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Neo_M660A GPRS Module AT Command Set

Version 1.0

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Notice

This document provides guide for users to use the M660A.

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

The information in this document is subject to change without notice due to product version update or other reasons.

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Revision Record

Issue	Changes	Date
V1.0	Initial draft	2014-06-26

Contents

Boot LOG Instruction

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

MODEM:STARTUP

+PBREADY

	LOG	LOG Description
1	MODEM:STARTUP	Indicates that the module starts up successfully and can receive AT commands.
5	+PBREADY	SMS and phonebook are available.
Remarks		Users can determine whether the module starts up successfully or not by detecting " MODEM:STARTUP ".

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>+CGMI:<manufacturer><CR><LF> <CR><LF>OK<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>+CGMM:<model><CR><LF> <CR><LF>OK<CR><LF>
Example	AT+CGMM +CGMM:M660A 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>+CGMR:<version><CR><LF> <CR><LF>OK<CR><LF>
Example	AT+CGMR

	+CGMR:M660A_1128_LQS13001_V001 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>
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> • AT+CIMI?<CR>	
Parameter	N/A	
Return Value	<CR><LF><IMSI><CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>+CIMI: "IMSI"<CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF> Or <CR><LF>+CME ERROR: <err><CR><LF>	
Example	AT+CIMI 460022201575463	Query the IMSI. IMSI: 460022201575463

	OK	
	AT+CIMI? +CIMI: "460020188385503" OK	Query the IMSI. IMSI: 460020188385503
	AT+CIMI ERROR	No SIM card is installed, so the module returns **ERROR**.
	AT+CIMI? ERROR	No SIM card is installed, so the module returns **ERROR**.
	AT+CIMI? +CME ERROR: 10	After **AT+CMEE=1** is set, the module returns **+CME ERROR: 10** if no SIM card is installed.
Remarks	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.	

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>+CCID:<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	If no SIM card is installed, **ERROR**is returned.
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> • 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 Value	<CR><LF>+CPAS:<pas><CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>+CME ERROR:<err><CR><LF>	
Example	AT+CPAS +CPAS: 0 OK	Query the work status of the module. The module is ready to execute AT commands.
	AT+CPAS=? +CPAS: (0-5) OK	To query the value range of the module work status
	AT+CPAS +CME ERROR:<err>	Query the current status of the module. **+CME ERROR:<err>** is returned. This value is returned only after you set **AT+CMEE=1**.
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> • AT+CREG=?<CR>

Parameter	**<n>**: Specified whether to enable network registration unsolicited result codes. 0: Disable network registration unsolicited result codes (default setting). 1: Enable network registration unsolicited result codes `+CREG: <stat>`. 2: Enable network registration and location information (Cell ID, Local ID) unsolicited result code `+CREG: <stat>[,[<lac>],[<ci>],[<AcT>]]` **<stat>**: network status 0: Not registered, the module is not currently searching an operator to register to 1: Registered the home network 2: Not registered, but the module is currently trying to attach or searching an operator to register to 3: Registration denied 4. Unknown code 5: Registered, roaming **<lac>**: Two byte location area code in hexadecimal format, string type **<ci>**: four byte GERAN/UTRAN cell ID in hexadecimal format, string type **<Act>**: The access technology of the serving cell, integer type 0: GSM 2: UTRAN 3: GSM w/EGPRS	
Return Value	<CR><LF>+CREG:<n>,<stat>[,<lac>,<ci>[,<Act>]]<CR><LF> <CR><LF>OK<CR><LF> Or <CR><LF>ERROR<CR><LF> or <CR><LF>+CME ERROR:<err><CR><LF>	
Example	AT+CREG=1 OK	Enable network registration unsolicited codes.
	AT+CREG? +CREG: 0,1 OK	Query the network registration status of the module.
	AT+CREG=? +CREG: (0-2) OK	Query the value range of the network registration status parameter.
	AT+CMEE=1 OK AT+CREG=5 ERROR	Set **AT+CMEE=1** (or run **AT+CMEE** without parameter) after a SIM card is installed. Send the **AT+CREG=5** command and **ERROR** is returned.
	AT+CMEE=1	Set **AT+CMEE=1** after a SIM card is installed. Send the **AT+CREG=5**

	OK AT+CREG=5 +CME ERROR: 100	command and **ERROR** is returned.
Remarks	N/A	

2.3 GPRS Network Registration: +CGREG

Description	To control the presentation of an unsolicited result code of the module's GPRS network registration status
Format	• AT+CGREG=[<n>]<CR> • AT+CGREG?<CR> • AT+CGREG=?<CR>
Parameters	**<n>**: Specifies whether to enable network registration unsolicited result code 0: Disable network registration unsolicited result code (default) 1: Enable network registration unsolicited result code +CGREG: <stat> 2: Enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>[,<Act>]] **<stat>**: GPRS registration status, integer type 0: Not registered, the module is not currently searching an operator to register to 1: Registered the home network 2: Not registered, but the module is currently trying to attach or searching an operator to register to 3: Registration denied 4. Unknown code 5: Registered, roaming **<lac>**: Two byte location area code in hexadecimal format, string type **<ci>**: four byte GERAN/UTRAN cell ID in hexadecimal format, string type **<Act>**: The access technology of the serving cell, integer type 0: GSM 2: UTRAN 3: GSM w/EGPRS
Return Value	<CR><LF>+CGREG: <n>,<stat>[,<lac>,<ci>[,<Act>]]<CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF>

Example	AT+CGREG=1 OK AT+CGATT=0 OK +CGREG: 4	Enable network registration result code. Set GPRS detaching. The module returns unsolicited result code.
	AT+CGREG=2 OK AT+CGATT=1 +CGREG: 2, "286F", "00000FCA", 3 OK +CGREG: 1, "286F", "00000FCA", 3	Enable network registration and location information result code. Set GPRS attachment. The module returns unsolicited result code. The module returns **OK** after attaching GPRS successfully. The module returns unsolicited result code.
	AT+CGREG? +CGREG: 0,1 OK	Query the current GPRS network registration status. The network registration unsolicited result code is disabled.
	AT+CGREG? +CGREG: 1,1 OK	Query the current GPRS network registration status. The network registration unsolicited result code is enabled.
	AT+CGREG? +CGREG: 2,1,"286F","00000FCA",3 OK	Query the current GPRS network registration status. The network registration and location information unsolicited result code is enabled.
	AT+CGREG=3 ERROR	The set value exceeds the parameter range and the module returns **ERROR**.
	AT+CGREG=? +CGREG: (0-2) OK	Query the available parameter range.
Remarks	N/A	

2.4 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> • AT+CFUN=?<CR>	
Parameter	<fun>: 1: All functions (Default) 4: Turn off the RF transmit and receive circuit of the module (flight mode). 0: Turn off the radio and 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> Or <CR><LF>ERROR<CR><LF>	
Example	AT+CFUN=1 OK	Set the module to work with all functions.
	AT+CFUN=0 OK AT+CFUN=1 OK +EUSIM: 0 +STKPCI: 0,"D081D881030125008202818285118052A8611F57305E2600530049004D53618F0E0180621176848EAB4EFD8BA48BC18F0A02808D857EA753F77C3F8F0E0380621176847CBE54C163A883508F10048065E07EBF97F34E504FF14E5090E88F0E05800031003300394E9280547F518F0A068079FB52A87CBE54C18F0E078079FB52A84F1860E04E13533A8F0E088079FB52A875355B50554652A18F12098062117684005300049004D84254E1A53858F080A808D224FE1901A8F0A0B8062117684573076D88F0A41805E9475287BA174068F0A42804E0B8F7D8BBE7F6E"	Turn of the SIM power and turn on all functions again. The module will return the SIM care information.
	AT+CFUN? +CFUN: 1	Query the current functions. All functions are turned on.

