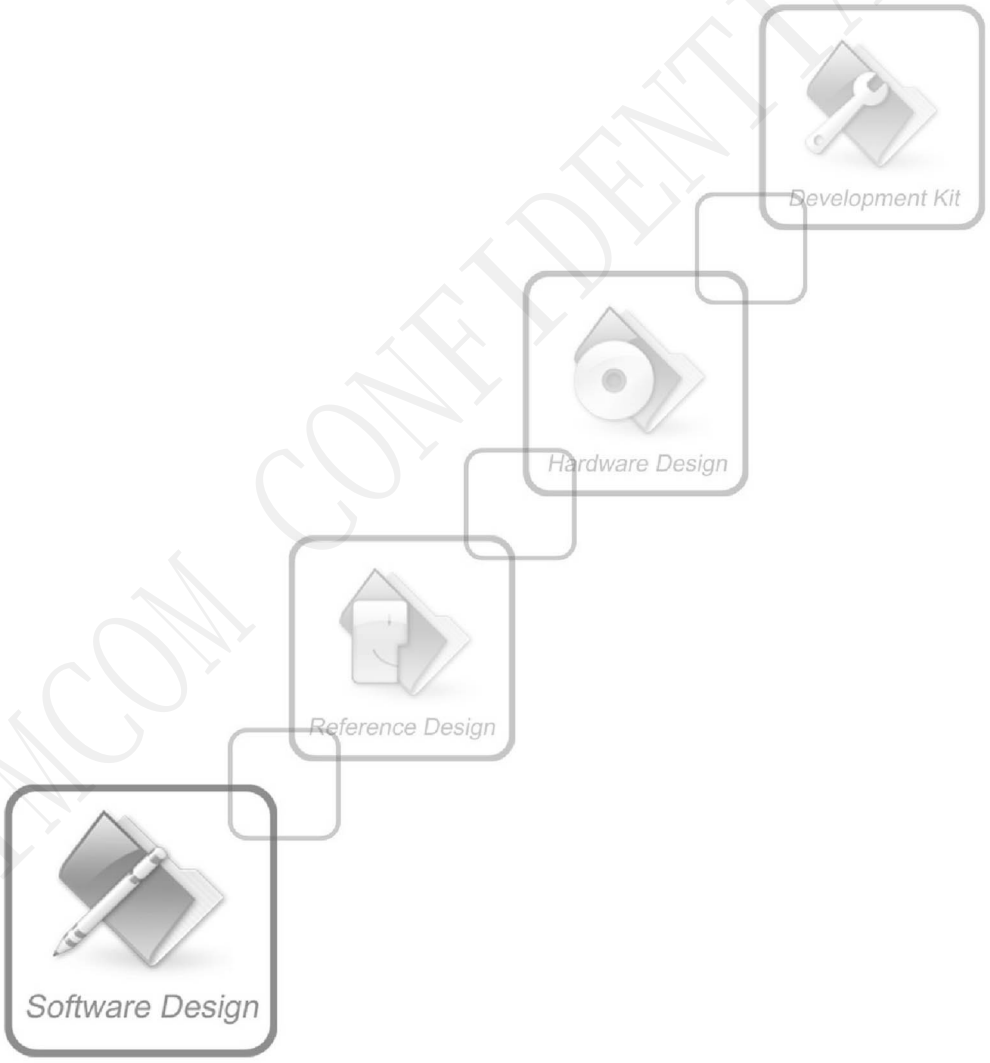
SIM5300E AT Command Manual



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VERSION HISTORY

Date	Version	Description of change	Author
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Content

1. Introduction

1.1 Scope of the document

This document presents the AT Command Set for SIMCom SIM5300E .

1.2 Related documents

You can visit the SIMCom Website using the following link:
URL:www.simcomm2m.com

1.3 Conventions and abbreviations

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

ME (Mobile Equipment);
MS (Mobile Station);
TA (Terminal Adapter);
DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface. The controlling device at the other end of the serial line is referred to as following term:

TE (Terminal Equipment);
DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

1.4 AT Command syntax

The "AT" or "at" or “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 Command set implemented by SIM5300E is a combination of 3GPP TS 27.005, 3GPP TS 27.007 and ITU-T recommendation V.25ter and the AT commands specified by SIMCom.

Note: Only enter AT Commands through serial port after SIM5300E have been powered on and Unsolicited Result Code "RDY" is received from serial port. If auto-bauding is enabled, the Unsolicited Result Codes "RDY" and so on are not indicated when you start up the ME, and the "AT" prefix, or "at" prefix must be set

at the beginning of each command line.

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

1.4.1 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 missing.

1.4.2 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.

1.4.3 Extended Syntax

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

Table 1: Types of AT commands and responses

Test Command	AT+<x>=?	The mobile equipment returns the list of parameters and value ranges set with the corresponding Write Command or by 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>	The execution command reads non-variable parameters affected by internal processes in the GSM engine.

1.4.4 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**" the beginning of the command line. Please note to use a semicolon as the command delimiter after an extended command; in basic syntax or S parameter syntax, the semicolon need not enter, for example: ATE1Q0S0=1V1X4;+IPR=115200;

The Command line buffer can accept a maximum of 1024 characters (counted from the first command without “AT” or “at” prefix). If the characters entered exceeded this number then none of the Command will executed and TA will return "**ERROR**".

1.4.5 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 last AT Command you entered before you enter the next AT Command.

1.5 Supported character sets

The SIM5300E AT Command interface defaults to the IRA character set. The SIM5300E supports the following character sets:

GSM format
UCS2
HEX
IRA

The character set can be set and interrogated using the "**AT+CSCS**" Command (3GPP TS 27.007).The character set is defined in GSM specification 3GPP TS 27.005.

The character set affects transmission and reception of SMS and SMS Cell Broadcast messages, the entry and display of phone book entries text field and SIM Application Toolkit alpha strings.

1.6 Flow control

Flow control is very important for correct communication between the GSM engine and DTE. For 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. SIM5300E support both two kinds of flow control.

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

1.6.1 Software flow control (XON/XOFF flow control)

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

The default flow control approach of SIM5300E is hardware flow control (RTS/CTS flow control), to enable software flow control in the DTE interface and within GSM engine, type the following AT Command:

AT+IFC=1, 1

Ensure that any communications software package (e.g. Hyper terminal) 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) as the DTE interface may interpret binary data as flow control characters.

1.6.2 Hardware flow control (RTS/CTS flow control)

Hardware flow control achieves the data flow control by controlling the RTS/CTS line. When the data transfer should be suspended, the CTS line is set inactive until the transfer from the receiving buffer has completed. When the receiving buffer is 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.

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 ATC According to V.25TER

Command	Description
A/	Re-issues the last command given
ATA	Answer an incoming call
ATD	Mobile originated call to dial a number
ATDL	Redial last telephone number used
ATE	Set command echo mode
ATH	Disconnect existing connection
ATI	Display product identification information
+++	Switch from data mode or ppp online mode to command mode
ATO	Switch from command mode to data mode
ATQ	Set result code presentation mode
ATS0	Set number of rings before automatically answering the call
ATS4	Set response formatting character
ATS7	Set number of seconds to wait for connection completion
ATV	TA response format
ATX	Set connect result code format and monitor call progress
ATZ	Reset default configuration
AT&C	Set DCD function mode
AT&D	Set DTR function mode
AT&V	Display current configuration
AT+GMI	Request manufacturer identification
AT+GMM	Request TA model identification
AT+GMR	Request TA revision identification of software release
AT+GOI	Request global object identification
AT+GSN	Request TA serial number identification (IMEI)
AT+ICF	Set TE-TA control character framing
AT+IFC	Set TE-TA local data flow control
AT+IPR	Set TE-TA fixed local rate

AT+HVOIC	Disconnect Voice Call Only

2.2 Detailed Description of ATC According to V.25TER

2.2.1 A/ Re-issues the Last Command Given

A/ Re-issues the Last Command Given	
Execution Command **A/**	Response Re-issues the previous Command
Reference V.25ter	

2.2.2 ATA Answer an Incoming Call

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

2.2.3 ATD Mobile Originated Call to Dial A Number

ATD Mobile Originated Call to Dial A Number	
Execution Command **ATD<n>[<mgsm][;]**	Response 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 error is related to ME functionality **+CME ERROR: <err>** If no DIALTONE 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 the remote station does not answer **NO ANSWER** 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 connection successful and voice call **OK**
Parameters	**<n>** String of dialing digits and optionally V.25ter modifiers dialing digits: **0-9, * , #, +, A, B, C** Following V.25ter modifiers are ignored: **,(comma), T, P, !, W, @** Emergency call: **<n>** Standardized emergency number 112 (no SIM needed) **<mgsm>** String of GSM modifiers: **I** Actives CLIR (Disables presentation of own number to called party) **i** Deactivates CLIR (Enable presentation of own number to called party)

	G	Activates Closed User Group invocation for this call only
	g	Deactivates Closed User Group invocation for this call only
	<;>	Only required to set up voice call , return to Command state
Reference V.25ter	Note: Parameter "I" and "i" only if no *#code is within the dial string<n> is default 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 is established. The setting is controlled by AT+COLP. Factory default is AT+COLP=0, this cause the TA returns "OK" immediately after dialing was completed, otherwise TA will returns "OK", "BUSY", "NO DIALTONE", "NO CARRIER". Using ATD during an active voice call: When a user originates a second voice call while there is already an active voice call, the first call will be automatically put on hold. The current states of all calls can be easily checked at any time by using the AT+CLCC Command.	

2.2.4 ATDL Redial Last Telephone Number Used

ATDL Redial Last Telephone Number Used	
Execution Command **ATDL**	Response This Command redials the last voice and data call number used. 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 dialtone 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 the remote station does not answer **NO ANSWER** If connection successful and non-voice call. CONNECT<text> TA switches to data modeWhen TA returns to Command mode after call release **OK** If successfully connected and voice call
Reference V.25ter	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. • <text> output only if ATX<value> parameter setting with the <value> >0

2.2.5 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	

2.2.6 ATH Disconnect Existing Connection

ATH Disconnect Existing Connection	
Execution Command **ATH**	Response Disconnect existing call by local TE from Command line and terminate call **OK**
Reference V.25ter	Note: OK is issued after circuit 109(DCD) is turned off, if it was previously on.

2.2.7 ATI Display Product Identification Information

ATI Display Product Identification Information	
Execution Command **ATI**	Response TA issues product information text Example: **SIM5300E R15.51** **OK**
Reference V.25ter	

2.2.8 ATM Set Monitor Speaker Mode

ATM Set Monitor Speaker Mode	
Execution Command **ATM<value>**	Response **OK**
Parameters	**<value>** **0..9** Mode
Reference V.25ter	Note: No effect in GSM

2.2.9 +++ Switch from Data Mode or PPP Online Mode to Command Mode

+++ Switch from Data Mode or PPP Online Mode to Command Mode	
Execution Command **+++**	Response 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 to the remote server. **OK** To prevent the +++ escape sequence from being misinterpreted as data, it should comply to following sequence: No characters entered for T1 time (1 second) "+++" characters entered with no characters in between (1 second) No characters entered for T1 timer (1 second) Switch to Command mode, otherwise go to step 1.
Reference V.25ter	Note: To return from Command mode back to data mode: Enter ATO.

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. **CONNECT** If connection is not successfully resumed **ERROR** else TA returns to data mode from command mode CONNECT <text> Note: <text> only if parameter setting ATX>0
Reference V.25ter	

2.2.11 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: **(null)**	
Parameters	**<n>**	
	0	TA transmits result code
	1	Result codes are suppressed and not transmitted
ReferenceV.25ter		

2.2.12 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** **0** Automatic answering is disable. **1-255** Number of rings the modem will wait for before answering the phone if a ring is detected.
Reference V.25ter	Note: • If <n> is set too high, the calling party may hang up before the call can be answered automatically. • If using cmux port, ATH and AT+CHUP can hang up the call(automatically answering) only in the CMUX channel 0. • If using dual-physical serial port, ATH and AT+CHUP can hang up the call(automatically answering) only in UART1.

2.2.13 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** **10** Response formatting character
Reference V.25ter	Note: Default 10 = LF. It only supports default value.

2.2.14 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** **1-255** Number of seconds to wait for connection completion(**60** is the default value)
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.

2.2.15 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**
Parameters	**<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.
ReferenceV.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 dialtone 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

2.2.16 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 DIALTONE and busy signal and whether or not TA transmits particular result codes. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<value>** **0** CONNECT result code only returned, DIALTONE and busy detection are both disabled. **1** CONNECT<text> result code only returned, DIALTONE and busy detection are both disabled. **2** CONNECT<text> result code returned, DIALTONE detection is

	enabled, **3** disabled, **4**	busy detection is disabled. CONNECT<text> result code returned, DIALTONE detection is busy detection is enabled. CONNECT<text> result code returned, DIALTONE and busy detection are both enabled.
Reference V.25ter		

2.2.17 ATZ Reset Default Configuration

ATZ Reset Default Configuration	
Execution Command **ATZ[<value>]**	Response TA sets all current parameters to the user defined profile. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<value>** **0** Restore profile 0
Reference V.25ter	

2.2.18 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<value>** **0** DCD line is always ON **1** DCD line is ON only in the presence of data carrier
Reference V.25ter	

2.2.19 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<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 call, change to Command mode. During state DTR = OFF is auto-answer off.
Reference V.25ter	

2.2.20 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** **0** Responses in numeric format
Reference V.25ter	

2.2.21 AT+GMI Request Manufacturer Identification

AT+GMI Request Manufacturer Identification	
Test Command **AT+GMI=?**	Response **OK**
Execution Command **AT+GMI**	TA reports one or more lines of information text which permit the user to identify the manufacturer. **SIMCOM_Ltd** **OK**

Reference V.25ter	

2.2.22 AT+GMM Request TA Model Identification

AT+GMM Request TA Model Identification	
Test Command **AT+GMM=?**	Response **OK**
Execution Command **AT+GMM**	TA reports one or more lines of information text which permit the user to identify the specific model of device. **<model>** **OK**
Parameters	**<model>** Product model identification text
Reference V.25ter	

2.2.23 AT+GMR Request TA Revision Identification of Software Release

AT+GMR Request TA Revision Identification of Software Release	
Test Command **AT+GMR=?**	Response **OK**
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**
Parameters	**<revision>** Revision of software release
Reference V.25ter	

2.2.24 AT+GOI Request Global Object Identification

AT+GOI Request Global Object Identification	
Test Command **AT+GOI=?**	Response **OK**

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**
Parameters	**<Object Id>** Identifier of device type see X.208, 209 for the format of <Object Id>
ReferenceV.25ter	

2.2.25 AT+GSN Request TA Serial Number Identification (IMEI)

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

2.2.26 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**
Read Command **AT+ICF?**	Response **+ICF: <format>,<parity>** **OK**
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 **3** space (0)
Reference V.25ter	Note: The Command is applied for Command state; In <format> parameter, "0 parity" means no parity;

2.2.27 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**
Read Command **AT+IFC?**	Response **+IFC: <dce_by_dte>,<dte_by_dce>** **OK**
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 at receive of data from TA **0** No flow control **1** Software flow control **2** Hardware flow control **<dte_by_dce>** Specifies the method will be used by TA at receive of data from TE **0** No flow control **1** Software flow control **2** Hardware flow control
Reference V.25ter	

2.2.28 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**
Read Command **AT+IPR?**	Response **+IPR: <rate>** **OK**
Write Command **AT+IPR=<rate>**	Response This parameter setting determines the data rate of the TA on the serial interface. The rate of Command takes effect following the issuance of any result code associated with the current Command line. **OK**
Parameters	**<rate>** that means baud rate per second **0** **1200** **2400** **4800** **9600** **19200** **38400** **57600** **15200** **230400** **460800**
Reference V.25ter	Note: Factory setting is AT+IPR=0（auto-bauding）.

AUTO-BAUDING

Synchronization between DTE and DCE ensure that DTE and DCE are correctly synchronized and the baud rate used by the DTE is detected by the DCE (= ME). To allow the baud rate to be synchronized, simply issue an "AT" string. This is necessary when you start up the module while auto-bauding is enabled. It is recommended to wait 3 to 5 seconds before sending the first AT character. Otherwise undefined characters might be returned.

If you want to use auto-bauding and auto-answer at the same time, you can easily enable the DTE-DCE synchronization, when you activate auto-bauding first and then configure the auto-answer mode.

Restrictions on auto-bauding operation

The serial interface has to be operated at 8 data bits, no parity and 1 stop bit (factory setting).

Only the strings "AT" or "at" can be detected when auto-bauding is enabled.

AT+IPR=0 setting to auto-bauding will take effect after module resets.

Unsolicited Result Codes that may be issued before the ME detects the new baud rate (by receiving the first AT Command string) will be sent at the previously detected baud rate .The Unsolicited Result Codes "RDY" and so on are not indicated when you start up the ME while auto-bauding is enabled.

Auto-bauding and baud rate after restart

The most recently detected baud rate cannot be stored when module is powered down.

