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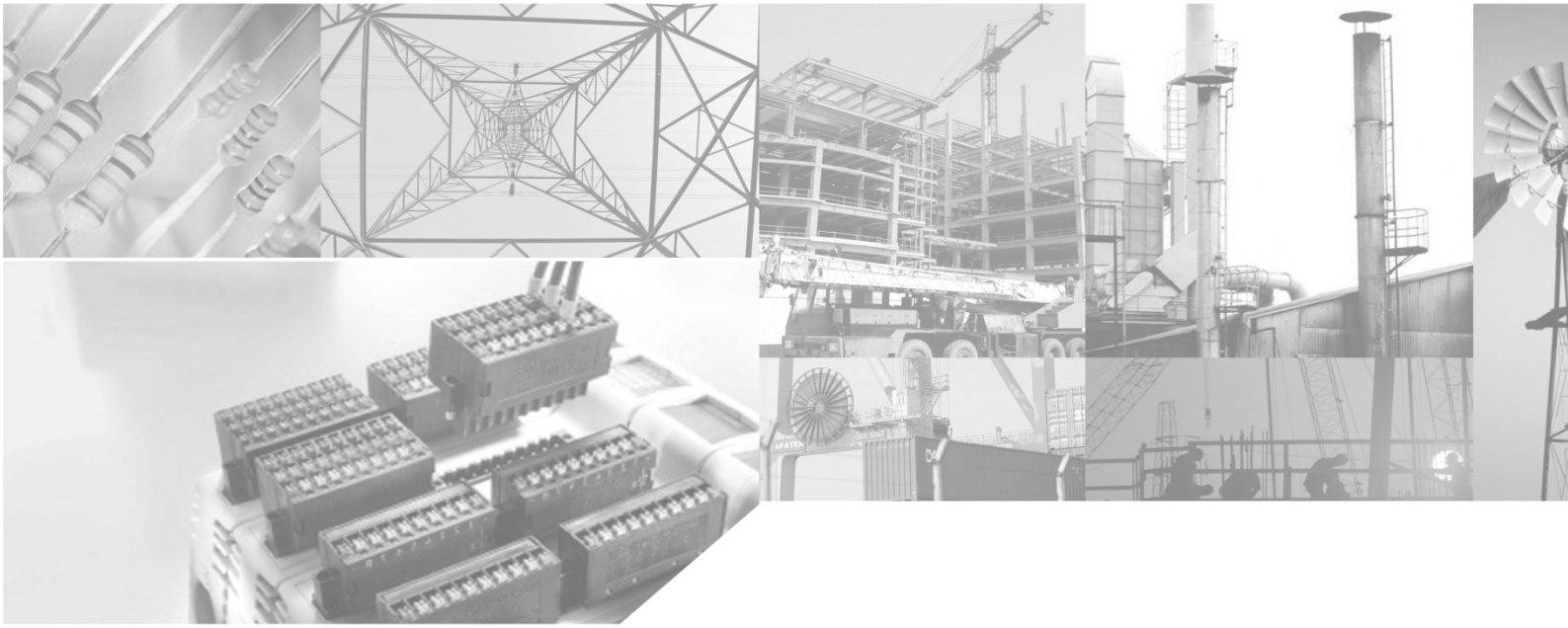
Neo_M660
AT Command Set

Version 3.7

Neoway Technology Co., Ltd.



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Notice

This document provides guide for users to use the M660.

This document is intended for system engineers (SEs), development engineers, and test engineers.

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Revision Record

Issue	Changes	Date
V3.0	Initial draft	2013-08-26
V3.1	Added the following commands: AT+OFFTIME, AT+FCHW, AT+AUDIN, AT+AUDOUT, AT+IFC, AT+RINGTIME, AT+TRANSCLOSE, AT+UDPTRANS, AT+TCPTRANS, and AT+RINGOUT.	2013-09-02
V3.2	• Deleted the command **AT+TRANSCLOSE** and use +++ to exit the data mode. • Modified the default data format of the **AT+DATAFORMAT** command. • Modified usage description of +++. • Modified the description of **AT+TCPSEND.** • Modified the description of **AT+TCPLPORT**, **AT+UDPLPORT**, and **AT+FTPPUT.**	2013-09-17
V3.3	Added the echo suppression command **AT+LESL**	2013-10-09
V3.4	• Modified the description of the following commands: +++ in the transparent mode, **AT+CLOSECLIENT**, **AT+IPSTATUS**, **AT+TCPACK**, and **AT+CLIENTSTATUS**. • Added the description of the ATO command in the transparent mode and **AT+TRABSCLOSE** command. • Added the description of the **AT+REST** and **AT+CPWROFF** commands.	2013-11-06
V3.5	Added the following commands: **AT+TCPACKS**, HTTP commands, **AT+TCPSRVTRANS?**, and **ATE1/ATE0**.	2013-11-29
V3.6	• Modified the terminal display after the client is connected to the server (transparent/non-transparent transmission) and the description of the **AT+TCPLPORT**, **AT+UDPLPORT**, and **AT+HANDFEE** commands. • Added SMTP commands: **AT+SMTPSRV**, **AT+SMTPAUTH**, **AT+SMTPFROM**, **AT+SMTPRCPT**, **AT+SMTPSUB**, **AT+SMTPBODY**, and **AT+SMTPSEND**. • Added the **AT+CNUM** command to obtain my number and added the following commands: **AT+POPSRV**, **AT+POPAUTH**, **AT+POPSTAT**, **AT+POPRSET**, **AT+POPDELE**, **AT+POPLIST**, **AT+POPRETR**, and **AT+POPQUIT**.	2013-12-18
V3.7	• Added eCall commands: **AT%EMSD**, **AT%EMSDSET**, **AT+CECALL**, **AT%EMSDPUSH**, etc.	2013-12-24

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Boot LOG Instruction

After the module is booted, the UART sends the following boot LOG:

+EIND: 128

+EUSIM: 0

+STKPCI:
0,"D081EE01030125000202818205118052A8611F57305E2600530049004D53610F0E0180621176848EAB4EFD8BA48BC10F160280624B673A901A5B9D52A8600153E34EE45E9475280F0A03808D857EA753F77C3F0F0E0480621176847CBE54C163A883500F10058065E07EBF97F34E504FF14E5090E80F0E06800031003300394E9280547F510F0A078079FB52A87CBE54C10F0E088079FB52A84F1860E04E13533A0F0E098079FB52A875355B50554652A10F120A8062117684005300049004D84254E1A53850F080B808D224FE1901A0F0A0C8062117684573076D80F0A4D805E9475287BA174060F084F804E0B4E009875"

+EIND: 2

+EIND: 1

	LOG	LOG Description	
1	+EIND: 128	Indicates that the module starts up successfully and can receive AT commands.	
2	+EUSIM: 0	Detect the SIM card.	For a China Mobile card, the module returns **+EUSIM: 0**. For a China Unicom 2G card, the module returns **+EUSIM: 1**. When the module does not detect any SIM card, the UART1 does not display information of 2 and 3.
3	+STKPCI: 0,"D081EE01030122….....	SIM card information	
4	+EIND: 2	The phonebook is available.	
5	+EIND: 1	SMS is available.	
Remarks		Users can determine whether the module starts up successfully or not by detecting "+EIND:1".	

1 General Commands

1.1 Querying the Manufacturer: +CGMI

Description	To query the manufacturer information
Format	AT+CGMI<CR>
Parameter	N/A
Return Value	<CR><LF><manufacturer><CR><LF> <CR><LF>**OK**<CR><LF> or <CR><LF>+CME ERROR:<err><CR><LF>
Example	AT+CGMI +CGMI: Neoway Corp Ltd OK
Remarks	N/A

1.2 Querying the Module Model: +CGMM

Description	To query the module model
Format	AT+CGMM<CR>
Parameter	N/A
Return Value	<CR><LF><model><CR><LF> <CR><LF>**OK**<CR><LF> or <CR><LF>+CME ERROR:<err><CR><LF>
Example	AT+CGMM +CGMM: M660 OK
Remarks	N/A

1.3 Querying the Version: +CGMR

Description	To query the software version
Format	AT+CGMR<CR>
Parameter	N/A

Return Value	<CR><LF><version><CR><LF> <CR><LF>**OK**<CR><LF> or <CR><LF>+CME ERROR:<err><CR><LF>
Example	AT+CGMR +CGMR: M660_1230_LQS13000_V013 OK
Remarks	N/A

1.4 Querying IMEI: +CGSN

Description	To query the International Mobile Equipment Identity (IMEI) of the module
Format	AT+CGSN<CR>
Parameter	N/A
Return Value	<CR><LF><IMEI><CR><LF> <CR><LF>**OK**<CR><LF> or <CR><LF>+CME ERROR:<err><CR><LF>
Example	AT+CGSN 864894010024181 OK
	The IMEI is a character string of 15 digits.
Remarks	N/A

1.5 Querying the IMSI: +CIMI

Description	To query the international mobile subscriber identification (IMSI)
Format	AT+CIMI<CR>
Parameter	N/A
Return Value	<CR><LF><IMSI><CR><LF> <CR><LF>**OK**<CR><LF> or <CR><LF>ERROR<CR><LF>
Example	AT+CIMI 460022201575463

	OK
	IMSI is a character string of 15 digits and starts with 3-bit MCC and 2-bit MNC. It is used to authenticate the SIM card.
Remarks	N/A

1.6 Obtaining the ICCID of the SIM Card: +CCID

Description	To obtain the integrated circuit card identifier (ICCID) of the SIM card	
Format	AT+CCID<CR>	
Parameter	N/A	
Return Value	<CR><LF><ICCID><CR><LF> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF>	
Example	AT+CCID +CCID: 89860002190810001367 OK	Read command
	AT+CCID ERROR	An error occurs when the read command is executed.
Remarks	The ICCID number is a character string of 20 digits.	

2 Mobile Device Control and Status Report

2.1 Querying the Module Status: +CPAS

Description	To query the work status of the module
Format	AT+CPAS<CR>
Parameter	<pas>: 0: ready. The module is ready and is able to execute AT commands. 1: unavailable. The command is not allowed by the module terminal (MT). 2: unknown. The status is unknown. 3: ringing. There is an incoming call and the module is ringing. The module can execute AT commands. 4: call in progress. A call is going on and the module can execute AT commands. 5: asleep. The module is in the sleep mode and not prepared.
Return	<CR><LF>+CPAS: <pas><CR><LF>

Value	<CR><LF>OK<CR><LF> or <CR><LF>+CME ERROR: <error><CR><LF>
Example	AT+CPAS +CPAS: 0 OK
	AT+CPAS +CME ERROR: <error>
Remarks	N/A

2.2 Querying the Network Registration Status: +CREG

Description	To query the network registration status of the module
Format	• AT+CREG=[<n>]<CR> • AT+CREG?<CR>
Parameter	<n>: 0: Forbid unsolicited result codes of network registration (default setting). 1: Allow unsolicited result codes of network registration. 2: Allow unsolicited location information (Cell ID, Local ID) of network registration.
Return Value	<CR><LF>+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]]<CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>+CME ERROR: <err><CR><LF> <n>: Value: 0: Forbid unsolicited result codes of network registration (default setting). 1: Allow unsolicited result codes of network registration. 2: Allow unsolicited location information (Cell ID, Local ID) of network registration. <stat>: Value: 0: Unregistered. The device is not searching for new carriers. 1: Registered the local network 2: Unregistered. The device is searching for base stations. 3: The registration is rejected. 4. Unknown code 5: Registered, roaming <lac>: string type; two−byte location area code in hexadecimal format <ci>: string type; two−byte cell ID in hexadecimal format

	<Act>: 0: GSM 2: UTRAN 3: GSM w/EGPRS	
Example	AT+CREG=1 OK	
	AT+CREG? +CREG: 0,1 OK	
	AT+CREG=? +CREG: (0-2) OK	+CREG: (list of supported <n>s)
Remarks	N/A	

2.3 Setting Module Functions: +CFUN

Description	To select the functions of the module by setting **<fun>** **<fun>** supports only a few values.	
Format	• AT+CFUN=[<fun>[,<rst>]]<CR> • AT+CFUN=?<CR>	
Parameter	<fun>: 1: All functions 4: Turn off the RF transmit and receive circuit of the module (flight mode). 0: Turn off the radio an SIM power (minimum functions). <rst>: 0: Do not reset the MT before setting it to <fun> power level. 1: Reset the MT before setting it to <fun> power level	
Return Value	<CR><LF>+CFUN: (list of supported <fun>s), (list of supported <rst>s) <CR><LF> <CR><LF>OK<CR><LF> OR <CR><LF>+CME ERROR: <err><CR><LF>	
Example	AT+CFUN=1 OK	
	AT+CFUN=? +CFUN: (0,1,4),(0,1)	+CFUN: (list of supported <fun>s), (list of supported <rst>s)

	OK	
Remarks	The setting of this command is not saved after the module is powered off.	

2.4 Enabling or Disabling the Sleep Mode: +ENPWRSAVE

Description	To enable or disable the sleep mode
Format	• AT+ENPWRSAVE=<n><CR> • AT+ENPWRSAVE?<CR>
Parameter	<n>: 0: Disable the sleep mode. 1: Enable the sleep mode (The module enters the sleep mode when the DTR signal is at low level and exits from the sleep mode at high level). 2: Enable the sleep mode (The module enters the sleep mode when the DTR signal is at high level and exits from the sleep mode at low level).
Return Value	See the Example.
Example	AT+ENPWRSAVE=1 OK
	AT+ENPWRSAVE? +ENPWRSAVE: 1 OK
Remarks	• The setting of the parameter **<n>** will not be saved after the module is powered off. • The DTR signal of the module is at high level by default. • After the sleep mode is enabled and the DTR signal is at low (or high) level, the module can enter the sleep mode only when all circuits of the module allows the sleep mode. • The DTR signal drive can wake the module up at high (low) level.

2.5 Clock: +CCLK

Description	To set and query the real-time clock
Format	• AT+CCLK=<time><CR> • AT+CCLK?<CR>
Parameter	< time >: Character string in format of YY/MM/DD,hh:mm:ss+TZ. TZ: Two digits, indicating the time lag between the local time and the GMT time. This information is optional because it can be displayed only when the network supports it.
Return Value	See the Example.

Example	AT+CCLK="11/10/14,09:30:16" OK
	AT+CCLK? +CCLK: "11/10/14,09:32:04" OK
Remarks	N/A

2.6 Setting the Baudrate of the Module: +IPR

Description	To set the baudrate of the module	
Format	• AT+IPR=<baud rate><CR> • AT+IPR?<CR>	
Parameter	<baud rate>: The value can be: 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 230400, 460800, and 921600.	
Return Value	See the Example.	
Example	AT+IPR=115200 OK	
	AT+IPR? +IPR: 115200 OK	
	AT+IPR=? +IPR: 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 230400, 460800, 921600 OK	
Remarks	The default baudrate is 115200 and the parameter setting of this command can be saved after the module is powered off.	

2.7 Entering the PIN Codes: +CPIN

Description	To query the PIN status and enter the PIN codes
Format	• AT+CPIN=<pin>[,<newpin>]<CR> • AT+CPIN?<CR>

Parameter	<pin>, <newpin>: string type values
Return Value	<CR><LF>+CPIN:<code><CR><LF> <CR><LF>OK<CR><LF> <code>: READY: No password SIM PIN: Enter PIN code. SIM PUK: Enter PUK code. SIM PIN2: Enter PIN2 code. SIM PUK2: Enter PUK2 code.
Example	AT+CPIN? +CPIN: READY OK
Remarks	N/A

2.8 Enabling PIN and Querying MT and Network Device: +CLCK

Description	To lock, unlock or interrogate an ME or a network facility
Format	AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]<CR>
Parameter	<fac> : "OI": Outgoing international calls "AI": All incoming calls "IR": Incoming calls when roaming outside the home country "SC": SIM card "AO": All outgoing calls "OX": All outgoing international calls except to the home country "AB": All barring services "AG": All outgoing barring services "AC": All incoming barring services "FD": SIM fixed dialing memory feature "PS": PH-SIM (lock Phone to SIM card) "PN": Network authentication "PU": Network subsystem authentication PP: Service provider authentication "PC": Corporate authentication <mode>: 0: Unlock 1: Lock

	2: Query the status <status>: 0: not active 1: active <passwd>: Password or code, string type <classx>: 1: Voice service 2: Data service 4: Fax service 8: SMS 16: Synchronous data service 32: Asynchronous data service 64: Dedicated packet access 128: Dedicated PAD access
Return Value	when <mode>=2 and command successful: <CR><LF>+CLCK: <status> [, <class1> [<CR><LF>+CLCK: <status>, <class2> [...]]<CR><LF>
Example	AT+CLCK="SC",2 +CLCK: 0 OK
	AT+CLCK=? +CLCK: ("PF","SC","AO","OI","OX","AI","IR", "AB","AG","AC","FD","PN","PU","PP", "PC") OK +CLCK: (list of supported <fac>s)
Remarks	N/A

2.9 Modifying the Password of the PIN: +CPWD

Description	To modify the password of the lock function of the module
Format	AT+CPWD=<fac>,<oldpwd>,<newpwd><CR>
Parameter	<fac>: "P2": SIM PIN2 "OI": Outgoing international calls "AI": All incoming calls "IR": Incoming calls when roaming outside the homing place "SC": SIM card

	"AO": All outgoing calls "OX": All outgoing international calls except to the home country "AB": All calling services "AG": All outgoing call services "AC": All incoming call services "FD": Fixed dialing of the SIM card "PN": Network authentication "PU": Network subsystem authentication "PP": Service provider authentication "PC": Corporate authentication <oldpwd>: Old password or code, string type <newpwd>: New password or code, string type	
Return Value	<CR><LF>+CPWD: list of supported (<fac>,<pwdlength>)s<CR><LF> <CR><LF>+CME ERROR: <err><CR><LF>	
Example	AT+CPWD=? +CPWD: ("SC",8),("P2",8),("AO",4),("OI",4), ("OX",4),("AI",4),("IR",4),("AB",4), ("AG",4),("AC",4) OK	+CPWD: list of supported (<fac>, <pwdlength>)s
Remarks	N/A	

2.10 Extended Error Report: +CEER

Description	To return text information **<report>** of one line or multiple lines (determined by the ME manufacturers)
Format	AT+CEER<CR>
Parameter	N/A
Return Value	<CR><LF>+CEER: <cause>, <report><CR><LF> <CR><LF>OK<CR><LF> <cause>: cause value listed in GSM 04.08 annex H. <report>: The ME manufacturer provides the extended report about the following error causes: Failure of the latest call (initiate or answer) or modification during the call Release of the latest call The latest GPRS attach failure or PDP context activation The latest GPRS detach or PDP context deactivation

Example	AT+CEER +CEER: 0, NONE OK	
Remarks	N/A	

2.11 Setting Error Information: +CMEE

Description	To enable or disable the **+CME ERROR:<err>** result code	
Format	• AT+CMEE=[<n>]<CR> • AT+CMEE?<CR>	
Parameter	<n>: 0: Disable the **+CME ERROR:<err>** result code and display **ERROR**. 1: Enable the **+CME ERROR:<err>** result code and use the numeric **<err>** value. 2: Enable the **+CME ERROR:<err>** result code and use verbose <err> values.	
Return Value	See the Example.	
Example	AT+CMEE=1 OK	
	AT+CMEE? +CMEE: 1 OK	
Remarks	N/A	

2.12 Setting the Signal Indicator Status: +SIGNAL

Description	To set the different blinking status of the signal indicator
Format	• AT+SIGNAL=<value><CR> • AT+SIGNAL?<CR> • AT+SIGNAL=?<CR>
Parameter	<value>: Integers, ranging from 0 to 5 0: Blink once every second in normal situation. Being off or on if any abnormality occurs. 1: Blink once every second after the module is connected to the GPRS data service. Being off in any other situations. 2: Flash and blink. Flash every 250 ms for the GPRS data service and blink every second in other normal situations. 3: Being on after the GPRS data service is connected and blink every second in other situations.

	4: Being on after the GPRS data service is connected and being off in other situations. 5: Being off if the SIM card cannot be detected after the module is powered on, blinking every second if the SIM card is detected, and being on after the GPRS data service is connected.	
Return Value	See the Example.	
Example	AT+SIGNAL? +SIGNAL: 2 OK	The current signal indicator status is 2.
	AT+SIGNAL=3 OK	Set current signal indicator status to 3.
	AT+SIGNAL=? +SIGNAL: (0-5) OK	The available value of the signal indicator status ranges from 0 to 5.
Remarks	The default status setting is 2. The parameter setting of this command can be saved after the module is powered off.	

2.13 Enabling the Hardware or Software Flow Control Function: +IFC

Description	To enable the hardware or software flow control function	
Format	• AT+IFC=<n1>,<n2><CR> • AT+IFC=?<CR> • AT+IFC?<CR>	
Parameter	<n1>: 0-2 <n2>: 0-2	
Return Value	See the Example.	
Example	AT+IFC=1, 1 OK	Enable the software flow control function.
	AT+IFC=2, 2 OK	Enable the hardware flow control function.
	AT+IFC=0, 0 OK	Disable the flow control function.
Remarks	• You must configure the U1RTS and U1CTS pins before enabling the hardware flow control. For details, see the **AT+FCHW** command. • This command supports only the (n1, n2) parameter combination: (0,0);(1,1);(2,2).	

