the data for QISEND

AT+QISDE Control whether or not to echo the data for QISEND	
Test Command **AT+QISDE=?**	Response **+QISDE: (0,1)** **OK**
Read Command **AT+QISDE?**	Response **+QISDE**: **<m>** **OK** Parameter See Write Command.
Write Command **AT+QISDE=<m>**	Response **OK** Parameter

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

7.2.31. AT+QPING Ping a remote server

AT+QPING Ping a remote server	
Test Command **AT+QPING=?**	Response **+QPING: "HOST",(1-255),(1-10)** **OK** Parameter See Write Command.
Write Command **AT+QPING="<host>"[,[<timeout>][,<pingnum>]]**	Response **OK** **[+QPING: <result>[,<ipA ddr>,<bytes>,<time>,<ttl>]<CR><LF>** **…]<CR><LF>** **+QPING:<finresult>[,<sent>,<rcvd>,<lost>,<min>,<max>,<avg>]** **ERROR** Parameter Parameter **<host>** The host address in string style. It could be a domain name or a dotted decimal IP address. **<timeout>** A numeric gives the maximum time to wait for the response of each ping request. Unit: second. Range: 1-255. Default: 1. **<pingnum>** A numeric indicates the maximum time of ping request. Range: 1-10. Default: 4. **<result>** The result of each ping request. 0 Received the ping response from the server. In the case, it is followed by "**,<ipAddr>,<bytes>,<time>,<ttl>**". 1 Timeout for the ping request. In the case, no other information follows it. **<ipAddr>** The IP address of the remote server. It is a dotted decimal IP. **<bytes>** The length of sending each ping request. **<time>** The time expended to wait for the response for the ping request. Unit: ms **<ttl>** The value of time to live of the response packet for the ping request.. **<finresult>** The final result of the command. 2 It is finished normally. It is successful to activate

		GPRS and find the host. In the case, it is followed by ",**<sent>,<rcvd>,<lost>,<min>,<max>,<avg>**"
		3 The TCP/IP stack is busy now. In the case, no other information follows it.
		4 Do NOT find the host. In the case, no other information follows it.
		5 Failed to activate PDP context. In the case, no other information follows it.
	<sent>	Total number of sending the ping requests.
	<rcvd>	Total number of the ping requests that received the response.
	<lost>	Total number of the ping requests that were timeout.
	<min>	The minimum response time. Unit: ms
	<max>	The maximum response time. Unit: ms
	<avg>	The average response time. Unit: ms
Reference		

7.2.32. AT+QNTP Synchronize the local time via NTP

AT+QNTP Synchronize the local time via NTP	
Test Command **AT+QNTP=?**	Response **+QNTP: "SERVER",(1-65535)** **OK** Parameter See Write Command.
Read Command **AT+QNTP?**	Response **+QNTP: "<server>",<port>** **OK** Parameter See Write Command.
Execute Command **AT+QNTP**	Response **OK** **+QNTP: <result>** Parameter See Write Command.
Write Command **AT+QNTP="<server>"[,<port>]**	Response **OK** **+QNTP: <result>** Or **ERROR**

	Parameter **<server>** The address of the Time Server in string style. It could be a domain name or a dotted decimal IP address. **<port>** The port of the Time Server. **<result>** The result of time synchronization. 0 Successfully synchronize the local time. 1 Failed to synchronize the local time because of unknown reason. 2 Failed to receive the response from the Time Server. 3 The TCP/IP stack is busy now. 4 Do Not find the Time Server. 5 Failed to activate PDP context.
Reference	*Note:* *The factory Time Server is the National Time Service Centre of China whose address is "**210.72.145.44**" and port is **123**.*