	OK	
	AT+CFUN=? +CFUN: (0,1,4),(0,1) OK	Query the range of the parameter value.
	AT+CMEE=1 OK AT+CFUN ERROR	Set **AT+CMEE=1** after a SIM card is installed. Send the **AT+CFUN** command and **ERROR** is returned.
	AT+CMEE=1 OK AT+CFUN +CME ERROR: 100	No SIM card is installed and set **AT+CMEE=1**. Send the **AT+CFUN** command and **ERROR** is returned.
Remarks	The setting of this command is not saved after the module is powered off.	

2.5 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. (Default) 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	Enable the sleep mode of the module.
	AT+ENPWRSAVE? +ENPWRSAVE: 1 OK	Query the enabling status of the sleep mode of the module.
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 low 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.

2.6 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. A pair of quotation marks ("") is a must.	
Return Value	See the Example.	
Example	AT+CCLK="11/10/14,09:30:16" OK	Set the real-time clock of the module.
	AT+CCLK="11/10/14,09:30:" ERROR	Command format is incorrect.
	AT+CCLK? +CCLK: "11/10/14,09:32:04" OK	Query the setting of the real-time clock.
Remarks	The settings will not be saved after the module is powered off.	

2.7 Setting the Baudrate of the Module: +IPR

Description	To set the baudrate of the module	
Format	• AT+IPR=<baud rate><CR> • AT+IPR?<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	Set the baudrate of the module to 115200.
	AT+IPR=100 ERROR	Set the baudrate to 100 that is not a valid value. **ERROR** is returned.

	AT+IPR? +IPR: 115200 OK	Query the current baudrate of the module.
	AT+IPR=? +IPR: 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200, 230400, 460800, 921600 OK	Query the valid baudrate range of the module.
Remarks	• The default baudrate is 115200. • The settingsby this command will be saved after the module is powered off.	

2.8 Entering the PIN Codes: +CPIN

Description	To query the PIN status and enter the PIN codes	
Format	• AT+CPIN=<pin>[,<newpin>]<CR> • AT+CPIN=<PUK>,<PIN><CR> • AT+CPIN?<CR>	
Parameter	<pin>, <newpin>:string type with a pair of quotation marks ("") <PUK>: PUK code of the SIM card <PIN>: PIN code of the SIM card	
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	Query the PIN code status of the module.
	AT+CPIN? ERROR	No SIM card is installed.

	AT+CPIN? +CPIN: SIM PIN OK	PIN code is required.
	AT+CLCK="SC",1,"1234" OK MODEM:STARTUP AT+CPIN? +CPIN: SIM PIN OK AT+CPIN="1234" OK +PBREADY +EIND: 2 +EIND: 1	Restart the module after locking the SIM card. Enter the PIN code to unlock the SIM card, and the modules will return the following code: +PBREADY, +EIND: 2, +EIND: 1
	AT+CPIN="1245" ERROR	PIN code is incorrect.
	AT+CPIN="1234" OK	The input PIN code is correct.
	AT+CPIN? +CPIN: SIM PUK OK	PUK code is required.
	AT+CPIN="78357381","0000" OK	"78357381": Correct PUK code "0000": New PIN code
Remarks	• To enter PIN code, you must lock the current SIM card (running **AT+CLCK="SC",1,"1234"**) and then restart the module. • After correct PIN code is input, the module will return code indicating that the initialization is completed. AT+CPIN="1234" OK +STKPCI:	

	0,"D081B6810301250082028182850B80795E5DDE884C592957308F0A01808F7B677 E95EE50198F0A028077ED4FE17FA453D18F0A0380670065B063A883508F0A04804 E1A52A17CBE90098F10058065E07EBF97F34E504FF14E5090E88F0E068000310033 00394E9280547F518F0807808D224FE1901A8F0E088079FB52A84F1860E04E13533 A8F0E098079FB52A875355B50554652A18F120A80621176840053004 9004D84254E1 A53858F0E0B8000530049004D53614FE1606F" +EIND: 2 +EIND: 1 • If you enter wrong PIN code for three times, you must enter PUK to unlock.

2.9 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> • AT+CLCK=?<CR>
Parameter	<fac>: A pair of quotation marks is a must for the value. "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. A pair of quotation marks is a must for the value.

	<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	Query the network information related to the module.
	AT+CLCK="SC",1,"1234" OK	Lock the current SIM card. "1234" is the PIN code of current SIM card.
	AT+CLCK="SC",0,"1234" OK	Unlock the current SIM card. "1234" is the PIN code of current SIM card.
Remarks	The settings of this command take effect after the module is restarted.	

2.10 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> • AT+CPWD=?<CR>
Parameter	<fac>: A pair of quotation marks is a must for the value. "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. A pair of quotation marks is a must for the value. <newpwd>: New password or code, string type. A pair of quotation marks is a must for the value.	
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	Query the service range of the PIN password allowed by the module.
	AT+CPWD="SC","1234","0000" OK	Modify the PIN code of the current SIM card. "1234" is the old PIN code and "0000" is the new PIN code.
	AT+CPWD=SC,1234,0000 ERROR	The command format is incorrect. A pair of quotation marks ("") is required for each parameter.
Remarks	To modify the PIN code, you must lock the SIM card (running **AT+CLCK="SC",1,"1234"**).	

2.11 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	Execute the ERROR report command.
	AT+CEER +CEER: 16, CM_NORMAL_CALL_CLR OK	The module initializes a call and ends the call manually after the recipient rings.
	AT+CEER +CEER: 31, CM_NORMAL_UNSPECIFIED OK	The module initializes a call and ends the call automatically since the recipient does not answer the call.
	AT+CEER +CEER: 17, CM_USER_BUSY OK	The module initializes a call and the recipient refuses the call manually.
Remarks	N/A	

2.12 Setting Error Information: +CMEE

Description	To enable or disable the **+CME ERROR:<err>** result code	
Format	• AT+CMEE=[<n>]<CR> • AT+CMEE?<CR> • AT+CMEE=?<CR>	
Parameter	<n>: 0: Disable the **+CME ERROR:<err>** result code and display **ERROR**. (default) 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	Enable the result code in digit format.

	AT+CMEE? +CMEE: 1 OK	Query the status of the current result code.
	AT+CMEE=? +CMEE: (0-2) OK	Query the status range of error code.
Remarks	• The setting of the parameter in this command is not saved after the modules is powered off. • It is recommended that you set **AT+CMEE=2** during commissioning.	