	OK will be returned after the command is executed successfully. • **ERROR** will be returned for other parameter combinations.

2.14 Enabling & Disabling the Terminal Display: ATE1/ATE0

Description	To enable or disable the terminal display function of the AT commands	
Format	• ATE1<CR> • ATE0<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	ATE1 OK	Enable the terminal display function of the AT commands.
	ATE0 OK	Disable the terminal display function of the AT commands.
Remarks	N/A	

3 Network Service Commands

3.1 Querying Signal Quality: +CSQ

Description	To check the receiving signal strength indication (RSSI) and the bit error rate (BER) of the channel
Format	AT+CSQ<CR>
Parameter	N/A
Return Value	<CR><LF> +CSQ: < signal >, <ber><CR><LF> <CR><LF> OK <CR><LF> < signal > The following table shows the relationship between the signal and the RSSI.

	signal	rssi
0	<4 or 99	<-107 dBm or unknown
1	<10	<-93dBm
2	<16	<-71 dBm
3	<22	<-69dBm
4	<28	<-57dBm
5	>=28	>=-57 dBm

	<ber> 0...7 — Refer to the value of RXQUAL in the table of GSM 05.08 8.2.4. 99 — Not known or not detectable
Example	AT+CSQ +CSQ: 1, 99 OK
Remarks	N/A

3.2 Selecting and Registering a GSM Network: +COPS

Description	To select and register a GSM network
Format	• AT+COPS=[<mode>[,<format>[,<oper>>[,<AcT>]]]]<CR> • AT+COPS?<CR>
Parameter	<mode>: To set automatic network selection or manual selection: 0: Automatic selection (ignore the parameter **<per>**) 1: Manual selection 2: Deregister from the network 3: Set **<format>** only 4: Manual/automatic selection (if the manual selection fails, automatic mode starts) <format>: 0: Long alphanumeric <oper> (default value) 1: Short format alphanumeric <oper> 2: Numeric <oper> <oper>: It is given in **<format>**. This field may be in 16-character long alphanumeric format, 8-characters short alphanumeric format, or 5-character numeric format (MCC/MNC). <AcT>: Indicates the radio access technology and its value can be 0, 1, and 2. 0: GSM 1: GSM compact 2: UTRAN
Return Value	<stat>: 0: Unknown network 1: Available network 2: Current network 3: Forbidden network
Example	AT+COPS=0,0

	OK	
	AT+COPS=0,2 OK	Set to digital mode
	AT+COPS? +COPS: 0,0,"China Mobile" OK	China Mobile
	AT+COPS? +COPS: 0,2,"46000" OK	If it is set to digital mode, get the number 46000
	AT+COPS? +COPS: 0,0,"China Unicom" OK	China Unicom
	AT+COPS? +COPS: 0,2,"46001" OK	If it is set to digital mode, then get the number 46001.
Remarks	• When you try to query the current network selection parameters, **<AcT>** is displayed only if the device supports UMTS. • **<AcT>** indicates the access technology of the manual attach procedure if you choose GSM/UMTS dual mode and select network manually. • Ignore the parameter **<AcT>** if you set automatic network selection.	

4 Calling Control Commands

4.1 Setting the Speaker Volume: +CLVL

Description	To set the level of the speaker volume, which is valid before a call or during a call	
Format	• AT+CLVL=<level><CR> • AT+CLVL?<CR> • AT+CLVL=?<CR>	
Parameter	<level>:Integers, ranging from 0 to 6	
Return Value	See the Example.	
Example	AT+CLVL=4 OK	

	AT+CLVL? +CLVL:4 OK	
	AT+CLVL=? +CLVL:0-6 OK	
Remarks	The setting of this command is not saved after the module is powered off.	

4.2 Mute Control: +CMUT

Description	To set mute control of the voice calls. The setting is valid during a call	
Format	• AT+CMUT=<n><CR> • AT+CMUT?<CR>	
Parameter	<n>: 0: Mute off 1: Mute on	
Return Value	See the Example.	
Example	AT+CMUT=0 OK	
	AT+CMUT? +CMUT: 0 OK	
Remarks	This command is valid only during a call. ERROR will be returned in any other situations.	

4.3 Dialing Command: ATD

Description	To initialize a data, fax, or voice link For a voice link, the dialing string consists of numbers and modifiers and must end with a semicolon.
Format	• ATD<dial string><CR> • ATD><n><CR>
Parameter	<dial string>: Phone number

	<n>: The location of phone number
Return Value	OK SPEECH ON ALERTING If the call is hung up directly on the other side: SPEECH OFF RELEASE BUSY The phone is picked up on the other side: CONNECT If the call is hung up on the other side during the call SPEECH OFF RELEASE NO CARRIER
Example	.0123456789+. Valid characters for origination W The W modifier is ignored but is included for compatibility reasons only , The comma modifier is ignored but is included for compatibility reasons only ; Informs the Infrared Modem that the number is a voice number rather than a fax or data number T The T modifier is ignored but is included only for compatibility purposes P The P modifier is handled (pulse DTMF dialing functionality) 28800 Connected with data bit rate of 28800 bits/s (HSCSD) 19200 Connected with data bit rate of 19200 bits/s (HSCSD) 14400 Connected with data bit rate of 14400 bits/s (HSCSD) 9600 Connected with data bit rate of 9600 bits/s 4800 Connected with data bit rate of 28800 bits/s 2400 Connected with data bit rate of 28800 bits/s
Remarks	N/A

4.4 Call Answering: ATA

Description	To answer the call and establish a call connection The return codes containing **RING** or **+CRING** indicate an incoming call.

Format	ATA<CR>
Parameter	N/A
Return Value	<CR><LF>SPEECH ON<CR><LF> <CR><LF>OK<CR><LF> If the call is hung up on the other side during the call, the command returns: <CR><LF>SPEECH OFF<CR><LF> <CR><LF>RELEASE<CR><LF> <CR><LF>NO CARRIER<CR><LF>
Example	28800 Connected with data bit rate of 28800 bits/s (HSCSD) 19200 Connected with data bit rate of 19200 bits/s (HSCSD) 14400 Connected with data bit rate of 14400 bits/s (HSCSD) 9600 Connected with data bit rate of 9600 bits/s 4800 Connected with data bit rate of 28800 bits/s 2400 Connected with data bit rate of 28800 bits/s
Remarks	N/A

4.5 Hanging Up Calls: ATH

Description	To hang up all call links	
Format	ATH<CR>	
Parameter	N/A	
Return Value	<CR><LF>SPEECH OFF<CR><LF> <CR><LF>RELEASE<CR><LF> <CR><LF>OK<CR><LF>	
Example	ATH SPEECH OFF RELEASE OK	
Remarks	N/A	

4.6 Caller ID: CLIP

Description	To enable or disable caller ID
Format	• AT+CLIP=<n> <CR> • AT+CLIP?<CR>

Parameter	<n>: 0: disable 1: enable(default value)	
Return Value	+CLIP: <n>,<m> <n>: 0: disable 1: enable <m>: 0: CLIP not provisioned 1: CLIP provisioned 2: unknown (no connection, etc.)	
Example	AT+CLIP=1 OK	
	AT+CLIP? +CLIP: 1, 1(default) OK	
Remarks	N/A	

4.7 Sending DTMF Tone: +VTS

Description	To send the DTMF tone Only for voice services in GSM	
Format	AT+VTS=<DTMF><CR>	
Parameter	< DTMF >: A single ASCII character in the set .0-9, #, *, A-D.	
Return Value	See the Example.	
Example	AT+VTS=? +VTS: 0,1,2,3,4,5,6,7,8,9,A,B,C,D,#,* OK	
Remarks	N/A	

4.8 Auto-Answer: ATS0

Description	To control the auto-answer mode of the module
Format	• ATS0=<value><CR>

	• ATS0?<CR>	
Parameter	<value>: Integers, ranging from 0 to 255 If **ATS0** is set to **0**, auto-answer is disabled; If **ATS0** is set to other values, the module will automatically answer the call after ringing for the set times.	
Return Value	See the Example.	
Example	ATS0=1 OK	
	ATS0? 001 OK	
Remarks	N/A	

4.9 Handfree Switch: +HANDFREE

Description	To control the handfree mode of a voice call	
Format	• AT+HANDFREE=<value><CR> • AT+HANDFREE?<CR>	
Parameter	<value>:Integer 0: Receiver mode 1: Handfree mode, always valid if the module is not powered off or switched to other modes 2: Handfree mode, only valid for the current call. It will switch to the receiver mode after the call ends.	
Return Value	<CR><LF>+HANDFREE:0<CR><LF> <CR><LF>OK<CR><LF>	
Example	AT+HANDFREE=0 OK	Set to the receiver mode.
	AT+HANDFREE=1 OK	Set to the handfree mode.
	AT+HANDFREE? +HANDFREE:0 OK	The current mode is receiver mode.
Remarks	It is recommended that you use the **AT+AUDIN** and **AT+AUDOUT** commands to switch the voice input/output channels. For details, see the command description.	

4.10 Starting the DTMF Detection: +DTMFDETECT

Description	To start the DTMF detection	
Format	AT+DTMFDETECT=<value><CR>	
Parameter	<value>: Integer 1: Start DTMF detection (only valid in a call) 0: Stop DTMF detection (Pairing with 1) 2: Start DTMF detection (valid before a call) 3: Stop DTMF detection (Pairing with 2)	
Return Value	<CR><LF> +DTMF:DETECT START OK<CR><LF> <CR><LF> +DTMF:DETECT STOP OK <CR><LF> <CR><LF> +DTMF:DETECT ALREADY STARTED <CR><LF> <CR><LF> +DTMF:OPERATION NOT ALLOWED <CR><LF>	
Example	AT+DTMFDETECT=1 +DTMF:DETECT START OK	Start the DTMF detection.
	AT+ DTMFDETECT=0 +DTMF:DETECT STOP OK	Stop the DTMF detection.
	AT+DTMFDETECT=2 +DTMF:DETECT ALLOWED OK	Start the DTMF detection.
	AT+ DTMFDETECT=3 +DTMF:DETECT ALLOWED NOT OK	Stop the DTMF detection.
Remarks	N/A	

4.11 Setting Echo Suppression Level in the Earphone Mode: +ESL

Description	To set the level of the echo suppression level in the earphone mode	
Format	• AT+ESL=<value><CR> • AT+ESL?<CR> • AT+ESL=?<CR>	
Parameter	<value>: Integers, ranging from 0 to 6	
Return Value	See the Example.	
Example	AT+ESL? +ESL:2 OK	Query the current echo suppression level.

	AT+ESL=1 OK	Set the level of echo suppression to 1.
	AT+ESL=? +ESL:(0-6) OK	Query the range of the command parameter.
Remarks	The setting of this command is saved after the module is powered off.	

4.12 Setting Echo Suppression Level in the Receiver Mode: +HESL

Description	To set the level of the echo suppression level in the receiver mode	
Format	• AT+HESL=<value><CR> • AT+HESL?<CR> • AT+HESL=?<CR>	
Parameter	<value>: Integers, ranging from 0 to 6	
Return Value	See the Example.	
Example	AT+HESL? +HESL:1 OK	Query the current echo suppression level.
	AT+HESL=2 OK	Set the level of echo suppression to 2.
	AT+HESL=? +HESL:(0-6) OK	Query the range of the command parameter
Remarks	The setting of this command is saved after the module is powered off.	

4.13 Setting Echo Suppression Level of the Loud Speaker Mode: +LESL

Description	To set the level of the echo suppression level in the loud speaker mode
Format	• AT+LESL=<value><CR> • AT+LESL?<CR> • AT+LESL=?<CR>

Parameter	<value>: Integers, ranging from 0 to 6	
Return Value	See the Example.	
Example	AT+LESL? +LESL:1 OK	Query the current echo suppression level.
	AT+LESL=2 OK	Set the level of echo suppression to 2.
	AT+LESL=? +LESL:(0-6) OK	Query the range of the command parameter.
Remarks	The setting of this command is saved after the module is powered off.	

4.14 MIC Volume Control: +MICL

Description	To set the level of the MIC volume in a call	
Format	• AT+MICL=<level><CR> • AT+MICL?<CR>	
Parameter	<level>: Integers, ranging from 0 to 6	
Return Value	See the Example.	
Example	AT+MICL=3 OK	Set the level of the MIC volume to 3.
	AT+MICL? +MICL:3 OK	Query the current level of the MIC volume.
Remarks	The setting of this command is not saved after the module is powered off.	

4.15 Switching the Audio Input Channel: +AUDIN

Description	To switch the audio input channel before and in a call
Format	• AT+AUDIN=<n><CR> • AT+AUDIN?<CR> • AT+AUDIN=?<CR>

Parameter	<n>: 0: Set to MIC0 input (default) 1: Set to MIC1 input	
Return Value	See the Example.	
Example	AT+AUDIN=0 OK	Set the audio input channel to MIC0.
	AT+AUDIN? +AUDIN: 0 OK	Query the current audio input channel.
	AT+AUDIN=? +AUDIN: (0-1) OK	Query the range of the command parameter.
Remarks	The setting of this command is not saved after the module is powered off.	

4.16 Switching the Audio Output Channel: +AUDIN

Description	To switch the audio output channel before and in a call	
Format	• AT+AUDOUT=<n><CR> • AT+AUDOUT?<CR> • AT+ AUDOUT =?<CR>	
Parameter	<n>: 0: Set to receiver output (default) 1: Set to loud speaker output 2: Set to earphone output	
Return Value	See the Example.	
Example	AT+AUDOUT=0 OK	Set to receiver output.
	AT+AUDOUT? +AUDOUT: 0 OK	Query the current audio output channel
	AT+AUDOUT=? +AUDOUT: (0-2)	Query the range of the command parameter.

	OK	
Remarks	The setting of this command is not saved after the module is powered off.	

5 SMS Commands

5.1 Selecting SMS Services: CSMS

Description	To select an SMS service among SMS-MO, SMS-MT, and SMS-CB	
Format	• AT+CSMS=<service><CR> • AT+CSMS?<CR>	
Parameter	<service>: 0: GSM03.40 and GSM03.41. SMS-related AT commands support GSM07.05 Phase 2. 1: GSM03.40 and GSM03.41. SMS-related AT commands support GSM07.05 Phase 2+. <mt>,<mo>,<bm>: 0: Not support 1: Support	
Return Value	See the Example.	
Example	AT+CSMS=1 +CSMS: 1, 1, 1 OK	+CSMS:<mt>,<mo>,<bm> OK
	AT+CSMS? +CSMS: 1, 1, 1, 1 OK	+CSMS:<service>,<mt>,<mo>,<bm> OK
Remarks	N/A	

5.2 Setting Preferred SMS Storage: +CPMS

Description	To set preferred SMS storage
Format	• AT+CPMS=<mem1><CR> • AT+CPMS?<CR>
Parameter	<mem1>: String type, for example, "SM", "ME", "MT" <used>: Used quantity <total>: Total capacity of the storage
Return	<CR><LF>+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> <CR><LF>

Value	<CR><LF>OK<CR><LF> OR <CR><LF>+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3><CR><LF> <CR><LF>OK<CR><LF> OR <CR><LF>+CPMS: (list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s)<CR><LF> <CR><LF>OK<CR><LF>	
Example	AT+CPMS="SM" +CPMS: 50, 50, 50, 50, 50, 50 OK	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK
	AT+CPMS? +CPMS: "SM_P", 50, 50, "SM_P", 50, 50, "SM_P", 50, 50 OK	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK
	AT+CPMS=? +CPMS: ("SM", "ME", "SM_P", "ME_P", "MT"), ("SM", "ME", "SM_P", "ME_P", "MT"), ("SM", "ME", "SM_P", "ME_P", "MT") OK	+CPMS:(list of supported <mem1>s), (list of supported <mem2>s), (list of supported <mem3>s) OK
Remarks	The setting of this command is saved after the module is powered off.	

5.3 Setting SMS Inputting Mode: +CMGF

Description	To set the SMS inputting mode
Format	AT+CMGF=[<mode>]<CR> AT+CMGF?<CR>
Parameter	<mode>: 0: PDU mode 1: Text mode
Return Value	See the Example.
Example	AT+CMGF=1 OK
	AT+CMGF? +CMGF: 1

	OK
Remarks	N/A

5.4 Setting the TE Character Set: +CSCS

Description	To set the format of the TE character set	
Format	AT+CSCS=[<chest>]<CR> AT+CSCS?<CR>	
Parameter	< chset >: • "GSM": Default GSM alphabet (GSM03.38.6.2.1) • "HEX": Character string consisting of hexadecimal numbers from **0x00** to **0xFF**. For example, "032FE6", equal to three 8-bit characters, whose values are respectively **3**, **47**, and **230** in decimal system. These characters do not have to be converted with the source MT character set. • "IRA": International reference alphabet (ITU-T T.50) • "PCCP437": PC character set Code Page 437 • "8859-1": ISO 8859 Latin 1 character set • "UCS2": 16-bit universal multiple-octet coded character set (USO/IEC10646). The UCS2 character string is converted into a hexadecimal number (ranging from 0x0000 to 0xFFFF). UCS2 encoding is used only in some character string of the statement.	
Return Value	See the Example.	
Example	AT+CSCS="HEX" OK	
	AT+CSCS? +CSCS: "HEX" OK	+CSCS: <chset> OK
	+CSCS: ("IRA","GSM","HEX","PCCP437", "8859-1", "UCS2", "UCS2_0X81") OK	+CSCS: (list of supported <chset>s) OK
Remarks	N/A	

5.5 Setting the SMS Instruction Mode: +CNMI

Description	To set the mode how the module informs users of new SMS messages received from the network
Format	• AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]<CR>

	• AT+CNMI?<CR>
Parameter	<mode>: Set the instruction mode after receiving SMS messages. 0: SMS instruction codes can be saved in the buffer of the module. If the TA is full, the old codes can be saved in other place or replaced with new codes. 1: When the module is online, it will discard saved SMS instruction codes and reject new codes. In other situations, the codes are displayed on the end device. 2: When the module is online, the SMS instruction codes are saved in the buffer of the module. After the connection is released, the SMS instruction codes are output through UART. In other situations, codes are directly displayed on the end device. 3: When the module is online, SMS instruction codes are transmitted with other data and displayed on the end device. <mt>: Set the format of the new SMS instruction codes. The default value is 0. 0: SMS instruction codes will not be sent to the end device. 1: The format of the new SMS instruction codes is **+CMTI: "MT" ,<index>**. The SMS message is stored rather than directly displayed. 2: The format of the new SMS instruction codes is **+CMT :<oa>,<scts>,<tooa>,<lang>,<encod>,<priority>[,<cbn>],<length><CR><LF> <data>** (text mode). SMS messages are directly displayed rather than stored. 3: Use the report codes defined by **<mt>=2** to transmit SMS instruction codes to the end device. The SMS instruction codes in other modes are the same as that of **<mt>=1**. <bm>: Set the format of the new cell broadcast codes. The default value is **1**. 0: Not send the instruction information of new cell broadcast. The cell broadcast will not be stored. 1: The cell broadcast instruction code is **+CBMI:" BC" ,<index>** and the cell broadcast is stored. 2: The format of the new cell broadcast instruction codes is **<oa>,[<alpha>,]<scts>[,<tooa>,<length>] <CR><LF><data>**(text mode). The cell broadcast will be directly displayed rather than stored. 3: The CBM of the third-type information will be displayed on the end device using the report codes defined by **<bm>=2**. For other type SMS messages that support CBM storage, the instruction codes are the same as that of **<bm>=1**. <ds>: Report status of SMS message sending. The default value is 1. 0: No status report of SMS message sending 1: The format of the SMS sending status report is **+CDS :<fo>,<mr>,[<ra>],[<tora>],<scts>, <dt>,<st>**(text mode). <bfr>: The default value is 0. 0: When **<mode>** is set to **1** or **2**, codes defined by this command and stored in TA will be sent to TE. The module will return **OK** before transmitting the codes. 1: When **<mode>** is set to **1** or **2**, the codes defined by this command and stored in TA will be cleared.
Return Value	See the Example.

Example	AT+CNMI=1,1,0,0,0 OK	
	AT+CNMI=? +CNMI: (0-3), (0-3), (0,2,3), (0,1), (0,1) OK	+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)
	AT+CNMI? +CNMI: 1, 1, 0, 0, 0 OK	+CNMI=<mode>,<mt>,<bm>,<ds>,<bfr> OK
Remarks	SMS messages are classified into four classes based on the storing: • Class0: displayed only • Class 1: Stored in the ME memory • Class 2: Stored in the SIM card • Class 3: Directly transmitted to TE	

5.6 Reading SMS Messages: +CMGR

Description	To read SMS messages stored in current memory (use the **AT+CPMS** command to specify the current memory)
Format	AT+CMGR=<index><CR>
Parameter	<index>: location value <index> from preferred message storage <mem1> to the TE

Return Value	if text mode (+CMGF=1), command successful and SMS-DELIVER:
	+CMGR:
	<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>]
	<CR><LF><data>
	
	if text mode (+CMGF=1), command successful and SMS-SUBMIT:
	+CMGR:
	<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>], <sca>,<tosca>,<length>]
	<CR><LF><data>
	
	if text mode (+CMGF=1),command successful and SMS-STATUS-REPORT:
	+CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st>
	
	if text mode (+CMGF=1), command successful and SMS-COMMAND:
	+CMGR:
	<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>]

	if text mode (+CMGF=1), command successful and CBM storage:
	+CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data>
	
	if PDU mode (+CMGF=0) and command successful:
	+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>

Example	AT+CMGR=1 +CMGR: "REC READ","66421","","2011/09/13 16:37:59+32" 050003140401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA596D7EBAEB5B91EBD16A5D46C35F98406A744E311A95C32594DA75688B50EADACA6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E1693CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021BDEC627E8E9441BD42655DEF446 OK
Remarks	If the status of the message is received unread, the status in the storage changes to received read.