8. Appendix

8.1. Summary of CME ERROR Codes

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

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

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

41	Network personalization PUK required
42	Network subset personalization PIN required
43	Network subset personalization PUK required
44	Service provider personalization PIN required
45	Service provider personalization PUK required
46	Corporate personalization PIN required
47	Corporate personalization PUK required
103	Illegal MS
106	Illegal ME
107	GPRS services not allowed
111	PLMN not allowed
112	Location area not allowed
113	Roaming not allowed in this location area
132	Service option not supported
133	Requested service option not subscribed
134	Service option temporarily out of order
148	Unspecified GPRS error
149	PDP authentication failure
150	Invalid mobile class
151	Link NS SP person PIN required
152	Link NS SP person PUK required
153	Link SIM C person PIN required
154	Link SIM C person PUK required
302	Command conflict
601	Unrecognized command
602	Return error
603	Syntax error
604	Unspecified
605	Data transfer already
606	Action already
607	Not AT command
608	Multi command too long
609	Abort COPS
610	No call disconnect
3513	Unread records on SIM
3515	PS busy
3516	Couldn't read SMS parameters from SIM
3517	SM not ready
3518	Invalid parameter
3738	CSCS mode not found
3742	CPOL operation format wrong
3765	Invalid input value
3769	Unable to get control

3771	Call setup in progress
3772	SIM powered down
3773	Invalid CFUN state
3774	Invalid ARFCN
3775	The pin is not in GPIO mode

8.2. Summary of CMS ERROR Codes

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

<err> values are mostly used by common message commands:

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

528	More message to send state error
529	MO SMS is not allow
530	GPRS is suspended
531	ME storage full
3513	Unread records on SIM
3515	PS busy
3516	Couldn't read SMS parameters from SIM
3517	SM not ready
3518	Invalid parameter
3742	Incorrect <oper> format
3765	Invalid input value
3769	Unable to get control of required module
3771	Call setup in progress
3772	SIM powered down
3773	Unable to operate in this cfun state
3774	Invalid arfcn in this band
3775	The pin is not in GPIO mode

8.3. Summary of cause for extended error report

8.3.1. Location ID for the extended error report

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

8.3.2. Cause for protocol stack (PS) layer

Cause	Description
CM Cause	
0	Radio link fail
1	Unassigned number
3	No route to destination
6	Channel unacceptable
8	Operator determined barring
10	Call barred
11	Reserved
16	Normal call clearing

17	User busy
18	No user responding
19	User alerting, no answer
21	Call rejected
22	Number changed
25	Pre-emption
26	Non-selected user clearing
27	Destination out of order
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
47	Resource unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Incoming calls barred within the CUG
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal or greater than ACM maximum
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional information element error
101	Message not compatible with protocol
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified

SMS Cause	
128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message
143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be acted
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
197	SM Rejected-Duplicate SM
198	TP-VPF not supported
199	TP-VP not supported
208	SIM SMS storage full
209	No SMS storage capability in SIM
210	Error in MS
211	Memory Capacity Exceeded
212	SIM Application Toolkit Busy
213	SIM data download error
224	CP retry exceed
225	RP trim timeout
226	SMS connection broken
255	Unspecified error cause
304	Invalid PDU mode parameter
305	Invalid TEXT mode parameter
313	SIM failure
320	Memory failure
321	Invalid memory index
322	Memory full
330	SMSC address unknown
340	No +CNMA acknowledgement expected
500	Unknown error
512	SMS no error
513	Message length exceeds maximum length
514	Invalid request parameters
515	ME storage failure
516	Invalid bearer service

517	Invalid service mode
518	Invalid storage type
519	Invalid message format
520	Too many MO concatenated messages
521	SMSAL not ready
522	SMSAL no more service
523	Not support TP-Status-Report & TP-Command in storage
524	Reserved MTI
525	No free entity in RL layer
526	The port number is already registered
527	There is no free entity for port number
528	More Message to Send state error
529	MO SMS is not allow
530	GPRS is suspended
531	ME storage full
532	Doing SIM refresh
CC Cause	
768	Command not allowed
769	Illegal card ID
770	Call allocation fail
771	BC fill fail
772	Call RE EST
773	Illegal DTMF tone
774	Illegal BC
775	Modify actual mode
776	Data action fail
777	No response from network
778	Call accept not allowed
896	General cause
897	CSD call is aborted by user during call establishment or MT call abort MO call/USSD
898	CSD call is disconnected due to lower layer failure
SS Cause	
1024	Cause none
1025	Unknown subscriber
1033	Illegal subscriber
1034	Bearer service not provisioned
1035	Tele service not provisioned
1036	Illegal equipment
1037	Call barred
1040	Illegal SS operation
1041	SS error status
1042	SS not available
1043	SS subscription violation