2.13 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: Be 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. 6: Four indicator states: • If no SIM card is installed or the SIM card does not register network, the indicator blinks every one second and is on for 0.1 second. • If the SIM card registered network, the indicator blinks every three second and is on for 0.1 second. • If the GPRS data service is enabled, the indicator blinks every 125 ms and is on for 0.1 second. • The indicator is always on during a call.	
Return Value	See the Example.	
Example	AT+SIGNAL? +SIGNAL: 2	The current signal indicator status is 2.

	OK	
	AT+SIGNAL=3 OK	Set current signal indicator status to 3.
	AT+SIGNAL=7 ERROR	The parameter is set to an incorrect value.
	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 settingsby this command will be saved after the module is powered off.	

2.14 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>:value ranges from 0 to 2. <n2>:value ranges from 0 to 2.	
Return Value	See the Example.	
Example	AT+IFC=1, 1	Enable the software flow control function.
	AT+IFC=2, 2	Enable the hardware flow control function.
	AT+IFC=0, 0	Disable the flow control function.
	AT+IFC=0,1 ERROR	The parameter combination is not allowed. Only (0,0), (1,1), and (2,2) are allowed.
	AT+IFC=? +IFC: (0-2),(0-2) OK	Query the value ranges of flow control function.

	AT+IFC? +IFC: 0, 0 OK	Query the current status of 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.	

2.15 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 AT OK	Enable the terminal display function of the AT commands.
	ATE0 OK OK	Disable the terminal display function of the AT commands.
Remarks	• The settings by this command will not saved after the module is powered off. • The terminal display function is enabled by default. • If you enter the command mode after dialing up to connect with the network, terminal display is disabled automatically. • ATE is equal to ATE1.	

2.16 Setting the Code Result Suppression Mode: ATQ

Description	To set the mode whether to suppress the code result
Format	ATQ[<value>]<CR>
Parameter	<value>: 0, 1 0: Output the code result (default) 1: Suppress the code result
Return	See the Example.

Value		
Example	ATQ1AT+CSQ +CSQ: 31, 99	Set to code result suppress mode. (The module does not return OK after this command is executed successfully.) After the mode is set, the return value for the **AT+CSO** command does not contain the code result **OK**.
	ATQ0 OK AT OK	Set to the code result output mode. After the mode is set, the return value for the **AT** command contains the code result **OK**.
Remarks	• After you set to the code result suppression mode, the command will not output **OK** or **ERROR**. • The setting by this command cannot be saved after the module is powered off. The setting is valid only for the GSM commands and invalid for customized commands. • ATQ is equal to ATQ1.	

2.17 Setting the Response Format of the Device: ATV

Description	To set the response format of the device	
Format	ATV[<value>]<CR>	
Parameter	<value>: 0, 1 0: Set the response format to output with only some header, footer, and digit text. 1: Set the response format to output with all headers, footers, and detailed response text (default).	
Return Value	See the Example.	
Example	ATV1 OK AT+CSQ +CSQ: 31, 99 OK	Set the response format to output with all headers, footers, and detailed response text. After the format is set successfully, the module returns the following value after you execute **AT+CSQ**: +CSQ: 31, 99 OK
	ATV00 AT+CSQ+CSQ: 31, 99 0	Set the response format to output with only some header, footer, and digit text. The module returns **0** after the format is set successfully. After the format is set successfully, the module returns the following value after you execute **AT+CSQ**:

		+CSQ: 31, 99 0
Remarks	• ATV is equal to ATV1. • After you execute **ATV0**, the return value for a command in correct format is 0 (default setting is OK); 4 for command in incorrect format (default setting is ERROR). • The setting by this command will not be saved after the module is powered off. The setting is valid only for the GSM commands and invalid for customized commands.	

2.18 Resetting to the Default Setting: ATZ

Description	To reset the module to the default setting	
Format	ATZ[<value>]<CR>	
Parameter	<value>: 0, 1 You can use the command to reset the module to the default setting both with valid parameter values and without this parameter.	
Return Value	See the Example.	
Example	ATZ1 OK	Reset the module to the default setting.
	ATZ0 OK	Reset the module to the default setting.
Remarks	If you have set the module to the code result suppression mode (ATQ1), you can reset it to the default settings by executing this command.	

2.19 Saving Parameter Settings: AT&W

Description	To save parameter settings	
Format	AT&W<CR>	
Parameter	NULL	
Return Value	See the Example	
Example	AT+REMOTEAT? +REMOTEAT: 0 OK AT+REMOTEAT=1 OK AT&W OK	Query the current parameter value. The value is **0**. Set commands that support parameter saving. Save parameter settings and restart the

	AT+REMOTEAT? +REMOTEAT: 1 OK	module. Query the current parameter value. The value is **1**.
	AT&W0 OK	Save parameter settings. This command has the same function as **AT&W**.
Remarks	• The following commands support parameter saving: ATE, +CMEE, ATV, ATQ, +CSCS, +COPS, +CCWA, +CREG, +CLIP, +ENPWRSAVE, +DATAFORMAT, +TRANMODE, +RSMODE, +EXTRARING, +FCHW, +TTSFMT, +RINGOUT, +REMOTEAT, etc. • **AT&W0** is equal to **AT&W**. To restore to the default settings, you can execute **AT&F** or **ATZ**.	

2.20 Resetting the Module to Factory Settings: AT&F

Description	To reset the module to the factory settings	
Format	AT&F[<value>]<CR>	
Parameter	<value> 0: Reset the module to factory settings.	
Return Value	See the Example.	
Example	AT&F0 OK	Reset the module to factory settings.
	AT&F OK	Reset the module to factory settings.
Remarks	• If you have set the module to the code result suppression mode (ATQ1), you can reset it to factory settings by executing this command. • This command is similar to the ATZ command in function.	

2.21 Reading ADC Value: +READADC

Description	To read the value from pins corresponding to the three ADC channels	
Format	AT+READADC=<channel><CR>	
Parameter	<channel>: Integer, ranging from 0 to 2, which indicates three ADC channels	
Return Value	See the Example	
Example	AT+READADC=0 +READADC:0,53	Read the value from the pin corresponding to ADC 0.

	OK	
	AT+READADC=2 +READADC:2,3244 OK	Read the value from the pin corresponding to ADC 2.
	AT+READADC=3 ERROR	The parameter value is invalid.
Remarks	Refer to the pin description in hardware user guide.	

2.22 Jamming Detect: +JAMMINGDETECT

Description	To detect GSM jamming	
Format	• AT+JAMMINGDETECT=<mod1>,<mod2>[,<mod3>]<CR> • AT+JAMMINGDETECT?<CR>	
Parameter	<mod1>: Detection mode, ranging 1 to 2 1: Detection of all channels 2: Detection of part channels (based on the value of <mod3>) <mod2>: Strength of jamming to be detected, ranging from 1 to 3 1: High 2: Medium 3: Low If you set the strength of jamming to be detected to low, it easier to detect weak jamming. <mod3>: Channel selection, ranging from 1 to 2 1: 900/1800 channel 2: 850/1900 channel (This parameter is valid only when <mod1> is 2.	
Return Value	See the Example	
Example	AT+JAMMINGDETECT=1,1 OK AT+JAMMINGDETECT? OK	Set detection parameters and enable jamming detection. Query the detection. No jamming is detected.
	AT+JAMMINGDETECT=1,1 OK AT+JAMMINGDETECT? OK +JAMMING DETECKED	Detected jamming.
Remarks	Example shows combination of commands and the commands must be executed in	

	sequence.