2.2.29 AT+HVOIC Disconnect Voice Call Only

AT+HVOIC Disconnect Voice Call Only	
Execution Command **AT+HVOIC**	Response Disconnect existing voice call by local TE from Command line and terminate call with existing PPP or CSD connection on. **OK**
Reference V.25ter	

3. AT Commands According to 3GPP TS 27.007

3.1 Overview of ATC According to 3GPP TS 27.007

Command	Description
AT+CACM	Accumulated call meter(ACM) reset or query
AT+CAMM	Accumulated call meter maximum(ACM max) set or query
AT+CAOC	Advice of charge
AT+CBST	Select bearer service type
AT+CCFC	Call forwarding number and conditions control
AT+CCWA	Call waiting control
AT+CEER	Extended error report
AT+CGMI	Request manufacturer identification
AT+CGMM	Request model identification
AT+CGMR	Request TA revision identification 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
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	Phone activity status
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 parameters
AT+CRSM	Restricted SIM access
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+CSIM	Generic SIM access
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 services notification

3.2 Detailed Descriptions of ATC According to 3GPP TS 27.007

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**
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>**
Write Command **AT+CACM=<passwd>**	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>**
Parameters	**<acm>** String type (string should be included in quotation marks); three bytes of the current ACM value in hexa-decimal format (e.g. "00001E" indicates decimal value 30) **000000 – FFFFFF** **<passwd>** String type (string should be included in quotation marks): **SIM PIN2**
Reference 3GPP TS 27.007 [13]	

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**
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>**
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 (string should be included in quotation marks); three bytes of the max. ACM value in hex-decimal format (e.g. "00001E" indicates decimal value 30) **000000** disable ACMmax feature **000001-FFFFFF**

	<passwd> String type (string should be included in quotation marks) **SIM PIN2**
Reference 3GPP TS 27.007 [13]	

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**
Read Command **AT+CAOC?**	Response **+CAOC: <mode>** **OK**
Write Command **AT+CAOC=<mode>**	Response TA sets the Advice of Charge supplementary service function mode. 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** If error is related to ME functionality: **+CME ERROR: <err>**
Execution Command **AT+CAOC**	Response **+CAOC: <ccm>** **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 (string should be included in quotation marks); three bytes of the current CCM value in hex-decimal format (e.g. "00001E" indicates decimal value

	30); bytes are similarly coded as ACMmax value in the SIM 000000-FFFFFF
Reference 3GPP TS 27.007 [13]	

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 supporte <ce>s)** **OK**
Read Command **AT+CBST**?	Response **+CBST: <speed>,<name>,<ce>** **OK**
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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<speed>** **0** Auto-bauding (automatic selection of the speed; this setting is possible in case of 3.1kHz modern and non-transparent service) **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) **79** 19200 bps (V.110 or X.31 flag stuffing) **80** 28800 bps (V.110 or X.31 flag stuffing) **81** 38400 bps (V.110 or X.31 flag stuffing) **82** 48000 bps (V.110 or X.31 flag stuffing) **83** 56000 bps (V.110 or X.31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI or RDI service

		in order to get FTM)
	84	64000 bps (X.31 flag stuffing; this setting can be used in conjunction with asyn-chronous non-transparent UDI service in order to get FTM)
	115	56000 bps (bit transparent)
	116	64000 bps (bit transparent)
	120	32000 bps (PIAFS32k)
	121	64000 bps (PIAFS64k)
	130	28800 bps (multimedia)
	13	32000 bps (multimedia)
	132	33600 bps (multimedia)
	133	56000 bps (multimedia)
	134	64000 bps (multimedia)
	<name>	
	0	Data circuit asynchronous (UDI or 3.1 kHz modem)
	1	data circuit synchronous (UDI or 3.1 kHz modem)
	4	Data circuit asynchronous (RDI)\
	5	data circuit synchronous (RDI)
	<ce>	
	0	Transparent
	1	Non-transparent
	2	Both, transparent prefered
	3	Both, non-transparent prefered
Reference 3GPP TS 27.007 [14]	Note: GSM 02.02[1]: 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 <reason>s)** **OK**
Write Command **AT+CCFC=<reason>,<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 <reason> 0 –3) For registered call forwarding numbers: when <mode>=2 and command successful: **+CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]]** **[<CR><LF>+CCFC:** **<status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][…]** **OK** If no call forwarding numbers are registered (and therefore all classes are inactive): **+CCFC: <status>, <class>** **OK** where <status>=0 and <class>=7 If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<reason>** **0** Unconditional **1** Mobile busy **2** No reply **3** Not reachable **4** All call forwarding **5** All conditional call forwarding **<mode>** **0** Disable **1** Enable **2** Query status **3** Registration **4** Erasure **<number>** String type (Phone number of forwarding address in format specified by <type>) **<type>** Type of address **<subaddr>** S tring type (subaddress of format specified by <satype>) **<satype>** Type of sub-address in integer **<class>** **1** Voice (telephony)

	2 Data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) **3** Default value(1+2) **4** Fax (facsimile services) **7** All classes **<time>** 1..30 When "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value is 20.Supported only if it is multiples of 5. **<status>** **0** Not active **1** Active
Reference 3GPP TS 27.007	

3.2.6 AT+CCWA Call Waiting Control

AT+CCWA Call Waiting Control	
Test Command **AT+CCWA=?**	Response **+CCWA: (list of supported <fac>s)** **OK**
Read Command **AT+CCWA?**	Response **+CCWA: <n>** **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>** **+CCWA: <status>,<class2>** **[...]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**

	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 aborted by pressing any key. Unsolicited result code **RING** **+CCWA: <number>,<type>,<classx>,,<CLI validity>=""**>
Parameters	**<number>** String type (string should be included in quotation marks) phone number of calling address in format specified by <type> **<type>** Type of address octet in integer format; **129** Unknown type **161** National number type **145** International number type **177** Network specific number **<CLI validity>:** integer type **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. **<n>** **0** Disable presentation of an unsolicited result code **1** Enable presentation of an unsolicited result code **<mode>** When <mode> parameter not given, network is not interrogated **1** Enable call waiting **2** Query status **<class>** Is a sum of integers each representing a class of information **1** Voice (telephony) **2** Data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128 **3** Default value(1+2) **4** Fax (facsimile services) **7** All classes **16** data circuit sync **32** data circuit async **64** dedicated packet access **128** dedicated PAD access

	<status> **0** Not active **1** Active
Reference 3GPP TS 27.007	

3.2.7 AT+CEER Extended Error Report

AT+CEER Extended Error Report	
Test Command **AT+CEER=?**	Response **+CEER: (list of supported <n>s)** **OK**
Read Command **AT+CEER?**	Response **+CEER: <n>** **OK**
Write Command **AT+CEER=<n>**	Response **OK**
Execution Command **AT+CEER**	Response In case of CC and SM categories: **+CEER: <category>** **OK** In case of SS category network error cause and network GSM cause. **+CEER: <cause>** **OK**
Parameters	**<n>** **0** The reason for last call release as text code **1** The reason for last call release as number code **<category>** may be **"No report available"** **"CC setup error"** **"CC modification error"** **"CC release"** **"SM attach error"** **"SM detach"** **"SM activation error"** **"SM deactivation"**

	"SS network error cause" **"SS network reject cause"** **"SS network GSM cause"** **<cause>** Contains a digit representing code of the error cause sent by network or internally.
Reference 3GPP TS 27.007 [13]	

3.2.8 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**
Parameters	**<manufacturer>** The ID of manufacturer
Reference 3GPP TS 27.007 [13]	

3.2.9 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**
Parameters	**<model>** Product model identification text
Reference 3GPP TS 27.007 [13]	

3.2.10 AT+CGMR Request TA Revision Identification of Software Release

AT+CGMR Request TA Revision Identification of Software Release	
Test Command	Response

AT+CGMR=?	**OK**
Execution Command **AT+CGMR**	Response TA returns product software version identification text. **Revision: <revision>** **OK**
Parameters	**<revision>** Product software version identification text
Reference 3GPP TS 27.007 [13]	

3.2.11 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 see +GSN **<sn>** **OK**
Parameters	**<sn>** International mobile equipment identity (IMEI)
Reference 3GPP TS 27.007 [13]	

3.2.12 AT+CSCS Select TE Character Set

AT+CSCS Select TE Character Set	
Test Command **AT+CSCS=?**	Response **+CSCS: (list of supported <chset>s)** **OK**
Read Command **AT+CSCS?**	Response **+CSCS: <chset>** **OK**
Write Command **AT+CSCS=<chset>**	Response Sets which character set <chset> are used by the TE. The TA can then convert character strings correctly between the TE and ME character sets. **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<chset>** **"GSM"** GSM 7 bit default alphabet (3GPP TS 23.038); **"UCS2** "16-bit universal multiple-octet coded character set (ISO/IEC10646); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99 **"IRA"** International reference alphabet (ITU-T T.50) **"HEX"** Character strings consist only of hexadecimal numbers from 00 to FF;
Reference 3GPP TS 27.007 [13]	

3.2.13 AT+CSTA Select Type of Address

AT+CSTA Select Type of Address	
Test Command **AT+CSTA=?**	Response **+CSTA: (list of supported <type>s)** **OK**
Read Command **AT+CSTA?**	Response **+CSTA: <type>** **OK**
Write Command **AT+CSTA=<type>**	Response **OK** If <type> is not in the parameter range: **ERROR**
Parameters	**<type>** Current address type setting.Type of address octet in integer format; **129** Unknown type **161** National number type **145** International number type **177** Network specific number
Reference 3GPP TS 27.007 [13]	Note: The ATD Command overrides this setting when a number is dialed.

3.2.14 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.These supplementary services are only applicable to tele service 11 (Speech: Telephony). **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** **0** release all held calls or set User Determined User Busy for a waiting/incoming call; if both exists then only the waiting call will be rejected **1** release all active calls and accepts the other (held or waiting) Note: In the scenario: An active call, a waiting call and held call, when the active call is terminated, we will make the Waiting call as active. **1x** release a specific call (x specific call number as indicated by +CLCC) **2** place all active calls (if exist) on hold and accepts the other call (held or waiting/in-coming). If only one call exists which is active, place it on hold and if only held call exists make it active call **2x** place all active calls on hold except call x with which communication is supported3 adds a held call to the conversation. **3** adds a held call to the conversation.
Reference	

3.2.15 AT+CIMI Request International Mobile Subscriber Identity

AT+CIMI Request International Mobile Subscriber Identity	
Test Command **AT+CIMI=?**	Response **OK**
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>**

Parameters	**<IMSI>** International Mobile Subscriber Identity (string without double quotes)
Reference 3GPP TS 27.007 [13]	

3.2.16 AT+CLCC List Current Calls of ME

AT+CLCC List Current Calls of ME	
Test Command **AT+CLCC=?**	Response **+CLCC: (list of supported <n>s)** **OK**
Read Command **AT+CLCC?**	Response **+CLCC: <n>** **OK**
Write Command **AT+CLCC=<n>**	Response **OK**
Execution Command **AT+CLCC**	Response TA returns a list of current calls of ME. Note: If Command succeeds but no calls are available, no information response is sent to TE. **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>,<alphaID>]** **[<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>,<alphaID>][...]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** **0** Don't report a list of current calls of ME automatically when the current call status changes. **1** Report a list of current calls of ME automatically when the current call status changes. **<idx>** **1..7** Call identification number 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) **6** Disconnect **<mode>** Bearer/tele service: **0** Voice **1** Data **2** Fax **<mpty>** **0** Call is not one of multiparty (conference) call parties **1** Call is one of multiparty (conference) call parties **<number>** String type (string should be included in quotation marks) phone number in format specified by <type> **<type>** Type of address **<alphaId>** String type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book.
Reference 3GPP TS 27.007 [13][14]	

3.2.17 AT+CLCK Facility Lock

AT+CLCK Facility Lock	
Test Command **AT+CLCK=?**	Response **+CLCK: (list of supported <fac>s)** **OK**
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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<fac>** **"AO"** BAOC (Barr All Outgoing Calls) **"OI"** BOIC (Barr Outgoing International Calls) **"AI"** BAIC (Barr All Incoming Calls) **"IR"** BIC-Roam (Barr Incoming Calls when Roaming outside the home country) **"OX"** BOIC-exHC (Barr Outgoing International Calls except to Home Country) **"AB"** All Barring services (refer 3GPP TS 22.030 [19]) (applicable only for <mode>=0) **"AG"** All outGoing barring services (refer 3GPP TS 22.030 [19]) (applicable only for<mode>=0) **"AC"** ll inComing barring services (refer 3GPP TS 22.030 [19]) (applicable only for<mode>=0) **"PS"** PH SIM (lock PHone to SIM/UICC card) (MT asks password when other than current SIM/UICC card inserted;MT may remember certain amount of previously used cards thus not requiring password when they are inserted) **"PN"** Network Personalization, Correspond to NCK code **"PU"** Network subset Personalization Correspond to NSCK code **"PP"** Service Provider Personalization Correspond to SPCK code **"PC"** Corporate Personalization (refer 3GPP TS 22.022 [33]) **"SC"** SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code. **"FD"** SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>) **<mode>** **0** unlock **1** lock **2** query status

	<passwd> String type (Shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD) **<class>** **1** Voice (telephony) **2** Data refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) **4** Fax (facsimile services) **7** All classes **<status>** **0** Not active **1** Active
Reference 3GPP TS 27.007 [14]	Note: CME errors if SIM not inserted or PIN is not entered.

3.2.18 AT+CLIP Calling Line Identification Presentation

AT+CLIP Calling Line Identification Presentation	
Test Command **AT+CLIP=?**	Response **+CLIP: (list of supported <n>s)** **OK**
Read Command **AT+CLIP?**	Response **+CLIP: <n>, <m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CLIP=<n>**	Response TA enables or disables the presentation of the 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>** Unsolicited Result Code When the presentation of the CLI at the TE is enabled (and calling subscriber

	allows), an unsolicited result code is returned after every RING (or +CRING: <type>) at a mobile terminating call. **+CLIP: <number>,<type>[,<subaddr>,<satype>,<alphaId>,<CLI validity>]**
Parameters	**<number>** String type (string should be included in quotation marks) phone number of calling address in format specified by <type> **<type>** Type of address octet in integer format; **129** Unknown type **161** National number type **145** International number type **177** Network specific number **<subaddr>** String type (subaddress of format specified by <satype>) **<satype>** Integer type (type of subaddress) **<alphaId>** String type (string should be included in quotation marks) 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. **<n>** **0** Disable +CLIP notification. **1** Enable +CLIP notification. **<m>** **0** CLIP not provisioned **1** CLIP provisioned **2** unknown (e.g. no network, etc.)
Reference	

3.2.19 AT+CLIR Calling Line Identification Restriction

AT+CLIR	**Calling Line Identification Restriction**

Test Command **AT+CLIR=?**	Response **+CLIR: (list of supported <n>s)** **OK**
Read Command **AT+CLIR?**	Response **+CLIR: <n>, <m>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CLIR=<n>**	Response TA restricts or enables the presentation of the 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 "Call line identification" adjustment for outgoing calls:): **0** presentation indicator is used according to the subscription of the CLIR service **1** CLIR invocation **2** CLIR suppression(default) **<m>** (parameter shows the subscriber CLIR service status in 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	

3.2.20 AT+CMEE Report Mobile Equipment Error

AT+CMEE Report Mobile Equipment Error

Test Command **AT+CMEE=?**	Response **+CMEE: (list of supported <n>s)** **OK**
Read Command **AT+CMEE?**	Response **+CMEE: <n>** **OK**
Write Command **AT+CMEE=[<n>]**	Response TA disables or enables the use of result code +CME ERROR: <err> as an indication of an error relating to the functionality of the ME. **OK** If error is related to ME functionality: **+CME ERROR:<err>**
Parameters	**<n>** **0** Disable +CME ERROR: <err> result code and use ERROR instead. **1** Enable +CME ERROR: <err> result code and use numeric <err> **2** Enable +CME ERROR: <err> result code and use verbose <err> values
Reference 3GPP TS 27.007 [13]	

3.2.21 AT+COLP Connected Line Identification Presentation

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

Write Command **AT+COLP=<n>**	Response TA enables or disables the presentation of the COL (Connected Line) at the TE for a mobile originated 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** If error is related to ME functionality: **+CME ERROR: <err>** 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> ,<alphaId>]**
Parameters	**<n>** (parameter sets/shows the result code presentation status in the TA): **0** Disable +COLP notification **1** Enable +COLP notification **<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.) **<number>** String type (string should be included in quotation marks) phone number of format specified by <type> **<type>** Type of address octet in integer format; **129** Unknown type **161** National number type **145** International number type **177** Network specific number **<subaddr>** String type (string should be included in quotation marks) sub address of format specified by <satype> **<satype>** Type of sub address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.8) **<alphaId>** String type (string should be included in quotation marks) alphanumeric representation of <number> corresponding to the entry found in phone book.
Reference 3GPP TS 27.007	

3.2.22 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>**
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>,[<AcT>]]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+COPS=<mode>,[<format>,[<oper>,[<AcT>]]]**	Response TA forces an attempt to select and register the GSM network operator. If the selected operator is not available, no other operator shall be selected (except <mode>=4). The selected operator name format shall apply to further read commands (+COPS?). **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<stat>** **0** Unknown Networks **1** Network Available **2** Current(Registered) **3** Forbidden Network **<mode>** **0** Automatic mode; <oper> field is ignored **1** Manual (<oper> field shall be present, and <AcT> optionally) **2** manual deregister from network

	3 It sets <format> value. In this case <format> becomes a mandatory input **4** Manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered **<format>** **0** Long format alphanumeric <oper> **1** Short format alphanumeric <oper> **2** Numeric <oper>; GSM Location Area Identification number **<oper>** Refer to [27.007] operator in format as per <format> **<AcT>** **0** GSM **2** UMTS
Reference 3GPP TS 27.007 [14]	

3.2.23 AT+CPAS Phone Activity Status

AT+CPAS Phone Activity Status	
Test Command **AT+CPAS=?**	Response **+CPAS: (list of supported <pas>s)** **OK**
Execution Command **AT+CPAS**	Response TA returns the activity status of ME. **+CPAS: <pas>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<pas>** **0** Ready (MT allows commands from TA/TE) **1** Unavailable(MT does not allow commands from TA/TE) **2** Unknown (MT is not guaranteed to respond to instructions) **3** Ringing (MT is ready for commands from TA/TE, but the ringer is active) **4** Call in progress (MT is ready for commands from TA/TE, but a call is

		in progress)
	5	Asleep(MT is unable to process commands from TA/TE because it is in a low functionality state)
Reference 3GPP TS 27.007 [13]		

3.2.24 AT+CPIN Enter PIN

AT+CPIN Enter PIN	
Test Command **AT+CPIN=?**	Response **OK**
Read Command **AT+CPIN?**	Response TA returns an alphanumeric string indicating whether some password is required or not. **+CPIN: <code>** **OK**
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 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<code>** **READY** MT is not pending for any password **SIM PIN** MT is waiting SIM PIN to be given **SIM PUK** MT is waiting for SIM PUK to be given **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. for editing the FDN book possible only if preceding Command was acknowledged with +CME ERROR:17 **SIM PUK2** Possible only if preceding Command was acknowledged with error +CME ERROR: 18. **<pin>** String type; password **<new pin>** String type; If the PIN required is SIM PUK or SIMPUK2: new password
Reference 3GPP TS 27.007 [13]	

3.2.25 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>,<pwdlength>)s** **OK**
Write Command **AT+CPWD=<fac>,<oldpwd>, <newpwd>**	Response TA sets a new password for the facility lock function. **OK**
Parameters	**<pwdlength>** Integer max. length of password **<fac>** **"AO** "BAOC (Barr All Outgoing Calls) **"OI"** BOIC (Barr Outgoing International Calls) **"OX"** BOIC-exHC (Barr Outgoing International Calls except to Home Country) **"AI"** BAIC (Barr All Incoming Calls) **"IR"** BIC-Roam (Barr Incoming Calls when Roaming outside the home country) **"AB"** All Barring services **"P2"** SIM PIN2 **"SC"** SIM (lock SIM/UICC card) (SIM/UICC asks password in MT power-up and when this lock command issued) Correspond to PIN1 code. **<oldpwd>** String type (string should be included in quotation marks): password specified for the facility from the user interface or with command. If an old password has not yet been set, <oldpwd> is not to enter. **<newpwd>** String type (string should be included in quotation marks): new password
Reference 3GPP TS 27.007 [13]	