1044	SS incompatibility
1045	Facility not supported
1051	Absent subscriber
1053	Short term denial
1054	Long term denial
1058	System failure
1059	Data missing
1060	Unexpected data value
1061	PW registration failure
1062	Negative PW check
1067	Number of PW attempts violation
1078	Position method failure
1095	Unknown alphabet
1096	USSD busy
1145	Rejected by user
1146	Rejected by network
1147	Deflection to served subscriber
1148	Special service code
1149	Invalid deflection to number
1150	Max number of MPTY participants exceeded
1151	Resources not available
1152	General problem, unrecognized component
1153	General problem, mistyped component
1154	General problem, badly structured component
1155	Invoke problem, duplicate invoked
1156	Invoke problem, unrecognized operation
1157	Invoke problem, mistyped parameter
1158	Invoke problem, resource limitation
1159	Invoke problem, initiating release
1160	Invoke problem, unrecognized linked ID
1161	Invoke problem, linked resource unexpected
1162	Invoke problem, unexpected linked operation
1163	Return result problem, RR unrecognized invoked
1164	Return result problem, RR, return result unexpected
1165	Return result problem, RR mistyped parameter
1166	Return error problem, RE, unrecognized invoked
1167	Return error problem, RE return error unexpected
1168	Return error problem, RE unrecognized error
1169	Return error problem, RE unexpected error
1170	Return error problem, RE mistyped parameter
MM Cause	
2048	Cause none
2050	IMSI unknown in HLR

2051	Illegal MS
2052	IMSI unknown in VLR
2053	IMEI not accepted
2054	Illegal ME
2055	GPRS not allowed
2056	None GPRS not allowed
2057	MS ID not derived by network
2058	Implicit detach
2059	PLMN not allowed
2060	Location area not allowed
2061	Roaming area not allowed
2062	GPRS not allowed in PLMN
2063	No suitable cells in LA
2064	MSC temp not reachable
2065	Network failure
2068	MAC failure
2069	Sync failure
2070	Congestion
2080	Serve option not supported
2081	Request serve option not subscribed
2082	Serve option temp out of order
2086	Call cannot be identified
2088	No PDP context activated
2096	Retry upon entry into a new cell
2111	Retry upon entry into a new cell
2143	Semantically incorrect message
2144	Invalid MM info
2145	Message type non existent
2146	Message type incompatible with protocol state
2147	IE not implemented
2148	Conditional MM IE error
2149	Message not compatible with protocol state
2159	Protocol error unspecified
2160	Access barred
2161	Assignment reject
2162	Random access failure
2163	RR no service
2164	PLMN search reject emergency
2165	RR connection release
2166	Authentication failure
2167	IMSI detach
2168	Abort by network
2169	Connection timeout

2170	Enqueue fail
2171	Not updated
2172	State not allowed
2173	Emergency not allowed
2174	No service
2175	Access class barred
SIM Cause	
2560	Command success
2561	Command fail
2562	Fatal error
2563	No inserted
2564	CHV not init
2565	CHV verify error
2566	CHV block
2567	Access not allow
2568	SAT command busy
2569	DL error
2570	Memory problem
2571	Technical problem
2572	PUK unlock
SM Cause	
3080	Operator determined barring
3097	LLC SND failure
3098	Insufficient resource
3099	Unknown APN
3100	Unknown PDP address or type
3101	Authentication failure
3102	Activation reject GGSN
3103	Activation reject
3104	Unsupported service option
3105	Unsubscribed service option
3106	Out of order service option
3108	Regular deactivation
3109	QOS not accepted
3110	Network fail
3111	Reactivation required
3112	Unsupported network context activation
3113	Semantic error in TFT operation
3114	Syntactical error in TFT operation
3115	Unknown PDP context
3116	Semantic error in packet filter
3117	Syntax error in packet filter
3118	PDP context WO TFT already act