5.7 SMS Message List: +CMGL

Description	To read SMS messages of one type from the current memory specified by the **+CPMS** command
Format	AT+CMGL[=<stat>]<CR> AT+CMGL=?<CR>
Parameter	<state>: String type or numeric type When you set **AT+CMGF=1**, • "REC UNREAD": Unread SMS messages received • "REC UNREAD": Read SMS messages received • "STO UNSENT": Stored unsent SMS messages • "STO SENT": Stored sent SMS messages • "ALL": All SMS messages When you set AT+CMGF=0, • 0: Unread SMS messages received • 1: Read SMS messages received • 2: Stored unsent SMS messages • 3: Stored sent SMS messages • "ALL": All SMS messages
Return Value	if text mode (+CMGF=1),command successful and 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>[...]]
	
	if text mode (+CMGF=1),commandsuccessful and 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>[...]]
	
	if text mode (+CMGF=1), command successful and SMS-COMMANDs:
	+CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF>
	+CMGL: <index>,<stat>,<fo>,<ct>[...]]
	
	if text mode (+CMGF=1), command successful and CBM storage:
	+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages>
	<CR><LF><data>[<CR><LF>
	+CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages>
	<CR><LF><data> [...]]
	
	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>[...]]

Example	AT+CMGL="ALL" +CMGL: 1,"REC READ","66421","","2011/09/13 16:37:59+32" 050003140401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA596D7EBAEB5B91EBD16A5D46C35F98406A744E311A95C32594DA75688B50EADACA6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E1693CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021BDEC627E8E9441BD42655DEF446 +CMGL: 14,"STO SENT","66045","", 050003010401E27778592EA7E7EBE9373C3C279BCF68F59AADC78FED62779BA596D7EBAEB5B91EBD16A5D46C35F98406A744E311A95C32594DA75688B50EADACA6D689150EADF1B2BC5E579AD575E5B5582D5EABD5624C36A3D56C375C0E1693CD6835DB0D9783A15C91D2E06BDAA558AC1F60C52B937CADCD2B747AA9021BDEC627E8E9441BD42655DEF446 +CMGL: 44,"REC UNREAD","8615719556937","","2011/09/30 03:00:55+32" 5E7F4E1C79FB52A863D0919260A8003A4E2D536B752862370031003500370031003900350035003600390033003770377ED960A86765753500326B21002C6700540E4E006B21572800320039002F00300039002000320030003A00340038002C60A853EF6309901A8BDD952E621690099879952E76F463A556DE62E8 OK AT+CMGL=?

	+CMGL: ("REC UNREAD", "REC READ", "STO UNSENT", "STO SENT", "ALL") OK
Remarks	N/A

5.8 Sending SMS Messages: +CMGS

Description	To send an SMS message from the module to the network The network will return reference value **<mr>** to the module after the SMS message is sent successfully.	
Format	AT+CMGS=<da>[,<toda>]<CR>text is entered<ctrl-Z/ESC> (Text command syntax) AT+CMGS=<length><CR>PDU is given<ctrl-Z/ESC> (PDU command syntax)	
Parameter	<da>: The destination number to which the SMS message is sent in text mode <text>: SMS message content in text mode <length>: The byte length of the SMS message content in PDU mode <mr>: The storage location <CR>: End character <Ctrl-Z>: Indicates the end of the input message <ESC>: Indicates giving up the input message	

Return Value	if text mode (+CMGF=1) and sending successful:
	+CMGS: <mr>[,<scts>]
	
	if PDU mode (+CMGF=0) and sending successful:
	+CMGS: <mr>[,<ackpdu>]	

Example	AT+CMGS="66358"<CR> > This is the text +CMGS: 171 OK	Text mode(+CMGF=1)
	AT+CMGS=33<CR> >0891683108705505F001000B815118784271F20008146DF157335E025B9D5B89533A59276D6A80545EFA +CMGS: 119 OK	PDU mode (+CMGF=0)
Remarks	• If you use UART debugging tool to sent PDU SMS message, enter **\r** behind the **AT+CMGS** command manually or send **<CR>** in hexadecimal system. • For details about PDU, see the A.1 Content of PDU SMS Messages.	

5.9 Writing SMS Messages: +CMGR

Description	To write an SMS message into the memory The location information **<index>** will be returned after the message is saved correctly.	
Format	Command syntax (text mode): AT+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR>text is entered<ctrl-Z/ESC> Command syntax (PDU mode): AT+CMGS=<length>[,<stat>]<CR>PDU is given<ctrl-Z/ESC>	
Parameter	<da>: The destination number to which the SMS message is sent in text mode <text>: SMS message content in text mode <length>: The byte length of the SMS message content in PDU mode <index>: Location information <CR>: End character <Ctrl-Z>: Indicates the end of the input message <ESC>: Indicates giving up the input message	
Return Value	+CMGW:<index> OK or +CMS ERROR:<err>	
Example	AT+CMGW=”091137880”<CR> >"This is the text"<Ctrl-Z> +CMGW: 15 OK	Text mode (+CMGF=1)
	AT+CMGW=31<CR> >0891683108705505F001000B813124248536F3000812004 00026002A535A53D153A653C1532052C7<Ctrl- Z> +CMGW: 1 OK	PDU mode (+CMGF=0)
Remarks	The message status is set to "stored unsent" by default. **<stat>** also supports other values such as "stored unsent" and "stored sent".	

5.10 Sending Stored SMS Messages: +CMSS

Description	To send an SMS message specified by **<index>** in the memory (SMS-SUBMIT) The network returns reference value **<mr>** to the end device after the SMS message is sent successfully.
Format	AT+CMSS=<index>[,<da>[,<toda>]]<CR>
Parameter	<index>: Message location

	<da>: the destination number of the SMS messages	

Return Value	if text mode (+CMGF=1) and sending successful:
	+CMSS: <mr>[,<scts>]
	if PDU mode (+CMGF=0) and sending successful:
	+CMSS: <mr>[,<ackpdu>]	

Example	AT+CMSS=2 +CMSS: <mr> OK	Send the SMS messages stored in memory 2.
	AT+CMSS=2 CME ERROR:<err>	Send the SMS messages stored in memory 2.
Remarks	N/A	

5.11 Deleting SMS Messages: +CMGD

Description	To delete SMS messages from the current memory.	
Format	• AT+CMGD=<index> [,<delflag>]<CR> • AT+CMGD=?<CR>	
Parameter	<index>: The recording number of the stored SMS messages <delflag>: Integer 0: Delete the SMS messages with the specified recording numbers. 1: Delete all read SMS messages. 2: Delete all read and sent SMS messages. 3: Delete all read, sent, and unsent SMS messages. 4: Delete all messages.	
Return Value	See the Example.	
Example	AT+CMGD=3 OK	Delete successfully
	AT+CMGD=? +CMGD: (1-50), (0-4) OK	+CMGD:(list of supported <index>s) [,(list of supported <delflag>s)]
Remarks	If you set **<delflag>**, ignor the parameter **<index>**.	

5.12 Setting the SMS Center Number: +CSCA

Description	To set the SMS center number

Format	• AT+CSCA=<sca>[,<tosca>]<CR> • AT+CSCA?<CR>
Parameter	<sca>: SMS center number <tosca>: The format of the SMS center number. **129** indicates common number; **145** indicates international number (add + in front of the number automatically).
Return Value	See the Example.
Example	AT+CSCA="8613800755500",145 OK
	AT+CSCA? +CSCA: "8613800755500", 145 OK
Remarks	This command is only used to temporarily modify SMS center number. The setting will not be saved after the module is powered off. To save the setting, enter the **AT+CSAS** command.

5.13 Setting the Parameters of the Text Mode: +CSMP

Description	To select required values for the additional parameters in the text mode, and set the validity period since the message is received from the SMSC, or the absolute time defining the end of the validity period
Format	• AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]<CR> • AT+CSMP?<CR>
Parameter	<fo>: Determined by the command or the first 8 bits of the result code **GSM 03.40 SMS-DELIVER**; SMS-SUBMIT (default value: 17); or adopt the integer-type SMS-COMMAND (default value: 2) <vp>:

Value	Validity Period
0-143	(vp+1)*5mins
144-167	12hours +((vp–143)*30mins)
168-196	(vp–166)*1day
197-255	(vp–192)*1week

<pid>: Integer-type TP-protocol-ID (default value: 0)

<dcs>: Encoding plan for integer-type cell broadcast data (default value: 0)

Return Value	See the Example.
Example	AT+CSMP=17,167,0,0 OK

	AT+CSMP? +CSMP: 0, 255, 0, 0 OK	
Remarks	N/A	

5.14 Displaying the Parameters of the Text Mode: +CSDH

Description	To set whether the detailed header information is displayed in the result code in text mode	
Format	• AT+CSDH=[<show>]<CR> • AT+CSDH?<CR>	
Parameter	<show>: 0: disable or not display 1: enable or display	
Return Value	See the Example.	
Example	AT+CSDH=0 OK	Equal to AT+CSDH=0 AT+CMGR=14 +CMGR: "REC READ","+86134309815 04","","09/07/17,14:49:00+50"7B5675655FAE5C0F65F65019 OK
	AT+CSDH=1 OK	AT+CMGR=14 +CMGR: "REC READ","+86134309815 04","","09/07/17,14:49:00+50",145,4,0,8,"+8613800755500",145,127B5675655FAE5C0F65F65019 OK
	AT+CSDH? +CSDH: 0 OK	
Remarks	N/A	

5.15 Selecting the Type of Cell Broadcast Messages: +CSCB

Description	To set the cell broadcast message (CBM) type the ME receives

Format	AT+CSCB=[<mode>[,<mids>[,<dcss>]]]<CR>	
Parameter	<mode>: 0: Receive the message type defined by **<mids>** and **<dcss>**. 1: Not receive the message type defined by <mids> and <dcss>. <mids>: Char type, for example, 0, 1, 5, 320 to 478, 922. All possible combination of CBM message IDs (refer to **<mid>**). <dcss>: Char type, for example **0** to **3**, **5**. All possible combination of CBM data encoding plans (refer to **<dcs>**) (the default value is empty character string)	
Return Value	See the Example.	
Example	AT+CSCB=0,"2","2" OK	
	AT+CSCB? +CSCB: 0,"2","0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,32,33,34,35,36,15" OK	
Remarks	N/A	

6 Phonebook Commands

6.1 Selecting Phonebook Storage: +CPBS

Description	To select phonebook storage
Format	• AT+CPBS=<storage><CR> • AT+CPBS?<CR>
Parameter	<storage>: "ME": MT phonebook "SM": SIM/UICC phonebook "LD": last-dialling phonebook "MC": MT missed calls list "RC": MT received calls list "DC": MT dialled calls list "FD": SIM/USIM fixdialling-phonebook "ON": SIM own numbers (MSISDNs) list
Return Value	<CR><LF>+CPBS: <storage>[,<used>,<total>] <CR><LF> <CR><LF> OK<CR><LF> <used> Used count

	<total> Total count	
Example	AT+CPBS="SM" OK	
	AT+CPBS? +CPBS: "SM", 1, 250 OK	
Remarks	N/A	

6.2 Reading the Phonebook: +CPBR

Description	To read the phonebook information	
Format	• AT+CPBR=<index1>[,<index2>]<CR> • AT+CPBR=?<CR>	
Parameter	<index1>: Integer type, the sequence number of the phone number <index2>: Integer type, the sequence number of the phone number	
Return Value	[+CPBR: <index1>,<number>,<type>,<text><CR> +CPBR: <index2>,<number>,<type>,<text>] [+CPBR: <index1>,<number>,<type>,<text>[,<hidden>][[...] <CR><LF>+CPBR: <index2>,<number>,<type>,<text>[,<hidden>]]] <index1>, <index2>, <index>: Integer type values in the range of location numbers of phonebook memory <number>: String type phone number of format <type> <type>: Type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7) <text>: The phonebook entry name, string type field of maximum length<tlength>; character set as specified by command Select TE Character Set +CSCS +CPBR: (list of supported <index>s),[<nlength>],[<tlength>] <nlength>: Integer type value, indicating the maximum length of field <number> <tlength>: Integer type value indicating the maximum length of field <text> <hidden>: Indicates if the entry is hidden or not 0: phonebook entry, not hidden 1: phonebook entry, hidden	
Example	AT+CPBR=1,3 +CPBR: 1, "091137880", 129, "Comneon"	

	+CPBR: 2, "09113788223", 129, "MMI" +CPBR: 3, "09113788328", 129, "Test-ro" OK	
	AT+CPBR=? +CPBR: (1-50), 40, 14 OK	+CPBR:(list of supported <index>s), [<nlength>],[<tlength>]
Remarks	N/A	

6.3 Querying the Phonebook: +CPBF

Description	To query the phonebook information
Format	AT+CPBF=<findtext><CR>
Parameter	<findtext>: the phone book entry name
Return Value	+CPBF: <index1>,<number>,<type>,<text> <index>: Integer type values in the range of location numbers of phonebook memory <number>: String type phone number of format <type> <type>: Type of address <text>: The phone book entry name, string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS.UCS2", and "IRA" are supported.
Example	AT+CPBF="Comneon" +CPBF: 1, "091137880", 129, "Comneon" OK
Remarks	N/A

6.4 Writing Information to the Phonebook: +CPBW

Description	To write information to the phonebook
Format	AT+CPBW=<index>,<number>,<type>,<text> <CR>
Parameter	<index>: integer type values in the range of location numbers of phonebook memory <number>: string type phone number of format <type> <type>: type of address <text>: the phone book entry name, string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS.UCS2", and "IRA"

	are supported.	
Return Value	See the Example.	
Example	AT+CPBW=1,”091137880”,129,”Comneon” OK	
	AT+CPBW=? +CPBW: (1-50), 40, (129,145), 14 OK	
Remarks	Preconfigure the TE character set. Otherwise names cannot be input successfully.	

6.5 Reading My Number: +CNUM

Description	To read my number
Format	AT+CNUM<CR>
Parameter	N/A
Return Value	+CNUM: [<alphal>],<number>,<typel>
Example	AT+CNUM +CNUM: "A","10086",129,0,4 OK
Remarks	Before reading "my number", you must use the **AT+CPBS="ON"** to set the storage of "my number" and use the **AT+CPBW** to store "my number".

7 Supplementary Service Commands

7.1 Call Forwarding: +CCFC

Description	To set the call forwarding conditions and number
Format	• AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]<CR> • AT+CCFC=?<CR>
Parameter	<reason>: 0: Unconditional 1: Mobile number is busy 2: No reply 3: Unreachable

	4: Forward all calls (refer to 3GPP TS 22.030 [19]) 5: Forward all conditional calls (refer to 3GPP TS 22.030 [19]) <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>: string type subaddress of format specified by <satype> <satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8); default 128 <classx> is a sum of integers each representing a class of information (default 7): 1: voice (telephony) 2: data (refers to all bearer services) 4: fax (facsimile services) 8: short message service 16: data circuit sync 32: data circuit async 64: dedicated packet access 128: dedicated PAD access <time>: 1...30 when "no reply" is enabled or queried, this parameter gives the time in seconds to wait before call is forwarded <status>: 0: not active 1: active	
Return Value	when <mode>=2 and command successful: +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][<CR><LF>+CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][...]]	
Example	AT+CCFC=0,1,"123456" OK	
	AT+CCFC=? +CCFC: (0-5) OK	+CCFC: (list of supported <reason>s)
Remarks	Call-related supplementary services are required.	

7.2 Call Waiting: +CCWA

Description	To set call waiting	
Format	• AT+CCWA=[<n>[,<mode>[,<class>]]]<CR> • AT+CCWA?<CR>	
Parameter	<n>: (sets/shows the result code presentation status to the TE) 0: disable 1: enable <mode>: (when <mode> parameter is not given, network is not interrogated) 0: disable 1: enable 2: query status <classx>: is a sum of integers each representing a class of information (default 7) 1: voice (telephony) 2: data (refers to all bearer services) 4: fax (facsimile services) 8: short message service 16: data circuit sync 32: data circuit async 64: dedicated packet access 128: dedicated PAD access <status>: 0: not active 1: active <number>: string type phone number of calling address in format specified by <type> <type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)	
Return Value	when <mode>=2 and command successful +CCWA: <status>,<class1>[<CR><LF>+CCWA: <status>,<class2>[...]]	
Example	AT+CCWA=1,1 OK	
	AT+CCWA=? +CCWA: (0-1) OK	+CCWA: (list of supported <n>s)
	AT+CCWA? +CCWA: 0 OK	+CCWA: <n>
Remarks	Call-related supplementary services are required.	

7.3 Call Holding and Multi-party Conversation: +CHLD

Description	To set call on hold and add it to a conversation	
Format	• AT+CHLD=<n><CR> • AT+CHLD=?<CR>	
Parameter	<n>: (sets/shows the result code presentation status to the TE) 0: Releases all held calls, or sets User-Determined User Busy for a waiting call 1: Releases all active calls and accepts the other (waiting or held) call 1x: Releases the specific active call X 2: Places all active calls on hold and accepts the other (held or waiting) call' 2x: Places all active calls, except call X, on hold 3: Adds a held call to the conversation 4: Connects two calls and disconnects the subscriber from both calls 5: Activate the Completion of Calls to Busy Subscriber Request. (CCBS)	
Return Value	See the Example.	
Example	AT+CHLD=0 OK	
	AT+CHLD=? +CHLD: (0, 1, 1x, 2, 2x, 3, 4, 5) OK	[+CHLD: (list of supported <n>s)]
Remarks	• Call-related supplementary services are required. • Refer to a service that allows a call to be temporarily disconnected from the ME but the connection to be retained by the network, and to a service that allows multiparty conversation. • Calls can be held on, recovered, released and added to a conversation.	

8 GPRS Commands

8.1 Setting PDP Format: CGDCONT

Description	To set the PDP format of the GPRS
Format	• AT+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [,…[,pdN]]]]]]]]]<CR> • AT+CGDCONT?<CR> • AT+CGDCONT=?<CR>
Parameter	<cid>: (PDP Context Identifier) a numeric parameter that specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.

	<PDP_type>: (Packet Data Protocol type) a string parameter. IP Internet Protocol (IETF STD 5) <APN>: (Access Point Name) a string parameter 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. <PDP_address>: a string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value maybe provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command. <d_comp>: a numeric parameter that controls PDP data compression (applicable for SNDCP only) 0: off (default if value is omitted) <h_comp>: a numeric parameter that controls PDP header compression 0: off (default if value is omitted) <pd1>, … <pdN>: zero to N string parameters whose meanings are specific to the <PDP_type>	
Return Value	See the Example.	
Example	AT+CGDCONT=1,"IP", "CMNET" OK	
	AT+CGDCONT? +CGDCONT: 1,"IP","internet","0.0.0.0",0,0 OK	+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [<CR><LF> +CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]][...]]
	AT+CGDCONT=? +CGDCONT: (1),"IP",,,(0),(0) OK	+CGDCONT:(range of supported <cid>s),<PDP_type>,,, (list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]][<CR><LF><CR><LF> +CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]][...]]
Remarks	N/A	

8.2 Sending USSD Data: +CUSD

Description	To send Unstructured Supplementary Service Data (USSD)	
Format	• AT+CUSD=<n>,<str>,<dcs><CR> • AT+CUSD?<CR> • AT+CUSD=?<CR>	
Parameter	<n>: 0: Do not display the return code 1: Display the return code 2: Cancel the request <str>: USSD string <dcs>: 3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 15) <m>: 0: no further user action required 1: further user action required 2: USSD terminated by network 3: other local client has responded 4: operation not supported 5: network response times out	
Return Value	See the Example.	
Example	AT+CUSD=1,”*100#”,15 OK +CUSD: 1,"0031795D798F4E0B8F7D000A00325F694FE18D3A5361000A0033665A95F465B095FB000A003480A1796867E58BE2000A003586816BD2000A003675377F5153CB5F008F665E26597953BB65C56E38000A00378BDD8D3967E58BE2000A00387FFB9875", 72	
	AT+CUSD=? +CUSD: (0-2) OK	+CUSD: (list of supported <n>s)
	AT+CUSD? +CUSD: 0 OK	+CUSD: <m>
Remarks	N/A	

8.3 Switching Data Mode to Command Mode: +++

Description	To switch the module from the data mode to the command mode	
Format	+++	
Parameter	N/A	
Return Value	See the Example.	
Example	+++	No return value
	+++ OK	Return value in the transparent TCP/UDP transmission
	+++ OK	Return value in the server transparent transmission
Remarks	• This command can be used in the transparent transmission of external/internal protocol stack. • This command should not end with \r or \n.	