3.2.26 AT+CR Service Reporting Control

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

	OK
Read Command **AT+CR?**	Response **+CR: <mode>** **OK**
Write Command **AT+CR=[<mode>]**	Response TA controls whether or not intermediate result code +CR: <serv> is returned from the TA to the TE at a call set up. **OK** Intermediate result code If 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>**
Parameters	**<mode>** **0** Disable reporting **1** Enable reporting **<serv>** **ASYNC** Asynchronous transparent **SYNC** Synchronous transparent **REL ASYNC** Asynchronous non-transparent **REL SYNC** Synchronous non-transparent **GPRS** For GPRS
Reference 3GPP TS 27.007 [13]	

3.2.27 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**
Read Command **AT+CRC?**	Response **+CRC: <mode>** **OK**

Write Command **AT+CRC=[<mode>]**	Response TA controls whether or not the extended format of incoming call indication is used. **OK** Unsolicited Result Code When enabled, an incoming call is indicated to the TE with unsolicited result code **+CRING: <type>** instead of the normal RING.
Parameters	**<type>** **ASYNC** Asynchronous transparent **SYNC** Synchronous transparent **REL ASYNC** Asynchronous non-transparent **REL SYNC** Synchronous non-transparent **FAX** Facsimile **VOICE** Voice **<mode>** **0** Disable extended format **1** Enable extended format Omitted Use previous value
Reference 3GPP TS 27.007 [13]	

3.2.28 AT+CREG Network Registration

AT+CREG Network Registration	
Test Command **AT+CREG=?**	Response **+CREG: (list of supported <n>s)** **OK**
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. The last parameter<AcT> is controlled by "AT+CSACT" **+CREG: <n>,<stat>[,<lac>,<ci>[,<AcT>]]** **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**
	Unsolicited Result Code If <n>=1 and there is a change in the MT network registration status **+CREG: <stat>** If <n>=2 and there is a change in the MT network registration status or a change of the network cell: **+CREG: <stat>[, <lac>,<ci>[,<AcT>]]**
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 +CREG: <stat>[,<lac>,<ci>] **<stat>** **0** Not registered, MT is not currently searching a new operator to register to **1** Registered, home network **2** Not registered, but MT is currently searching a new operator to register to **3** Registration denied **4** Unknown **5** Registered, roaming **<lac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format **<ci>** String type (string should be included in quotation marks); two byte cell ID in hexadecimal format
Reference 3GPP TS 27.007 [13]	

3.2.29 AT+CRLP Select Radio Link Protocol Parameters

AT+CRLP Select Radio Link Protocol Parameters	
Test Command **AT+CRLP=?**	Response TA returns values supported.RLP versions 0 and 1 share the same parameter set.

	+CRLP: (list of supported <iws>s),(list of supported <mws>s),(list of supported <T1>s),(list of supported <N2>s) **OK**
Read Command **AT+CRLP?**	Response TA returns current settings for RLP version.RLP versions 0 and 1 share the same parameter set. **+CRLP: <iws>,<mws>,<T1>,<N2>** **OK**
Write Command **AT+CRLP=[<iws>[,<mws>[,<T1>[,<N2>]]]]**	Response TA sets radio link protocol (RLP) parameters used when non-transparent data calls are setup. **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 10 ms units **<N2>** **1-255** Retransmission attempts N2
Reference 3GPP TS 27.007 [13]	SIMCom redefined the range of values used by the parameters.

3.2.30 AT+CRSM Restricted SIM Access

AT+CRSM Restricted SIM Access	
Test Command **AT+CRSM=?**	Response **OK**
Write Command **AT+CRSM=<Command>[,<fileId>[,<P1>,<P2>,<P3>[,<data>]]]**	Response **+CRSM: <sw1>, <sw2> [,<response>]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<Command>** **176** READ BINARY **178** READ RECORD

	192 GET RESPONSE **214** UPDATE BINARY **220** UPDATE RECORD **242** STATUS All other values are reserved; refer GSM 11.11. **<fileId>** Integer type; this is the identifier for an elementary data file on SIM. Mandatory for every Command except STATUS **<P1>,<P2>,<P3>** Integer type, range 0 – 255 Parameters to be passed on by the ME to the SIM; refer GSM 11.11. **<data>** Information which shall be written to the SIM (hex-decimal character format) **<sw1>, <sw2>** Integer type, range 0 - 255 Status information from the SIM about the execution of the actual Command. These parameters are delivered to the TE in both cases, on successful or failed execution of the Command; refer GSM 11.11. **<response>** Response of a successful completion of the Command previously issued (hexadecimal character format)
Reference 3GPP TS 27.007 GSM 11.11	

3.2.31 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** If error is related to ME functionality: **+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** -115 dBm or less **1** -111 dBm **2...30** -110... -54 dBm **31** -52 dBm or greater **99** not known or not detectable **<ber>** (in percent): **0...7** As RXQUAL values in the table in GSM 05.08 [20] subclause 7.2.4 **99** Not known or not detectable
Reference 3GPP TS 27.007 [13]	

3.2.32 AT+VTD Tone Duration

AT+VTD Tone Duration	
Test Command **AT+VTD=?**	Response **+VTD: (list of supported <n>s)** **OK**
Read Command **AT+VTD?**	Response **+VTD: <n>** **OK**
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**
Parameters	**<n>** **0-255** Duration of the tone in 1/10 seconds
Reference 3GPP TS 27.007 [13]	

3.2.33 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**
Write Command	Response

Generate tone Duration is set by +VTD **AT+VTS=<dtmf-string>** **AT+VTS=<dtmf>,{<dtmf>,<duration>}**	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>** Note: The Command is writing only.
Parameters	**<dtmf-string>** Which has a max length of 20 characters, must be entered between double quotes ("") and consists of combinations of the following separated by commas. But a single character does not require quotes. 1) **<dtmf>** A single ASCII characters in the set **0-9, #,*, A-D**. This is interpreted as a sequence of DTMF tones whose duration is set by the +VTD Command. 2) **{<dtmf>, <duration>}** This is interpreted as a DTMF tone whose duration is determined by <duration>. **<duration>** Duration of the tone in 1/10 seconds range: **0-255**
Reference 3GPP TS 27.007 [13]	

3.2.34 AT+CMUX Multiplexer Control

AT+CMUX Multiplexer Control	
Test Command **AT+CMUX=?**	Response **+CMUX: (list of supported <mode>s),(list of supported <subset>s),,(list of supported <N1>s),(list of supported <T1>s),(list of supported <N2>s),(list of supported<T2>s),(list of supported <T3>s),(list of supported <k>s)** **OK**
Read Command **AT+CMUX?**	Response: **+CMUX:[<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]** **OK**
Write Command **AT+CMUX=<mode>** **AT+CMUX=0,0,,1500,50,3,90**	Response If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** Multiplexer transparency mechanism **0** Basic option

<subset> The way in which the multiplexer control channel is set up

0 UIH frames used only

<port_speed> Transmission rate

1 9600 bits/t

2 19200 bits/t

3 38400 bits/t

4 57600 bits/t

5 115200 bit/s

6 230400 bits/t

7 1 Mbit/s (default)

Proprietary values, available if MUX NEW PORT SPEED FTR is activated

<N1> Maximum frame size

1-255 Default: 127

<T1> Acknowledgement timer in units of ten milliseconds

1-255 Default:10 (100 ms)

<N2> Maximum number of re-transmissions

0-100 Default:3

<T2> Max Response Timer for the multiplexer control channel in units of ten milliseconds

2-255 Default:30

<T3> Wake up Max Response Timers in seconds

1-255 Default:10

<k> Window size, for Advanced operation with Error Recovery options

1-7 Default:2

<mode> Multiplexer transparency mechanism

0 Basic option

1 Advanced option (not supported)

Reference

3GPP TS 27.007 [13]

Note:

The multiplexing transmission rate is 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	NumberType	DLCI
None	Multiplexer Control	0
1	3GPP TS 27.007 and 005	1

	2	3GPP TS 27.007 and 005	2
	3	3GPP TS 27.007 and 005	3
	4	3GPP TS 27.007 and 005	4

3.2.35 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>]** **[<CR><LF>+CNUM:[<alpha2>],<number2>,<type2>[,<speed>,<service>]** **[...]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<alpha*x*>** Optional alphanumeric string associated with *<numberx>*; used character set should be the one selected with Command Select TE Character Set +CSCS **<number*x*>** String type (string should be included in quotation marks) phone number of format specified by <type*x*> **<type*x*>** Type of address octet in integer format (refer GSM04.08[8] subclause 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
Reference 3GPP TS 27.007 [13]	

3.2.36 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**
Read Command **AT+CPOL?**	Response **+CPOL: <index1>,<format>,<oper1>[,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1>][<CR><LF>** **+CPOL: <index2>,<format>,<oper2>[,<GSM_AcT2>,<GSM_Compact_AcT2>,<UTRAN_AcT2>] [...]]** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CPOL=[<index>][,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UTRAN_AcT>,<EUTRAN_AcT>]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<index>** Integer type. order number of operator in SIM preferred operator list **<format>** Indicates whether alphanumeric or numeric format used (see +COPS Command) **0** Long format alphanumeric <oper> **1** Short format alphanumeric <oper> **2** Numeric <oper> **<oper>** String type(string should be included in quotation marks) **<GSM_AcT>** GSM access technology **0** access technology not selected **1** access technology selected **<GSM_Compact_AcT>** GSM compact access technology **0** access technology not selected **1** access technology selected **<UTRAN_AcT>** UTRAN access technology **0** access technology not selected

	1 access technology selected **<EUTRAN_AcT>** EUTRAN access technology **0** access technology not selected **1** access technology selected
Reference 3GPP TS 27.007 [13]	

3.2.37 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** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<numeric*n*>** String type (string should be included in quotation marks): operator in numeric format (see +COPS) **<alpha*n*>** String type (string should be included in quotation marks): operator in long alphanumeric format (see +COPS)
Reference 3GPP TS 27.007 [13]	

3.2.38 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** If error is related to ME functionality: **+CME ERROR: <err>**
Read Command **AT+CFUN?**	Response **+CFUN: <fun>**

	OK If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CFUN=<fun>[,<rst>]**	Response **OK** If error is related to ME functionality: **+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 MT before resetting it to <fun> power level. (default) **1** Reset the MT before setting it to <fun> power level.
Reference 3GPP TS 27.007 [13]	Note: Minimum functionality mode (AT+CFUN=0)and RF disabled functionality mode (AT+CFUN=4) cannot be switched to each other.The <fun> power level will be written to flash except minimum functionality.AT+CFUN=1,1 can be used to reset module purposely at minimum/full functionality mode. Response string "OK" will be returned after module resets if baud rate is set to fixed baud rate.

3.2.39 AT+CCLK Clock

AT+CCLK Clock	
Test Command **AT+CCLK=?**	Response **OK**
Read Command **AT+CCLK?**	Response **+CCLK: <time>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CCLK=<time>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<time>** String type(string should be included in quotation marks) value; format is "yy/MM/dd,hh:mm:ss±zz", where characters indicate year (two last digits),month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in

	quarters of an hour, between the local time and GMT; range -47...+48). E.g. 6th of May 2010, 00:01:52 GMT+2 hours equals to "10/05/06,00:01:52+08".
Reference 3GPP TS 27.007 [13]	

3.2.40 AT+CSIM Generic SIM Access

AT+CSIM Generic SIM Access	
Test Command **AT+CSIM=?**	Response **OK**
Write Command **AT+CSIM=<length>,<Command>**	Response **+CSIM: <length>,<response>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<length>** Integer type: length of characters sent to the TE in <Command> or <response> (i.e. twice the number of octets in the raw data). **<Command>** String type(string should be included in quotation marks): hex format: GSM 11.11 SIM Command sent from the ME to the SIM. **<response>** String type(string should be included in quotation marks): hex format: GSM 11.11 response from SIM to <Command>.
Reference 3GPP TS 27.007 [13]	

3.2.41 AT+CPUC Price Per Unit and Currency Table

AT+CPUC Price Per Unit and Currency Table	
Test Command **AT+CPUC=?**	Response **OK**
Read Command AT+CPUC?	Response **+CPUC: <currency>,<ppu>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CPUC=<currency>,<ppu>[,<passwd>]**	Response **OK**

	+CME ERROR: <err>
Parameters	**<currency>** String type (string should be included in quotation marks); three-character currency code (e.g. "GBP", "DEM"); character set as specified by Command Select TE Character Set +CSCS **<ppu>** String type (string should be included in quotation marks); price per unit; dot is used as a decimal separator(e.g. "2.66") **<passwd>** String type (string should be included in quotation marks); SIM PIN2
Reference 3GPP TS 27.007 [13]	

3.2.42 AT+CCWE Call Meter Maximum Event

AT+CCWE Call Meter Maximum Event	
Test Command **AT+CCWE=?**	Response **+CCWE: (list of supported <mode>s)** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Read Command **AT+CCWE?**	Response **+CCWE: <mode>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CCWE=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** 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 5 s call time remains.
Parameters	**<mode>** **0** Disable call meter warning event **1** Enable call meter warning event

Reference 3GPP TS 27.007 [13]	3GPP TS 27.007 specifies 30 seconds, so SIMCom deviates from the specification.

3.2.43 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**
Execution Command **AT+CBC**	Response **+CBC: <bcs>, <bcl>,<voltage>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<bcs>** Charge status **0** ME is not charging **1** ME is charging **2** Charging has finished **<bcl>** Battery connection level **1...100** battery has 1-100 percent of capacity remaining vent **<voltage>**Battery voltage(mV)
Reference 3GPP TS 27.007 [13]	Note: This command depends on hardware and only be used when battery is charging.

3.2.44 AT+CUSD Unstructured Supplementary Service Data

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

AT+CUSD=<n>[,<str>[,<dcs>]]	**OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** A numeric parameter which indicates control of the unstructured supplementary service data **0** disable the result code presentation in the TE **1** enable the result code presentation in the TE **2** cancel session (not applicable to read Command response) **<str>** String type (string should be included in quotation marks) USSD-string **<dcs>** Cell Broadcast Data Coding Scheme in integer format (default 0)
Reference GSM 03.38 [25]	Note: When ussd is not support or return error ,TE will print +CUSD:4.

3.2.45 AT+CSSN Supplementary Services Notification

AT+CSSN Supplementary Services Notification	
Test Command **AT+CSSN=?**	Response returns values supported as a compound value. **+CSSN: (list of supported <n>s),(list of supported <m>s)** **OK**
Read Command **AT+CSSN?**	Response gives corresponding setting value of <n> and <m>. **+CSSN: <n>,<m>** **OK**
Write Command **AT+CSSN=<n>[,<m>]**	Response enables/disables the presentation of notification result codes from TA to TE. Command Syntax: AT+CSSN = [<n>[,<m>]] URC Response Syntax: +CSSI : <code1>[,<index>] +CSSU: <code2>[<index> [,<number>,<type>]] **OK** If error is related to ME functionality: **+CME ERROR: <err>**
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>[<index> [,<number>,<type>]] +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 **8** Call has been deflected **<index>** Closed user group index **<code2>** **0** This is a forwarded call(MT call setup) **1** This is a CUG call (also <index> present) (MT call setup) **2** Call has been put on hold (during a voice call) **3** Call has been retrieved (during a voice call) **4** Multiparty call entered (during a voice call) **5** Call on hold has been released (this is not a SS notification) (during a voice call) **6** Forward check SS message received (can be received whenever) **7** Call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call) **8** Call has been connected with the other remote party in explicit call transfer operation (also number and subaddress parameters may be present) (during a voice call or MT call setup) **9** This is a deflected call (MT call setup) **10** Additional incoming call forwarded **<number>** Parameter string type phone of format specified by <type> **<index>** Parameter type of address octet in integer format
Reference	

4. AT Commands According to 3GPP TS 27.005

The 3GPP TS 27.005 commands are for performing SMS and CBS related operations. SIM5300E supports both Text and PDU modes.