3153	Invalid TI
3167	Incorrect message
3168	Invalid MAND info
3169	Unimplemented message type
3170	Incompatible message type protocol state
3171	Unimplemented IE
3172	Conditional IE error
3173	Incompatible message protocol state
3183	Unspecified
3184	Startup failure
ABM Cause	
3273	Success
3274	Invalid network account ID
3275	GPRS reactivate
3276	GPRS protocol rejection
3277	CSD reactivate
3278	CSD PPP negotiated failed
3279	CSD action failed
3280	CSD call setup failed
3283	Rejected
3284	Slot limited
3285	Abort
3286	None auto deactivation
TCM Cause	
3372	Invalid parameter
3373	NSAPI not in use
3374	ACL action not allowed
3375	ACL SIM file full
3376	ACL add entry failed
3377	ACL del entry failed
3378	ACL set entry failed
3379	ACL SIM read failed
3380	ACL SIM write failed

8.3.3. Internal cause for MM layer

Cause	Description
112	Forbidden PLMN
113	Access class barred
114	No coverage
115	GPRS service not allowed
116	Timer expiry

117	SIM inserted
118	SIM removed
119	SIM absent
120	SIM invalid for PS
121	SIM invalid for CS
122	SIM invalid for PS and CS
123	Low layer fail
124	Connection in progress
125	Not updated
126	Connection establish failure
127	Connection abort
128	Connection failure
129	Emergency not allowed
130	No GPRS coverage
131	Abnormal LU
132	Abnormal LU less then 4 times
133	Same LAI IMSI attaching

8.3.4. Cause for PPP/IP-Stack

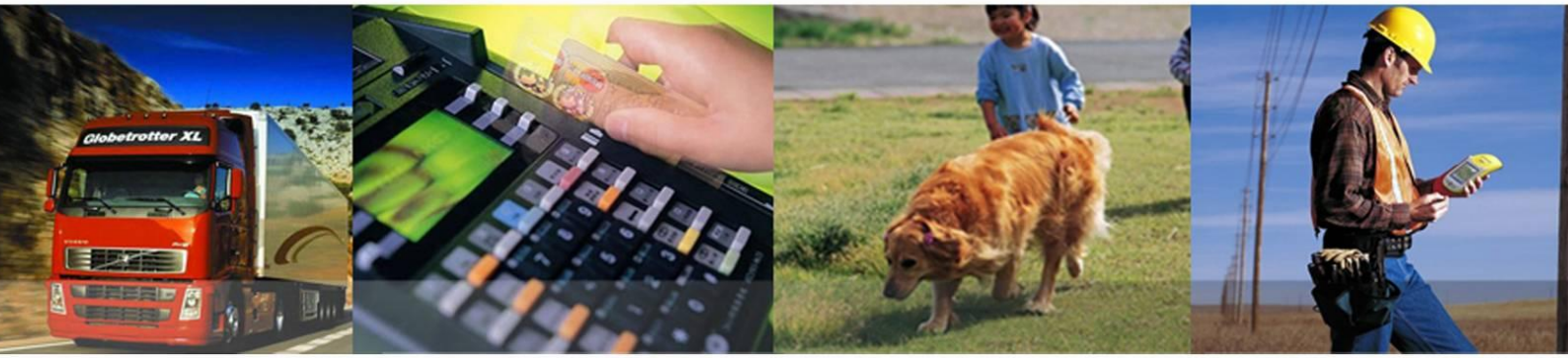
Cause	Description
0	No error
1	LCP fail
2	Authentication fail
3	IPCP fail
4	ESC detect
5	Plug out detect
6	PPP GPRS dialup already activated
7	PPP not activated by external modem yet
8	PPP already activated by external modem
9	PPP not activated by WAP over CSD yet
10	PPP already activated by WAP over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