2.23 Activating Multiplexing Mode: +CMUX

Description	To activate multiplexing mode	
Format	• AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]<CR> • AT+CMUX=?<CR>	
Parameters	**<mode>**: The mode of MUX that is enabled, integer type 0: Basic option (default value) 1: Advanced option (not supported currently) **<subnet>**: Subset of frame format, integer type 0: UIH frames used only (default value) 1: UI frames used only (not supported currently) **<port_speed>**: UART port rate, integer type 1: 9600bit/s 2: 19200bit/s 3: 38400bit/s 4: 57600bit/s 5: 115200bit/s (default value) 6: 230400bit/s **<N1>**: Maximum frame size. Integer type, ranging from 1 to 32768. The range of 1 to 1509 is supported currently. The default value is 31. If you select **Advanced option** for mode, the default value is 64. **<T1>**: Acknowledgement timer in unite of ten milliseconds, integer type, ranging from 1 to 255, where 10 is default (100 ms). **<N2>**: Maximum number of re-transmission, integer type, ranging from 1 to 100, where 3 is the default value. The range of 0 to 5 is supported currently. **<T2>**: response timer for the multiplexer control channel in units of ten milliseconds, integer type, ranging from 2 to 255, where 30 is default (300 ms) **<T1>**: Wake up response timer in seconds, integer type, ranging from 1 to 255, where 10 is default (10s) This parameter is not supported and the module returns 0 for it. **<k>**: window size, for **Advanced option** with Error-Recovery Mode, integer type, ranging from 1 to 7, where 2 is default This parameter is not supported and the module returns 0 for it.	
Return Value	<CR><LF>OK<CR><LF>	
Example	AT+CMUX=0 OK	Basic option. Other parameters are left out.
	AT+CMUX=2 ERROR	The set value exceeds the parameter range and the module returns **ERROR**.

	AT+CMUX=0,0,,512,254,5,255 OK	Mode: Basic option Subset: UIH Transmission rate: default value Max. frame size: 255 Acknowledgement timer: 2540 ms Max. number of retransmission: 5 Response timer: 2550 ms
	AT+CMUX=1,0,,512,254,5,255 ERROR	Advanced option, which is not supported The module returns **ERROR**.
	AT+CMUX=? +CMUX: (0),(0),(1-6),(16-1510),(1-255),(0-100),(2-255),(1-255),(1-7) OK	Query the available range of parameters.
	AT+CMUX? ERROR	The command format is incorrect. The module returns **ERROR**.
Remarks	• In accordance with the multiplexing protocol, two or more virtual channels are set up on one physical port. In general, three virtual channels are set up, among which one is used for dialing up to access the Internet, and two are used for AT command sending and receiving. • <T2> must be longer than <T1>. • It is recommended that you use AT+CMUX=0 to enable the multiplexing protocol control channel.	

3 Network Service Commands

3.1 Querying Signal Quality: +CSQ

<table>
<tr><td>Description</td><td colspan="2">To check the receiving signal strength indication (RSSI) and the bit error rate (BER) of the channel</td></tr>
<tr><td>Format</td><td colspan="2">• AT+CSQ<CR>
• AT+CSQ=?<CR></td></tr>
<tr><td>Parameter</td><td colspan="2">N/A</td></tr>
<tr><td>Return Value</td><td colspan="2"><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.
<table>
<tr><td></td><td>signal</td><td>rssi</td></tr>
<tr><td>0</td><td><4 or 99</td><td><-107 dBm or unknown</td></tr>
<tr><td>1</td><td><10</td><td><-93dBm</td></tr>
<tr><td>2</td><td><16</td><td><-71 dBm</td></tr>
<tr><td>3</td><td><22</td><td><-69dBm</td></tr>
<tr><td>4</td><td><28</td><td><-57dBm</td></tr>
<tr><td>5</td><td>>=28</td><td>>=-57 dBm</td></tr>
</table>
<ber>
<table>
<tr><td>0...7</td><td>Refer to the value of RXQUAL in the table of GSM 05.08 8.2.4.</td></tr>
<tr><td>99</td><td>Not known or not detectable</td></tr>
</table></td></tr>
<tr><td>Example</td><td>AT+CSQ
+CSQ: 1, 99

OK</td><td>Query the current signal strength of the module.</td></tr>
<tr><td></td><td>AT+CSQ=?
+CSQ: (0-31,99),(0-7,99)

OK</td><td>Query the range of the module signal strength.</td></tr>
<tr><td>Remarks</td><td colspan="2">N/A</td></tr>
</table>

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> • 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	Automatic network selection is enabled. Long alphanumeric mode.
	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.
	AT+COPS=? +COPS: (2,"ChinaUnicom","CU-GSM","46001",0), (3,"China Mobile","CMCC","46000",0),, (0-3),(0-2) OK	Query the range of network selection.
	AT+COPS=2 OK	Deregister the network.
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.	

3.3 Setting Band: +XBANDSEL

Description	To set band
Format	• AT+XBANDSEL=<band>[,<n>]<CR> • AT+XBANDSEL?<CR> • AT+XBANDSEL=?<CR>
Parameter	<band>: Band selection 850: 850M 900: 900M 1800: 1800M 1900: 1900M <n>: Set whether to support the band or not. Values can be **0** and **1**.

	0: not support 1: support When **<n>** is omitted, only the current <band> is supported.	
Return Value	See the Example	
Example	AT+XBANDSEL=900 OK	Supported band is set to 900M forcibly. 850M, 1800M, and 1900M are not supported.
	AT+XBANDSEL? +XBANDSEL:850 OK	Query the current band supported. Support 850M band.
	AT+XBANDSEL=900,1 OK AT+XBANDSEL=1800,1 OK AT+XBANDSEL=850,0 OK AT+XBANDSEL=1900,0 OK	Set supported band to 900M forcibly. Set supported band to 1800M forcibly. Set 850M to band not supported forcibly. Set 1900M to band not supported forcibly.
	AT+XBANDSEL? +XBANDSEL:900,1800 OK	Query the current band that is set. Support 900M and 1800M bands.
	AT+XBANDSEL? +XBANDSEL:No Band Support OK	Query the current band supported. No band is supported.
	AT+XBANDSEL=? +XBANDSEL:(850,900,1800,1900),(0,1) OK	Query the value range of parameters.
Remarks	• The settings by this command are saved after the module is powered off. By default all those four bands are supported. • After this command is executed, the module will deregister the network. Then the module need to register network again and you must set **AT+COPS=0,0**.It takes some time to set **AT+COPS=0,0**.	