8.4 Switching Command Mode to Data Mode: ATO

Description	To switch the module from the command mode to the data mode
Format	ATO<CR>
Parameter	N/A
Return Value	CONNECT CONNECT <text> NO CARRIER ERROR
Example	ATO CONNECT
Remarks	This command is used to switch the command mode to the data mode for dial-up connection through external protocol stack and transparent transmission through internal protocol stack.

9 TCP/UDP Data Service

9.1 Setting Network APN: +NETAPN

Description	To set the network APN

Format	• AT+NETAPN="APN","USERNAME","PASSWORD"<CR> • AT+NETAPN?<CR>
Parameter	APN: GPRS network access point USERNAME: GPRS user name PASSWORD: GPRS password
Return Value	OK
Example	AT+NETAPN="CMNET","","" OK
	AT+NETAPN? +NETAPN:"","","" OK
Remarks	N/A

9.2 Setting Up a PPP Link: +XIIC

Description	To set up a PPP link	
Format	• AT+XIIC=<n><CR> • AT+XIIC?<CR> Query the PPP link status	
Parameter	<n>: 1	
Return Value	See the Example.	
Example	AT+XIIC=1 OK	The module is required to set up a PPP link.
	AT+XIIC? +XIIC: 1, 10.232.165.29 OK	The PPP link is set up successfully and the IP address is **10.232.165.29**. There are four spaces before **1**.
	AT+XIIC? +XIIC: 0, 0.0.0.0 OK	The PPP link has not been set up successfully. There are four spaces before **0**.
Remarks	Ensure that the module has registered the network before you use the **AT+XIIC=1** command to set up PPP link. You can use **AT+GREG?** to check whether the module has registered the network or not. If **+CREG: 0,1** or **+CREG: 0,5** is returned, the module has registered the network.	

9.3 Setting Up TCP Connection: +TCPSETUP

Description	To set up a TCP link	
Format	AT+TCPSETUP=<n>,<ip>,<port><CR>	
Parameter	<n>: Link number, ranging from 0 to 4 <ip>: Destination IP address, in **xx.xx.xx.xx** or domain name format <port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+TCPSETUP=0,220.199.66.56,6800 OK +TCPSETUP:0,OK	The link to 220.199.66.56,6800 is successfully set up on link 0.
	AT+TCPSETUP=1,192.168.20.6,7000 OK +TCPSETUP:0,FAIL	Failed to set up the link to 192.168.20.6,7000 on link 1. The server is probably not started, the IP address is incorrect, or the SIM card is out of credit.
	AT+TCPSETUP=5,192.168.20.6,7000 +TCPSETUP: ERROR	The format or the AT command is incorrect or the link number is incorrect.
Remarks	Use the **AT+XIIC=1** command to set up a PPP link before running this command.	

9.4 Sending TCP Data: +TCPSEND

Description	To send TCP data The module will returns > after this command is sent. Send TCP data 50 ms to 100 ms later.	
Format	AT+TCPSEND=<n>,<length><CR>	
Parameter	<n>: Link number, ranging from 0 to 4. A TCP connection is established on the link. <length>: The length of the data to be sent, ranging from **1** to **4096**, unit: byte.	
Return Value	See the Example.	
Example	AT+TCPSEND=0,1 >1 OK +TCPSEND:0,1	1-byte data is successfully sent through link 0.
	AT+TCPSEND=0,1 +TCPSEND: SOCKET ID OPEN FAILED	1-byte data fails to be sent on link 0 because the link is not established.
	AT+TCPSEND=0,4097 +TCPSEND: DATA LENGTH ERROR	4097-byte data fails to be sent on link 0 because data length exceeds the limit.
Remarks	• Ensure that the TCP link has been set up before sending TCP data.	

	• It is recommended that you use the **AT+IPSTATUS** command to check the buffer size before sending data. • The command supports only char type data if you do not use the **AT+DATAFORMAT** command to set the sending format.

9.5 Receiving TCP Data: +TCPRECV

Description	To receive TCP data	
Format	+TCPRECV:<n>,<length>,<data><CR>	
Parameter	<n>: Link number, ranging from **0** to **4** <length>: The length of the data received <data>: The data received Add **0x0d 0x0a** to the end of the data. You can identify the end based on **<length>**.	
Return Value	See the Example.	
Example	+TCPRECV: 0,10,1234567890	10-byte data is successfully received on link 0. The data is **1234567890**.
Remarks	N/A	

9.6 Closing TCP Connection: +TCPCLOSE

Description	To close a TCP link	
Format	AT+TCPCLOSE=<n><CR>	
Parameter	<n>: Link number, ranging from 0 to 4	
Return Value	See the Example.	
Example	AT+TCPCLOSE=1 +TCPCLOSE: 1,OK	The TCP connection on link 1 is closed successfully.
	AT+TCPCLOSE=5 +TCPCLOSE: ERROR	Link number error
	N/A +TCPCLOSE:0,Link Closed	The TCP link is disconnected.
Remarks	N/A	

9.7 Setting Up UDP Connection: +UDPSETUP

Description	To set up a UDP link

Format	AT+UDPSETUP=<n>,<ip>,<port><CR>	
Parameter	<n>: Link number, ranging from 0 to 4 <ip>: Destination IP address, in **xx.xx.xx.xx** format <port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+UDPSETUP=1,220.199.66.56,7000 OK +UDPSETUP:1,OK	The link to 220.199.66.560.7000 is successfully set up on link 1.
	AT+UDPSETUP=1,192.168.20.6,7000 OK +UDPSETUP:0,FAIL	Failed to set up the link to 192.168.20.6,7000 on link 1 because link 0 is unavailable.
	AT+UDPSETUP=5,192.168.20.6,6800 +UDPSETUP: ERROR	The format or the AT command is incorrect or the link number is incorrect.
Remarks	Use the **AT+XIIC=1** command to set up a PPP link before running this command.	

9.8 Sending UDP Data: +UDPSEND

Description	To send UDP data The module will returns > after this command is sent. Send UDP data 50 ms to 100 ms later.	
Format	AT+UDPSEND=<n>,<length><CR>	
Parameter	<n>: Link number, ranging from **0** to 4. A UDP connection is established on the link. <length>: The length of the data to be sent, ranging from 1 to 1024, unit: byte.	
Return Value	• If the AT command is input in correct format, the module returns >. • If the command is input in incorrect format, the module returns **ERROR**. • If the link has not been set up, the module returns **+UDPSEND:ERROR**. • After entering the command, input the data to be sent until the module returns >. • If the UDP data is sent successfully, the module returns **+UDPSEND:<n>,<length>**. **<length>** indicates the length of data already sent.	
Example	AT+UDPSEND=0,2 >11 OK +UDPSEND:0,2	Send 2-byte data on link 0. Then send the characters to be sent 50 ms to 100 ms after the module returns >. The UDP data is sent successfully.
Remarks	N/A	

9.9 Receiving UDP Data: +UDPRECV

Description	To receive UDP data	
Format	+UDPRECV:<n>,<length>,<data><CR>	
Parameter	<n>: Link number, ranging from **0** to **4** <length>: The length of the data received <data>: The data received Add **0x0d 0x0a** to the end of the data. You can identify the end based on <**length**>.	
Return Value	See the Example.	
Example	+UDPRECV: 0,10,1234567890	10-byte data is successfully received on link 0. The data is 1234567890.
Remarks	N/A	

9.10 Closing UDP Connection: +UDPCLOSE

Description	To close the UDP connection	
Format	AT+UDPCLOSE=<n><CR>	
Parameter	<n>: Link number, ranging from 0 to 4	
Return Value	If **<n>** is illegal, the module returns: +UDPCLOSE: ERROR. Otherwise, the module returns **+UDPCLOSE:<n>,OK**.	
Example	AT+UDPCLOSE=1 +UDPCLOSE: 1,OK	The TCP connection on link 1 is closed successfully.
	AT+UDPCLOSE=5 +UDPCLOSE: ERROR	Link number error
Remarks	N/A	

9.11 Querying TCP/UDP Link Status: +IPSTATUS

Description	To query the TCP/UDP link status
Format	• AT+IPSTATUS=<n><CR> • AT+IPSTATUS<CR>
Parameter	<n>: Link number, ranging from 0 to 4
Return Value	• AT+IPSTATUS=<n><CR> (Non-transparent transmission mode) +IPSTATUS:<n>,<CONNECT or DISCONNECT>,<TCP or UDP>, <send-buffer-size> <CONNECT or DISCONNECT>: Link status, value: CONNECT or DISCONNECT <TCP or UDP>: Link type, value: TCP or UDP <send-buffer-size>: The size of the available send buffer on the module, in decimal

	ASCII mode, unit: byte • AT+IPSTATUS<CR> (Transparent transmission mode) +IPSTATUS:<TRANSPARENT>,<TCP or UDP>, <send-buffer-size> <TRANSPARENT>	
Example	AT+IPSTATUS=0 +IPSTATUS:0,CONNECT,TCP,4096	A TCP link has been set up on socket 0 and the buffer size is 4096 bytes.
	AT+IPSTATUS=0 +IPSTATUS:0,CONNECT,UDP,1024	A UDP link has been set up on socket 0 and the buffer size is 1024 bytes.
	AT+IPSTATUS=1 +IPSTATUS:1,DISCONNECT	No connection is set up on socket 1.
	AT+IPSTATUS +IPSTATUS:CONNECT,TCP,4096	A TCP link in transparent transmission mode has been set up.
	AT+IPSTATUS +IPSTATUS:CONNECT,UDP,4096	A UDP link in transparent transmission mode has been set up.
	AT+IPSTATUS +IPSTATUS:DISCONNECT	No link in transparent transmission mode has been set up.
Remarks	This command can be used to query the status of the link in transparent transmission mode.	

9.12 Querying the Status of Data Sent by the TCP Link: +TCPACK

Description	To query the size of data successfully sent by the TCP server and the size of the data successfully received
Format	• AT+TCPACK=<n><CR> • AT+TCPACK<CR>
Parameter	<n>: Link number, ranging from 0 to 4
Return Value	• AT+TCPACK<CR> (Transparent transmission) +TCPACK:<n>,<data_sent>,<acked_recv> < data_sent >: Data successfully sent through this link <acked_recv>: Data acknowledged by the receiver +TCPACK:<n>,< DISCONNECT > No connection is set up on this link. +TCPACK:NO TCP LINK A UDP connection has been set up on this link. • AT+TCPACK<CR> (Transparent transmission) +TCPACK:<data_sent>,<acked_recv> < data_sent >: Data transparently transmitted through this link successfully <acked_recv>: Transparently transmitted data acknowledged by the receiver +TCPACK:< DISCONNECT > No link in transparent transmission mode has been set up.

	+TCPACK:NO TCP LINK A UDP link in transparent transmission mode has been set up.	
Example	AT+TCPACK=0 + TCPACK:0,20,20	20-byte data has been transmitted through link 0 and the receiver acknowledged 20-byte data.
	AT+TCPACK=0 + TCPACK:0,128,120	128-byte data has been transmitted through link 0 and the receiver acknowledged 120-byte data.
	AT+TCPACK=1 + TCPACK:1,DISCONNECT	No connection is set up on socket 1.
	AT+TCPACK=2 +TCPACK:NO TCP LINK	A UDP connection is set up on link 2.
	AT+TCPACK +TCPACK:1024,1024	1024-byte data is successfully sent and received in TCP transparent transmission mode.
	AT+TCPACK +TCPACK: DISCONNECT	No link in transparent transmission mode has been set up.
	AT+TCPACK +TCPACK:NO TCP LINK	A UDP link in transparent transmission mode has been set up.
Remarks	The values of **<data_sent>** and **<acked_recv>** are unsigned 64-bit integers in decimal ASCII. The unit is byte.	

9.13 Setting Data Receiving Type: +ASCII

Description	To set the TCP/UDP data receiving type
Format	• AT+ASCII=<n><CR> • AT+ASCII?<CR>
Parameter	<n>: 0: Hexadecimal ASCII code 1: Char type
Return Value	See the Example.
Example	AT+ASCII=0 OK AT+ASCII=1 OK
	AT+ASCII? +ASCII: 0

	OK
Remarks	The received data is displayed in char type by default.

9.14 Setting Data TX/RX Type: +DATAFORMAT

Description	To set the TCP/UDP data TX/RX type
Format	• AT+DATAFORMAT=<n>,<m><CR> • AT+DATAFORMAT?<CR>
Parameter	<n>: Transmitted data type 0: Transmitted data is displayed in hexadecimal ASCII code. 1: Transmitted data is displayed in char type. <m>: Received data type 0: Hexadecimal ASCII code 1: Char type
Return Value	See the Example.
Example	AT+DATAFORMAT=0,0 OK AT+DATAFORMAT=1,0 OK
	AT+DATAFORMAT? +DATAFORMAT: 0,0 OK
Remarks	The transmitted/received data is displayed in char type by default.

9.15 Setting Data Receiving Mode: +TRANMODE

Description	To set the TCP/UDP data receiving type	
Format	AT+TRANMODE=<mode><CR>	
Parameter	<mode>: 0: Original data without header, that is, transparent receiving mode 1: Data with header, that is, non-transparent receiving mode	
Return Value	See the Example.	
Example	AT+TRANMODE=1	Set the receiving mode with data header

	OK The received data is in the following format: +TCPRECV:0,10,1234567890	
	AT+TRANMODE=0 OK The received data is in the following format: 1234567890	Set the receiving mode without data header
Remarks	The default setting is **1** and the value is not saved after the module is powered off.	

9.16 Setting Link Closing Mode: +SETCLSMODE

Description	To set the link closing mode	
Format	AT+SETCLSMODE=<SocketID>,<Mode><CR>	
Parameter	<SocketID>: Socket ID, ranging from **0** to **4** <Mode>: 0: Close in normal mode 1: Forced closing	
Return Value	See the Example.	
Example	AT+SETCLSMODE=1,1 OK	The mode is set successfully.
Remarks	This command should be executed after the **AT+TCPSETUP** command has been executed.	

9.17 Setting Local TCP Port: +TCPLPORT

Description	Setting Local TCP Port: +TCPLPORT	
Format	AT+TCPLPORT=<socket>,<port><CR>	
Parameter	<socket>: Socket ID, ranging from **0** to **4** <port>: Port ID, ranging from **0**, **4097** to **32767**	
Return Value	See the Example.	
Example	AT+TCPLPORT=0,6800 OK	Set the local port ID of link 0 to **6800**.

	AT+TCPLPORT=0,0 OK	The local port ID of link 0 is allocated randomly.
Remarks	• This command should have been executed before the **AT+TCPSETUP** command is executed. • If you do not use this command, the local port ID will be allocated dynamically every time the UDP link is set up. • The local port ID setting will not be saved after the module is powered off. • After running this command and setting up a link, you must reset the local port ID or run **AT+TCPLPORT=<socket>,0** directly if you want to set up another link.	

9.18 Setting Local UDP Port: +UDPLPORT

Description	Setting Local UDP Port: +UDPLPORT	
Format	AT+UDPLPORT=<socket>,<port><CR>	
Parameter	<socket>: Socket ID, ranging from 0 to 4 <port>: Port ID, ranging from 0, 4097 to 32767	
Return Value	See the Example.	
Example	AT+UDPLPORT=0,6800 OK	Set the local port ID of link 0 to 6800.
	AT+UDPLPORT=0,0 OK	The local port ID of link 0 is allocated randomly.
Remarks	• This command should have been executed before the **AT+UDPSETUP** command is executed. • If you do not use this command, the local port ID will be allocated dynamically every time the UDP link is set up. • The local port ID setting will not be saved after the module is powered off. • After running this command and setting up a link, you must reset the local port ID or run **AT+UDPLPORT=<socket>,0** directly if you want to set up another link.	

9.19 Setting Socket Timeout Parameter: +SSTP

Description	To set the timeout period for the socket operations
Format	• AT+SSTP=<n><CR> • AT+SSTP?<CR> (Query the current value of the timeout parameter) • AT+SSTP=?<CR> (Query the range of the timeout parameter)
Parameter	<n>: The timeout period, ranging from **8** to **30**, unit: s
Return Value	+SSTP ERROR: INVALID VALUE (The parameter value exceeds the allowed range.) OK

Example	AT+SSTP? +SSTP: 10 OK	Query the current timeout period. The default value is **10** (s).
	AT+SSTP=? +SSTP: 8-30(s) OK	Query the value range of the timeout parameter.
	AT+SSTP=8 OK	Change the current value of the timeout parameter.
Remarks	N/A	

9.20 Transparently Transmitting TCP Data: +TCPTRANS

Description	To transparently transmit TCP data	
Format	AT+TCPTRANS=<ip>,<port><CR>	
Parameter	<ip>: Destination IP address, in xx.xx.xx.xx format <port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+TCPTRANS=220.199.66.56,6800 OK + TCPTRANS:OK	A TCP transparent transmission link is set up successfully.
Remarks	• The UART does not display the data transmitted to the server after the transparent transmission TCP link is set up successfully. • Use +++ to switch the server to the command mode and ATO to switch it to the data mode. • The module will exit from the transparent transmission link if a call or message is incoming. • At most 4096-byte data can be sent or received in transparent transmission mode.	

9.21 Transparently Transmitting UDP Data: +UDPTRANS

Description	To transparently transmit UDP data
Format	AT+UDPTRANS=<ip>,<port><CR>
Parameter	<ip>: Destination IP address, in xx.xx.xx.xx format <port>: Destination port ID in decimal ASCII code
Return	See the Example.

Value		
Example	AT+UDPTRANS =220.199.66.56,6800 OK +UDPTRANS:OK	A UDP transparent transmission link is set up successfully.
Remarks	• The UART does not display the data transmitted to the server after the transparent transmission UDP link is set up successfully. • Use +++ to switch the server to the command mode and ATO to switch it to the data mode. • The module will exit from the transparent transmission link if a call or message is incoming. • At most 4096-byte data can be sent or received in transparent transmission mode.	

9.22 Closing Transparent Transmission Link: +TRANSCLOSE

Description	To close the transparent transmission link	
Format	AT+TRANSCLOSE<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+TRANSCLOSE +TRANSCLOSE: 0,OK Quit Transparent Success!!!	A TCP transparent transmission link is closed successfully.
	AT+TRANSCLOSE +TRANSCLOSE: 1,OK Quit Transparent Success!!!	A UDP transparent transmission link is closed successfully.
Remarks	N/A	

10 DNS Command

10.1 Querying the IP Address: +DNS

Description	To query the IP address
Format	AT+DNS=<string><CR>
Parameter	<string>: The website URL to be queried, in form of www.*xxxx*.com
Return Value	See the Example.

Example	AT+DNS="www.china.com" OK +DNS:124.238.253.103 +DNS:OK	Query the IP address of www.china.com, and the module returns the IP address 124.238.253.103.
Remarks	The URL length should not exceed 250 bytes.	

11 FTP AT Commands

11.1 Logging In to the FTP Server: +FTPLOGIN

Description	To log in to the FTP server	
Format	AT+FTPLOGIN=<ip>,<port>,<user>,<pwd><CR>	
Parameter	<ip>: FTP server address <port>: Port ID of the FTP server, 21 <user>: The user name to log in to the FTP server. The length of the user name cannot exceed 100 bytes in ASCII code and the user name cannot contain comma (,). <pwd>: The password for the user account to log in to the FTP server. The length of the password cannot exceed 100 bytes in ASCII code and the password cannot contain comma (,).	
Return Value	• **+FTPLOGIN: Error**: The format of the AT command is incorrect • **+FTPLOGIN:Have Logged In**: The user has logged in to the FTP server. • **+FTPLOGIN:AT Busy**: Last FTP AT command has not been executed completely. • **+FTPLOGIN:User logged in**: The user logged in to the FTP server successfully. • **+FTPLOGIN: 530 Not logged in:** The user failed to log in to the FTP server because the user account or password is incorrect.	
Example	At+ftplogin=219.134.179.52,21,user1,pwd2009 OK +FTPLOGIN:User logged in	**user1** logged in to the server 219.134.179.52 through port 21. And the password for **user1** is **pwd2009**. Successful
Remarks	• The FTP functions cannot be used together with the internal protocol stack TCP/UDP function. • You can read or write data on the FTP server only after you logged in to the FTP server.	

11.2 Logging Out from the FTP Server: +FTPLOGOUT

Description	To log out from the FTP server
Format	AT+FTPLOGOUT<CR>
Parameter	N/A

Return Value	See the Example.	
Example	AT+FTPLOGOUT +FTPLOGOUT:User logged out OK	Log out from the FTP server
Remarks	N/A	

11.3 Downloading Data from the FTP Server: +FTPGET

Description	To download data from the FTP server	
Format	AT+FTPGET=<dir&filename>,<type>,<Content or Info><CR>	
Parameter	<Dir&filename>: Path and name of the file to be read (Note: The file directory under the FTP root directory) <Type> file transfer mode: 1: ASCII 2: Binary <Content or Info>: File content or file (or specified directory) information 1: Obtain the file content 2: Obtain the information of the file or the specified path	
Return Value	• **+FTPGET: Error**: The format of the AT command is incorrect • **+FTPGET:Error Not Login**: The user has not logged in to the FTP server. • **+FTPGET:AT Busy**: Last FTP AT command has not been executed completely. • **+FTPGET: Error!TimeOut**: Some failure is caused by download timeout (timeout period is 30 seconds) and the module does not receive data from the FTP server within 30 seconds. • **+FTPGET:<length>,<data>**: **<length>** indicates the data length; **<data>** indicates the data content. • **+FTPGET:OK.total length is <n>**: The module reads data successfully and the data length is **n**. • **+FTP:Server Data Link Disconnect**: The link is disconnected after the data is downloaded. It will be connected automatically when the module downloads data again. • **+FTP:Server Control Link Disconnect**: The control link is disconnected because you do not use the link for long time or for other causes. The module returns this message whenever the control link is disconnected. You need to connect to the FTP server again by running the **AT+FTPLOGIN** command.	
Example	AT+FTPGET=,1,2 +FTPGET:446,drw-rw-rw- 1 user group 0 Apr 14 15:55 . drw-rw-rw- 1 user group 0 Apr 14 15:55 .. -rw-rw-rw- 1 user group 1238528 Jan 14 10:36 1M.doc	Obtain information in the root directory.