4.1 Overview of AT Commands According to 3GPP TS 27.005

Command	Description
AT+CMGD	Delete SMS message
AT+CMGF	Select SMS message format
AT+CMGL	List SMS messages 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+CNMI	New SMS message indications
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 ATC According to 3GPP TS 27.005

4.2.1 AT+CMGD Delete SMS Message

AT+CMGD Delete SMS Message	
Test Command **AT+CMGD=?**	Response **+CMGD: (list of supported <index>s),(list of supported <delflag>s)** **OK**
Write Command **AT+CMGD=<index>[,<delflag>]**	Response TA deletes message from preferred message storage <mem1> location <index>. **OK** 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 **<delflag>** **0** Delete the message specified in <index> **1** Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched **2** Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched **3** Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched **4** Delete all messages from preferred message storage including unread messages
Reference 3GPP TS 27.005	

4.2.2 AT+CMGF Select SMS Message Format

AT+CMGF Select SMS Message Format

Test Command **AT+CMGF=?**	Response **+CMGF: (list of supported <mode>s)** **OK**
Read Command **AT+CMGF?**	Response **+CMGF: <mode>** **OK**
Write Command **AT+CMGF=[<mode>]**	Response TA sets parameter to denote which input and output format of messages to use. **OK**
Parameters	**<mode>** **0** PDU mode **1** Text mode
Reference 3GPP TS 27.005	

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

OK

	3)If error is related to ME functionality: **+CMS ERROR: <err>**
Execution Command **AT+CMGL**	If text mode: the same as AT+CMGL="REC UNREAD", received unread messages If PDU mode: the same as AT+CMGL=0, received unread messages See more messages please refer to Write Command.
Parameters	**<alpha>** String type(string should be included in quotation marks) alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with Command Select TE Character Set +CSCS (see definition of this Command in 3GPP TS 27.007) **<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 Command+CSCS in 3GPP TS 27.007); 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 Command Select TE Character Set +CSCS in 3GPP TS 27.007):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A If TE character set is "HEX": ME/TA converts each 7-bit character of GSM 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 Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A

	If TE character set is "HEX": ME/TA converts each 7-bit character of 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 Command +CSCS in 3GPP TS 27.007); type of address given by <tooa> **<pdu>** In the case of SMS: GSM 04.11 SC address followed byGSM 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 <dt>) **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) **<tooa>** GSM 04.11 TP-Originating-Address Type-of-Address octet i integer format (default refer<toda>)
Reference 3GPP TS 27.005	

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>]**	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 successful: 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	**<index>** Integer type; value in the range of location numbers supported by the associated memory **<mode>** **0** Normal **1** Not change status of the specified SMS record **<alpha>** String type (string should be included in quotation marks) 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 3GPP TS 27.007); 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 Command Select TE Character Set +CSCS in 3GPP TS 27.007):ME/TA converts GSM alphabet into current TE character set according to rules of Annex A

if TE character set is "HEX": ME/TA converts each 7-bit character of GSM 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 Command +CSCS in 3GPP TS 27.007): ME/TA converts GSM alphabet into current TE character set according to rules of Annex A

if TE character set is "HEX": ME/TA converts each 7-bit character of 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 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 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format

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

<mid> 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 3GPP TS 27.007); 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 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 3GPP TS 27.007); type of address given by <tosca>

<scts> GSM 03.40 TP-Service-Centre-Time-Stamp in time-string format (refer <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 octetin integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

<tooa> GSM 04.11 TP-Originating-Address Type-of-Address octet in integer format (default refer<toda>)

<tosca> GSM 04.11 RP SC address Type-of-Address octet in integer format

	(default refer <toda>) **<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 <dt>)
Reference 3GPP TS 27.005	

4.2.5 AT+CMGS Send SMS Message

AT+CMGS Send SMS Message	
Test Command **AT+CMGS=?**	Response **OK**
Write Command 1) If text mode (+CMGF=1): **+CMGS=<da>[,<toda>]** <CR>text is entered <ctrl-Z/ESC> ESC quits without sending 2) If PDU mode (+CMGF=0): **+CMGS=<length>** <CR>PDU is given <ctrl-Z/ESC>	Response TA sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery. Optionally (when +CSMS <service> value is 1 and network supports) <scts> is returned. Values can be used to identify message upon unsolicited delivery status report result code. 1) If text mode(+CMGF=1) and sending successful: **+CMGS: <mr>** **OK** 2) If PDU mode(+CMGF=0) and sending successful: **+CMGS: <mr>** **OK** 3)If error is related to ME functionality: **+CMS ERROR: <err>**
Parameters	**<da>** GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); 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 is 145, otherwise default is 129) **<length>** Integer type value (not exceed 160 bytes) indicating in the text mode (+CMGF=1) the length of the message body <data>(or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP

	layer SMSC address octets are not counted in the length) **<mr>** GSM 03.40 TP-Message-Reference in integer format
Reference 3GPP TS 27.005	Note: In text mode, the maximum length of an SMS depends on the used coding scheme: Reject incoming call when sending messages.

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 2) If PDU mode (+CMGF=0): **AT+CMGW=<length>[,<stat>]** <CR>PDU is given <ctrl-Z/ESC>	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> allows also other status values to be given. If writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Execution Command **AT+CMGW**	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> allows also other status values to be given. If writing is successful: **+CMGW: <index>** **OK** If error is related to ME functionality: **+CMS ERROR: <err>**
Parameters	**<oa>** GSM 03.40 TP-Originating-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007);type of address given by

<tooa>

<da> GSM 03.40 TP-Destination-Address Address-Value field in string format(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <toda>

<tooa> GSM 04.11 TP-Originating-Address Type-of-Address octetin integer format (default refer <toda>)

<toda> GSM 04.11 TP-Destination-Address Type-of-Address octet in integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129)

129	Unknown type(IDSN format number)
161	National number type(IDSN format)
145	International number type(ISDN format)
177	Network specific number(ISDN format)

<length> Integer type value (not exceed 160 bytes) 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)

<stat>
in the text mode (+CMGF=1):

"STO UNSENT"	Stored unsent messages
"STO SENT"	Stored sent messages

in PDU mode (+CMGF=0):

0	Received unread messages
1	Received read messages
2	Stored unsent messages
3	Stored sent messages

<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 3GPP TS 27.005	

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 sending successful: **+CMSS: <mr>** **OK** 2) If PDU mode(+CMGF=0) and sending successful: **+CMSS: <mr>** **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(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); type of address given by <toda> **<toda>** GSM 04.11 TP-Destination-Address Type-of-Address octetin integer format (when first character of <da> is + (IRA 43) default is 145, otherwise default is 129) **<mr>** GSM 03.40 TP-Message-Reference in integer format
Reference 3GPP TS 27.005	

4.2.8 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**
Read Command **AT+CNMI?**	Response **+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>** **OK**
Write Command **AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]**	Response TA selects the procedure for how the receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in GSM 03.38. **OK** **ERROR** Unsolicited result code 1. Indicates that new message has been received If <mt>=1: **+CMTI: <mem3>, <index>** If <mt>=2 (PDU mode enabled): **+CMT: [<alpha>],<length><CR><LF><pdu>** If <mt>=2 (text mode enabled): **+CMT: <oa>, <scts>[, <tooa>, <fo>, <pid>, <dcs>, <sca>, <tosca>, <length>]<CR><LF><data>** 2. Indicates that new cell broadcast message has been received If <bm>=2 (PDU mode enabled): **+CBM: <length><CR><LF><pdu>** If <bm>=2 (text mode enabled): **+CBM: <sn>, <mid>, <dcs>, <page>, <pages><CR><LF><data>** 3. Indicates that new SMS status report has been received If <ds>=1 (PDU mode enabled): **+CDS: <length><CR><LF><pdu>** If <ds>=1 (text mode enabled): **+CDS: <fo>, <mr>[, <ra>][, <tora>], <scts>, <dt>, <st>**
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 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 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 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 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 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 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).

<ds>

0	No SMS-STATUS-REPORTs are routed to the TE.
1	SMS-STATUS-REPORTs are routed to the TE 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 within this Command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes). **1** TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1…3 is entered
Reference 3GPP TS 27.005	

4.2.9 AT+CPMS Preferred SMS Message Storage

AT+CPMS Preferred SMS Message Storage	
Test Command **AT+CPMS=?**	Response **+CPMS: (list of supported <mem1>s),(list of supported <mem2>s),(list of supported <mem3>s)** **OK** If error is related to ME functionality: **+CMS ERROR <err>**
Read Command **AT+CPMS?**	Response **+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>, <mem3>,<used3>,<total3>** **OK** If error is related to ME functionality: **+CMS ERROR <err>**
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**
Parameters	**<mem1>** Messages to be read and deleted from this memory storage **"SM"** SIM message storage **"ME"** Phone message storage **<mem2>** Messages will be written and sent to this memory storage **"ME"** Phone message storage **"SM"** SIM message storage **<mem3>** Received messages will be placed in this memory storage if routing to

	PC is not set ("+CNMI") **"SM"** SIM message storage **"ME"** Phone message storage **<usedx>** Integer type; Number of messages currently in <memx> <**totalx**> Integer type; Number of messages storable in <memx>
Reference 3GPP TS 27.005	

4.2.10 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 Execution command restores message service settings from non-volatile memory to active memory. A TA can contain several profiles of settings. Settings specified in commands Service Centre Address +CSCA and Set Message Parameters +CSMP are restored. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be restored. **OK** If error is related to ME functionality: **+CMS ERROR <err>**
Execution Command **AT+CRES**	Response Same as AT+CRES=0. **OK** If error is related to ME functionality: **+CMS ERROR <err>**
Parameters	**<profile>** **0** Restore SM service settings from profile 0
Reference 3GPP TS 27.005	

4.2.11 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 Execution command saves active message service settings to a non-volatile memory. Settings specified in commands Service Centre Address +CSCA and Set Message Parameters +CSMP are saved. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be saved. **OK** If error is related to ME functionality: **+CMS ERROR <err>**
Execution Command **AT+CSAS**	Response Same as AT+CSAS=0 **OK** If error is related to ME functionality: **+CMS ERROR <err>**
Parameters	**<profile>** **0** Save SM service setting in profile 0
Reference 3GPP TS 27.005	

4.2.12 AT+CSCA SMS Service Center Address

AT+CSCA SMS Service Center Address	
Test Command **AT+CSCA=?**	Response **OK**
Read Command **AT+CSCA?**	Response **+CSCA: <sca>,<tosca>[,<scaAlpha>]** **OK**

Write Command **AT+CSCA=<sca>[,<tosca>]**	Response TA updates the SMSC address, through which mobile originated SMS are transmitted. In text mode, setting is used by send and writes 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: This 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(string should be included in quotation marks); BCD numbers (or GSM default alphabet characters) are converted to characters of the currently selected TE character set (specified by +CSCS in 3GPP TS 27.007); 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 <toda>) **<scaAlpha>** String type(string should be included in quotation marks) Service center address alpha data
Reference 3GPP TS 27.005	

4.2.13 AT+CSCB Select Cell Broadcast SMS Messages

AT+CSCB Select Cell Broadcast SMS Messages	
Test Command **AT+CSCB=?**	Response **+CSCB: (list of supported <mode>s)** **OK**
Read Command **AT+CSCB?**	Response **+CSCB: <mode>,<mids>,<dcss>** **OK**
Write Command **AT+CSCB=<mode>[,<mids>[,<dcss>]]**	Response TA selects which types of CBMs are to be received by the ME. Note: This 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 (string should be included in quotation marks); all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string); e.g. "0,1,5,320,922". Total 15 different <mids> values can be supported. <mids> values cannot be written consecutively, such as "100-200" **<dcss>** String type(string should be included in quotation marks); all different possible combinations of CBM data coding schemes (refer <dcs>) (default is empty string); e.g. "0,5". Total 5 different <dcss> values can be supported. <dcss> values cannot be written consecutively, such as "0-5".
Reference 3GPP TS 27.005	Note • AT+CSCB=0 will reset <mids> and <dcss> and select no <mids> and no <dcss>. • AT+CSCB=1 means all <dcss> are accepted but this command has no effect on the list of the <mids> accepted. "0-255" means all <dcss> are accepted. • AT+CSCB=0, <mids> will add the <mids> values in the <mids> current list handled by module. • AT+CSCB=0, ,<dcss> will add the <dcss> values in the <dcss> current list handled by module. • If AT+CSCB=0, <mids> is received while the list of <mids> is full, OK is returned and new value is not added.

4.2.14 AT+CSDH Show SMS Text Mode Parameters

AT+CSDH Show SMS Text Mode Parameters	
Test Command **AT+CSDH=?**	Response **+CSDH: (list of supported <show>s)** **OK**
Read Command **AT+CSDH?**	Response **+CSDH: <show>** **OK**
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 3GPP TS 27.005		

4.2.15 AT+CSMP Set SMS Text Mode Parameters

AT+CSMP Set SMS Text Mode Parameters	
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**
Read Command **AT+CSMP?**	Response **+CSMP: <fo>,<vp>,<pid>,<dcs>** **OK**
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). **OK** Note: This Command writes the parameters in NON-VOLATILE memory.
Parameters	**<fo>** Depending on the command or result code: first octet of GSM 03.40 SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 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 <dt>) **<pid>** GSM 03.40 TP-Protocol-Identifier in integer format (default 0). **<dcs>** GSM 03.38 SMS Data Coding Scheme in Integer format.
Reference 3GPP TS 27.005	

4.2.16 AT+CSMS Select Message Service

AT+CSMS Select Message Service	
Test Command **AT+CSMS=?**	Response **+CSMS: (list of supported <service>s)** **OK**
Read Command **AT+CSMS?**	Response **+CSMS: <service>,<mt>,<mo>,<bm>** **OK**
Write Command **AT+CSMS= <service>**	Response **+CSMS: <mt>,<mo>,<bm>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<service>** **0** GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2 version 4.7.0; Phase 2+ features which do not require new Command syntax may be supported (e.g. correct routing of messages with new Phase 2+ data coding schemes)) **1** GSM 03.40 and 03.41 (the syntax of SMS AT commands is compatible with 3GPP TS 27.005 Phase 2+version; the requirement of <service> setting 1 is mentioned under corresponding command descriptions) **<mt>** Mobile Terminated Messages: **0** Type not supported **1** Type supported **<mo>** Mobile Originated Messages: **0** Type not supported **1** Type supported **<bm>** Broadcast Type Messages: **0** Type not supported **1** Type supported
Reference 3GPP TS 27.005	

5. AT Commands Special for SIMCom

5.1 Overview of ATC for SIMCom

Command	Description
AT+CSNS	Single numbering scheme
AT+CMOD	Configure alternating mode calls
AT+CPOWD	Power Off
AT+CADC	Read ADC
AT+CLTS	Get local timestamp
AT+CBAND	Get and set mobile operation band
AT+CSCLK	Configure slow clock
AT+CENG	Switch on or off engineering mode
AT+SCLASS0	Store class 0 SMS to SIM when received class 0 SMS
AT+CCID	Show ICCID
AT+CMTE	Set critical temperature operating mode or query temperature
AT+MORING	Show state of mobile originated call
AT+CIURC	Enable or disable initial URC presentation
AT+CCALR	Call ready query
AT+GSV	Display product identification information
AT+SLEDS	Set the timer period of net light
AT+CNETLIGHT	Close the net light or open it to shining
AT+CSDT	Switch on or off detecting SIM card
AT+CSMINS	SIM inserted status reporting
AT+CSGS	Netlight Indication of GPRS Status
AT+CNMP	Selection of Radio Access Technology
AT+CSACT	Choose the Network-attached status
AT+GSMBUSY	Reject Incoming Call
AT+CDRIND	CS Voice/Data Call Termination Indication

5.2 Detailed Descriptions of ATC for SIMCom

5.2.1 AT+CSNS Single Numbering Scheme

AT+CSNS Single Numbering Scheme	
Test Command **AT+CSNS=?**	Response **+CSNS: (list of supported <mode>s)** **OK**
Read Command **AT+CSNS?**	Response **+CSNS: <mode>** **OK**
Write Command **AT+CSNS=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Voice **4** Data
Reference	

5.2.2 AT+CMOD Configure Alternating Mode Calls

AT+CMOD Configure Alternating Mode Calls	
Test Command **AT+CMOD=?**	Response **+CMOD: <list supported <mode>s>** **OK**
Read Command **AT+CMOD?**	Response **+CMOD: <mode>** **OK**

Write Command **AT+CMOD=[<mode>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** single mode (default) **1** alternating voice/fax **2** alternating voice/data **3** voice followed by data **4** data followed by voice(propriatory mode)
Reference	

5.2.3 AT+CPOWD Power Off

AT+CPOWD Power Off	
Write Command **AT+CPOWD=<n>**	Response **[NORMAL POWER DOWN]**
Parameter	**<n>** **0** Power off urgently (Will not send out NORMAL POWER DOWN) **1** Normal power off (Will send out NORMAL POWER DOWN)
Reference	

5.2.4 AT+CADC Read ADC

AT+CADC Read ADC	
Test Command **AT+CADC=?**	Response **+CADC: (**list of supported **<status>**s**),(**list of supported **<value>**s**)** **OK**
Read Command **AT+CADC?**	Response **+CADC: <status>,<value>** **OK**
Parameter	**<status>** **1** Success **0** Fail **<value>** Integer

	0-2800
Reference	

5.2.5 AT+CLTS Get Local Timestamp

AT+CLTS Get Local Timestamp	
Test Command **AT+CLTS=?**	Response **+CLTS: "yy/MM/dd,hh:mm:ss+/-zz"** **OK**
Read Command **AT+CLTS?**	Response **+CLTS: <mode>** **OK**
Write Command **AT+CLTS=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Unsolicited Result Code When "get local timestamp" function is enabled, the following URC may be reported if network sends the message to the MS to provide the MS with subscriber specific information. 1. Refresh network name by network: ***PSNWID: "<mcc>", "<mnc>", "<full network name>", <full network name CI>, "<short network name>",<short network name CI>** 2. Refresh time and time zone by network: This is UTC time, the time queried by AT+CCLK command is local time. ***PSUTTZ: <year>, <month>, <day>, <hour>, <min>, <sec>, "<time zone>", <dst>** 3. Refresh network time zone by network: **+CTZV: "<time zone>"** 4. Refresh Network Daylight Saving Time by network: **DST: <dst>**
Parameters	**<mode>** **0** Disable **1** Enable **<mcc>** String type; mobile country code

	<mnc> String type; mobile network code **<full network name>** String type; name of the network in full length. **<full network name CI>** Integer type; indicates whether to add CI. **0** The MS will not add the initial letters of the Country's Name to the text string. **1** The MS will add the initial letters of the Country's Name and a separator (e.g. a space) to the text string. **<short network name>** String type; abbreviated name of the network **<short network name CI>** Integer type; indicates whether to add CI. **0** The MS will not add the initial letters of the Country's Name to the text string. **1** The MS will add the initial letters of the Country's Name and a separator (e.g. a space) to the text string. **<year>** 4 digits of year (from network) **<month>** Month (from network) **<day>** Day (from network) **<hour>** Hour (from network) **<min>** Minute (from network) **<sec>** Second (from network) **<time zone>** String type; network time zone. If the network time zone has been adjusted for Daylight Saving Time, the network shall indicate this by including the <dst> (Network Daylight Saving Time) **<dst>** Network Daylight Saving Time; the content of this indicates the value that used to adjust the network time zone **0** No adjustment for Daylight Saving Time **1** +1 hour adjustment for Daylight Saving **2** +2 hours adjustment for Daylight Saving Time **3** Reserved
Reference	Note: Support for this Command will be network dependent. Set AT+CLTS=1, it means user can receive network time updating and use AT+CCLK to show current time.