3.4 Locking BCCH Channel: $MYBCCH

Description	To lock BCCH channel	
Format	• AT$MYBCCH=<mode>[,<bcch1>,<bcch2>,<bcch3>]<CR> • AT$MYBCCH?<CR> • AT$MYBCCH=?<CR>	
Parameter	<mode>: Integer. The settings of locked channel can be saved after the module is powered off only if you run **AT$MYBCCH=1,XX**. If the BCCH locked does not exist or its signal is weak, the module cannot register network. 0: Unlock 1: Lock the BCCH cell 2: List IDs of seven BCCH channels that have the strongest signals at current place. <bcch>: channel ID <num>: the number of BCCH channels in the BA list (7 at most) <mcc>: Mobile country code <mnc>: mobile network code <lac>: Location ID, four-byte characters in hexadecimal format <cell-id>: Cell ID, hexadecimal	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>$MYBCCH: +BA(num): <CR><LF><bcch1>,<mcc1>,<mnc1>,<lac1>,<cell-id1><CR><LF> <CR><LF><bcch2>,<mcc2>,<mnc2>,<lac2>,<cell-id2><CR><LF> <CR><LF><bcch3>,<mcc3>,<mnc3>,<lac3>,<cell-id3><CR><LF> ... <CR><LF>OK<CR><LF>	
	<CR><LF>$MYBCCH: <bcch1>,<mcc1>,<mnc1>,<lac1>,<cell-id1><CR><LF> <CR><LF>OK<CR><LF>	
	<CR><LF>$MYBCCH: UNLOCKED<CR><LF> <CR><LF>OK<CR><LF>	
	<CR><LF>ERROR<CR><LF>	
	<CR><LF>$MYBCCH: <mode list>,<bcch1>,…<bcch3><CR><LF> <CR><LF>OK<CR><LF>	
Example	AT$MYBCCH=2 $MYBCCH: +BA(7): 120,460,01,2543,A85D	List IDs of seven BCCH channels that have the strongest signals at current place.

	734,460,01,2543,AB12 712,460,01,2543,AFF4 715,460,01,2543,AB13 736,460,01,2543,AB14 115,460,01,2543,A85E 719,460,01,2543,B04F OK	
	AT$MYBCCH=? $MYBCCH: (0,1,2),120,734,712 OK	Query the value range of parameters in this command. Channels 120, 734, and 712 can be locked.
	AT$MYBCCH=1,120 OK	Lock channel 120.
	AT$MYBCCH=? $MYBCCH: (0,1,2),120 OK	Query the value range of parameters in this command. Channels 120 can be locked.
	AT$MYBCCH? $MYBCCH: 120,460,01,2543,A85D OK	Query channels that are locked currently.
	AT$MYBCCH=0 OK	Unlock
Remarks	• The settings by this command are saved after the module is powered off. • This command does not support the BCCH channels of 1900M.	

4 Calling Control Commands

4.1 Setting the Voice Volume: +CLVL

Description	To set the level of the voice 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. The default value is **3**.	
Return Value	See the Example.	
Example	AT+CLVL=4 OK	Set the level of the voice volume to 4.
	AT+CLVL? +CLVL:4 OK	Query the level of voice volume of the module.
	AT+CLVL=? +CLVL:0-6 OK	Query the valid voice volume level for the module.
Remarks	• The setting by this command is not saved after the module is powered off. • This command is used to set the volume level of the current voice ouput channe, which can be reciever, earphone, speaker.	

4.2 MIC Volume Control: +MICL

Description	To set the level of the MIC volume in a call, which is valid during a call	
Format	• AT+MICL=<level><CR> • AT+MICL?<CR> • AT+MICL=?<CR>	
Parameter	<level>: Integers, ranging from 0 to 6, the default value is 3.	
Return Value	See the Example.	
Example	AT+MICL=3 OK	Set the level of the MIC volume to 3.
	AT+MICL? +MICL:3	Query the current level of the MIC volume.

	OK	
	AT+MICL=? +MICL:0-6 OK	Query the value range of MIC volume.
Remarks	The settings by this command will not be saved after the module is powered off.	

4.3 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> • AT+CMUT=?<CR>	
Parameter	<n>: 0: Mute off (default value) 1: Mute on	
Return Value	See the Example.	
Example	AT+CMUT=0 OK	Disable the mute mode.
	AT+CMUT=1 ERROR	Enable mute control before a call.
	AT+CMUT? +CMUT: 0 OK	Query whetherthe mute mode is enabled.
	AT+CMUT=? +CMUT: (0,1) OK	Query the value range of mute mode function.
Remarks	This command is valid only during a call. **ERROR** will be returned in any other situations.	

4.4 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

	ATD15889758495; OK SPEECH ON ALERTING	Make a call to 15889758495.
	ATD13510823499 ALERTING CONNECT CONNECT 9600	Fax to 13510823499. No semicolon (;). Data can be sent after the module returns **CONNECT<n>**.
	ATD13510823499 ALERTING CONNECT RELEASE NO CARRIER RELEASE	Fax to 13510823499. No semicolon (;). The fax link is released since data is sent before the module returns **CONNECT<n>**.
	ATD>2; OK SPEECH ON ALERTING	Dial up the number listed as 2 in the phonebook.
Remarks	There are two types of calls: voice call, data and fax call. Semicolon is required for voice calls and not required for data or fax calls.	

4.5 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	
	ATA SPEECH ON OK	Answer the call (voice).
	ATA CONNECT CONNECT 9600	Answer the call (fax). Data can be sent after the module returns **CONNECT<n>**.
Remarks	N/A	

4.6 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	End the call connection.

	ATH RELEASE OK	Refuse the incoming call. Hang up the call.
Remarks	N/A	

4.7 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 The default value is **000**.	
Return Value	See the Example.	
Example	ATS0=1 OK	Set the auto-answer for one ring.
	ATS0? 001 OK	Query the status of the auto-answer function.
Remarks	If **ATS0=0**, the auto-answer function is not enabled; otherwise, the module will automatically answer the call after ringing for certain times.	

4.8 Caller ID: CLIP

Description	To enable or disable caller ID
Format	• AT+CLIP=<n><CR> • AT+CLIP?<CR> • AT+CLIP=?<CR>
Parameter	<n>: 0: disable caller ID 1: enable caller ID (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	Enable the caller ID function.
	RING +CLIP: "136********",161,"",0,"",0	An incoming call from 136********.
	AT+CLIP? +CLIP:1, 1(default) OK	Query the setting of the caller ID.
	AT+CLIP=? +CLIP: (0-1) OK	Query the value range of callee ID function.
Remarks	The callee ID function is enabled by default.	

4.9 Sending DTMF Tone: +VTS

Description	To send the DTMF tone Only for voice services in GSM	
Format	• AT+VTS=<DTMF><CR> • AT+VTS=?<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	Query the DTMF signal range of the module.
	AT+VTS=1 OK	Set during a call.
	AT+VTS=1 ERROR	Set not during a call.
Remarks	This command is valid during a call.	

4.10 Starting the DTMF Detection: +DTMFDETECT

Description	To start the DTMF detection	
Format	AT+DTMFDETECT=<value><CR>	
Parameter	<value>: Integer, ranging from **0** to **3**. 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	Set during a call. Start DTMF detection.
	AT+DTMFDETECT=1 +DTMF:DETECT START OK DTMF KEY(Rec): * DTMF KEY(Rec): # DTMF KEY(Rec): 8	Start the DTMF detection during a call. The module detects *, #, and 8 respectively.
	AT+ DTMFDETECT=0 +DTMF:DETECT STOP OK	Stop the DTMF detection during a call.
	AT+DTMFDETECT=2 +DTMF:DETECT ALLOWED OK	Start the DTMF detection before a call.
	AT+ DTMFDETECT=3 +DTMF:DETECT ALLOWED NOT OK	Stop the DTMF detection before a call.
Remarks	• After DTMF detection is started, the module will returns **DTMF KEY(Rec):<key>** if it detects DTMF signals from the other side. • The value of **<key>** can be 0-9, #, *, and A-D. Please refer to the parater of **AT+VTS**.	