	-rw-rw-rw- 1 user group 10 Jan 15 15:01 test.txt +FTP:Server Data Link Disconnect +FTPGET:OK.total length is 446	
	AT+FTPGET=test.txt,1,2 +FTPGET:65,-rw-rw-rw- 1 user group 10 Jan 15 15:01 test.txt +FTP:Server Data Link Disconnect +FTPGET:OK.total length is 65	Obtain the information about **test.txt**.
	AT+FTPGET=test.txt,1,1 +FTPGET:10,1234567890 +FTPGET:OK.total length is 10 +FTP:Server Data Link Disconnect	Obtain the information in **test.txt**.
Remarks	There is an 8-second delay from the last frame data to **+FTPGET:OK.total length is <n>** to ensure the reliability of data transmission. Do not perform next FTP operation until **+FTPGET:OK.total length is <n>** is displayed.	

11.4 Uploading Data from the FTP Server: +FTPPUT

Description	To upload data to the FTP server
Format	AT+FTPPUT=<filename>,<type>,<mode>,<size><CR>
Parameter	<filename>: The name of the file to be uploaded <type>: File transfer mode 1: ASCII 2: Binary <mode>: Operation mode 1: STOR mode. Create a file on the FTP server and write the data to the file. If the file exists, the original file will be overwritten. 2: APPE mode. Create a file on the FTP server and write the data to the file. If the file exists, the data is attached to the end of the file. 3: DELE mode. Delete a file. <size>: Data length. The data length cannot exceeds 1024.

Return Value	• **+FTPPUT: Error**: The format of the AT command is incorrect. • **+FTPPUT:Error Not Login**: The user has not logged in to the FTP server. • **+FTPPUT:AT Busy**: Last FTP AT command has not been executed completely. • **+FTPPUT:SIZE Error**: The value of **<length>** is greater than 1024. • **+FTPPUT:OK,<n>**: The file is sent successfully and the file length is **n**. • **+FTPPUT:Delete File OK**: The file is deleted successfully. • **+FTPPUT:Error send data error**: You enter an FTP command that cannot be identified. The module will disconnect with the FTP server proactively.	
Example	AT+FTPPUT=test.txt,1,1,1024 > +FTPPUT:OK,1024	Upload the **text.txt** file, which is 1024 in length. The transfer mode is ASCII mode and the operation mode is STOR.
	AT+FTPPUT=test.txt,1,2,1024 > +FTPPUT:OK,1024	Upload the **text.txt** file, which is 1024 in length. The transfer mode is ASCII mode and the operation mode is APPE.
	AT+FTPPUT=test.txt,1,3,0 +FTPPUT:Delete File OK	Delete the **test.txt** file.
Remarks	N/A	

11.5 Querying FTP Link Status: +FTPSTATUS

Description	To query the FTP link status	
Format	AT+FTPSTATUS<CR>	
Parameter	N/A	
Return Value	+FTPSTATUS:<status>,<ip>, <port> <status>: 0: The FTP link has not been set up. 1: The FTP link has been set up. <ip>: The IP address of the FTP server <port>: The port of the FTP server	
Example	AT+FTPSTATUS +FTPSTATUS:1,119.139.221.66,21	
Remarks	N/A	

12 TCP Server AT Commands

12.1 Setting TCP Listening for the Server: +TCPLISTEN

Description	To set the TCP listening function of the server

Format	• AT+TCPLISTEN=<port><CR> • AT+TCPLISTEN?<CR>	
Parameter	<Port>: Port ID <Socket>: SOCKET ID	
Return Value	See the Example.	
Example	AT+TCPLISTEN=6800 +TCPLISTEN:0,OK or +TCPLISTEN:bind error	Listening port ID: 6800 The listening function of the server is started. Failed to bind
	AT+TCPLISTEN=6800 Listening...	Transparent listening has been set.
	AT+TCPLISTEN? +TCPLISTEN:listening status	Query the listening status. Here the server is in the listening status.
	AT+TCPLISTEN? +TCPLISTEN:not listening	Query the listening status. Here the server is not in the listening status.
	Connect AcceptSocket=1,ClientAddr=119.123.77.133,ClientPort=8000 Receive the connection request from the client. **AcceptSocket** indicates the socket ID on the module, and **119.123.77.133** is the IP address of the client.	
Remarks	Only the SIM cards with fixed IP addresses can be used as servers.	

12.2 Closing the Listening Link: +CLOSELISTEN

Description	To close the listening connection	
Format	AT+CLOSELISTEN<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	+CLOSELISTEN:0,local link closed	Abnormalities might occur on the network.
	AT+CLOSELISTEN +CLOSELISTEN:0,local link closed	The local link will be closed if there is any link to the client.
	AT+CLOSELISTEN +CLOSELISTEN:Transparent local link closed	This message is displayed in transparent transmission mode.

Remarks	N/A

12.3 Closing Connections of the Client: +CLOSECLIENT

Description	To close all connections with the client	
Format	• AT+CLOSECLIENT=<Socket><CR> • AT+CLOSECLIENT<CR>	
Parameter	<Socket>: Socket ID	
Return Value	See the Example.	
Example	AT+CLOSECLIENT=1 +CLOSECLIENT:1,remote link closed	Close the socket 1 connection with the client.
	AT+CLOSECLIENT +CLOSECLIENT:0,remote link closed +CLOSECLIENT:1,remote link closed	All connections with the client is closed successfully.
	AT+CLOSECLIENT +CLOSECLIENT:transparent remote link closed	The remote link is closed in transparent transmission mode.
Remarks	N/A	

12.4 Receiving Data from the Client: +TCPRECV(S)

Description	To receive data from the client	
Format	+TCPRECV(S):<n>,<length>,<data><CR>	
Parameter	<n>: Link number, ranging from 0 to 4 <length>: The length of the data received <data>: The data received Add **0x0d 0x0a** to the end of the data. You can identify the end based on <**length**>.	
Return Value	See the Example.	
Example	+TCPRECV(S):1,10,1234567899	
Remarks	• Additional **(s)** makes this command different from the receive mode of the client mode in format. • The parameters are different from those of the client mode.	

12.5 Sending Data to the Client: +TCPSENDS

Description	To send data to the client	
Format	AT+TCPSENDS=<socket>,<length><CR>	
Parameter	<socket>: The value of **AcceptSocket**, that is, the socket of the module. See the description of the **AT+TCPLISTEN** command. <length>: The length of the data to be sent, value ranges from **1** to **1024**, unit: byte.	
Return Value	See the Example.	
Example	AT+TCPSENDS=0,10 >1234567890 OK +TCPSENDS:0,10	10-byte data is successfully sent through link 0.
	AT+TCPSENDS=0,536 >1234567890… +TCPSENDS:Buffer not enough,439	536-byte data is sent on socket 0. Failed to transmit the data because internal buffer is insufficient.
Remarks	Ensure that the TCP link has been set up before sending TCP data.	

12.6 Querying the Link Status on the Client: +CLIENTSTATUS

Description	To query the status of the link with the client	
Format	• AT+CLIENTSTATUS=<socket><CR> • AT+CLIENTSTATUS<CR>	
Parameter	<socket>: The value of **AcceptSocket**, that is, the socket of the module. See the description of the **AT+TCPLISTEN** command.	
Return Value	• AT+CLIENTSTATUS=<socket> <CR> (Non-transparent transmission) +CLIENTSTATUS:<socket>,<CONNECT or DISCONNECT>,<TCP>, <send-buffer-size> <CONNECT or DISCONNECT>: Link status, value: CONNECT or DISCONNECT <TCP>: Link type, value: TCP <send-buffer-size>: The size of the available send buffer on the module, in decimal ASCII mode, unit: byte • AT+CLIENTSTATUS<CR> (Transparent transmission) +CLIENTSTATUS:<CONNECT or DISCONNECT>,<TCP>, <send-buffer-size> <CONNECT or DISCONNECT>: Link status, value: CONNECT or DISCONNECT <TCP>: Link type, value: TCP <send-buffer-size>: The size of the available send buffer on the module, in decimal ASCII mode, unit: byte	
Example	AT+CLIENTSTATUS=0 +CLIENTSTATUS:0,CONNECT,TCP,1024	A TCP link has been set up with the socket 0 client and the buffer size is 1024 bytes.

	AT+CLIENTSTATUS +CLIENTSTATUS:CONNECT,TCP,4096	A TCP link has been set up with the non-transparent transmission client and the buffer size is 4096 bytes.
Remarks	This command can be used to query the status of the link with the client in transparent transmission mode.	

12.7 Obtaining the Local IP Address: +GETIP

Description	To query the local IP address
Format	AT+GETIP<CR>
Parameter	N/A
Return Value	+LOCALIP:<ip_addr>
Example	AT+GETIP +LOCALIP:119.139.220.13
Remarks	N/A

12.8 Setting TCP Listening for the Server of Transparent Transmission: +TCPSRVTRANS

Description	To setting TCP listening for the server of transparent transmission	
Format	• AT+TCPSRVTRANS=<port><CR> • AT+TCPSRVTRANS?<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+TCPSRVTRANS=6800 +TCPSRVTRANS:OK or +TCPSRVTRANS:bind error	Listening port ID: 6800 The listening function of the server in transparent transmission mode is started. Failed to bind
	AT+TCPSRVTRANS=6800 Transparent Listening...	Transparent listening has been set.
	AT+TCPSRVTRANS? + TCPSRVTRANS:listening status	Query the listening status. Here the server is in the listening status.
	AT+TCPSRVTRANS? +TCPSRVTRANS:not listening	Query the listening status. Here the server is not in the listening status.
	Connect AcceptSocket=0,ClientAddr=119.123.77.133,ClientPort=8000	

	Receive the connection request from the client. The client has set up socket 1 with the module and **119.123.77.133** is the IP address of the client, 8000 is the port ID of the client.
Remarks	• The server must set up socket link with the client before it transparently transmits TCP data. • Use +++ to switch the server to the command mode and ATO to switch it to the data mode. • Only the SIM cards with fixed IP addresses can be used as servers. The server set up in transparent transmission mode can be connected to only one TCP client (transparent transmission mode or non-transparent transmission mode). • The server will automatically disconnect from the client if a call or message is incoming.

12.9 Querying the Status of Data Sent by the TCP Server: +TCPACKS

Description	To query the size of data successfully sent by the TCP server and the size of the data successfully received	
Format	• AT+TCPACKS=<socket><CR> • AT+TCPACKS<CR>	
Parameter	<socket>: The ID of the socket that is set up between the client and the module. The value ranges from **0** to **4**.	
Return Value	• AT+TCPACKS=<socket><CR> (Non-transparent transmission mode) +TCPACKS:<socket>,<data_sent>,<acked_recv> <data_sent>: The size of data that the module sent to the client successfully <acked_recv>: The size of the data that the client received successfully +TCPACKS:<socket>,<DISCONNECT>: The link with the client has not been set up. • AT+TCPACKS<CR> (Transparent transmission mode) +TCPACKS:<data_sent>,<acked_recv> <data_sent>: The size of data that the module sent to the client successfully <acked_recv>: The size of the data that the client received successfully +TCPACKS:<DISCONNECT>: The link with the client has not been set up.	
Example	AT+TCPACKS=0 + TCPACK:0,20,20	The module sent 20-byte data to the socket 0 client and the client received 20-byte data successfully.
	AT+TCPACK=0 + TCPACK:0,128,120	The module sent 128-byte data to the socket 0 client and the client received 120-byte data successfully.
	AT+TCPACK=1 + TCPACK:1,DISCONNECT	Socket 1 has not set up link with the client.
	AT+TCPACK +TCPACK:1024,1024	TCP transparent transmission mode The module sent 1024-byte data to the socket 0 client and the client received 1024-byte data successfully.

	AT+TCPACK +TCPACK: DISCONNECT	The link with the client has not been set up.
Remarks	The values of **<data_sent>** and **<acked_recv>** are unsigned 64-bit integers in decimal ASCII. The unit is byte.	

13 HTTP Commands

13.1 Setting HTTP Parameters: +HTTPPARA

Description	To set HTTP parameters	
Format	AT+HTTPPARA=<para>,<para_value><CR>	
Parameter	<para>: HTTP parameters, supporting the following two parameters: url: Destination path port: Destination port ID <para_value>: The value of **<para>**. The value of **url** contains at most 128 bytes and **url** supports domain name translation. The default port is 80.	
Return Value	See the Example.	
Example	AT+HTTPPARA =url,www.neoway.com.cn/en/index.aspx OK	Set the Neoway homepage as the URL. The URL supports domain name translation.
	AT+HTTPPARA=url,121.15.200.97/Service1.asmx/GetNote OK	Set URL.
	AT+HTTPPARA=port,80 OK	Set the destination port ID to 80.
	AT+HTTPPARA=port,8080 OK	Set the destination port ID to 8080.
Remarks	• You need to set new HTTP parameters for new HTTP requests. • After you run the **+HTTPCLOSE** command, the link is closed and the HTTP parameters are cleared.	

13.2 Setting Up HTTP Link: +HTTPSETUP

Description	Set up an HTTP link
Format	AT+HTTPSETUP<CR>
Parameter	N/A

Return Value	See the Example.	
Example	AT+HTTPSETUP OK	Set up an HTTP link Successful
	AT+HTTPSETUP ERROR	Set up an HTTP link failed
Remarks	The link is set up successfully only after you set the destination address and port ID correctly.	

13.3 Executing HTTP Request: +HTTPACTION

Description	To execute an HTTP request	
Format	AT+HTTPACTION=<mode>[,<length>]<CR>	
Parameter	<mode>: HTTP request mode, available value can be 0, 1, 2, 99 0: GET 1: HEAD 2: POST 99: OPEN_MODE, user-defined packet mode <length>: The length of the POST content or user-defined packet length, maximum value **2048** This parameter must be set when you set **<mode>** to **POST** or **OPEN_MODE**.	
Return Value	See the Example.	
Example	AT+HTTPPARA =url,www.neoway.com.cn/en/index.aspx OK AT+HTTPSETUP OK AT+HTTPACTION=0 OK +HTTPRECV: HTTP/1.1 200 OK Cache-Control: private Content-Type: text/html; charset=utf-8 Server: Microsoft-IIS/7.5 Set-Cookie: ASP.NET_SessionId=rh3fjg554ufzb145aevgzz45; path=/; HttpOnly X-AspNet-Version: 2.0.50727 X-Powered-By: ASP.NET X-UA-Compatible: IE=EmulateIE7	Set the destination path. The default port is 80. Set up an HTTP link. GET request Receive the response from the HTTP server.

	Date: Thu, 28 Nov 2013 03:06:57 GMT Connection: close Content-Length: 13842 /*neowy homepage, html Format, 13842 bytes*/ …….. /* neowy homepage*/ +HTTPCLOSE: HTTP Link Closed	The server finished the response and disconnected the link.
	AT+HTTPPARA =url,www.neoway.com.cn/en/index.aspx OK AT+HTTPSETUP OK AT+HTTPACTION=1 OK +HTTPRECV: HTTP/1.1 200 OK Cache-Control: private Content-Length: 13842 Content-Type: text/html; charset=utf-8 Server: Microsoft-IIS/7.5 Set-Cookie: ASP.NET_SessionId=znt4fqabqsuclz55pvfufn55; path=/; HttpOnly X-AspNet-Version: 2.0.50727 X-Powered-By: ASP.NET X-UA-Compatible: IE=EmulateIE7 Date: Thu, 28 Nov 2013 03:32:35 GMT Connection: close +HTTPCLOSE: HTTP Link Closed	Set the destination path. The default port is 80. Set up an HTTP link HEAD request The HTTP server responds.
	AT+HTTPPARA=url,121.15.200.97/Service1.asmx/GetNote OK AT+HTTPPARA=port,8080 OK AT+HTTPSETUP OK AT+HTTPACTION=2,25 > MAC=NEOWAY&DATA=0123456 OK	Set URL Set the destination port ID as 8080. Set up an HTTP link POST request. Send 25 bytes; enter the contents to be uploaded after > is displayed. Receive the response from

	+HTTPRECV: HTTP/1.1 200 OK Cache-Control: private, max-age=0 Content-Type: text/xml; charset=utf-8 Server: Microsoft-IIS/7.5 X-AspNet-Version: 4.0.30319 X-Powered-By: ASP.NET Date: Thu, 28 Nov 2013 03:41:52 GMT Connection: close Content-Length: 98 <?xml version="1.0" encoding="utf-8"?> <string xmlns="http://wsliu.cn/">NEOWAY+0123456 </string> +HTTPCLOSE: HTTP Link Closed	the HTTP server. The server replies an XML file containing the uploaded content NEOWAY and 0123456. The server disconnected with the module after it finished responding.
	AT+HTTPPARA=url,www.neoway.com.cn/en/index.aspx OK AT+HTTPSETUP OK AT+HTTPACTION=99,76 >HEAD /en/index.aspx HTTP/1.1 connection: close HOST: www.neoway.com.cn OK +HTTPRECV: HTTP/1.1 200 OK Cache-Control: private Content-Length: 13842 Content-Type: text/html; charset=utf-8 Server: Microsoft-IIS/7.5 Set-Cookie: ASP.NET_SessionId=pvlaai3fizxg44eyvyqsyenk; path=/; HttpOnly X-AspNet-Version: 2.0.50727 X-Powered-By: ASP.NET X-UA-Compatible: IE=EmulateIE7 Date: Thu, 28 Nov 2013 05:40:24 GMT Connection: close	Set URL The HTTP link is set up through port 80. Send 76-byte user-defined packets Receive the response from the HTTP server.

	+HTTPCLOSE: HTTP Link Closed	The server disconnects with the module after it finishes responding.
Remarks	You need to comply with the HTTP protocol when defining packets.	

13.4 Closing HTTP Link: +HTTPCLOSE

Description	To close an HTTP link	
Format	AT+HTTPCLOSE<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+HTTPCLOSE OK	Close the HTTP link.
Remarks	After you run the **+HTTPCLOSE** command, the HTTP link is closed and the setting of **+HTTPPARA** is cleared.	

13.5 Receiving HTTP Data: +HTTPRECV

Description	To report the data received from the HTTP link
Format	<CR><LF>HTTPRECV: <CR><LF><datas>
Parameter	<datas>: Data received through the HTTP link
Return Value	See the Example.
Example	+HTTPRECV: HTTP/1.1 200 OK Cache-Control: private Content-Length: 13842 Content-Type: text/html; charset=utf-8 Server: Microsoft-IIS/7.5 Set-Cookie: ASP.NET_SessionId=pvlaai3fizxg44eyvyqsyenk; path=/; HttpOnly X-AspNet-Version: 2.0.50727 X-Powered-By: ASP.NET X-UA-Compatible: IE=EmulateIE7 Date: Thu, 28 Nov 2013 05:40:24 GMT Connection: close
Remarks	N/A

13.6 HTTP Link Closing: +HTTPCLOSED

Description	Unsolicited report of the HTTP link closing	
Format	<CR><LF>+HTTPCLOSED: HTTP Link Closed<CR><LF>	
Parameter	N/A	
Return Value	See the Example.	
Example	+HTTPCLOSED: HTTP Link Closed	Unsolicited report of the HTTP link closing
Remarks	N/A	

14 SMTP Commands

14.1 Setting Parameters for the SMTP Login Server: +SMTPSRV

Description	To set parameters of the SMTP server	
Format	AT+SMTPSRV=<addr>,<port><CR>	
Parameter	<addr>: SMTP server address <port>: Destination port ID. In general, the port ID of the POP3 server is 25.	
Return Value	See the Example.	
	AT+SMTPSRV="smtp.163.com",25 OK	
	AT+SMTPSRV="smtp.qq.com",25 OK	
Remarks	N/A	

14.2 Setting SMTP Login Account: +SMTPAUTH

Description	To set the SMTP login account
Format	AT+SMTPAUTH=<user>,<password><CR>
Parameter	<user>: Email account <password>: Password for the account
Return Value	See the Example.

Example	AT+SMTPAUTH="zhangyanun101","167483" OK
Remarks	The link can be set up successfully only after you set the destination address and port ID correctly.

14.3 Setting SMTP Sending Parameters: +SMTPFROM

Description	To set the SMTP sending parameters
Format	AT+SMTPFROM =<sender>,<name><CR>
Parameter	< sender >: The email address of the sender < name >: The name of the sender (user-defined)
Return Value	See the Example.
Example	AT+SMTPFROM="zhangyanun101@163.com","Damon" OK
Remarks	The content before @ in the sender email address must be the same as the login email account.