5.2.6 AT+CBAND Get and Set Mobile Operation Band

AT+CBAND Get and Set Mobile Operation Band	
Test Command **AT+CBAND=?**	Response **+CBAND: (list of supported <op_band>s)** **OK**
Read Command **AT+CBAND?**	Response **+CBAND: <op_band>,[(list of <2G_BAND>s)],[(list of <3G_BAND>S)]** **OK**
Write Command **AT+CBAND=<op_band>**	Response **OK** Note: Users should select 2G band and 3G band separately. If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<op_band>** A string parameter which indicate the operation band. And the following strings should be included in quotation marks. **EGSM_MODE** **DCS_MODE** **EGSM_DCS_MODE** **UMTS_I_MODE** 3G band **UMTS_VIII_MODE** 3G band **ALL_BAND** All_BAND means all the2G bands and 3G bands. **<2G_BAND>** means the configured 2G bands **<3G_BAND>** means the configured 3G bands.
Reference	

5.2.7 AT+CSCLK Configure Slow Clock

AT+CSCLK Configure Slow Clock	
Test Command **AT+CSCLK=?**	Response **+CSCLK: (list of supported <n>s)** **OK**
Read Command **AT+CSCLK?**	Response **+CSCLK: <n>** **OK**
Write Command	Response

AT+CSCLK=<n>	**OK** **ERROR**
Parameters	**<n>** **0** Disable slow clock, module will not enter sleep mode. **1** Enable slow clock, it is controlled by DTR. When DTR is high, module can enter sleep mode. When DTR changes to low level, module can quit sleep mode. **2** Enable slow clock automatically. When there is no interrupt (on air and hardware such as GPIO interrupt or data in serial port), module can enter sleep mode. Otherwise, it will quit sleep mode.
Reference	Note: There are two caveats when you want to quit sleep mode in mode 2: 1, You should input some characters (at least one) to awake module. 2, An interval time of 100ms more is necessary between waking characters and following AT commands,otherwise the waking characters will not be discarded completely,and messy codes will be produced which may leads to UART baudrate re-adaptation. The +CSCLK value can not be reset by AT&F or ATZ command.

5.2.8 AT+CENG Switch on or off Engineering Mode

AT+CENG Switch on or off Engineering Mode	
Test Command **AT+CENG=?**	Response TA returns the list of supported modes. **+CENG: (list of supported <mode>s),(list of supported <Ncell>s)** **OK**
Read Command **AT+CENG?**	Response Engineering Mode is designed to allow a field engineer to view and test the network information received by a handset, when the handset is either in idle mode or dedicated mode (that is: with a call active). In each mode, the engineer is able to view network interaction for the "serving cell" (the cell the handset is currently registered with) or for the neighboring cells. TA returns the current engineering mode. The network information including serving cell and neighboring cells are returned only when <mode>=1 or <mode> = 2. <cell> carry with them corresponding network interaction. **In 2G mode** **+CENG: <mode>,<CELLID>** **[+CENG: <cell>,"<arfcn>,<rxl>,<rxq>,<mcc>,<mnc>,<bsic>,<cellid>,<rla>,** **<txp>,<lac>,<TA>** **<CR><LF>+CENG: <cell>,"<arfcn>,<rxl>,<bsic>[,<cellid>,]<mcc>,<mnc>,<lac>"…]**

	OK if <mode>=3 **+CENG: <mode>,<Ncell>** **[+CENG: <cell>,<mcc>,<mnc>,<lac>,<cellid>,<bsic>,<rxl>** **<CR><LF>+CENG: <cell>,<mcc>,<mnc>,<lac>,<cellid>,<bsic>,<rxl>…]** **OK** **In 3G mode** If <mode>=1 **network is UMTS** **+CENG:<ID>,<dl_uarfcn>,<mcc>,<mnc>,<lac>,<cellid>,<psc>,<rscp>,<rxlev),<tx_pwr>** **[+CENG: <ID>,<dl_uarfcn>,<psc>,<rscp>,<ecn0>,<[pathloss>** **<CR><LF>+CENG: <ID>,<dl_uarfcn>,<psc>,<rscp>,<ecn0>,<[pathloss>…]** **OK** If <mode>=2, TA activates the unsolicited reporting of network information. **network is UMTS** **+CENG:<ID>,<dl_uarfcn>,<mcc>,<mnc>,<lac>,<cellid>,<psc>,<rscp>,<rxlev),<tx_pwr>** **[+CENG: <ID>,<dl_uarfcn>,<psc>,<rscp>,<ecn0>,<[pathloss>** **<CR><LF>+CENG: <ID>,<dl_uarfcn>,<psc>,<rscp>,<ecn0>,<[pathloss>…]** **OK**
Write Command **AT+CENG=<mode>[,<Ncell>]**	Response Switch on or off engineering mode. It will report +CENG: (network information) automatically if <mode>=2. **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Switch off engineering mode **1** Switch on engineering mode(display the cell details) **2** Switch on engineering mode, and activate the URC report of network information(display the cell information automatically) **3** Switch on engineering mode, with limited URC report(display the concise cell information) **4** display the serving cell information

<Ncell>

0	Un-display neighbor cell ID
1	Display neighbor cell ID

<cell>

0	The serving cell
1-6	The index of the neighboring cell

<arfcn> Absolute radio frequency channel number, in decimal format

<rxl> Receive level, in decimal format

<rxq> Receive quality, in decimal format

<mcc> Mobile country code, in decimal format

<mnc> Mobile network code, in decimal format

<bsic> Base station identity code, in decimal format

<cellid> Cell id, in hexadecimal format

<lac> Location area code, in hexadecimal format

<rla> Receive level access minimum, in decimal format

<txp> Transmit power maximum CCCH, in decimal format

<TA> Timing Advance, in decimal format

<ID> Cell identifier

<dl_uarfcn> UMTS assigned radio channel

<psc> Primary scrambling code

<rscp> Received Signal Code Power

<rxlev> received signal strength in dBm

<tx_pwr> UE TX power in dBm. If no TX, the value is 0.

<ecn0> EC2N0 (dB - positive value presented positive) of serviceng cell.

	<[pathloss> Path Loss ranges from 46 dB to 158 dB
Reference	

5.2.9 AT+SCLASS0 Store Class 0 SMS to SIM When Received Class 0 SMS

AT+SCLASS0 Store Class 0 SMS to SIM When Module Received Class 0 SMS	
Test Command **AT+SCLASS0=?**	Response **+SCLASS0: (list of supported<mode>s)** **OK**
Read Command **AT+SCLASS0?**	Response **+SCLASS0: <mode>** **OK**
Write Command **AT+SCLASS0=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Disable to store Class 0 SMS to SIM when module receives Class 0 SMS **1** Enable to store Class 0 SMS to SIM when module receives Class 0 SMS
Reference	

5.2.10 AT+CCID Show ICCID

AT+CCID Show ICCID	
Test Command **AT+CCID=?**	Response **OK**
Execution Command **AT+CCID**	Response **Ccid data** **OK**
Reference	

5.2.11 AT+CMTE Set Critical Temperature Operating Mode or Query Temperature

AT+CMTE Set Critical Temperature Operating Mode or Query Temperature	
Read Command **AT+CMTE?**	Response **+CMTE: <mode>,<Temperature>** **OK**
Write Command **AT+CMTE=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Disable temperature detection **1** Enable temperature detection **<Temperature>** range from -40.00 to 95.00
Reference	Note: When temperature is extremely high or low, product will power off. URCs indicating the alert level "1" or "-1" are intended to enable the user to take appropriate precautions, such as protecting the module from exposure to extreme conditions, or saving or backing up data etc. Level "2" or "-2" URCs are followed by immediate shutdown.

5.2.12 AT+MORING Show State of Mobile Originated Call

AT+MORING Show State of Mobile Originated Call	
Test Command **AT+MORING=?**	Response **+MORING: (list of supported<mode>s)** **OK**
Read Command **AT+MORING?**	Response **+MORING: <mode>** **OK**
Write Command	Response

AT+MORING=<mode>	**OK** If error is related to ME functionality: **+CME ERROR: <err>** Unsolicited Result Code **MO RING** the call is alerted. **MO CONNECTED** the call is established.
Parameters	**<mode>** **0** Not show call state of mobile originated call **1** Show call state of mobile originated call. After the call number is dialed, the URC strings of MO RING will be sent if another call is alerted and the URC strings of MO CONNECTED will be sent if the call is established.
Reference	

5.2.13 AT+CIURC Enable or Disable Initial URC Presentation

AT+CIURC Enable or Disable Initial URC Presentation	
Test Command **AT+CIURC=?**	Response **+CIURC: (list of supported<mode>s)** **OK**
Read Command **AT+CIURC?**	Response **+CIURC:<mode>** **OK**
Write Command **AT+CIURC=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Disable URC presentation. **1** Enable URC presentation
Reference	Note: When module is powered on and initialization procedure is over.

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

5.2.14 AT+CCALR Call Ready Query

AT+CCALR Call Ready Query	
Test Command **AT+CCALR=?**	Response **+CCALR: (list of supported <mode>s)** **OK**
Read Command **AT+CCALR?**	Response ME returns the status of result code presentation and an integer <n> which shows whether the module is currently ready for phone call. **+CCALR: <mode>** **OK**
Parameters	**<mode>** A numeric parameter which indicates whether the module is ready for phone call. **0** Module is not ready for phone call **1** Module is ready for phone call
Reference	

5.2.15 AT+GSV Display Product Identification Information

AT+GSV Display Product Identification Information	
Execution Command **AT+GSV**	Response TA returns product information text **SIMCOM_Ltd** **SIMCOM_SIM5300E** **Revision:1551B01SIM5300E** **OK**
Reference	

5.2.16 AT+SPWM Generate the Pulse-Width-Modulation

AT+SPWM Generate the Pulse-Width-Modulation

Test Command **AT+SPWM=?**	Response **+SPWM:(list of supported <index>s),(list of supported <freq>s),(list of supported <level>s)** **OK**
Write Command **AT+SPWM=<index>,<freq>,<level>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<index>** Integer type: the index number of PWM port, which value is 0-2; Current only support one channel,whether 1 or 2,the PWM port is the same. **1** Corresponding to PWM_OUT0 in the hardware circuit **2** Corresponding to PWM_OUT1 in the hardware circuit **<freq>** **400-10000** Hz. **<Duty ratio>** **0-100** percents
Reference	

5.2.17 AT+SLEDS Set the Timer Period of Net Light

AT+SLEDS Set the Timer Period of Net Light	
Test Command **AT+SLEDS=?**	Response **+SLEDS: (list of supported<mode>s),(list of supported<time_on>s),(list of supported<time_off>s)** **OK**
Read Command **AT+SLEDS?**	Response **+SLEDS: <mode>,<timer_on>,<timer_off>** **OK**
Write Command **AT+SLEDS=<mode>,<timer_on>,<timer_off>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**

Parameters	**<mode>** **1** Set the timer period of net light while SIM5300E does not register to the network **2** Set the timer period net light while SIM5300E has already registered to the network **3** Set the timer period net light while SIM5300E is in the state of PPP communication <**timer_on**> Timer period of "LED ON" in decimal format which range is 0 or 40-65535(ms) <**timer_off**> Timer period of "LED OFF" in decimal format which range is 0 or 40-65535(ms)
Reference	The default value is : <mode>,<timer_on>,<timer_off> 1,64,800 2,64,3000 3,64,300

5.2.18 AT+CNETLIGHT Close the Net Light or Open It to Shining

AT+CNETLIGHT Close the Net Light or Open It to Shining	
Test Command **AT+CNETLIGHT=?**	Response **+CNETLIGHT: (list of supported<mode>s)** **OK**
Read Command **AT+CNETLIGHT?**	Response **+CNETLIGHT: <mode>** **OK**
Write Command **AT+CNETLIGHT=<mode>**	Response **OK** **+CME ERROR: <err>**
Parameters	**<mode>** **0** Close the net light **1** Open the net light to shining
Reference	

5.2.19 AT+CSDT Switch on or off Detecting SIM Card

AT+CSDT Switch on or off Detecting SIM Card

Test Command **AT+CSDT=?**	Response **+CSDT: (list of supported<mode>s)** **OK**
Read Command **AT+CSDT?**	Response **+CSDT: <mode>** **OK**
Write Command **AT+CSDT=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Switch off detecting SIM card **1** Switch on detecting SIM card
Reference	Note: User should select 8-pin SIM card holder to implement SIM card detection function. After plug out simcard,User should wait 2 seconds ,then plug in SIM card.

5.2.20 AT+CSMINS SIM Inserted Status Reporting

AT+CSMINS SIM Inserted Status Reporting	
Test Command **AT+CSMINS=?**	Response **+CSMINS: (list of supported <n>s)** **OK**
Read Command **AT+CSMINS?**	Response **+CSMINS: <n>,<SIM inserted>** **OK**
Write Command **AT+CSMINS=<n>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Unsolicited Result Code **+CSMINS: <n>,<SIM inserted>**

Parameters	**<n>** A numeric parameter to show an unsolicited event code indicating whether the SIM has been inserted or removed. **0** Disable **1** Enable **<SIM inserted>**A numeric parameter which indicates whether SIM card has been inserted. **0** Not inserted **1** Inserted
Reference	

5.2.21 AT+CSGS Netlight Indication of GPRS Status

AT+CSGS Netlight Indication of GPRS Status	
Test Command **AT+CSGS=?**	Response **+CSGS: (list of supported <mode>s)** **OK**
Read Command **AT+CSGS?**	Response **+CSGS: <mode>** **OK**
Write Command **AT+CSGS=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Disable **1** Enable, the netlight will be forced to enter into 64ms on/300ms off blinking state in GPRS data transmission service. Otherwise, the netlight state is not restricted.
Reference	

5.2.22 AT+CNMP Selection of Radio Access Technology

AT+CNMP Selection of Radio Access Technology	
Test Command **AT+CNMP=?**	Response **+CNMP: (**list of supported <Act>s) ,(list supported<PreferredAct>s)

	OK
Read Command **AT+CNMP?**	**+CNMP : <Act>,[<PreferredAct>]** **OK**
Write Command **AT+CNMP=<Act>[,<PreferredAct>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<AcT>** indicates the radio access technology and may be **2** GSM/UMTS automatic mode **13** GSM single mode **14** UMTS single mode **<PreferredAct>** This parameter is used for network registration in case of <AcT>=2. **13** RAT GSM **14** RAT UMTS(default)
Reference	Note: This command forces the selection of the Radio Access Technology (RAT) in the protocol stack. The single mode is set by the first parameter [AcT]. In single mode, ME register only the preferred network. In automatic mode, If gotten no preferred registration, ME is currently searching a new operator to register to.

5.2.23 AT+CSACT Choose the network-attached Status

AT+CSACT Choose the network-attached Status	
Read Command **AT+CSACT?**	Response **+CSACT: <AcT>, <rac>,<AcT_creg>,<AcT_cgreg>** **OK**
Write Command **AT+CSACT=<AcT_creg>,<AcT_cgreg>**	Response **+CSACT: <AcT>, <rac>,< AcT_creg>,< AcT_cgreg>** **OK**

Parameters	**<AcT>** indicates the radio access technology and values can be: **0** CAT_ACT_GSM **1** CAT_ACT_GSM **2** CAT_ACT_UTRAN **3** CAT_ACT_GSM_EDGE **4** CAT_ACT_UTRAN_HSDPA **5** CAT_ACT_UTRAN_HSUPA **6** CAT_ACT_UTRAN_HSDPA_AND_HSUPA **7** CAT_ACT_E_UTRAN **<rac>** string type; one byte routing area code in hexadecimal format. **<AcT_creg>** **0** disable the command"AT+CREG" to return parameter<AcT> **1** enable the command"AT+CREG" to return parameter<AcT> **<AcT_cgreg>** **0** disable the command"AT+CGREG" to return parameter <AcT>&<rac>. **1** enable the command"AT+CGREG" to return parameter <AcT>&<rac>.
Reference	Note: Read command returns the network-attached mode. Write command controls the presentation of <AcT>in +CREG and <AcT>&<rac>in +CGREG

5.2.24 AT+GSMBUSY Reject Incoming Call

AT+GSMBUSY Reject Incoming Call	
Test Command **AT+GSMBUSY=?**	Response **+GSMBUSY: (list of supported<mode>s)** **OK**
Read Command **AT+GSMBUSY?**	Response **+GSMBUSY: <mode>** **OK**
Write Command **AT+GSMBUSY=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <error>**
Parameters	**<mode>**

	0	Enable incoming call
	1	Forbid all incoming calls
	2	Forbid incoming voice calls but enable CSD calls
Reference	Note: The parameter is not saved if the module power down.	

5.2.25 AT+CDRIND CS Voice/Data Call Termination Indication

AT+CDRIND CS Voice/Data Call Termination Indication	
Test Command **AT+CDRIND=?**	Response **+CDRIND: (list of supported <n>s)** **OK**
Read Command **AT+CDRIND?**	Response **+CDRIND: <n>** **OK**
Write Command **AT+CDRIND=<n>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** Unsolicited result code When enabled, an unsolicited result code is returned after the connection has been terminated **+CDRIND: <type>**
Parameter	**<n>** A numeric parameter to enable an unsolicited event code indicating whether a CS voice call, CS data has been terminated. **0** Disable **1** Enable **<type>** Connection type **0** CSV connection **1** CSD connection **2** PPP connection
Reference	

6. AT Commands for Network Support

6.1 Overview of ATC for Network Support

Command	Description
AT+CGATT	Attach or 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 state
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 messages
AT+CGEQMIN	3G Quality of Service Profile(Minimum acceptable)
AT+CGEQREQ	3G Quality of Service Profile (Requested)
AT+CGEGNEQ	3G Quality of Service Profile (Negotiated)

6.2 Detailed Descriptions of ATC for GPRS Support

6.2.1 AT+CGATT Attach or Detach from GPRS Service

AT+CGATT Attach or Detach from GPRS Service	
Test Command **AT+CGATT=?**	Response **+CGATT: (list of supported <state>s)** **OK**
Read Command **AT+CGATT?**	Response **+CGATT: <state>** **OK**

Write Command **AT+CGATT=<state>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<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	

6.2.2 AT+CGDCONT Define PDP Context

AT+CGDCONT Define PDP Context	
Test Command **AT+CGDCONT=?**	Response **+CGDCONT: (range of supported <cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported<h_comp>s)** **[<CR><LF>+CGDCONT: (range of supported <cid>s), <PDP_type>,,,** **(list of supported<d_comp>s),(list ofsupported <h_comp>s) [...]]** **OK**
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**
Write Command **AT+CGDCONT=<cid>[,<PDP_type>[,APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
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) **IP** Internet Protocol (IETF STD 5) **IPv4** Internet Protocol, version 6 (IETF RFC 2460) **IPv4v6** Virtual <PDP_type>introduced to handle dual IP stack UE capability (see 3GPPTS 24.301[83]) **<APN>** (Access Point Name) A string parameter (string should be included in quotation marks) which 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.The default value is NULL. **<PDP_addr>** A string parameter (IP address). **Format:"<n>.<n>.<n>.<n>"** where <n>=0..255 If the value is null or equals 0.0.0.0 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 –PDP** data compression off (default if value is omitted) **<h_comp>** A numeric parameter that controls PDP data compression **0 –PDP** header compression off (default if value is omitted)
Reference	

6.2.3 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)** **[<CR><LF>+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**
Read Command **AT+CGQMIN?**	Response **+CGQMIN: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>** **[<CR><LF>+CGQMIN: <cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **[…]]** **OK**

Write Command	Response
AT+CGQMIN=<cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]	**OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<cid>** **1..310** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) **<precedence>** **0** QOS precedence class subscribed value **1.. 3** QOS precedence class **<delay>** **0** QOS delay class subscribed value **1..4** QOS delay class subscribed **<reliability>** **0** QOS reliability class subscribed value **1..5** QOS reliability class. **<peak>** **0** QOS peak throughput class subscribed value **1.. 9** QOS peak throughput class **<mean>** **0** QOS mean throughput class subscribed value **1..18** QOS mean throughput class **31** QOS mean throughput class best effort
Reference	Note

6.2.4 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)** **[<CR><LF>+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
Read Command **AT+CGQREQ?**	Response **+CGQREQ: <cid>,<precedence>,<delay>,>reliability>,<peak>,<mean>** **[<CR><LF>+CGQREQ:<cid>,<precedence>,<delay>,<reliability>,<peak>,<mean>** **[…]]** **OK**
Write Command **AT+CGQREQ=cid>[,<precedence>[,<delay>[,<reliability>[,<peak>[,<mean>]]]]]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<cid>** **1..10** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT command) **<precedence>** **0** QOS precedence class subscribed value **1..3** QOS precedence class **<delay>** **0** QOS delay class subscribed value **1..4** QOS delay class subscribed **<reliability>** **0** QOS reliability class subscribed value **1.. 5** QOS reliability class. **<peak>** **0** QOS peak throughput class subscribed value **1.. 9** QOS peak throughput class **<mean>** **0** QOS mean throughput class subscribed value **1..18** QOS mean throughput class **31** QOS mean throughput class best effort
Reference	

6.2.5 AT+CGACT PDP Context Activate or Deactivate

AT+CGACT	**PDP Context Activate or Deactivate**

Test Command **AT+CGACT=?**	Response **+CGACT: (list of supported <state>s)** **OK**
Read Command **AT+CGACT?**	Response **+CGACT: <cid>,<state>[<CR><LF>+CGACT:<cid>,<state>…]** **OK**
Write Command **AT+CGACT=<state>** **[,<cid>]**	Response **OK** 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). If the <cid> is omitted, it only affects the first cid.
Reference	Note: This command is used to test PDPs with network simulators. Successful activation of PDP on real network is not guaranteed. Refer to AT+CGDATA clarification for more information.