4.11 Setting Echo Suppression Level: +HESL

Description	To set the level of the echo suppression level
Format	• AT+HESL=<value><CR>

	• AT+HESL?<CR> • AT+HESL=?<CR>	
Parameter	<value>: Integers, ranging from 0 to 6. The default value is 3.	
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 echo suppression parameter.
Remarks	The setting of this command is saved after the module is powered off.	

4.12 Setting the Sidetone Level of Voice Channel: +SSTL

Description	To set the sidetone level of voice channel	
Format	• AT+SSTL=<n>[,<level>]<CR> • AT+SSTL=?<CR>	
Parameter	<n>: Voice channel 0: Query (or set) the sidetone level of voice channel. <level>: sidetone level. Integer, ranging from **0** to **15**. The default value is **0**.	
Return Value	See the Example	
Example	AT+SSTL=0 +SSTL: 0,0 OK	Query the sidetone level of the voice channel.
	AT+SSTL=0,1 OK	Set the sidetone level of the voice channel to 1.
	AT+SSTL=? +SSTL: 0,(0-15) OK	Query the value range of parameters.

	AT+SSTL=0,16 ERROR	The parameter value set in the command is not supported. ERROR is returned.
Remarks	• The settings by this command will be saved after the module is powered off. The sidetone level of the voice channel is 0 by default (sidetone is disabled). • The lowest sidetone level is 0 and the highest sidetone is 15.	

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> • 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	Set SMS service to 1.
	AT+CSMS? +CSMS: 1, 1, 1, 1 OK	Query the current parameter value.
	AT+CSMS=? +CSMS: (0,1) OK	Query the value range of SMS service.
Remarks	The default settings of this command are **0, 1, 1, 1**.	

5.2 Setting Preferred SMS Storage: +CPMS

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

	<mem1>: "SM": SIM only "ME": ME only "SM_P": SIM prefer, try SIM first, then ME "ME_P": ME prefer, try ME first, then SIM "MT": any of storages associated with ME(SIM first)	
Return Value	<CR><LF>+CPMS:<used1>,<total1>,<used2>,<total2>,<used3>,<total3><CR><LF> <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	Set the SMS storage to "SM", that is, store SMS messages in SIM card.
	AT+CPMS? +CPMS:"SM_P", 50, 50, "SM_P", 50, 50, "SM_P", 50, 50 OK	Query the capacity of current SMS storage.
	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	Query the available storages.
Remarks	The settings by this command will be 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> • AT+CMGF=?<CR>
Parameter	<mode>:

	0: PDU mode 1: Text mode	
Return Value	See the Example.	
Example	AT+CMGF=1 OK	Set the SMS to text mode.
	AT+CMGF? +CMGF: 1 OK	Query the current mode of SMS message input.
	AT+CMGF=? +CMGF: (0,1) OK	Query the value range of SMS mode setting.
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> • 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	Set HEX character set.
	AT+CSCS?	Query the format of current character set.

	+CSCS:"HEX" OK	
	+CSCS:("IRA","GSM","HEX","PCCP437","8859-1", "UCS2", "UCS2_0X81") OK	Query the character set formats that the module supports. The list of the character set formats is returned.
Remarks	The default value is IRA.	

5.5 Setting the SMS Indication 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> • 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	Set the SMS message indication mode.
	AT+CNMI=? +CNMI: (0-3), (0-3), (0,2,3), (0,1), (0,1) OK	Query the value ranges of the paramters.
	AT+CNMI? +CNMI: 1, 1, 0, 0, 0 OK	Query the current setting of the parameters.
Remarks	• The default settings of this command are **0, 0, 0, 0,1**. • The recommended setting is **+CNMI: 2,1,0,0,0** (new messages are stored on SIM card rather than displayed directly) or **+CNMI:2,2,0,0,0** (new messages are displayed directly rather than stored on SIM card). SMS messages are classified into four classes based on the storing: Class 0: 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	
	AT+CMGR=10 ERROR	No SMS message 10 in the storage.
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 • 4: 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	Query in text format (AT+CMGF=1).
	AT+CMGL=? +CMGL: (0-4) OK	Query in PDU format (AT+CMGF=0).
	AT+CMGL=ALL ERROR	The parameter format in the command is incorrect. A pair of quotation marks ("") is required for the parameter.
	AT+CMGF=1 OK AT+CMGL=4 ERROR	The parameter should be set to **0**.
	AT+CMGF=0 OK AT+CMGL="ALL" ERROR	The parameter should be set to **1**.
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<CCtrl-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, → in the example. <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) → is the symbol after you press **Ctrl+Z**.
	AT+CMGS="15889758493"<CR> > This is the text→ ERROR	**AT+CMGF=1** might not be executed.
	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: +CMGW

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+CMGW=<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	<CR><LF>+CMGW:<index><CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF> or <CR><LF>+CMS ERROR:<err><CR><LF>	
Example	AT+CMGW=”091137880”<CR> >"This is the text"<Ctrl-Z> +CMGW: 15 OK	Text mode (+CMGF=1)
	AT+CMGW=091137880 > "This is the text"<Ctrl+Z> ERROR	A pair of quotation marks ("") is required for the number in text mode.
	AT+CMGW=31<CR> >0891683108705505F001000B813124248536F300081200400026002A535A53D153A653C1532052C7<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 ERROR	No SMS message is stored in memory 2 or the SMS message number in memory 2 is incorrect.
	AT+CMSS=6,"15889758495" +CMSS: 6 OK	Forward stored SMS message to 15889758495. 6 is the ID of the message stored successfully. Only message in text mode support this function.
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=0,3 OK	Delete all read, sent, and unsent SMS messages. Delete successfully
	AT+CMGD=? +CMGD: (1-50), (0-4) OK	Query the value ranges of parameters.
	AT+CMGD=5 ERROR	No message number 5 is to be deleted in storage.
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	Set an international SMSC number.
	AT+CSCA=8613800755500,145 ERROR	A pair of quotation marks ("") is required for SMSC number.
	AT+CSCA? +CSCA: "8613800755500", 145 OK	Query the SMSC number.
Remarks	• This command is only used to temporarily modify SMS center number. • The settings 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

<table>
<tr><td>Format</td><td colspan="2">• AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]<CR>
• AT+CSMP?<CR></td></tr>
<tr><td>Parameter</td><td colspan="2"><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>:
<table>
<tr><td>Value</td><td>Validity Period</td></tr>
<tr><td>0-143</td><td>(vp+1)*5mins, 12 hours at most</td></tr>
<tr><td>144-167</td><td>12hours +((vp–143)*30mins), 24 hours at most</td></tr>
<tr><td>168-196</td><td>(vp–166)*1day</td></tr>
<tr><td>197-255</td><td>(vp–192)*1week</td></tr>
</table>
<pid>: Integer-type TP-protocol-ID (default value: 0)
<dcs>: Encoding plan for integer-type cell broadcast data (default value: 0)</td></tr>
<tr><td>Return Value</td><td colspan="2">See the Example.</td></tr>
<tr><td rowspan="3">Example</td><td>AT+CSMP=17,167,0,0
OK</td><td>Text mode parameters:
17: 00010001 in binary system, indicating no status report
167: The validity period of the information is 24 hours.
0: Default value
0: Only messages in text format can be sent (8 indicates PDU messages).</td></tr>
<tr><td>AT+CSMP?
+CSMP: 0, 255, 0, 0