14.4 Setting SMTP Receiving Parameters: +SMTPRCPT

Description	To set the SMTP receiving parameter	
Format	AT+SMTPRCPT=<receiver_type>,<receiver_num>,<receiver_addr>,< receiver_name><CR>	
Parameter	<receiver_type>: 0: Receiver 1: Copy to 2: Bcc to <receiver_num >: 0~9: (**<receiver_type>** is **0** or **1**) 0~5: (**<receiver_type>** is 2) <receiver_addr >: The email address of receivers < receiver_name >: The name of the receiver	
Return Value	See the Example.	
Example	AT+SMTPRCPT=0,0,"571783423@qq.com","yf" OK AT+SMTPRCPT=0,1,"571783424@qq.com","yg" OK	Add the first receiver Add the second receiver

	AT+SMTPRCPT=1,0,"571783425@qq.com","yh" OK AT+SMTPRCPT=1,1,"571783426@qq.com","yj" OK	Add the first person the email is copied to Add the second person the email is copied to
	AT+SMTPRCPT=2,0,"571783427@qq.com","yk" OK AT+SMTPRCPT=2,1,"571783427@qq.com","yl" OK	Add the first person the email is blind carbon copied to Add the second tertiary recipient.
Remarks	Before sending an email, you can execute this command for several times to add different types of recipients: At most 10 primary recipients (0 to 9) At most 10 secondary recipients (0 to 9) At most 5 tertiary recipients (0 to 4)	

14.5 Entering an Email Subject: +SMTPSUB

Description	To enter the subject of an email
Format	AT+SMTPSUB=<subject><CR>
Parameter	<subject>: The maximum length of an email subject is 100 bytes.
Return Value	See the Example.
Example	AT+SMTPSUB="flower" OK
Remarks	N/A

14.6 Entering Email Content: +SMTPBODY

Description	To enter the content of an email
Format	AT+SMTPBODY=<context><CR>
Parameter	< context >: The maximum length of email content is 400 bytes.
Return Value	See the Example.
Example	AT+SMTPBODY="rose is better" OK
Remarks	N/A

14.7 Sending an Email: +SMTPSEND

Description	To send an email
Format	AT+SMTPSEND<CR>
Parameter	N/A
Return Value	See the Example.
Example	AT+SMTPSEND OK
Remarks	There is a delay to return OK.

15 POP3 Commands

15.1 Connecting POP3 Server: +POPSRV

Description	To connect to the POP3 server
Format	AT+POPSRV=<addr>,<port><CR>
Parameter	<addr>: POP3 server address < port >: Destination port ID. In general, the port ID of the POP3 server is 110.
Return Value	See the Example.
Example	AT+POPSRV="pop3.163.com",110 OK
	AT+POPSRV="pop.qq.com",110 OK
Remarks	Some email server supports POP rather than POP3.

15.2 Using Account to Log In to the Emailbox: +POPAUTH

Description	To use an account to log in to the emailbox
Format	AT+POPAUTH=<user>,<password><CR>
Parameter	<user>: Email account <password>: Password for the account
Return Value	See the Example.

Example	AT+POPAUTH="zhangyanun101","167483" OK
Remarks	The link can be set up successfully only after you set the destination address and port ID correctly.

15.3 Querying the Email Box Status: +POPSTAT

Description	To query the email box status
Format	AT+POPSTAT<CR>
Parameter	N/A
Return Value	+POPRECV:<bytes> +OK <num> <totalsize> <bytes>: The bytes sent by the email server, including all characters following **OK** <num>: Total number of emails <totalsize>: Total size of emails
Example	AT+POPSTAT +POPRECV:15 +OK 36 327235
Remarks	N/A

15.4 Querying Specified Email Information: +POPLIST

Description	To query specified email information	
Format	• AT+POPLIST=<num><CR> • AT+POPLIST<CR>	
Parameter	< num>: Numeric type, email number	
Return Value	+POPRECV:<bytes> +OK <num> <totalsize> <bytes>: The bytes sent by the email server, including all characters following **OK** <num>: Email number <totalsize>: Email size	
Example	AT+POPLIST=1 +POPRECV:12 +OK 1 7743	
	AT+POPLIST +POPRECV:344 +OK 36 327235	To obtain the sizes of all emails

	1 7743 2 2589 3 7528 4 5711 5 4301 6 1890 7 700 8 4202 9 14820 10 25609 11 18182 12 5780 13 3393 14 27736 15 17749 16 17750 17 23050 18 6172 19 5797 20 28983 21 4088 22 28545 23 26138 24 1332 25 1326 26 1333 27 1328 28 1330 29 10498 30 1328 31 1333 32 1331 33 1328 34 1330 35 4486 36 10496	
Remarks	N/A	

15.5 Marking an Email Deleted: +POPDELE

Description	To mark the email deleted

Format	AT+POPDELE=<num><CR>	
Parameter	<num>: Email number	
Return Value	See the Example.	
Example	AT+POPDELE=1 OK	
Remarks	The email is not deleted from the email box after executing this command. You can also run the **+POPRSET** command to cancel the marks.	

15.6 Cancelling All Deleting Marks: +POPRSET

Description	To cancel all deleting marks
Format	AT+POPRSET<CR>
Parameter	N/A
Return Value	See the Example.
Example	AT+POPRSET OK
Remarks	N/A

15.7 Ending the Conversation: +POPQUIT

Description	To end a conversation
Format	AT+POPQUIT<CR>
Parameter	N/A
Return Value	See the Example.
Example	AT+POPQUIT OK +POP:POP Link Closed
Remarks	N/A

15.8 Reading Emails: +POPRETR

Description	To read an email
Format	AT+POPRETR=<num><CR>

Parameter	<num>: Email number
Return Value	See the Example.
Example	AT+POPRETR=7 +POPRECV:716 +OK 700 octets Received: from web1.sportsnine.com (unknown [211.234.111.105]) by mx32 (Coremail) with SMTP id UsCowECpsm83YNdPX_v8Ig--.404S2; Tue, 12 Jun 2012 23:28:55 +0800 (CST) Received: (qmail 24046 invoked by uid 3001); 12 Jun 2012 22:29:14 +0900 Received: from unknown (HELO sxchnsy) (postmaster@222.78.124.127) by 0 (qmail 1.03 + ejcp v14 + HB patch) with SMTP; 12 Jun 2012 22:29:14 +0900 X-CM-TRANSID:UsCowECpsm83YNdPX_v8Ig--.404S2 X-Coremail-Antispam: 1Uf129KBjDUn29KB7ZKAUJUUUUU529EdanIXcx71UUUUU7v73 VFW2AGmfu7bjvjm3AaLaJ3UbIYCTnIWIevJa73UjIFyTuYvjxU6OJeDUUUU Message-Id: <4FD76037.194D40.02028@m12-82.163.com> Date: Tue, 12 Jun 2012 23:28:55 +0800 (CST) From: postmaster@recro.or.kr +POPRECV:3.
Remarks	N/A

16 eCall Commands

16.1 Enabling/Disabling the DSP Monitor: %EMSD

Description	To enable/disable DSP to monitor eCall related signal
Format	AT%EMSD=<Monitor_DSP><CR>
Parameter	< Monitor_DSP >: 0: DSP stop monitor "eCall related signal" 1: DSP start monitor "eCall related signal"
Return Value	See the Example.

Example	AT%EMSD=1 OK AT%EMSD=0 OK
Remarks	Enable DSP monitor before eCall is initiated. After eCall is terminated, disable DSP monitor

16.2 Configuring MSD Data: %EMSDSET

Description	To configurate MSD data (a minimum set of emergency related data)
Format	AT%EMSDSET=<MSD_data><CR>
Parameter	< MSD_data >: String Hexstring, maximum length is 280 bytes
Return Value	OK/ERROR
Example	AT%EMSDSET="0D0D0D" OK
	AT%EMSD=0 OK
Remarks	Refer to TS 26.267, maximum size of MSD is 140 bytes. This command is sent before eCall is initiated

16.3 Initiating an eCall: +CECALL

Description	To trigger an eCall to the network. Based on the configuration selected, it can be used to either trigger a test call, a reconfiguration call,a manually initiated eCall or an automatically initiated eCall.
Format	AT+CECALL=<type_of_eCall><CR>
Parameter	<type_of_eCall>: Integer 0: Test call 1: Reconfiguration call 2: Manually initiated eCall 3: Automatically initiated eCall
Return Value	OK/ERROR
Example	AT+CECALL=? +CECALL: (0,1,2,3) OK

	AT+CECALL=2 OK SPEECH ON
Remarks	Derail information about eCall, please refer to TS 26.267.

16.4 Triggering an MSD Transmission: %EMSDPUSH

Description	IVS(In-Vehicle System) can trigger the MSD transmission after eCall is established. In this case, the IVS asks the PSAP to request a MSD transmission
Format	AT%EMSDPUSH<CR>
Parameter	N/A
Return Value	See the Example.
Example	AT%EMSDPUSH OK
Remarks	IVS,MSD and PSAP are defined in TS 26.267

16.5 eCall Indications:

Description	The indications about eCall
Format	+EMSDPULL: PSAP start get pull data. +EMSDSYNC: SYNC frame detected start sending MSD. +EMSDLACK: link layer data transfer success(only sent when lower layer transfer success) +EMSDHACK: High layer data ack. Will send to AP no matter MSD transfer success or fail. (could be success or fail)->ecall session finish, depends on AP if Call need to be end.
Parameter	N/A
Return Value	
Example	
Remarks	

16.6 eCall Commands Process

Description	The process of eCall commands
Format	N/A

Parameter	N/A	
Return Value	See the Example.	
Example	AT%EMSD=1 OK	Set DSP to monitor incoming data. (limitation->no call exist, customer shall release all call first)
	AT%EMSDSET="0D0D0D..." OK	Set MSD data
	AT+CECALL=2 OK	establish eCall (after call connect, speech on)
	AT%EMSDPUSH OK	Push mode, push data to PSAP (please make sure that before PUSH, MSD data is set)
	ATH OK	release call
	AT%EMSD=0 OK	Switch off DSP monitor mode
Remarks	N/A	

17 Recording Commands

17.1 Setting Buffer Mode for Recording: +RSMODE

Description	To set the buffer mode for the recording	
Format	AT+RSMODE=<val><CR>	
Parameter	<val>: 0: No buffer for recording, output as a data block 1: Buffer for recording	
Return Value	See the Example.	
Example	AT+RSMODE=1 OK	Set buffer for recording
	AT+RSMODE=0 OK	Set the no buffer for recording data
Remarks	Set the buffer mode for recording before you start recording.	

17.2 Starting/Stopping Recording: +RECF

Description	To start or stop recording	
Format	AT+RECF=<val><CR>	
Parameter	<val>: 1: Start recording 0: Stop recording	
Return Value	When the recording buffer is almost full, **+REC:BUFFER FULL** is displayed every 5 blocks form in buffer. Run the **AT+RECR** command at this time. In the non-buffer mode, each block of data is sent to the UART when the block is completed during recording. **+Recpack:0,2030,(***recording data***)** will be returned.	
Example	AT+RECF=1 OK	Start recording
	AT+RECF=0 OK	Stop recording
Remarks	• The recording rate is 5.15 Kbit/s and each block is completed in 6 seconds. • The recording format is **amr**. All recording data is put together and then added the amr header: **#!AMR\n(2321414D525C6E)**	

17.3 Reading Recording Data: +RECR

Description	To read recording data in buffer mode
Format	AT+RECR<CR>
Parameter	N/A
Return Value	See the Example.
Example	AT+RECR +Recpack:0,2030,(data1) +Recpack:1,2030,(data2) +Recpack:2,2030,(data3) +Recpack:3,2030,(data4) +Recpack:4,1897,(data5) OK
Remarks	If you read the recording data after **+REC:BUFFER FULL** is returned, the recording data block you read can be 5 to 7 blocks because of the delay of the read act. If you do not obtain the recording data in 10 seconds, the early data will be overwritten.

18 Other AT Commands

18.1 Calculating MD5 Value: +CALMD5

Description	To calculate the value of MD5
Format	AT+CALMD5=<length><CR>
Parameter	<length>: The length of the data to be calculated
Return Value	+CALMD5: str
Example	AT+CALMD5=6 >313233343536 +CALMD5: e10adc3949ba59abbe56e057f20f883e
Remarks	The data is entered in hexadecimal system, and the return character string is 32 bytes in hexadecimal system.

18.2 Calculating CRC32 Verification Value: +CALCRC32

Description	To calculate the verification value of the CRC32
Format	AT+CALCRC32=<length><CR>
Parameter	<length>: The length of the data to be calculated
Return Value	+CALCRC32: str
Example	AT+CALCRC32=6 >313233343536 +CALCRC32: 398f3fd4
Remarks	The data is entered in hexadecimal system, and the return character string is 8 bytes in hexadecimal system.

18.3 Calculating CRC16 Verification Value: +CALCRC16

Description	To calculate the verification value of CRC16
Format	AT+CALCRC16=<length><CR>
Parameter	<length>: The length of the data to be calculated
Return Value	+CALCRC16: str
Example	AT+CALCRC16=6 >313233343536

	+CALCRC16: 2ef4
Remarks	The data is entered in hexadecimal system, and the return character string is 4 bytes in hexadecimal system.

18.4 Querying Base Station Information: +POSI

Description	To query the base station information
Format	AT+POSI=MODE<CR>
Return Value	+POSI: MODE,MCC,MNC,LAC,CI,BSIC, RxLev,ENDED<CR><LF>OK<CR><LF> MODE: 1, indicating that all base station information will be read MCC: Country code MNC: Mobile network code, hexadecimal LAC: Area code, hexadecimal CI: Cell ID, hexadecimal BSIC: Base station ID, hexadecimal RxLev: Signal strength of the base station, expressed by 1 to 64 ENDED: End symbol. 0 indicates there is more base station information; 1 indicates that this is the last line of the base station information.
Example	AT+POSI=1 +POSI: 1,460,00,27A8,EA7,1D,7,1 OK
Remarks	If no cell is found, the module returns OK. If there are multiple pieces of base station information, the data circulates between MCC and ENDED.

18.5 Opening/Closing Digital Audio Channel: +SETPCM

Description	To open/close the digital audio channel	
Format	• AT+SETPCM=<n><CR> • AT+SETPCM?<CR>	
Parameter	<n>: The digital audio channel setting 0: Close 1: Start	
Return Value	See the Example.	
Example	AT+SETPCM=1 OK	Open the digital audio channel

	AT+SETPCM? +SETPCM:PCM open OK	Query the status of the digital audio channel PCM open: Open PCM close: Close
Remarks	N/A	

18.6 Setting Extra RING Pulses: +EXTRARING

Description	To set whether to output extra RING pulse (when the callee answers the call or hangs up)	
Format	• AT+EXTRARING=<n><CR> • AT+EXTRARING?<CR>	
Parameter	<n>: 0: Not allow extra RING pulse 1: Allow extra RING pulse	
Return Value	See the Example.	
Example	AT+EXTRARING=1 OK	The setting is successful and the module returns OK.
	AT+EXTRARING? +EXTRARING: 1 OK	Query the set parameter Allow additional RING pulse output The module returns OK.
Remarks	• The setting of the **<n>** parameter will not be saved after the module powers off. Its value is 0 by default and there are relevant RING pulses only when a call or SMS message is coming. • When the value is set to 1, The RING pin outputs 100 ms low pulses when a call is not answered or ended or the recipient takes the phone off the hook.	

18.7 Setting the Width of the RING Pulse: +RINGTIME

Description	To set the width of the RING pulse (ms)
Format	• AT+RINGTIME=<n>,<time><CR> • AT+RINGTIME=?<CR>
Parameter	<n>: 0: The width of the pulse for incoming calls 1: The width of the pulse for incoming messages 2: The width of the extra pulse <time>:

	100-1000: Available range of the RING pulse width, unit: ms	
Return Value	See the Example.	
Example	AT+RINGTIME=0 OK	Query the width of the pulse output by the RING pin when a call is incoming.
	AT+RINGTIME=1,500 OK	Set the width of the pulse output by the RING pin when an SMS message is incoming.
	AT+ RINGTIME=? +RINGTIME: (0-2),(100-1000) OK	Query parameters that can be set by this command. The module returns OK.
Remarks	The setting cannot be saved after the module is powered off. The default pulse for the incoming calls is 250 ms, for incoming SMS message 600 ms, and extra pulse 100 ms.	

18.8 Configuring the Pin Mode of Flow Control by Hardware for UART1: +FCHW

Description	To configure the pin mode of flow control by hardware for UART1	
Format	• AT+FCHW=<n><CR> • AT+FCHW?<CR>	
Parameter	<n>: 0: Configure it to the U2RXD and U2TXD mode. 1: Configure it to U1RTS and U1CTS mode (default).	
Return Value	See the Example.	
Example	AT+FCHW=1 OK	The setting is successful and the module returns OK.
	AT+FCHW? +FCHW: 1 OK	Query the set parameter. Configure it to the U1RTS and U1CTS mode. The module returns OK.
Remarks	• The value of the parameter **<n>** is 1 by default, and the setting will not be saved after the module powers off. • This command is used together with **AT+IFC**. You can run **AT+IFC=2,2** to enable the flow control function of UART1.	

18.9 Setting the Offtime of the ON/OFF Pin: +OFFTIME

Description	To set the offtime of the ON/OFF pin, unit: tick	
Format	• AT+OFFTIME=<time><CR> • AT+OFFTIME?<CR>	
Parameter	<time>: 50 to 5000 (1 s = 1000 ms = 216 ticks)	
Return Value	See the Example.	
Example	AT+OFFTIME=50 OK	The setting is successful and the module returns OK.
	AT+OFFTIME? +OFFTIME: 50 OK	Query the set parameter. The module returns OK.
Remarks	For the poweroff procedure of the ON/PFF pin, see the Hardware User Guide. The default offtime is 250 ms.	

18.10 Setting Mode and Volume of the Incoming Ring: +RINGOUT

Description	To set the mode and volume of the incoming ring	
Format	• AT+RINGOUT=<value>,< level ><CR> • AT+ RINGOUT?<CR> • AT+ RINGOUT=?<CR>	
Parameter	< value >: 0: No ring 1: Earphone output 2: Speaker output < level >: 0 to 6, the volume level	
Return Value	See the Example.	
Example	AT+RINGOUT=2,6 OK	The setting is successful and the module returns OK.

	AT+RINGOUT? +RINGOUT: 2,6 OK	Query the set parameter. The module returns OK.
Remarks	N/A	

18.11 Setting the Format of the Voice Broadcast: +TTSFMT

Description	To set the encoding format of the content for voice broadcast	
Format	AT+TTSFMT=<format><CR>	
Parameter	<format>: 0: GBK 1: UTF16	
Return Value	See the Example.	
Example	AT+TTSFMT=1 OK	Set the encoding format to UTF16.
	AT+TTSFMT? +TTSFMT: 0 OK	
Remarks	• By default, the encoding format is GBK. • The parameter setting is not saved after the module is powered off.	

18.12 Inputting Broadcasting Content Through AT: +TTSPLAY

Description	To input text for voice broadcast through AT commands
Format	AT+TTSPLAY=<n><CR>
Parameter	<n>: The length of the content to be input (0 to 140)
Return Value	• If the AT command is input in correct format, the module returns >. • If the command is input in incorrect format, the module returns **+TTSPLAYERROR**. • You can input the data to be sent till the > is displayed after entering the command. Then the module returns OK. If you do not input data one minute after > is displayed, **+TTSPLAY:EXPIRED** will be displayed. • If the text is broadcast successfully, the module returns **+TTSPLAY:OK**. • If the text fails to be broadcast, the module returns **+TTSPLAY:FAILED**.

	• If the broadcast is interrupted by call or other links, the module returns **+TTSPLAY:TERMINATED**.
Example	AT+TTSPLAY=8 >A3E1A3E2A3E4A3E5 OK +TTSPLAY:OK
Remarks	• The encoding format is GBK (2 bytes). • The broadcast using this command is prior to incoming calls and SMS messages. If an incoming call or SMS message is being broadcast, the broadcast using this command will interrupt the call or message broadcast. The interrupted call will not be broadcast again will the message will be after the broadcast is finished.

18.13 Configuring Parameters of Voice Broadcast: +TTSCFG

Description	To set the volume, speaking speed, and tone of the voice broadcast	
Format	• AT+TTSCFG=?<CR> • AT+TTSCFG=<volume>,<speed>,<pitch><CR> • AT+TTSCFG?<CR>	
Parameter	<volume>: Ranges 0 to 6 <speed>: Broadcast speed, ranging from 0 to 6 <pitch>: Broadcast tone, ranging from 0 to 6	
Return Value	See the Example.	
Example	AT+TTSCFG=1,3,2 OK	Set the volume to 1, speed to 3, and tone to 2.
	AT+TTSCFG? +TTSCFG: 1,3,2 OK	Query the current configurations of the voice broadcast.
	AT+TTSCFG=? +TTSCFG:(0-6),(0-6),(0-6) OK	Query the configuration range of the voice broadcast parameters.
Remarks	• The parameter setting is saved after the module is powered off. • The TTS voice broadcast commands are not support on the 60s versions but supported on	

	the 60D version.