6.2.6 AT+CGDATA Enter Data State

AT+CGDATA Enter Data State	
Test Command **AT+CGDATA=?**	Response **+CGDATA: list of supported <L2P>s** **OK**
Write Command **AT+CGDATA=<L2P>** **[,<cid>]**	Response **CONNECT** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<L2P>** A string parameter (string should be included in quotation marks) that indicates the layer 2 protocol to be used between the TE and MT: **"PPP"** Point to Point protocol for a PDP such as IPOther 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	

6.2.7 AT+CGPADDR Show PDP Address

AT+CGPADDR Show PDP Address	
Test Command **AT+CGPADDR=?**	Response **+CGPADDR: (list of defined <cid>s)** **OK**
Write Command **AT+CGPADDR=<cid>**	Response **+CGPADDR: <cid>,<PDP_addr>** **[<CR><LF>+CGPADDR: <cid>,<PDP_addr>[...]]** **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) **<PDP_addr>** String type, IP address **Format: "<n>.<n>.<n>.<n>"** where <n>=0..255
Reference	Note Write command returns address provided by the network if a connection has been established.

6.2.8 AT+CGCLASS GPRS Mobile Station Class

AT+CGCLASS GPRS Mobile Station Class	
Test Command **AT+CGCLASS=?**	Response **+CGCLASS: (list of supported <class>s)** **OK**

Read Command **AT+CGCLASS?**	Response **+CGCLASS: <class>** **OK**
Write Command **AT+CGCLASS=<class>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<class>** **A** string parameter(string should be included in quotation marks) which indicates the GPRS mobile class (in descending order of functionality) **B** Class-B mode of operation (A/Gb mode), (not applicable in Iu mode) MT would operate PS and CS services but not simultaneously **CG** Class C in GPRS only mode **CC** Class C in circuit switched only mode (lowest)
Reference	Note: It only supports Class B, CG and CC.

6.2.9 AT+CGREP Control Unsolicited GPRS Event Reporting

AT+CGEREP Control Unsolicited GPRS Event Reporting	
Test Command **AT+CGEREP=?**	Response **+CGEREP: (list of supported <mode>s) ,(list of supported <bfr>s)** **OK**
Read Command **AT+CGEREP?**	Response **+CGEREP: <mode>,<bfr>** **OK**
Write Command **AT+CGEREP=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** 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 DETACH**

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) **<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 **2** buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE. **<brf>** **0** MT buffer of unsolicited result codes defined within this command is cleared when <mode>1 or 2 is entered. **1** MT buffer of unsolicited result codes defined withen this command is flushed to the TE when <mode> 1 or 2 is entered.
Reference	

6.2.10 AT+CGREG Network Registration Status

AT+CGREG Network Registration Status	
Test Command **AT+CGREG=?**	Response **+CGREG: (list of supported <n>s)** **OK**
Read Command **AT+CGREG?**	Response **+CGREG: <n>,<stat>[,<lac>,<ci>]** **OK** Note: the last two parameters presentation determined by AT+CSACT. If error is related to ME functionality: **+CME ERROR: <err>**

Write Command **AT+CGREG=[<n>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
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, MT is not currently searching an operator to register to.The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user. **1** Registered, home network. **2** Not registered, but MT is currently trying to attach or searching an operator to register to. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. **3** Registration denied, The GPRS service is disabled, the UE is not allowed to attach for GPRS if it is requested by the user. **4** Unknown **5** Registered, roaming **<lac>** String type (string should be included in quotation marks); two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal) **<ci>** String type (string should be included in quotation marks); two bytes cell ID in hexadecimal format
Reference	

6.2.11 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**

Read Command **AT+CGSMS?**	Response **+CGSMS: <service>** **OK**
Write Command **AT+CGSMS=<service>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<service>** A numeric parameter which indicates the service or service preference to be used **0** Packet Domain **1** Circuit switched **2** Packet Domain preferred (use circuit switched if GPRS not available) **3** Circuit switched preferred (use Packet Domain if circuit switched not available)
Reference	

6.2.12 AT+CGEQMIN 3G Quality of Service Profile

AT+CGEQMIN 3G Quality of Service Profile (Minimum Acceptable)	
Test Command **AT+CGQMIN=?**	**+CGEQMIN: <PDP_type>, (list_of supported <Traffic_class>s) ,(list of supported <Maximum_bitrate_UL>s) , (list of supported <Maximum_bitrate_DL>s), (list of supported <Guaranteed_bitrate_UL>s), (list of supported <Guaranteed_bitrate_DL>s) ,(list of supported <Delivery_order>s) ,(list of supported <Maximum_SDU_size>s) ,(list of supported <SDU_error_ratio>s) , (list of supported<Residual_bit_error_ratio>s) ,(list of supported <Delivery_of_erroneous_SDUs>s) , (list of supported <Transfer_delay>s) ,(list of supported <Traffic_handling_priority>s) [,(list of supported <Source_statistics_descriptor>s) ,(list of supported <Signalling_indication>s)] [<CR><LF> +CGEQMIN: <PDP_type>, (list of supported <Traffic_class>s) ,(list of supported<Maximum_bitrate_UL>s), (list of supported <Maximum_bitrate_DL>s) ,(list of supported <Guaranteed_bitrate_UL>s), (list of supported <Guaranteed_bitrate_DL>s) ,(list of supported <Delivery_order>s) ,(list of supported <Maximum_SDU_size>s) ,(list of supported <SDU_error_ratio>s),(list of supported <Residual_bit_error_ratio>s) ,(list of supported <Delivery_of_erroneous_SDUs>s) ,(list of supported <Transfer_delay>s) ,(list of supported<Traffic_handling_priority>s) [,(list of supported <Source_statistics_descriptor>s) ,(list of supported<Signalling_indication>s)] [...]]** If error is related to ME functionality:

	+CME ERROR: <err>
Read Command **AT+CGQMIN?**	Response **+CGEQMIN: <cid>, <Traffic_class> ,<Maximum_bitrate_UL>, <Maximum_bitrate_DL> ,<Guaranteed_bitrate_UL> ,<Guaranteed_bitrate_DL>, <Delivery_order> ,<Maximum_SDU_size> , <SDU_error_ratio> ,<Residual_bit_error_ratio> ,<Delivery_of_erroneous_SDUs> , <Transfer_delay> ,<Traffic_handling_priority> [,<Source_statistics_descriptor>,<Signalling_indication>] [<CR><LF> +CGEQMIN: <cid>, <Traffic_class> ,<Maximum_bitrate_UL> ,<Maximum_bitrate_DL>, <Guaranteed_bitrate_UL> ,<Guaranteed_bitrate_DL>, <Delivery_order> ,<Maximum_SDU_size> ,<SDU_error_ratio> ,<Residual_bit_error_ratio> ,<Delivery_of_erroneous_SDUs> ,<Transfer_delay>,<Traffic_handling_priority> [,<Source_statistics_descriptor> ,<Signalling_indication>][...]]** If error is related to ME functionality: **+CME ERROR: <err>**
Write Command **AT+CGEQMIN=[<cid> [,<Traffic_class>[,<Maximum_bitrate_UL>[,<Maximum_bitrate_DL> [,<Guaranteed_bitrate_UL> [,<Guaranteed_bitrate_DL> [,<Delivery_order> [,<Maximum_SDU_size> [,<SDU_error_ratio> [,<Residual_bit_error_ratio>[,<Delivery_of_erroneous_SDUs>[,<Transfer_delay>[,<Traffic_handling_priority>[,<Source_statistics_descriptor>[,<Signalling_indication>]]]]]]]]]]]]]]**	**OK** If error is related to ME functionality: **+CME ERROR: <err>**

Parameters	**<cid>** a numeric parameter which specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands). The following parameters are defined in 3GPP TS 23.107[46]. **<Traffic_class>** a numeric parameter that indicates the type of application for which the UMTS bearerservice is onfirmat. 0 conversational 1 streaming 2 interactive 3 background Other values are reserved. **<Maximum_bitrate_UL>:** a numeric parameter that indicates the maximum number of kbits/s delivered to UMTS(up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32'(e.g. AT+CGEQMIN=...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). **<Maximum_bitrate_DL>:** a numeric parameter that indicates the maximum number of kbits/s delivered by UMTS(down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as'32' (e.g. AT+CGEQMIN=...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). **<Guaranteed_bitrate_UL>:** a numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS(up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=...,32, ...) (refer 3GPP TS24.008 [8] subclause 10.5.6.5). **<Guaranteed_bitrate_DL>:** a numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=...,32, ...) (refer 3GPPTS 24.008 [8] subclause 10.5.6.5). **<Delivery_order>** a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not. **0** no **1** yes Other values are reserved. **<Maximum_SDU_size>** a numeric parameter (1,2,3,...) that indicates the maximum allowed SDU size in octets(refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<SDU_error_ratio>

a string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5.10-3 would be specified as '5E3'(e.g. AT+CGEQMIN=...,"5E3",...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Residual_bit_error_ratio>

a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of 5.10-3 would be specified as 'E3' (e.g. AT+CGEQMIN=....,"5E3",...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery_of_erroneous_SDUs>

a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.

0 no

1 yes

2 no detect

Other values are reserved.

<Transfer_delay>

a numeric parameter (0,1,2,...) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds (refer 3GPPTS 24.008 [8] subclause 10.5.6.5).

<Traffic_handling_priority>

a numeric parameter (1,2,3,...) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers (refer 3GPPTS 24.008 [8] subclause 10.5.6.5).

<Source_Statistics_Descriptor>

Supported in R7 P S a numeric parameter that specifies characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause10.5.6.5).

0 Characteristics of SDUs is unknown (default value)

1 Characteristics of SDUs corresponds to a speech source

Other values are reserved.

<Signalling_Indication>

Supported in R7 P S a numeric parameter used to indicate confirmat content of

	submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). **0** PDP context is not optimized for confirmat (default value) **1** PDP context is optimized for confirmat **<PDP_type>** (see +CGDCONT and +CGDSCONT commands). If a value is omitted for a particular class then the value is considered to be unspecified.
Reference	

6.2.13 AT+CGEQREQ 3G Quality of Service Profile(Requested)

AT+CGEQREQ 3G Quality of Service Profile (Requested)	
Read Command **AT+CGEQREQ?**	Response **+CGEQREQ:** **<cid>,<Traffic_class> ,<Maximum_bitrate_UL>,<Maximum_bitrate_DL> ,<Guaranteed_bitrate_UL> ,<Guaranteed_bitrate_DL>,<Delivery_order> ,<Maximum_SDU_size> ,<SDU_error_ratio> ,<Residual_bit_error_ratio> ,<Delivery_of_erroneous_SDUs> ,<Transfer_delay> ,<Traffic_handling_priority>[,<Source_statistics_descriptor>,<Signalling_indication>][<CR><LF>+cgeqreq:** **<cid>,<Traffic_class> ,<Maximum_bitrate_UL> ,<Maximum_bitrate_DL> ,<Guaranteed_bitrate_UL> ,<Guaranteed_bitrate_DL>,<Delivery_order> ,<Maximum_SDU_size> ,<SDU_error_ratio> ,<Residual_bit_error_ratio> ,<Delivery_of_erroneous_SDUs> , <Transfer_delay>, <Traffic_handling_priority> [,** **<Source_statistics_descriptor> , <Signalling_indication>][...]]** **OK**
Write Command **AT+CGEQREQ** **=[<cid>[,<Traffic_class>[,<Maximum_bitrate_UL>[,<Maximum_bitrate_DL>[,<Guaranteed_bitrate_UL>[,<Guaranteed_bitrate_DL>[,<Delivery_order>[,<Maximum_SDU_size>[,<SDU_error_ratio>[,<Residual_bit_error_ratio>[,<Delivery_of_erroneous_SDUs>[,<Transfer_delay>[,<Traffic_handling_priority>[,<Source**	**OK** If error is related to ME functionality: **+CME ERROR: <err>**

_statistics_descriptor>[, <Signalling_indication>]]]]]]]]]]]]]	
Parameters	**<cid>** A numeric parameter which specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands). The following parameters are defined in 3GPP TS 23.107[46]. **<Traffic_class>** A numeric parameter that indicates the type of application for which the UMTS bearer service is onfirmat. 0 conversational (default) **1** streaming **2** interactive **3** background Other values are reserved. **<Maximum_bitrate_UL>:** A numeric parameter that indicates the maximum number of kbits/s delivered to UMTS(up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32'(e.g. AT+cgeqreq=...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). **<Maximum_bitrate_DL>:** A numeric parameter that indicates the maximum number of kbits/s delivered by UMTS(down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as'32' (e.g. AT+cgeqreq=...,32, ...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). **<Guaranteed_bitrate_UL>:** A numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS(up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+cgeqreq=...,32, ...) (refer 3GPP TS24.008 [8] subclause 10.5.6.5). **<Guaranteed_bitrate_DL>** A numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS(down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+cgeqreq=...,32, ...) (refer 3GPPTS 24.008 [8] subclause 10.5.6.5). **<Delivery_order>** A numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

0 no
1 yes
Other values are reserved.

<Maximum_SDU_size>
A numeric parameter (1,2,3,...) that indicates the maximum allowed SDU size in octets(refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<SDU_error_ratio>
A string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5.10-3 would be specified as '5E3'(e.g. AT+cgeqreq=...,"5E3",...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Residual_bit_error_ratio>
A string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of 5.10-3 would be specified as 'E3' (e.g. AT+cgeqreq=....,"5E3",...) (refer 3GPP TS 24.008 [8] subclause 10.5.6.5).

<Delivery_of_erroneous_SDUs>
A numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.
0 no
1 yes
2 no detect
Other values are reserved.

<Transfer_delay>
A numeric parameter (0,1,2,...) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds (refer 3GPPTS 24.008 [8] subclause 10.5.6.5).

<Traffic_handling_priority>
A numeric parameter (1,2,3,...) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers (refer 3GPPTS 24.008 [8] subclause 10.5.6.5).

<Source_Statistics_Descriptor>
Supported in R7 P S a numeric parameter that specifies characteristics of the source of the submitted SDUs for a PDP context. This parameter should be provided if the Traffic

	class is specified as conversational or streaming (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). **0** Characteristics of SDUs is unknown (default value) **1** Characteristics of SDUs corresponds to a speech source Other values are reserved. **<Signalling_Indication>** Supported in R7 P S a numeric parameter used to indicate confirmat content of submitted SDUs for a PDP context. This parameter should be provided if the Traffic class is specified as interactive (refer 3GPP TS 24.008 [8] subclause 10.5.6.5). **0** PDP context is notoptimized for confirmat (default value) **1** PDP context is optimized for confirmat **<PDP_type>** (see +CGDCONT and +CGDSCONT commands). If a value is omitted for a particular class then the value is considered to be unspecified.
Reference	

6.2.14 AT+CGEQNEG 3G Quality of Service Profile(Negotiated)

AT+CGEQNEG 3G Quality of Service Profile (Negotiated)	
Read Command **AT+CGEQNEG=?**	**+CGEQNEG: (list of <cid>s associated with active contexts)** **OK**
Write Command **AT+CGEQNEG** **=[<cid>[,<cid>[,...]]]**	**+CGEQNEG: <cid>, <Traffic class> , <Maximum bi-trate UL>, <Maximum bitrate DL> , <Guaranteedbitrate UL>, <Guaranteed bitrateDL>, <Deliveryorder> ,<Maximum SDU size> , <SDU error ratio> ,<Residual bit errorratio> , <Delivery of erroneous SDUs> , <Transfer delay> , <Traffic handling priority>** **[<CR><LF>+CGEQNEG: <cid>, <Traffic class> ,<Maximum bitrate UL>, <Maximum bitrate DL> ,** **<Guaranteed bitrate UL>, <Guaranteed bitrate DL>, <Delivery order> , <Maximum SDU size> , <SDUerror ratio> , <Residual bit error ratio> , <Deliveryof erroneous SDUs> , <Transfer delay> , <Traffichandling priority> [....]]** **OK**
Parameters	**<cid>** a numeric parameter which specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands). The following parameters are defined in 3GPP TS 23.107 [46]

<Traffic class>

a numeric parameter that indicates the type of application for which the UMTS bearer

service is vailable. 0 conversational (default)

1 streaming

2 interactive

3 background

Other values are reserved.