OK</td><td>Query the current settings of the text mode.</td></tr>
<tr><td>AT+CMGF=1
OK
AT+CSCS="UCS2"
OK
AT+CSMP=0,0,0,8
OK
AT+CMGS="13424258633"
> 4F60597D→
+CMGS: 162

OK</td><td>Send PDU messages in text mode.</td></tr>
</table>

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> • AT+CSDH=?<CR>	
Parameter	<show>: 0: not display (default value) 1: display	
Return Value	See the Example.	
Example	AT+CSDH=0 OK AT+CMGR=14 +CMGR: "RECREAD","+86134309815 04","","2013/07/17,14:49:00+50" 7B5675655FAE5C0F65F65019 OK	Set the header information to not display Read the 14th message.
	AT+CSDH=1 OK AT+CMGR=14 +CMGR: "REC READ","+86134309815 04","","2013/07/17,14:49:00+50",145,4,0,8,"+8613800755500",145,12 7B5675655FAE5C0F65F65019 OK	Set the detailed header information to display. Read the 14th message.
	AT+CSDH? +CSDH:0 OK	Query the current parameter setting of the command.
	AT+CSDH=? +CSDH: (0, 1) OK	Query the value range of current parameter in the command.

Remarks	This command is valid in text mode, which can be set by **AT+CMGF=1**.

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> • AT+CSCB?<CR> • AT+CSCB=?<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	Enable channel 2 and disable other channels.
	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	Query current CBM type channel. Channel 2 is enabled.
	AT+CSCB=? +CSCB: (0,1) OK	Query the value range of broadcast message status.
Remarks	N/A	

5.16 Save Settings: +CSAS

Description	To save current settings
Format	AT+CSAS[=<profile>]<CR> AT+CSAS=?<CR>
Parameter	<profile>: 0 to 3 0: Save settings (or omit the parameter) 1 to 3: No save settings
Return	See the Example.

Value		
Example	AT+CSAS OK	Save settings
	AT+CSAS=0 OK	Save settings
	AT+CSAS=1 OK	Do not save settings.
	AT+CSAS=? +CSAS: (0-3) OK	Query the valid parameter values for the command.
Remarks	You can save only the parameter setting of **AT+CSCA**, **AT+CSMP**, and **AT+CSCB** by executing this command.	

6 Phonebook Commands

6.1 Selecting Phonebook Storage: +CPBS

Description	To select phonebook storage	
Format	• AT+CPBS=<storage><CR> • AT+CPBS?<CR> • AT+CPBS=?<CR>	
Parameter	<storage>: A pair of quotation marks is a must for the values. "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	Set the phonebook storage to SIM card.
	AT+CPBS=SM ERROR	A pair of quotation marks is required for SM.
	AT+CPBS? +CPBS:"SM", 1, 250 OK	Query the current storage of the phonebook.
	AT+CPBS=? +CPBS: ("ME","SM","LD","MC","RC","FD","DC","ON") OK	Query the value range of phonebook storage.
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	Read the phone numbers from 1 to 3 in the phonebook.
	AT+CPBR=5 OK	No phone number with a sequence number 5 in the phonebook.
	AT+CPBR=? +CPBR: (1-50), 40, 14 OK	Query the range of sequence number, number length, and text length.
Remarks	N/A	

6.3 Querying the Phonebook: +CPBF

Description	To query the phonebook information	
Format	• AT+CPBF=<findtext><CR> • AT+CPBF=?<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	Query the phone number information of contact Comneon.
	AT+CPBF=Comneon ERROR	A pair of quotation marks is a must for the contact name.
	AT+CPBF=? +CPBF: 40, 14 OK	Query the length of phone number and text.
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> • AT+CPBW=?<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	Write a new contact to the phonebook. 1: Sequence number 091137880: Phone number 129: common number type Comneon: Contact name
	AT+CPBW=1 OK	Delete the record of number 1 from the phonebook.
	AT+CPBW=5,"091137880",129,Comneon ERROR	A pair of quotation marks is required for both phone number and name.
	AT+CPBW=? +CPBW: (1-50), 40, (129,145), 14 OK	Query the value range of the parameters in this command.
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	Query my number. "A": name of my number "10086": my number 129: common number type
	AT+CPBS="on" OK AT+CPBW=1,"13651445684",129,"t" OK AT+CNUM +CNUM: "t","13651445684",129,0,4 OK	Store my number.
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,"1324567890" ERROR	If the phone number that calls be will forward to has not registered, **ERROR** will be returned after running this command.
	AT+CCFC=0,3,"1324567890" OK AT+CCFC=0,1,"1324567890" OK	Register the phone number 1324567890 first. Set call forwarding to phone number.
	AT+CCFC=0,1, 1324567890 ERROR	A pair of quotation marks is lack.
	AT+CCFC=? +CCFC: (0-5) OK	Query the call forwarding conditions.
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> • 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	Set call waiting and enable +CCWA: *return code* display.
	+CCWA: "13006629752",161,1	A call is incoming after +CCWA: return code display is enabled.
	AT+CCWA=2,1 ERROR	Invalid value.
	AT+CCWA=? +CCWA: (0-1) OK	Query the value range of parameters.
	AT+CCWA? +CCWA: 0 OK	Query the current parameter value. The value is **0**.
Remarks	Call-related supplementary services are required.	

7.3 Call Holding and Multi-party Session: +CHLD

Description	To set call on hold and add it to a session
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 session 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	The number you dial is busy, please call later,
	AT+CHLD=? +CHLD:(0, 1, 1x, 2, 2x, 3, 4, 5) OK	Query the value range of parameters.
	+CCWA: "13006629752",161,1 AT+CHLD=2 OK AT+CHLD=3 OK	After **AT+CCWA** is executed, the module will indicate incoming call. Add a holding call to multi-party session.
	AT+CHLD=11 RELEASE OK	Release the communication with A.
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 session. • Calls can be held on, recovered, released and added to a session.	

8 GPRS Commands

8.1 Setting PDP Format: CGDCONT

Description	To set the packet data protocol (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	Set APN.
	AT+CGDCONT=1,IP,CMNET ERROR	The parameter format is incorrect (lack of quotation marks). **ERROR** is returned.
	AT+CGDCONT? +CGDCONT:1,"IP","internet","0.0.0.0",0,0 OK	Query the current parameter value.
	AT+CGDCONT=?	Query the value range of parameters.

	+CGDCONT:(1),"IP",,,(0),(0) OK	
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	<CR><LF>+CUSD: <m><CR><LF>	
Example	AT+CUSD=1,"*100#",15 OK +CUSD:1,"0031795D798F4E0B8F7D000A00325F694FE18D3A5361000A0033665A95F465B095FB000A003480A1796867E58BE2000A003586816BD2000A003675377F5153CB5F008F665E26597953BB65C56E38000A00378BDD8D3967E58BE2000A00387FFB9875", 72	The operator supports this data service.
	AT+CUSD=1,"*121#",15 OK +CUSD: 4	The operator does not support this data service. The module returns **+CUSD: 4**.