18.14 Resetting the Module: +REST

Description	To reset the module	
Format	AT+REST<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+REST Start up later,Please wait a second! OK	The return code of the command
Remarks	After this command is sent and the return code is displayed, other return codes including **+EIND: 128** will be displayed.	

18.15 Shutting Down the Module: +CPWROFF

Description	To shut down the module	
Format	AT+CPWROFF<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+CPWROFF OK	The module is off after returning OK.
Remarks	• Before sending **AT+CPWROFF**, leave the ON/OFF pin blank or pull its level high. • After the module returns OK, you can pull down the ON/OFF pin level if you want to restart the module.	

A Reference Process of AT Command Programming

A.1 Content of PDU SMS Messages

<PDU> SMS message sending format:

1>: 0891

08: indicates the length of the SMSC address information 91: indicates the format of the SMSC address

2>: Inversion of every two bits (add F if the bits are not sufficient) in SMSC number, fixed. For example, China Unicom 8613010888500 should be 683108705505F0 here.

3>: 0100

01: Indicates basic parameters 00: indicates message baseline value

4>: Convert the receiving number into hexadecimal. For example, the number length is 11 bits and then the hexadecimal length should be 0B.

5>: 81 (Receiving mode) there are multiple receiving modes. 81 indicates that the receiving mode is unknown.

6>: Inversion of every two bits (add F if the bits are not sufficient) in the recipient number. For example, 13421839693 should be 3124819396F3 after conversion.

7>: 0008

8>: The hexadecimal length of the SMS message content. For example, the UCS2 code of hello is 00080A00680065006C006C006F, that is 10 bits and the hexadecimal length is 0A.

9>: Message content, for example, the USC2 code of hello is 00080A00680065006C006C006F.

One PDU message contains the above 9 parts and the parameter values are determined by the actual situation.

NOTE

If the SMSC address length is 0, replace 08 with 00 and the SMSC type and address fields must be omitted.

The following is an example of the PDU message whose SMSC address length is not 0:

0891683110808805F001000B813124819396F300080A00680065006C006C006F

Wherein,

0891

683108705505F0: SMSC number of China Unicom

0100

0B: the length of the recipient number

81: Receiving mode

3124819396F3: The number of recipient

0008

0A: The length of the content

00680065006C006C006F: SMS message content

Message content: hello

The SMS message content starts from 0100, so the value of LENGTH in **AT+CMGS=LENGTH** is **23**.

The following is an example of the PDU message whose SMSC address length is **0**:

0001000B813124819396F300080A00680065006C006C006F

Wherein,

00: SMSC address information length

0100

0B: the length of the recipient number

81: Receiving mode

3124819396F3: The number of recipient

0008

0A: The length of the content

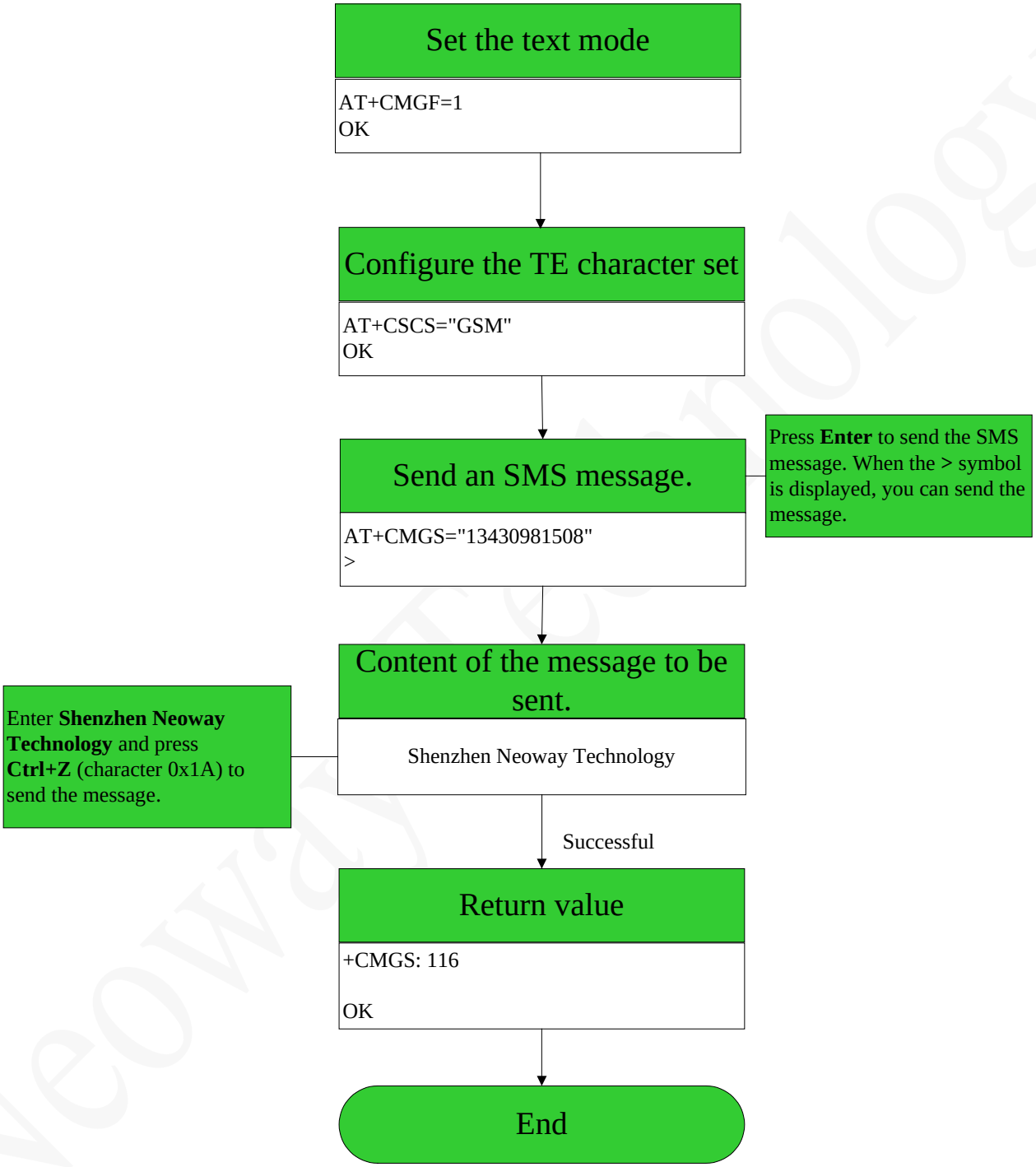
00680065006C006C006F: SMS message content

SMS message content: hello

The SMS message content starts from 0100, so the value of LENGTH in **AT+CMGS=LENGTH** is **23**.

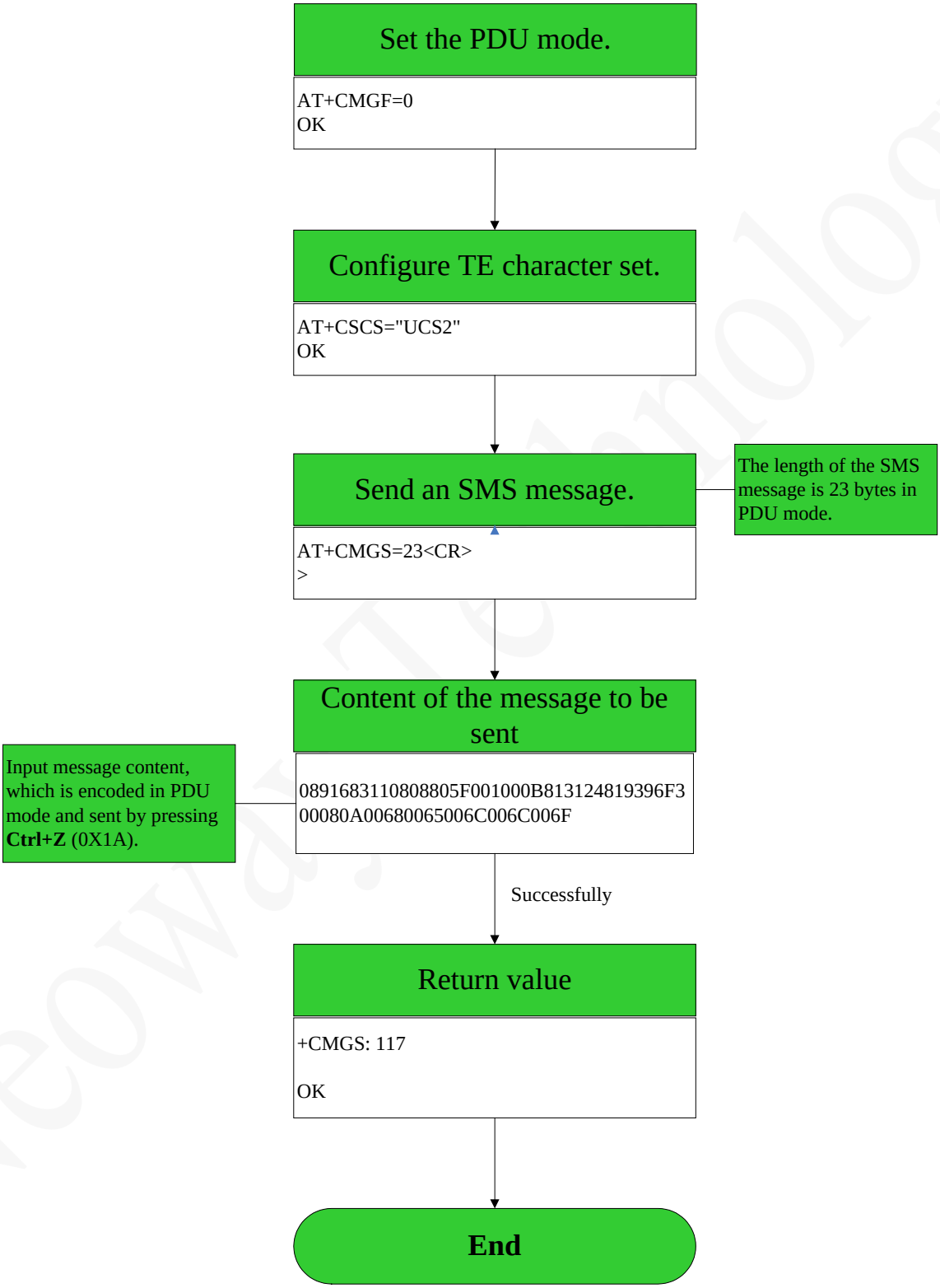
A.2 Flowchart of Sending Text SMS Messages (Through UART)

Figure A-1 Flowchart of sending text format SMS messages



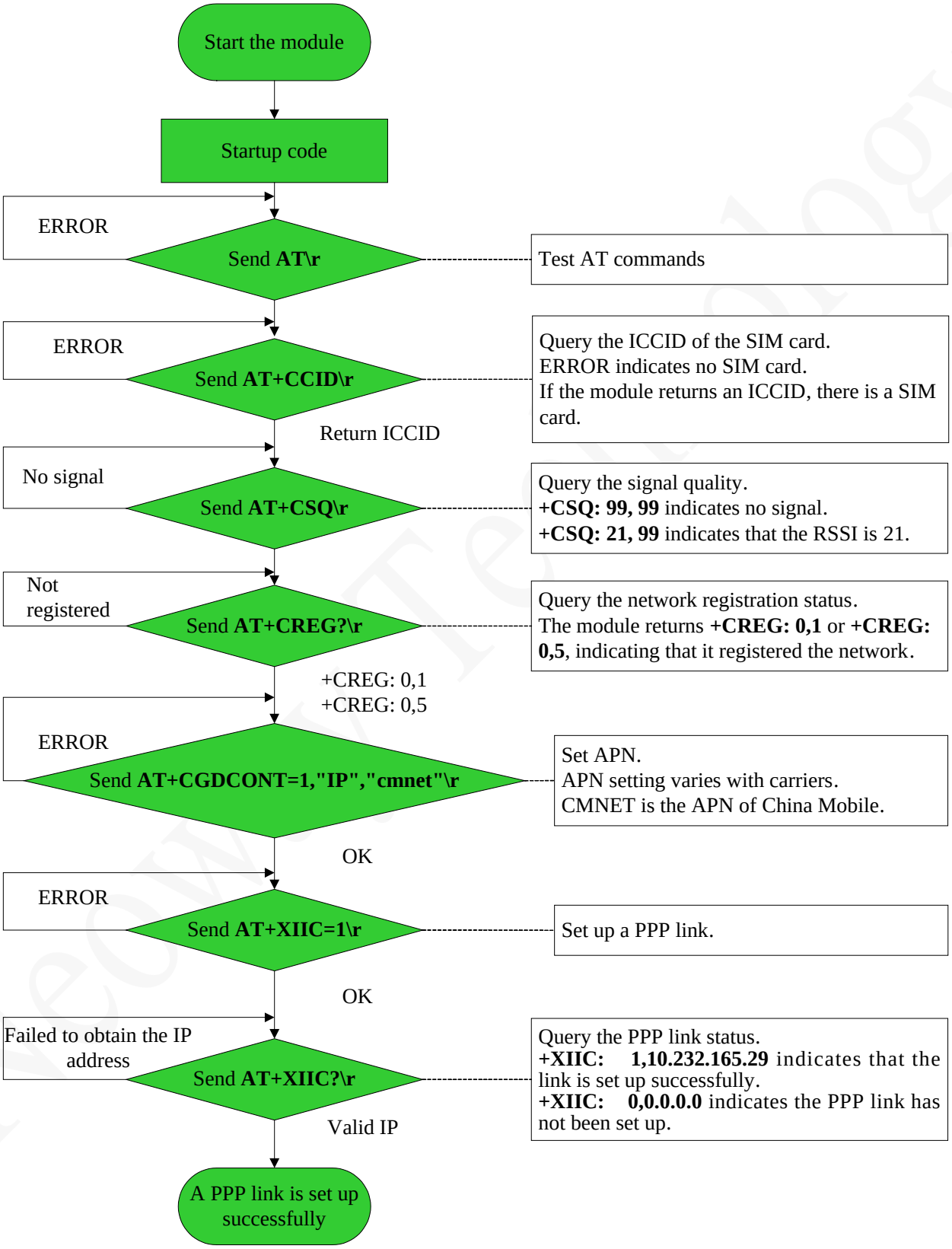
A.3 Flowchart of Sending PDU SMS Messages (Through UART)

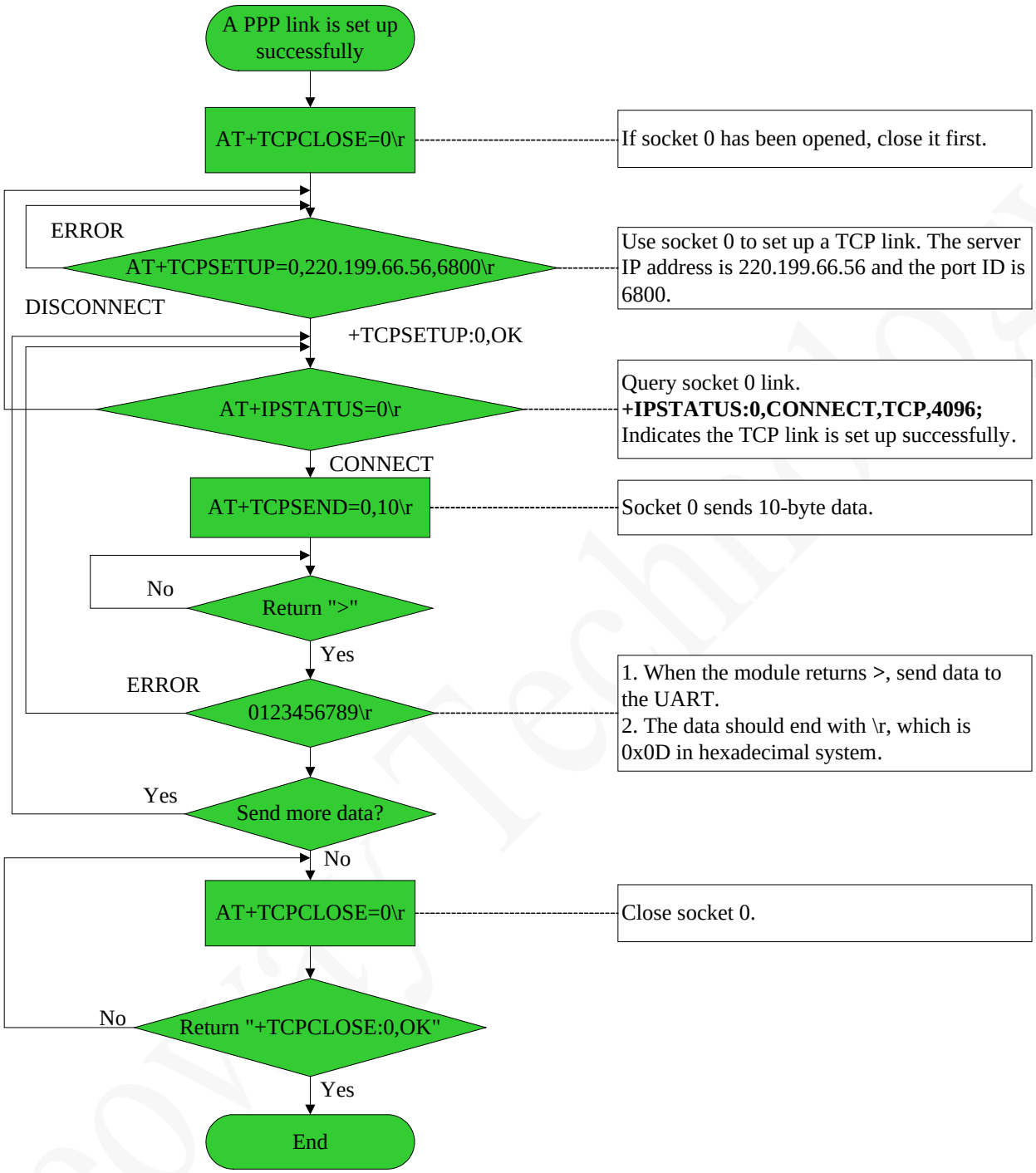
Figure A-2 Flowchart of Sending PDU SMS messages



A.4 Flowchart of AT Commands to Establish TCP Link

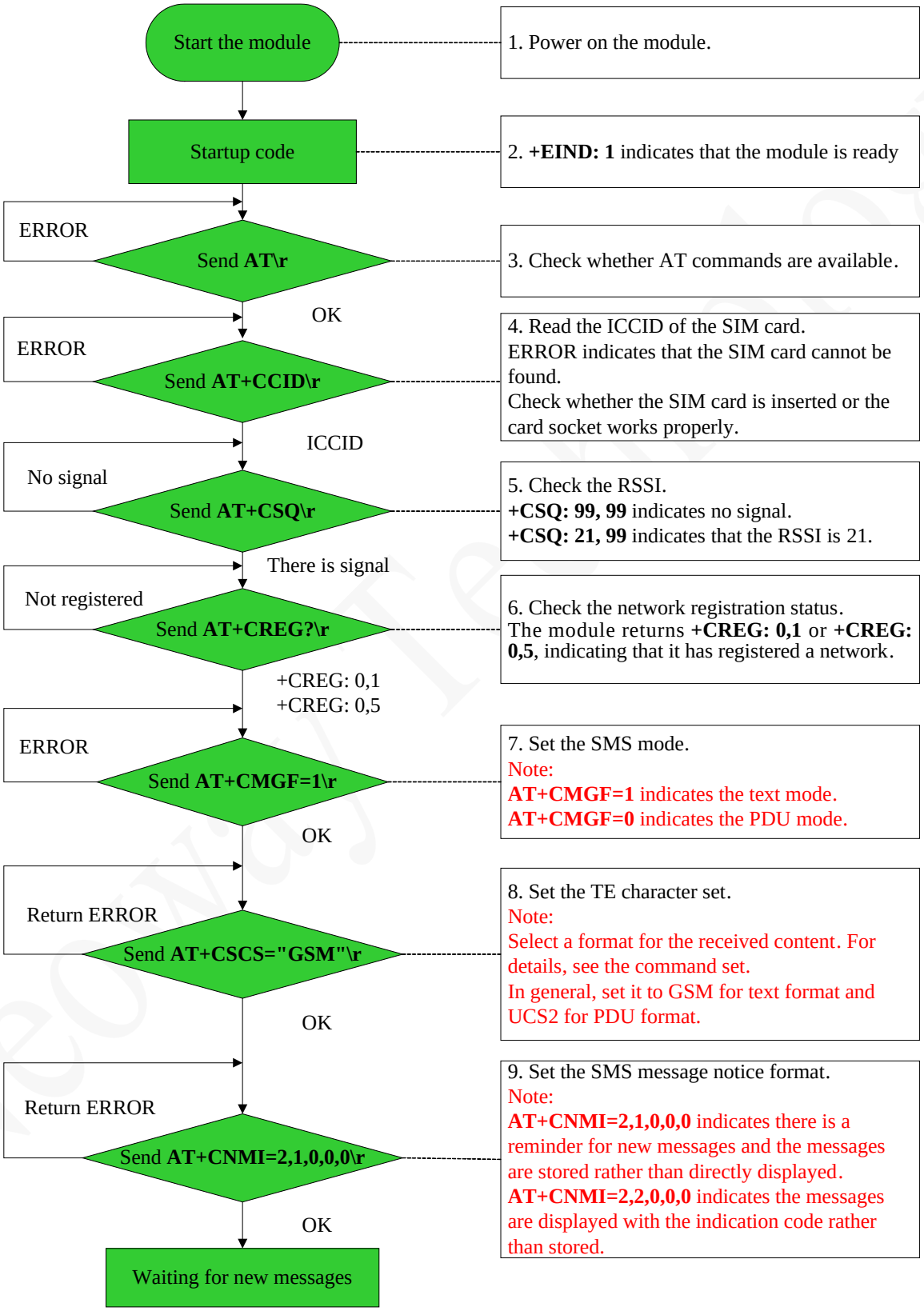
Figure A-3 Flowchart of using AT commands to establish TCP link