<Maximum bitrate UL>

a numeric parameter that indicates the maximum number of kbits/s delivered to UMTS(up-link traffic) at a SAP. As an example a bitrate of 32 kbit/s would be specified as '32'(e.g. +CGEQNEG:...,32, ...) (refer TS 24.008 [8] subclause 10.5.6.5).

<Maximum bitrate DL>

a numeric parameter that indicates the maximum number of kbits/s delivered by UMTS(down-link traffic) at a SAP As an example a bitrate of 32 kbit/s would be specified as'32' (e.g. +CGEQNEG:...,32, ...) (refer TS 24.008 [8] subclause 10.5.6.5).

<Guaranteed bitrate UL>

a numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS(up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. +CGEQNEG: ...,32, ...) (refer TS 24.008 [8]subclause 10.5.6.5).

<Guaranteed bitrate DL>

a numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS(down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32 kbit/s would be specified as '32' (e.g. +CGEQNEG: ...,32, ...) (refer TS24.008 [8] subclause 10.5.6.5).

<Delivery order>

a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence

SDU delivery or not

0 no

1 yes

Other values are reserved.

<Maximum SDU size>

a numeric parameter that (1,2,3,...) indicates the maximum allowed SDU size in octets(refer TS 24.008 [8] subclause 10.5.6.5).

<SDU error ratio>

	a string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5.10-3 would be specified as '5E3'(e.g. +CGEQNEG:....,"5E3",...) (refer TS 24.008 [8] subclause 10.5.6.5). **<Residual bit error ratio>** a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of 5.10-3 would be specified as '5E3' (e.g. +CGEQNEG:...,"5E3",...) (refer TS 24.008 [8] subclause 10.5.6.5). **<Delivery of erroneous SDUs>** a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not. **0** no **1** yes **2** no detect Other values are reserved. **<Transfer delay>** a numeric parameter (0,1,2,...) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds (refer TS 24.008 [8] subclause 10.5.6.5). **<Traffic handling priority>** a numeric parameter (1,2,3,...) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers (refer TS 24.008 [8] subclause 10.5.6.5 Revision 2.5,
Reference	

7. AT Commands for TCPIP Application Toolkit

7.1 Overview

Command	Description
AT+CIPMUX	Start up multi-IP connection
AT+CIPSTART	Start up TCP or UDP connection
AT+CIPSEND	Send data through TCP or UDP connection
AT+CIPQSEND	Select data transmitting mode
AT+CIPACK	Query previous connection data transmitting state
AT+CIPCLOSE	Close TCP or UDP connection
AT+CIPSHUT	Deactivate GPRS PDP context
AT+CLPORT	Set local port
AT+CSTT	Start task and set APN, user name, password
AT+CIICR	Bring up wireless connection with GPRS
AT+CIFSR	Get local IP address
AT+CIFSREX	Get local IP address
AT+CIPSTATUS	Query current connection status
AT+CDNSCFG	Configure domain name server
AT+CDNSGIP	Query the IP address of given domain name
AT+CIPHEAD	Add an IP head at the beginning of a package received
AT+CIPATS	Set auto sending timer
AT+CIPSPRT	Set prompt of '>' when module sends data
AT+CIPSERVER	Configure module as server
AT+CIPCSGP	Set GPRS for connection mode
AT+CIPSRIP	Show remote IP address and port when received data
AT+CIPDPDP	Set whether to check state of GPRS network timing
AT+CIPMODE	Select TCPIP application mode
AT+CIPCCFG	Configure transparent transfer mode
AT+CIPSHOWTP	Display transfer protocol in IP head when received data

AT+CIPUDPMODE	UDP extended mode
AT+CIPRXGET	Get data from network manually
AT+CIPRDTIMER	Set remode delay timer
AT+CIPSGTXT	Select GPRS PDP context
AT+CIPSENDHEX	Set CIPSEND Data Format to Hex
AT+CIPHEXS	Set CIPSEND Data Format with suffix

7.2 Detailed Descriptions of Commands

7.2.1 AT+CIPMUX Start Up Multi-IP Connection

AT+CIPMUX Start Up Multi-IP Connection	
Test Command **AT+CIPMUX=?**	Response **+CIPMUX: (list of supported<n>s)** **OK**
Read Command **AT+CIPMUX?**	Response **+CIPMUX: <n>** **OK**
Write Command **AT+CIPMUX=<n>**	Response **OK**
Parameters	**<n>** **0** Single IP connection **1** Multi IP connection
Reference	Note: Only in IP initial state, AT+CIPMUX=1 is effective; Only when multi IP connection and GPRS application are both shut down, AT+CIPMUX=0 is effective.

7.2.2 AT+CIPSTART Start Up TCP or UDP Connection

AT+CIPSTART Start Up TCP or UDP Connection	
Test Command **AT+CIPSTART=?**	Response 1) If AT+CIPMUX=0 **+CIPSTART: (list of supported <mode>),(<IP address>),(<port>)** **+CIPSTART: (list of supported <mode>),(<domain name>),(<port>)** **OK**

	2) If AT+CIPMUX=1 **+CIPSTART: (list of supported <n>),(list of supported <mode>),(<IP address>),(<port>)** **+CIPSTART: (list of supported <n>),(list of supported <mode>),(<domain name>),(<port>)** **OK**
Write Command 1)If single IP connection (+CIPMUX=0) **AT+CIPSTART=<mode>,<IP address>,<port>** Or **AT+CIPSTART=<mode>,<domain name>,<port>** 2)If multi-IP connection (+CIPMUX=1) **AT+CIPSTART=<n>,<mode>,<address>,<port>** **AT+CIPSTART=<n>,<mode>,<domain name>,<port>**	Response 1)If single IP connection (+CIPMUX=0) If format is right response **OK** otherwise response If error is related to ME functionality: **+CME ERROR <err>** Response when connection exists **ALREADY CONNECT** Response when connection is successful **CONNECT OK** Otherwise **STATE: <state>** **CONNECT FAIL** 2)If multi-IP connection (+CIPMUX=1) If format is right **OK** otherwise response If error is related to ME functionality: **+CME ERROR <err>** Response when connection exists **<n>,ALREADY CONNECT** If connection is successful **<n>,CONNECT OK** Otherwise **<n>,CONNECT FAIL**

Parameters	**<n>** **0..7** A numeric parameter which indicates the connection number **<mode>** A string parameter which indicates the connection type **"TCP"** Establish a TCP connection **"UDP"** Establish a UDP connection **<IP address>** A string parameter which indicates remote server IP address **<port>** Remote server port **<domain name>** A string parameter which indicates remote server domain name **<state>** A string parameter which indicates the progress of connecting **0** IP INITIAL **1** IP START **2** IP CONFIG **3** IP GPRSACT **4** IP STATUS **5** TCP CONNECTING/UDP CONNECTING/SERVER LISTENING **6** CONNECT OK **7** TCP CLOSING/UDP CLOSING **8** TCP CLOSED/UDP CLOSED **9** PDP DEACT In Multi-IP state: **0** IP INITIAL **1** IP START **2** IP CONFIG **3** IP GPRSACT **4** IP STATUS **5** IP PROCESSING **9** PDP DEACT
Reference	Note: This command allows establishment of a TCP/UDP connection only when the state is IP INITIAL or IP STATUS when it is in single state.In multi-IP state, the state is in IP STATUS only.So it is necessary to process "AT+CIPSHUT" before user establishes a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS. When module is in multi-IP state, before this command is executed, it is necessary to process "AT+CSTT, AT+CIICR, AT+CIFSR".

7.2.3 AT+CIPSEND Send Data Through TCP or UDP Connection

AT+CIPSEND Send Data Through TCP or UDP Connection	
Test Command **AT+CIPSEND=?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND: <length>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND: (0-7),<length>** **OK**
Read Command **AT+CIPSEND?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND:<size>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND:<n>,<size>** **OK**
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPSEND=<length>** 2) If multi IP connection (+CIPMUX=1) **AT+CIPSEND=<n>[,<length>]**	Response This Command is used to send changeable length data If single IP is connected (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: +**CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **SEND OK** When +CIPQSEND=1 **DATA ACCEPT:<length>** If sending fails: **SEND FAIL** If multi IP connection is established (+CIPMUX=1) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>**

	If sending is successful: When +CIPQSEND=0 **<n>,SEND OK** When +CIPQSEND=1 **DATA ACCEPT:<n>,<length>** If sending fails: **<n>,SEND FAIL**
Execution Command **AT+CIPSEND** response">", then type data for send, tap CTRL+Z to send, tap ESC to cancel the operation	Response This Command is used to send changeable length data. If single IP connection is established (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **SEND OK** When +CIPQSEND=1 **DATA ACCEPT:<length>** If sending fails: **SEND FAIL** Note: This Command can only be used in single IP connection mode (+CIPMUX=0) and 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. There are at most <size> bytes which can be sent at a time.
Parameters	**<n>** A numeric parameter which indicates the connection number **<size>** A numeric parameter which indicates the data length sent at a time **<length>** A numeric parameter which indicates the length of sending data, it must be less than <size>
Reference	Note: The data length which can be sent depends on network status. Set the time that send data automatically with the Command of AT+CIPATS. Only send data at the status of established connection.

7.2.4 AT+CIPQSEND Select Data Transmitting Mode

AT+CIPQSEND Select Data Transmitting Mode	
Test Command **AT+CIPQSEND=?**	Response **+CIPQSEND: (list of supported<n>s)** **OK**
Read Command **AT+CIPQSEND?**	Response **+CIPQSEND: <n>** **OK**
Write Command **AT+CIPQSEND=<n>**	Response **OK**
Parameters	**<n>** **0** Normal mode – when the server receives TCP data, it will responsd SEND OK. **1** Quick send mode – when the data is sent to module, it will responsd DATA ACCEPT:<n>,<length>, while not responding SEND OK.
Reference	

7.2.5 AT+CIPACK Query Previous Connection Data Transmitting State

AT+CIPACK Query Previous Connection Data Transmitting State	
Test Command **AT+CIPACK=?**	Response **OK**
Write Command If in multi IP connection (+CIPMUX=1) **AT+CIPACK=<n>**	Response **+CIPACK: <txlen>, <acklen>, <nacklen>** **OK**
Execution Command If in single IP connection (+CIPMUX=0) **AT+CIPACK**	Response **+CIPACK: <txlen>, <acklen>, <nacklen>** **OK**
Parameters	**<n>** A numeric parameter which indicates the connection number **<txlen>** The data amount which has been sent **<acklen>** The data amount confirmed successfully by the server

	<nacklen> The data amount without confirmation by the server
Reference	

7.2.6 AT+CIPCLOSE Close TCP or UDP Connection

AT+CIPCLOSE Close TCP or UDP Connection	
Test Command **AT+CIPCLOSE=?**	Response **OK**
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPCLOSE=<n>** 2) If multi IP connection (+CIPMUX=1) **AT+CIPCLOSE=<id>, [<n>]**	Response: 1) For single IP connection (+CIPMUX=0) **CLOSE OK** 2) For multi IP connection (+CIPMUX=1) **<n>, CLOSE OK**
Execution Command **AT+CIPCLOSE**	Response If close is successfully: **CLOSE OK** If close fails: **+CME ERROR: <err>**
Parameters	**<n>** **0** Slow close **1** Quick close **<id>** A numeric parameter which indicates the connection number
Reference	Note: AT+CIPCLOSE only closes connection at the status of TCP/UDP which returns CONNECTING or CONNECT OK, otherwise it will return ERROR, after the connection is closed, the status is IP CLOSE in single IP mode.

7.2.7 AT+CIPSHUT Deactivate GPRS PDP Context

AT+CIPSHUT Deactivate GPRS PDP Context	
Test Command **AT+CIPSHUT=?**	Response **OK**

Execution Command **AT+CIPSHUT**	Response If close is successful: **SHUT OK** If close fails: **+CME ERROR: <err>**
Reference	Note If this command is executed in multi-connection mode, all of the IP connection will be shut. User can close gprs pdp context by AT+CIPSHUT. After it is closed, the status is IP INITIAL. If "+PDP: DEACT" urc is reported which means the gprs is released by the network, then user still needs to execute "AT+CIPSHUT" command to make PDP context come back to original state.

7.2.8 AT+CLPORT Set Local Port

AT+CLPORT Set Local Port	
Test Command **AT+CLPORT=?**	Response 1) For single IP connection (+CIPMUX=0) **+CLPORT: ("TCP","UDP"),(0-65535)** **OK** 2) For multi IP connection (+CIPMUX=1) **+CLPORT: (0-7),("TCP","UDP"),(0-65535)** **OK**
Read Command **AT+CLPORT?**	Response 1) For single IP connection (+CIPMUX=0) **+CLPORT: <TCP port>,<UDP port>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CLPORT: 0,<TCP port>,<UDP port>** **+CLPORT: 1,<TCP port>,<UDP port>** **+CLPORT: 2,<TCP port>,<UDP port>** **+CLPORT: 3,<TCP port>,<UDP port>** **+CLPORT: 4,<TCP port>,<UDP port>** **+CLPORT: 5,<TCP port>,<UDP port>** **+CLPORT: 6,<TCP port>,<UDP port>** **+CLPORT: 7,<TCP port>,<UDP port>**

	OK
Write Command 1) For single IP connection (+CIPMUX=0) **AT+CLPORT=<mode>,<port>** 2) For multi IP connection (+CIPMUX=1) **AT+CLPORT=<n>,<mode>,<port>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** **0..7** A numeric parameter which indicates the connection numberthis used in multi IP connection **<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 0 is the default value, a port can be dynamically allocated a port.
Reference	Note: This command will be effective when module is set as a Client

7.2.9 AT+CSTT Start Task and Set APN, USER NAME, PASSWORD

AT+CSTT Start Task and Set APN, USER NAME, PASSWORD	
Test Command **AT+CSTT=?**	Response **+CSTT: "APN","USER","PWD"** **OK**
Read Command **AT+CSTT?**	Response **+CSTT: <apn>,<user name>,<password>** **OK**
Write Command **AT+CSTT=<apn>,<user name>,<password>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Execution Command **AT+CSTT**	Response **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<apn>** A string parameter which indicates the GPRS access point name **<user name>** A string parameter which indicates the GPRS user name **<password>** A string parameter which indicates the GPRS password
Reference	Note: The write command and execution command of this command is valid only at the state of IP INITIAL. After this command is executed, the state will be changed to IP START.

7.2.10 AT+CIICR Bring Up Wireless Connection with GPRS

AT+CIICR Bring Up Wireless Connection with GPRS	
Test Command **AT+CIICR=?**	Response **OK**
Execution Command **AT+CIICR**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Reference	Note: AT+CIICR only activates moving scene at the status of IP START, after operating this Command is executed, the state will be changed to IP CONFIG. After module accepts the activated operation, if it is activated successfully, module state will be changed to IP GPRSACT, and it responds OK, otherwise it will respond ERROR.

7.2.11 AT+CIFSR Get Local IP Address

AT+CIFSR Get Local IP Address	
Test Command **AT+CIFSR=?**	Response **OK**
Execution Command **AT+CIFSR**	Response **<IP address>** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<IP address>** a string parameter which indicates the IP address assigned from

	GPRS.
Reference	Note: Only after PDP context is activated, local IP Address can be obtained by AT+CIFSR, otherwise it will respond ERROR. The active status are IP GPRSACT, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE.

7.2.12 AT+CIFSREX Get Local IP Address

AT+CIFSREX Get Local IP Address	
Test Command **AT+CIFSRREX=?**	Response **OK**
Execution Command **AT+CIFSRREX**	Response **+CIFSREX: <IP address>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<IP address>** a string parameter which indicates the IP address assigned from GPRS.
Reference	

7.2.13 AT+CIPSTATUS Query Current Connection Status

AT+CIPSTATUS Query Current Connection Status	
Test Command **AT+CIPSTATUS=?**	Response **OK**
Write Command If multi IP connection mode(+CIPMUX=1) **AT+CIPSTATUS=<n>**	Response **+CIPSTATUS: <n>,<bearer>, <TCP/UDP>, <IP address>, <port>, <client state>** **OK**
Execution Command **AT+CIPSTATUS**	Response 1）If in single connection mode (+CIPMUX=0) **OK** **STATE: <state>** 2) If in multi-connection mode (+CIPMUX=1) **OK** **STATE: <state>** If the module is set as server

	S: 0, <bearer>, <port>, <server state> **C: <n>,<bearer>, <TCP/UDP>, <IP address>, <port>, <client state>**
Parameters	**<n>** **0-7** A numeric parameter which indicates the connection number **<bearer>** **0-1** GPRS bearer, default is 0 **<server state>** **OPENING** **LISTENING** **CLOSING** **<client state>** **INITIAL** **CONNECTING** **CONNECTED** **REMOTE CLOSING** **CLOSING** **CLOSED** **<state>** A string parameter which indicates the progress of connecting **0** IP INITIAL **1** IP START **2** IP CONFIG **3** IP GPRSACT **4** IP STATUS **5** TCP CONNECTING/UDP CONNECTING/SERVER LISTENING **6** CONNECT OK **7** TCP CLOSING/UDP CLOSING **8** TCP CLOSED/UDP CLOSED **9** PDP DEACT In Multi-IP state: **0** IP INITIAL **1** IP START **2** IP CONFIG **3** IP GPRSACT **4** IP STATUS **5** IP PROCESSING **9** PDP DEACT
Reference	

7.2.14 AT+CDNSCFGConfigure Domain Name Server

AT+CDNSCFGConfigure Domain Name Server	
Test Command **AT+CDNSCFG=?**	Response **+CDNSCFG: ("Primary DNS"),("Secondary DNS")** **OK**
Read Command **AT+CDNSCFG?**	Response **PrimaryDns: <pri_dns>** **SecondaryDns: <sec_dns>** **OK**
Write Command **AT+CDNSCFG=<pri_dns>[,<sec_dns>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
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	

7.2.15 AT+CDNSGIP Query the IP Address of Given Domain Name

AT+CDNSGIP Query the IP Address of Given Domain Name	
Test Command **AT+CDNSGIP=?**	Response **OK**
Write Command **AT+CDNSGIP=<domain name>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>** If successful, return: **+CDNSGIP: 1, <domain name>,<IP1>[,<IP2>]** If fail, return: **+CDNSGIP:0,<dns error code>**
Parameters	**<domain name>** A string parameter which indicates the domain name

	<IP1> A string parameter which indicates the first IP address corresponding to the domain name **<IP2>** A string parameter which indicates the second IP address corresponding to the domain name **<dns error code>** A numeric parameter which indicates the error code **8** DNS COMMON ERROR **3** NETWORK ERROR There are some other error codes as well.
Reference	