8.4. Summary of URC

Index	URC display	Meaning	Condition
1	+CMTI:<mem>,<index>	New message is received, and saved to memory	AT+CNMI=2,1
2	+CMT:[<alpha>],<length><CR><LF><pdu>	New short message is received and output directly to TE (PDU mode)	AT+CNMI=2,2
3	+CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>	New short message is received and output directly to TE (Text mode)	AT+CNMI=2,2
4	+CBM:<length><CR>	New CBM is received and output directly (PDU mode)	AT+CNMI=2,2
5	+CBM:<sn>,<mid>,<dcs>,<page>,<pages>,<CR>,<LF><data>	New CBM is received and output directly to TE (Text mode)	AT+CNMI=2,2
6	+CDS:<length><CR><LF><pdu>	New CDS is received and output directly (PDU mode)	AT+CNMI=2,2
7	+CDS:<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>	New CDS is received and output directly to TE (Text mode)	AT+CNMI=2,2
8	+CGEV:NW DEACT<PDP_type>,<PDP_addr>[,<cid>]	GPRS network detach	AT+CGEREP=1
9	+CGEV:ME DEACT<PDP_type>,<PDP_addr>[,<cid>]	GPRS ME detach	AT+CGEREP=1
10	+CGEV:NW DETACH	GPRS network detach	AT+CGEREP=1
11	+CGEV:ME DETACH	GPRS ME detach	AT+CGEREP=1
12	+CVGREG:1	Network registered	AT+CGREG=1
13	+CGREG:0	Network unregistered	AT+CGREG=2
14	+CVGREG:1,<lac><ci>	Network registered, with location code	AT+CGREG=2
15	+CVGREG:0,<lac><ci>	Network unregistered, with location code	AT+CGREG=2
16	+CSQN:<rssi>,<ber>	Signal quality change	AT+QEXTUNSOL="SQ",1
17		Forbidden network is available only	AT+QEXTUNSOL="FN",1
18	+CMWT:<store>,<index>,<voice>,<fax>,<email>,<other>	Message waiting	AT+QEXTUNSOL="MW",1
19	+QGURC:<event>	Unsolicited result code follows particular call state transition	AT+QEXTUNSOL="UR",1
20	+CBCN<bcs>,<bcl>	Display battery connection	AT+QEXTUNSO

		status and battery charge level	L="BC",1
21	+QBAND:<band>	Band mode display	AT+QEXTUNSOL="BM",1
22	+TSMSINFO:<CMS error info>	Additional SMS information	AT+QEXTUNSOL="SM",1
23	+CCINFO:<Call is Disconnected>,<remain calls>	Displays the disconnected call ID and the remain call numbers after one of the call is disconnected	AT+QEXTUNSOL="CC",1
24	RING	Indicates incoming call	n/a
25	Call Ready	Device is ready to make/receive calls	n/a
26	UNDER_VOLTAGE POWER DOWN	Under voltage shutdown indication	n/a
27	UNDER_VOLTAGE WARNING	Under voltage warning	n/a
28	OVER_VOLTAGE POWER DOWN	Over voltage shutdown indication	n/a
29	OVER_VOLTAGE WARNING	Over voltage warning	n/a
30	UNDER_VOLTAGE POWER DOWN	Normal power down	n/a
31	+COLP:<number>,<type>[,<subaddr>,<satype>[CLI validity]],	The presentation of the COL(connected line) at the TE for a mobile originated call	AT+COLP=1
32	+CLIP:<number>,<type>"",,<alphaID>,<CLI validity>	Mobile terminating call indication	AT+CLIP=1
33	+CRING:<type>	An incoming call is indicated to the TE with unsolicited result code instead of the normal RING	AT+CRC=1
34	+CREG:<stat>	Indicate registration status of the ME	AT+CREG=1
35	+CREG:<stat>[,<lac>]	After cell neighborhood changing shows whether the network has currently indicated the registration of the ME, with location area code	AT+CREG=2
36	CCWV	Call meter warning, 5 seconds left before ACM	AT+CCWV=1
37	+CCWA:<number>,<type>,<class>[,<alpha>]	Call waiting indication	AT+CCWA=1,1
38	RDY	ME initialization is successful	n/a
39	+CFUN:1	All function of the ME is available	n/a
40	+CPIN:<state>	SIM card pin state	n/a

41	MO RING	MO call ringing	AT+QMOSTAT=1
42	MO CONNECTED	MO call connected	AT+QMOSTAT=1



Shanghai Quectel Wireless Solutions Co., Ltd.

Room 501, Building 13, No.99 Tianzhou Road, Shanghai, China 200233

Tel: +86 21 5108 6236

Mail: info@quectel.com