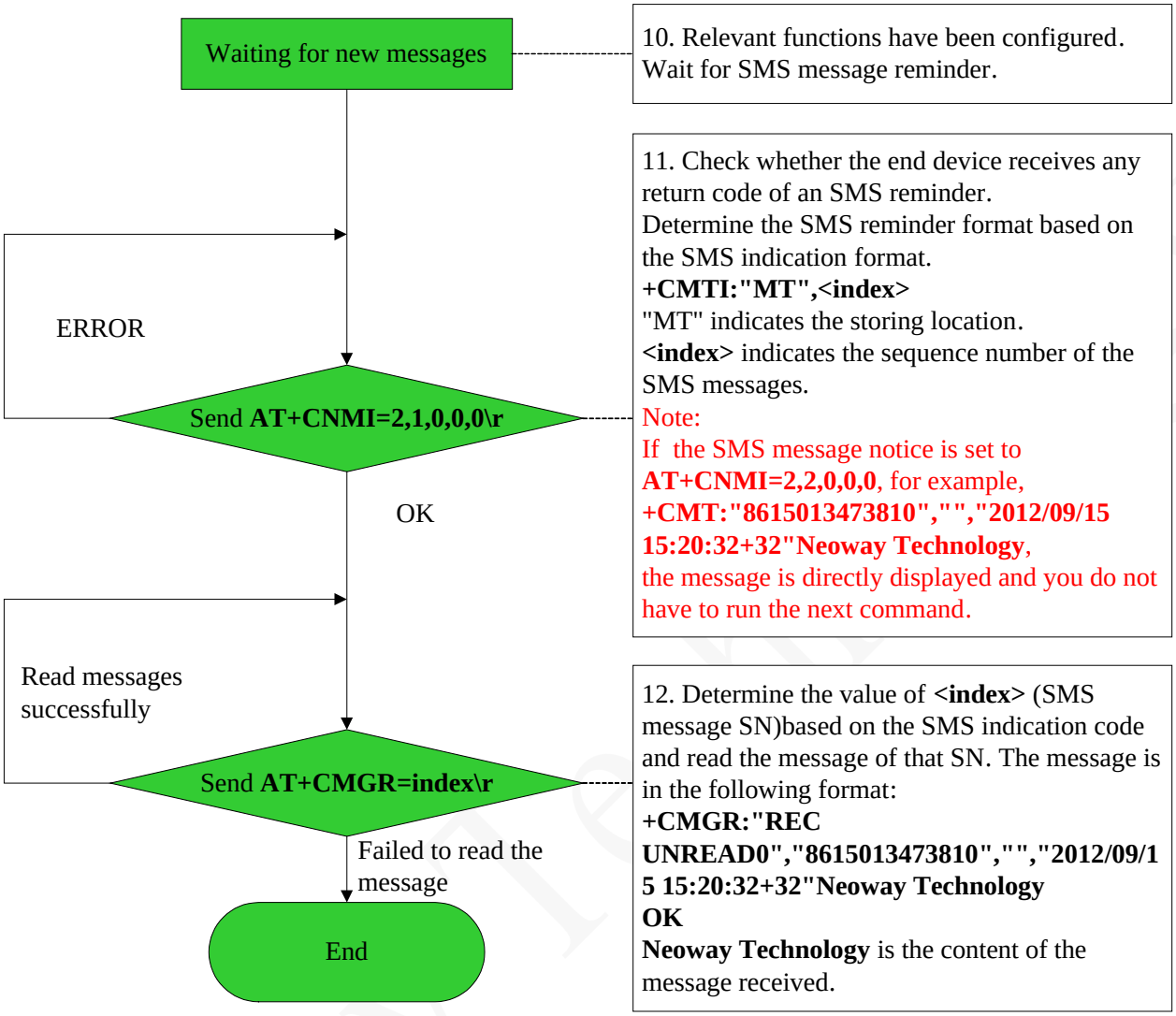



A PPP link is set up successfully
AT+TCPCLOSE=0\r
If socket 0 has been opened, close it first.
ERROR
AT+TCPSETUP=0,220.199.66.56,6800\r
Use socket 0 to set up a TCP link. The server IP address is 220.199.66.56 and the port ID is 6800.
DISCONNECT
+TCPSETUP:0,OK
AT+IPSTATUS=0\r
Query socket 0 link.
+IPSTATUS:0,CONNECT,TCP,4096;
Indicates the TCP link is set up successfully.
CONNECT
AT+TCPSEND=0,10\r
Socket 0 sends 10-byte data.
No
Return ">"
Yes
ERROR
0123456789\r
1. When the module returns >, send data to the UART.
2. The data should end with \r, which is 0x0D in hexadecimal system.
Yes
Send more data?
No
AT+TCPCLOSE=0\r
Close socket 0.
No
Return "+TCPCLOSE:0,OK"
Yes
End

A.5 Flowchart of Receiving SMS Messages

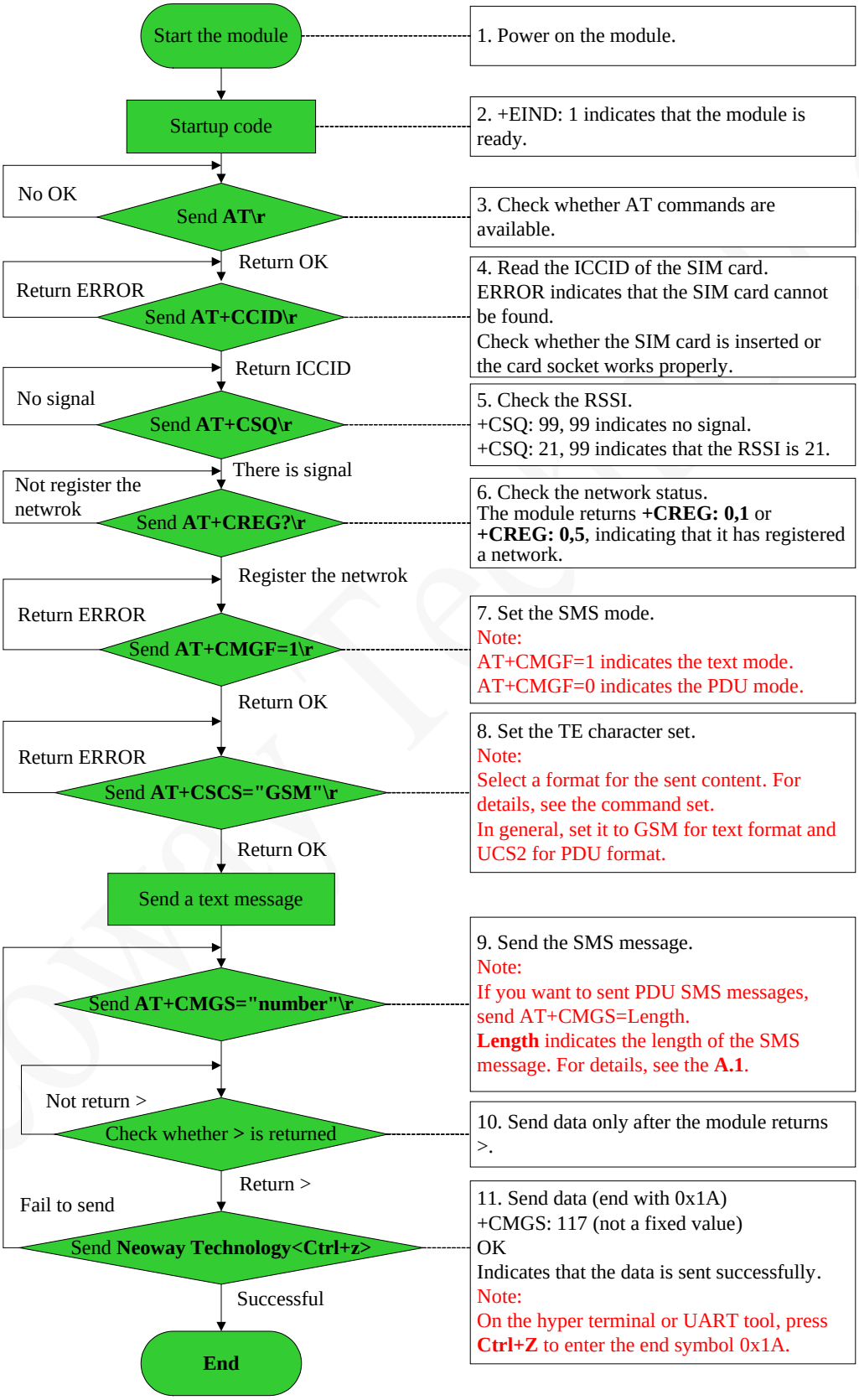
Figure A-4 Flowchart of receiving SMS messages




Waiting for new messages
10. Relevant functions have been configured. Wait for SMS message reminder.
ERROR
Send AT+CNMI=2,1,0,0,0\r
11. Check whether the end device receives any return code of an SMS reminder.
Determine the SMS reminder format based on the SMS indication format.
+CMTI:"MT",<index>
"MT" indicates the storing location.
<index> indicates the sequence number of the SMS messages.
Note:
If the SMS message notice is set to AT+CNMI=2,2,0,0,0, for example,
+CMT:"8615013473810","","2012/09/15 15:20:32+32"Neoway Technology,
the message is directly displayed and you do not have to run the next command.
OK
Read messages successfully
Send AT+CMGR=index\r
12. Determine the value of <index> (SMS message SN)based on the SMS indication code and read the message of that SN. The message is in the following format:
+CMGR:"REC UNREAD0","8615013473810","","2012/09/15 15:20:32+32"Neoway Technology
OK
Neoway Technology is the content of the message received.
Failed to read the message
End

A.6 Flowchart of Sending SMS Messages

Figure A-5 Flowchart of sending SMS messages



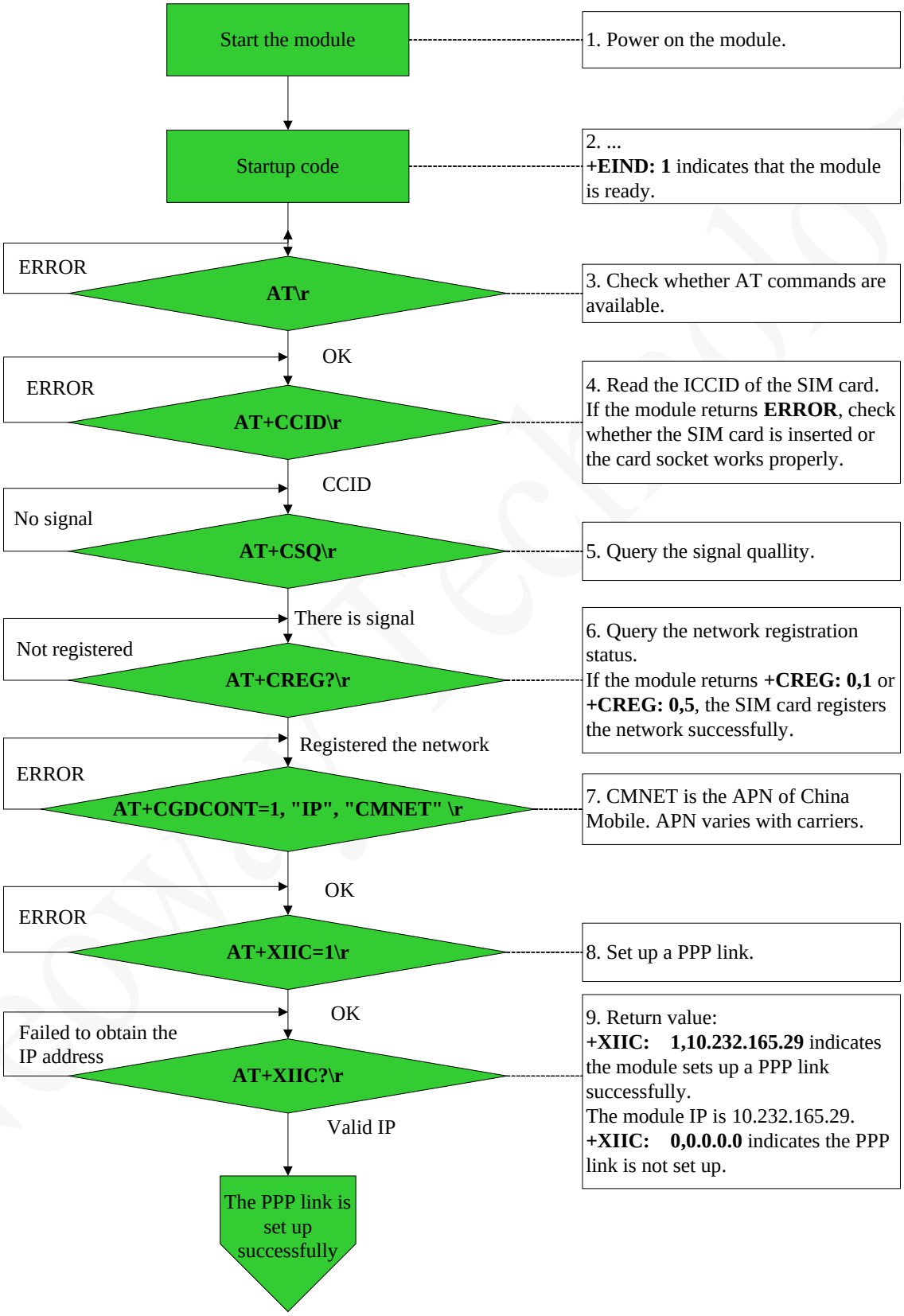
A.7 Common AT Commands for SMS TX/RX

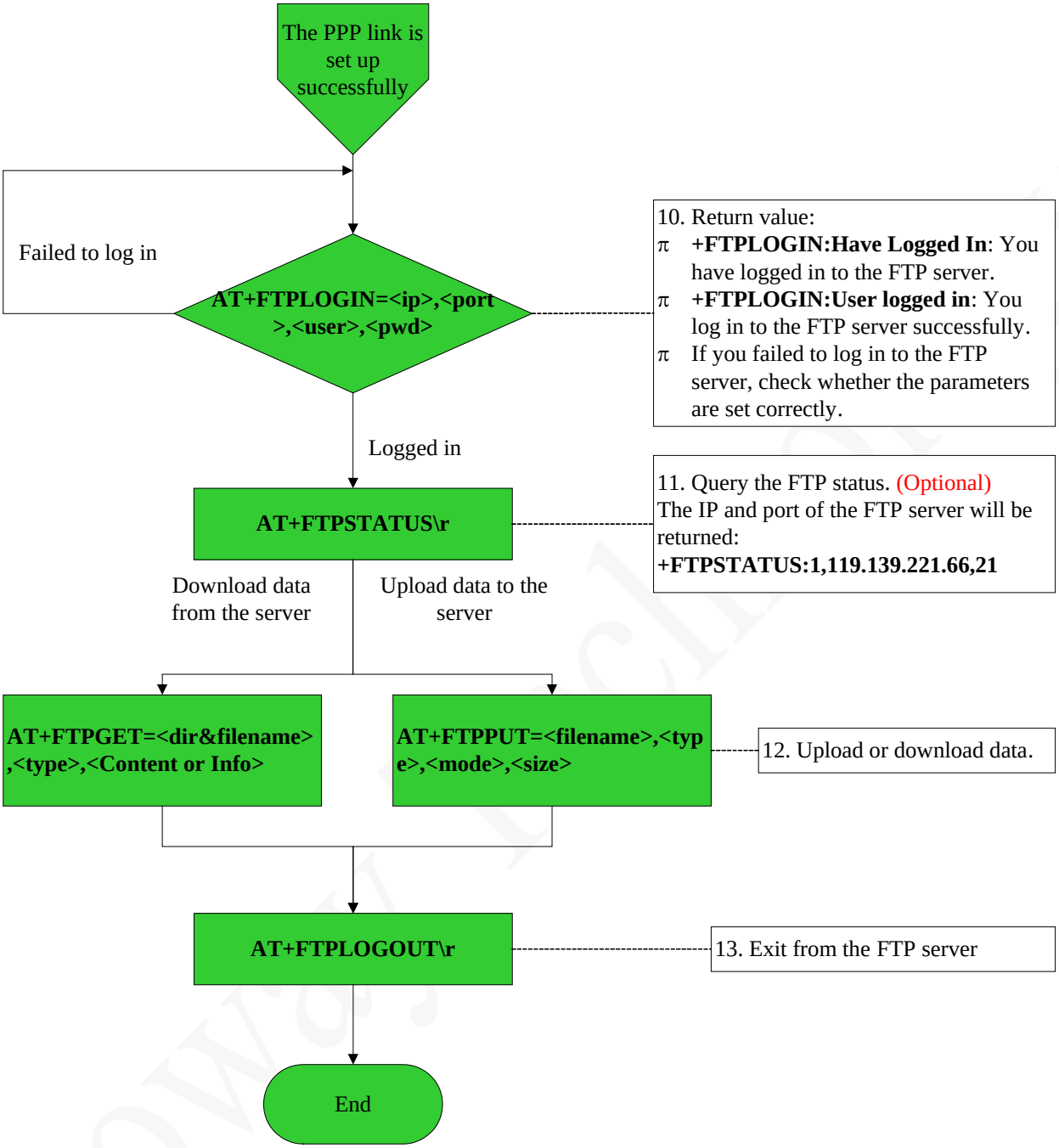
Function	Format	Example	Description
Set text mode	AT+CMGF=1	AT+CMGF=1 OK	AT commands to be set when sending SMS messages in text mode
To set the TE character set	AT+CSCS="GSM"	AT+CSCS="GSM" OK	
Set PDU mode	AT+CMGF=0	AT+CMGF=0 OK	AT commands to be set when sending SMS messages in PDU mode
Display TE in hexadecimal	AT+CSCS="UCS2"	AT+CSCS="UCS2" OK	
Send SMS messages.	AT+CMGS="Number"	AT+CMGS"13430981508" >Shenzhen +CMGS: 232 OK	Enter the AT+CMGS"13430981508" command and press **Enter** (\r). When > is displayed, enter the message content (Shenzhen) and press **Ctrl+Z** (character 0x1A) to sent the message.
Notice mode of new messages	AT+CNMI=2,1,0,0,0	AT+CNMI=2,1,0,0,0 (Received SMS message and message SN) +CMTI: "SM", 1	The default value of CNNI is **1,0,0,0,0**. The module can only store the SMS messages on the SIM card, so you must set the CNNI to 2,1,0,0,0 (new messages are stored on the SIM card rather than directly displayed) or 2,2,0,0,0 (new messages are directly displayed rather than stored on the SM card).
Read SMS messages	AT+CMGR=1	AT+CMGR=1 +CMGR:"REC UNREAD", "13430981508",""," 2012/09/08 16:30:08+32" Shenzhen Neoway Technology OK	

Read all SMS messages	AT+CMGL="ALL"	AT+CMGL ="ALL" List all messages	• If AT+CMGF=0, the command to read all SMS messages is **AT+CMGL =1**. • The unread SMS messages change to read messages after all messages are listed.
Delete SMS messages	AT+CMGD=n	AT+CMGD=1 OK	Delete SMS messages based on the sequence number.
Delete all messages.	AT+CMGD=0,4	AT+CMGD=0,4 OK	Delete SMS messages as required. For details, see the AT commands.
Query the number of SMS messages	AT+CPMS?	AT+CPMS? +CPMS: "SM", 1, 50, "SM_P", 1, 50, "SM_P", 1, 50 OK	1: Indicates the number of the messages. 50: indicates the number of messages that can be stored.

A.8 Flowchart of AT Commands To Log In to the FTP Server

Figure A-6 Flowchart of AT commands to log in to the FTP server




The PPP link is set up successfully
Failed to log in
AT+FTPLOGIN=<ip>,<port>,<user>,<pwd>
10. Return value:
π +FTPLOGIN:Have Logged In: You have logged in to the FTP server.
π +FTPLOGIN:User logged in: You log in to the FTP server successfully.
π If you failed to log in to the FTP server, check whether the parameters are set correctly.
Logged in
AT+FTPSTATUS\r
11. Query the FTP status. (Optional)
The IP and port of the FTP server will be returned:
+FTPSTATUS:1,119.139.221.66,21
Download data from the server
Upload data to the server
AT+FTPGET=<dir&filename>,<type>,<Content or Info>
AT+FTPPUT=<filename>,<type>,<mode>,<size>
12. Upload or download data.
AT+FTPLOGOUT\r
13. Exit from the FTP server
End