7.2.16 AT+CIPHEAD Add an IP Head at the Beginning of a Package Received

AT+CIPHEAD Add an IP Head at the Beginning of a Package Received	
Test Command **AT+CIPHEAD=?**	Response **+CIPHEAD: (list of supported <mode>s)** **OK**
Read Command **AT+CIPHEAD?**	Response **+CIPHEAD: <mode>** **OK**
Write Command **AT+CIPHEAD=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** A numeric parameter which indicates whether an IP header is added to the received data or not. **0** Not add IP header **1** Add IP header, the format is: 1) For single IP connection (+CIPMUX=0) **+IPD,<data length>:** 2) For multi IP connection (+CIPMUX=1) **+RECEIVE,<n>,<data length>:**
Reference	

7.2.17 AT+CIPATS Set Auto Sending Timer

AT+CIPATS Set Auto Sending Timer	
Test Command **AT+CIPATS=?**	Response **+CIPATS: (list of supported <mode>s),(list of supported <time>)** **OK**
Read Command **AT+CIPATS?**	Response **+CIPATS: <mode>,<time>** **OK**
Write Command **AT+CIPATS=<mode>[,<time>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** A numeric parameter which indicates whether set timer when module is sending data **0** Not set timer when module is sending data **1** Set timer when module is sending data **<time>** **1..100** A numeric parameter which indicates the seconds after which the data will be sent
Reference	

7.2.18 AT+CIPSPRT Set Prompt of '>' When Module Sends Data

AT+CIPSPRT Set Prompt of '>' When Module Sends Data	
Test Command **AT+CIPSPRT=?**	Response **+CIPSPRT: (list of supported <send prompt>s)** **OK**
Read Command **AT+CIPSPRT?**	Response **+CIPSPRT: <send prompt>** **OK**
Write Command **AT+CIPSPRT=<send prompt>**	Response **OK** If error is related to ME functionality:

	+CME ERROR: <err>
Parameters	**<send prompt>** A numeric parameter which indicates whether to echo prompt '>' after module issues AT+CIPSEND command. **0** It shows "send ok" but does not prompt echo '>' when sending is successful. **1** It prompts echo '>' and shows "send ok" when sending is successful. **2** It neither prompts echo '>' nor shows "send ok" when sending is successful.
Reference	

7.2.19 AT+CIPSERVER Configure Module as Server

AT+CIPSERVER Configure Module as Server	
Test Command **AT+CIPSERVER=?**	Response **+CIPSERVER: (0-CLOSE SERVER, 1-OPEN SERVER),(1-65535)** **OK**
Read Command **AT+CIPSERVER?**	Response **+CIPSERVER: <mode>[,<port>,<channel id>,<bearer>]** **OK**
Write Command **AT+CIPSERVER=<mode>,<port>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Close server **1** Open server **<port>** **1..65535** Listening port **<channel id>** Channel id **<bearer>** GPRS bearer
Reference	Note: This command is allowed to establish a TCP server only when the state is IP INITIAL or IP STATUS when it is in single state. In multi-IP state, the state is in IP STATUS only.

7.2.20 AT+CIPCSGP Set GPRS for Connection Mode

AT+CIPCSGP Set GPRS for Connection Mode	
Test Command **AT+CIPCSGP=?**	Response **+CIPCSGP: 1-GPRS,APN,USER NAME,PASSWORD** **OK**
Read Command **AT+CIPCSGP?**	Response **+CIPCSGP: <mode>, <apn>, <user name>, <password>** **OK**
Write Command **AT+CIPCSGP=<mode>[,(<apn>,<user name>,<password>)]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
parameters	**<mode>** A numeric parameter which indicates the wireless connection mode **1** set GPRS as wireless connection mode **<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
Reference	Note

7.2.21 AT+CIPSRIP Show Remote IP Address and Port When Received Data

AT+CIPSRIP Show Remote IP Address and Port When Received Data	
Test Command **AT+CIPSRIP=?**	Response **+CIPSRIP: (list of supported <mode>s)** **OK**
Read Command **AT+CIPSRIP?**	Response **+CIPSRIP: <mode>** **OK**
Write Command **AT+CIPSRIP=<mode>**	Response **OK** If error is related to ME functionality:

	+CME ERROR: <err>
Parameters	**<mode>** A numeric parameter which shows remote IP address and port. **0** Do not show the prompt **1** Show the prompt, the format is as follows: 1) For single IP connection (+CIPMUX=0) **+RECV FROM:<IP ADDRESS>:<PORT>** 1) For multi IP connection (+CIPMUX=1) **+RECEIVE,<n>,<data length>,<IP ADDRESS>:<PORT>**
Reference	

7.2.22 AT+CIPDPDP Set Whether to Check State of GPRS Network Timing

AT+CIPDPDP Set Whether to Check State of GPRS Network Timing	
Test Command **AT+CIPDPDP=?**	Response **+CIPDPDP: (list of supported<mode>s, list of supported <interval>, list of supported <timer>)** **OK**
Read Command **AT+CIPDPDP?**	Response **+CIPDPDP: <mode>, <interval>, <timer>** **OK**
Write Command **AT+CIPDPDP=<mode>[,<interval>,<timer>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Not set detect PDP **1** Set detect PDP **<interval>** **1<=interval<=180(s)** **<timer>** **1<=timer<=10**
Reference	Note: If "+PDP: DEACT" urc is reported because of module not attaching to gprs for a

	certain time or other reasons, user still needs to execute "AT+CIPSHUT" command makes PDP context come back to original state.

7.2.23 AT+CIPMODE Select TCPIP Application Mode

AT+CIPMODE Select TCPIP Application Mode	
Test Command **AT+CIPMODE=?**	Response **+CIPMODE:(0-NORMAL MODE,1-TRANSPARENT MODE)** **OK**
Read Command **AT+CIPMODE?**	Response **+CIPMODE: <mode>** **OK**
Write Command **AT+CIPMODE=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Normal mode **1** Transparent mode
Reference	

7.2.24 AT+CIPCCFG Configure Transparent Transfer Mode

AT+CIPCCFG Configure Transparent Transfer Mode	
Test Command **AT+CIPCCFG=?**	Response **+CIPCCFG: (NmRetry:3-8),(WaitTm:2-10),(SendSz:1-1460),(esc:0,1),(Rxmode:0,1),(RxSize:50-1460),(Rxtimer:20-1000)** **OK**
Read Command **AT+CIPCCFG?**	Response **+CIPCCFG: <NmRetry>,<WaitTm>,<SendSz>,<esc>,<Rxmode>,<RxSize>,<Rxtimer>** **OK**
Write Command **AT+CIPCCFG=<NmRetr**	Response **OK**

y>,<WaitTm>,<SendSz>,<esc>[,<Rxmode>,<RxSize>,<Rxtimer>]	If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<NmRetry>** Number of retries to be made for 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, default is TRUE. **0** Turn off the escape sequence **1** Turn on the escape sequence **<Rxmode>** Whether to set time interval during output data from serial port. **0** output data to serial port without interval **1** output data to serial port within <Rxtimer> interval. **<RxSize>** Output data length for each time, default value is 1460. **<Rxtimer>** Time interval (ms) to wait for serial port to output data again. Default value: 50ms
Reference	Note: This command will be effective only in single connection mode (+CIPMUX=0)

7.2.25 AT+CIPSHOWTP Display Transfer Protocol in IP Head When Received Data

AT+CIPSHOWTP Display Transfer Protocol in IP Head When Received Data	
Test Command **AT+CIPSHOWTP=?**	Response **+CIPSHOWTP: (list of supported <mode>s)** **OK**
Read Command **AT+CIPSHOWTP?**	Response **+CIPSHOWTP: <mode>** **OK**
Write Command **AT+CIPSHOWTP=<mode>**	Response **OK** If error is related to ME functionality:

	+CME ERROR: <err>
Parameters	**<mode>** A numeric parameter which indicates whether to display transfer protocol in IP header to received data or not **0** Not display transfer protocol **1** Display transfer protocol, the format is "+IPD,<data size>,<TCP/UDP>:<data>"
Reference	Note: This command will be effective only in single connection mode (+CIPMUX=0) Only when +CIPHEAD is set to 1, the setting of this command will work..

7.2.26 AT+CIPUDPMODE UDP Extended Mode

AT+CIPUDP MODEUDP Extended Mode	
Test Command **AT+CIPUDPMODE=?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPUDPMODE: (0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPUDPMODE: (0-7),(0-2),("(0-255).(0-255).(0-255).(0-255)"),(1-65535)** **OK**
Read Command **AT+CIPUDPMODE?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPUDPMODE: <mode> [,<IP address>,<Port>]** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPUDPMODE: 0, <mode> [,<IP address>,<Port>]** **+CIPUDPMODE: 1,<mode> [,<IP address>,<Port>]** **+CIPUDPMODE: 2,<mode> [,<IP address>,<Port>]** **+CIPUDPMODE: 3,<mode> [,<IP address>,<Port>]** **+CIPUDPMODE: 4,<mode> [,<IP address>,<Port>]** **+CIPUDPMODE: 5,<mode> [,<IP address>,<Port>]** **+CIPUDPMODE: 6,<mode> [,<IP address>,<Port>]** **+CIPUDPMODE: 7,<mode> [,<IP address>,<Port>]** **OK**

Write Command 1) For single IP connection (+CIPMUX=0) **AT+CIPUDPMODE=<mode>[,<IP address>,<Port>]** 2) For multi IP connection (+CIPMUX=1) **AT+CIPUDPMODE=<n>,<mode>[,<IP address>,<Port>]**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<n>** A numeric parameter which indicates the connection number **0-7** **<mode>** **0** UDP Normal Mode **1** UDP Extended Mode **2** Set UDP address to be sent **<IP address>** A string parameterwhich indicates remote IP address **<port>** Remote port
Reference	

7.2.27 AT+CIPRXGET Get Data from Network Manually

AT+CIPRXGET Get Data from Network Manually	
Test Command **AT+CIPRXGET=?**	Response If single IP connection (+CIPMUX=0) **+CIPRXGET: (list of supported <mode>s),(list of supported <reqlength>)** **OK** If multi IP connection (+CIPMUX=1) **+CIPRXGET: (list of supported <mode>s), (list of supported <id>s), (list of supported <reqlength>)** **OK**
Read Command	Response

AT+CIPRXGET?	**+CIPRXGET: <mode>** **OK**
Write Command 1) If single IP connection (+CIPMUX=0) **AT+CIPRXGET=<mode> [,<reqlength >]** 2) If multi IP connection (+CIPMUX=1) **AT+CIPRXGET=<mode> [,<id>,<reqlength >]**	Response **OK** 1)For single IP connection If "AT+CIPSRIP=1" is set, IP address and port are contained. if <mode>=1 **+CIPRXGET: 1[,<IP ADDRESS>:<PORT>]** if <mode>=2 **+CIPRXGET: 2,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **1234567890…** **OK** if <mode>=3 **+CIPRXGET: 3,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **5151…** **OK** if <mode>=4 **+CIPRXGET: 4, <cnflength>** **OK** 2)For multi IP connection If "AT+CIPSRIP=1" is set, IP address and port is contained. if <mode>=1 **+CIPRXGET: 1[,<id>,<IP ADDRESS>:<PORT>]** if <mode>=2 **+CIPRXGET: 2,<id>,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **1234567890…** **OK** if <mode>=3 **+CIPRXGET: 3,<id>,<reqlength>,<cnflength>[,<IP ADDRESS>:<PORT>]** **5151…** **OK**

	if <mode>=4 **+CIPRXGET: 4, <id>,<cnflength>** **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** Disable getting data from network manually, the module is set to normal mode, data will be pushed to TE directly. **1** Enable getting data from network manually. **2** The module can get data, but the length of output data can not exceed 1460 bytes at a time. **3** Similar to mode 2, but in HEX mode, which means the module can get 730 bytes maximum at a time. **4** Query how many data are not read with a given ID. **<id>** A numeric parameter which indicates the connection number **<reqlength>** Requested number of data bytes (1-1460 bytes)to be read **<cnflength>** Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read.
Reference	Note: To enable this function, parameter <mode> must be set to 1 before connection.

7.2.28 AT+CIPRDTIMER Set Remote Delay Timer

AT+CIPRDTIMER Set Remote Delay Timer	
Test Command **AT+CIPRDTIMER=?**	Response **+CIPRDTIMER: (100-4000),(100-7000)** **OK**
Read Command **AT+CIPRDTIMER?**	Response **+CIPRDTIMER: <rdsigtimer>,<rdmuxtimer>** **OK**
Write Command **AT+CIPRDTIMER=<rdsigtimer>,<rdmuxtimer>**	Response **OK**

	If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<rdsigtimer>** remote delay timer of single connection. **<rdmuxtimer>** remote delay timer of multi-connections.
Reference	Note: This command is used to shorten the disconnect time locally when the remote server has been disconnected.

7.2.29 AT+CIPSGTXT Select GPRS PDP context

AT+CIPSGTXT Select GPRS PDP context	
Test Command **AT+CIPSGTXT=?**	Response **+CIPSGTXT: (0,1)** **OK**
Write Command **AT+CIPSGTXT=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** select first PDP context **1** select second PDP context
Reference	Note: This command is used to select pdp context, only for multi IP connection (+CIPMUX=1).

7.2.30 AT+CIPSENDHEX Set CIPSEND Data Format to Hex

AT+CIPSENDHEX Set CIPSEND Data Format to HEX	
Test Command **AT+CIPSENDHEX=?**	Response **+CIPSENDHEX: (list of supported <mode>s)** **OK**
Read Command **AT+CIPSENDHEX?**	Response **+CIPSENDHEX: <mode>** **OK**

Write Command **AT+CIPSENDHEX=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** The default format of output data in AT+CIPSEND. **1** Set the input data in HEX format when using CIPSEND command to send data.
Reference	

7.2.31 AT+CIPHEXS Set CIPSEND Data Format with suffix

AT+CIPSENDHEX Set CIPSEND Data Format with suffix	
Test Command **AT+CIPHEXS=?**	Response **+CIPHEXS: (list of supported <mode>s)** **OK**
Read Command **AT+CIPSHEXS?**	Response **+CIPHEXS: <mode>** **OK**
Write Command **AT+CIPHEXS=<mode>**	Response **OK** If error is related to ME functionality: **+CME ERROR: <err>**
Parameters	**<mode>** **0** The default format of output data in AT+CIPSEND. **1** Set the output data with suffix"0d 0a". **2** Set the output data in HEX format with suffix "0d 0a".
Reference	

8. Supported Unsolicited Result Code

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 used by common messaging commands:

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 call only
40	network personalisation PIN required
41	network personalisation PUK required
42	network subset personalisation PIN required
43	network subset personalisation PUK required
44	service provider personalisation PIN required
45	service provider personalisation PUK required
46	corporate personalisation PIN required
47	corporate personalisation PUK required
99	resource limitation
100	unknown
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
160	DNS resolve failed
161	Socket open failed
171	MMS task is busy now
172	The MMS data is oversize
173	The operation is overtime
174	There is no MMS receiver
175	The storage for address is full
176	Not find the address
177	The connection to network is failed
178	Failed to read push message
179	This is not a push message
180	gprs is not attached
181	tcpip stack is busy
182	The MMS storage is full
183	The box is empty

184	failed to save MMS
185	It is in edit mode
186	It is not in edit mode
187	No content in the buffer
188	Not find the file
189	Failed to receive MMS
190	Failed to read MMS
191	Not M-Notification.ind
192	The MMS inclosure is full
193	Unknown
753	missing required cmd parameter
754	invalid SIM command
755	invalid File Id
756	missing required P1/2/3 parameter
757	invalid P1/2/3 parameter
758	missing required command data
759	invalid characters in command data
765	Invalid input value
766	Unsupported mode
767	Operation failed
768	Mux already running
769	Unable to get control
770	SIM network reject
771	Call setup in progress
772	SIM powered down
773	SIM file not present
791	Param count not enough
792	Param count beyond
793	Param value range beyond
794	Param type not match
795	Param format invalid
796	Get a null param
797	CFUN state is 0 or 4
810	No Error
811	Unrecognized Command
812	Return Value Error
813	Syntax Error
814	Unspecified Error
815	Data Transfer Already

816	Action Already
817	Not At Cmd
818	Multi Cmd too long
819	Abort Cops
820	No Call Disc
821	BT SAP Undefined
822	BT SAP Not Accessible
823	BT SAP Card Removed
824	AT Not Allowed By Customer

8.2 Summary of CMS ERROR Codes

Final result code +CMS ERROR: <err> indicates an error related to message service 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 used by common messaging commands:

Code of <err>	Meaning
1	Unassigned(unallocated) 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	Short message transfer rejected
22	Number changed
25	Pre-emption
26	Non-selected user clearing
27	Destination out of service
28	Invalid number format (incomplete number)
29	Facility rejected
30	Response to STATUS ENQUIRY
32	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	Resources unavailable, unspecified
49	Quality of service unavailable
50	Requested facility not subscribed
55	Requested facility not subscribed
57	Bearer capability not authorized
58	Bearer capability not presently available
63	Service or option not available, unspecified
65	Bearer service not implemented
68	ACM equal or greater than ACM maximum
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
79	Service or option not implemented, unspecified
81	Invalid transaction identifier value
87	User not member of CUG
88	Incompatible destination
91	Invalid transit network selection
95	Semantically incorrect message
96	Invalid mandatory information
97	Message type non-existent or not implemented
98	Message type not compatible with protocol state
99	Information element non-existent or not implemented
100	Conditional information element error
101	Message not compatible with protocol
102	Recovery on timer expiry
111	Protocol error, unspecified
127	Interworking, unspecified
128	Telematic interworking not supported
129	Short message Type 0 not supported
130	Cannot replace short message

143	Unspecified TP-PID error
144	Data coding scheme (alphabet) not supported
145	Message class not supported
159	Unspecified TP-DCS error
160	Command cannot be acted
161	Command unsupported
175	Unspecified TP-Command error
176	TPDU not supported
192	SC busy
193	No SC subscription
194	SC system failure
195	Invalid SME address
196	Destination SME barred
197	SM Rejected-Duplicate SM
198	TP-VPF not supported
199	TP-VP not supported
208	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
300	ME failure
301	SMS 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
323	invalid input parameter
324	invalid input format
325	invalid input value
330	SMSC address unknown
331	no network
332	network timeout
340	no cnma ack
500	Unknown
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 registerred
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

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