	AT+CUSD=? +CUSD: (0-2) OK	Query the value range of parameters.
	AT+CUSD? +CUSD: 0 OK	Query the current parameter value.
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	+++	Used in external protocol stacks. No return value
	+++ OK	Return value in the transparent TCP/UDP transmission
	+++ OK	Return value in the server transparent transmission
	+++ OK	Return value in the CSD
Remarks	• This command can be used in the transparent transmission of external/internal protocol stack and CSD function. • 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	**CONNECT** is returned in TCP/UDP transparent transmission mode and TCP server transparent transmission mode.
	ATO OK	**OK** is returned after the mode is switched to data mode successfully in external protocol dialing.
	ATO CONNECT 9600	**CONNECT 9600** is returned after the module is switched to data mode successfully during the operation of CSD function.
	ATO ERROR	**ERROR** is returned because no transparent transmission link is set up or no external protocol is used for dial-up internet access.
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. • Commands mode is switched to data mode during the operation of CSD function.	

8.5 Setting GPRS Attach and Detach: +CGATT

Description	To set GPRS attach and detach	
Format	AT+CGATT=<state><CR> AT+CGATT?<CR> AT+CGATT=?<CR>	
Parameter	<state>: 0, 1 0: indicates detach 1: indicates attach	
Return Value	See the Example.	
Example	AT+CGATT=1 OK	GPRS attach is set successfully.
	AT+CGATT=0 OK	GPRS detach is set successfully.
	AT+CGATT=0 GPRS DISCONNECTION OK	**GPRS DISCONNECTION** is returned if you run this command after PPP link is set up (**AT+XIIC=1**).
	AT+CGATT=0 ERROR	No SIM card is installed, so the module returns **ERROR**.
	AT+CGATT?	Query the GPRS status.

	+CGATT: 0 OK	
	AT+CGATT=? +CGATT:(0,1) OK	Query the valid parameter values for the command.
Remarks	• By default, the module can automatically perform GPRS attach. • Ensure that the GPRS attach is set before the PPP connection is set up. • It is recommended that you add the **AT+CGATT?** command to the process to query the GPRS status. If the module returns **1**, you can set up PPP connection directly; otherwise, you need to set GPRS attch manually by executing the command **AT+CGATT=1**.	

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	Set GPRS APN to **CMNET** and leave user account and password blank.
	AT+NETAPN=CMNET,, ERROR	**ERROR** is returned because the parameter format is incorrect. A pair of quotation marks is required for each parameter.
	AT+NETAPN? +NETAPN:"","",""" OK	Query the current settings of APN parameter.
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=1 OK GPRS DISCONNECTION	**GPRS DISCONNECTION** is returned because no SIM card is installed or network abnormality occurs.

	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**.
	GPRS DISCONNECTION	PPP link is disconnected.
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 link: +TCPSETUP

Description	To set up a TCP link	
Format	AT+TCPSETUP=<n>,<ip>,<port><CR>	
Parameter	<n>: Socket 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 socket 0.
	AT+TCPSETUP=0,neowayjsr.oicp.net,60010 OK +TCPSETUP:0,OK	The connection to **neowayjsr.oicp.net,60010** is set up on socket 0 successfully.
	+TCPCLOSE:0,Link Closed	The link is closed.
	AT+TCPSETUP=1,192.168.20.6,7000 OK +TCPSETUP:0,FAIL	Failed to set up the connection to 192.168.20.6,7000 on socket 1. The server is probably not started, the IP address is incorrect, or the SIM card is out of credit.
	AT+TCPSETUP=0,neowayjsr.oicp.net,60010 +TCPSETUP:0,FAIL	A TCP/UDP link has been set up on socket 0.
	AT+TCPSETUP=5,192.168.20.6,7000 +TCPSETUP:ERROR	The socket number is incorrect.

	AT+TCPSETUP=0.58.60.184.213.10012 +TCPSETUP:ERROR	The punctuations in the command are incorrect.
	AT+TCPSET=0,58.60.184.213,10012 ERROR	The AT command is not complete.
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>: Socket number, ranging from 0 to 4. A TCP link is established on the socket. <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 socket 0.
	AT+TCPSEND=0,1024 > +TCPSEND:ERROR	Network congestion occurs when 1024-byte data is sent. Only some data is sent successfully.
	AT+TCPSEND=0,10 > +TCPSEND:0,OPERATION EXPIRED	After you input the data sending command and > is returned, no more data is entered in one minute. Then the expiration information is displayed.
	AT+TCPSEND=0,1 +TCPSEND:SOCKET ID OPEN FAILED	One-byte data fails to be sent on socket 0 because the link is not established.
	AT+TCPSEND=0,4097 +TCPSEND:DATA LENGTH ERROR	4097-byte data fails to be sent on socket 0 because data length exceeds the limit.
	AT+TCPSEND=0 > OK +TCPSEND:0,21	21-byte data is successfully sent through socket 0. The command ends with \r if no data length is contained. The data length should not exceed 4096 bytes.
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>:Socket 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 socket 0. The data is **1234567890**.
	+TCPRECV: 0,10,31323334353637383930	10-byte of data is received on socket 0. The data is 31323334353637383930 in ASCII format.
Remarks	N/A	

9.6 Closing TCP link: +TCPCLOSE

Description	To close a TCP link	
Format	AT+TCPCLOSE=<n><CR>	
Parameter	<n>:Socket number, ranging from 0 to 4	
Return Value	See the Example.	
Example	AT+TCPCLOSE=1 +TCPCLOSE:1,OK	Close the TCP link. The TCP link on socket 1 is closed successfully.
	AT+TCPCLOSE=5 +TCPCLOSE:ERROR	Socket number error
	N/A +TCPCLOSE:0,Link Closed	The TCP link is closed. The server sends TCP link closing command or the network encounters abnormality or weak signals.
Remarks	N/A	

9.7 Setting Up UDP link: +UDPSETUP

Description	To set up a UDP link	
Format	AT+UDPSETUP=<n>,<ip>,<port><CR>	
Parameter	<n>:Socket number, ranging from 0 to 4 <ip>: Destination IP address, in **xx.xx.xx.xx** format or domain name format (www.*XXXX*.com) <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 socket 1.
	AT+UDPSETUP=0,neowayjsr.oicp.net,60010 OK +UDPSETUP:0,OK	The connection to **neowayjsr.oicp.net,60010** is set up on socket 0 successfully.
	AT+UDPSETUP=0,58.60.184.213,11008 +UDPSETUP:0,FAIL	A TCP/UDP link has been set up on socket 0.
	AT+UDPSETUP=1,192.168.20.6,7000 OK +UDPSETUP:0,FAIL	Failed to set up the connection to 192.168.20.6,7000 on socket 1 because socket 0 is unavailable.
	AT+UDPSETUP=5,192.168.20.6,6800 +UDPSETUP:ERROR	The format or the AT command is incorrect or the socket number is incorrect.
	AT+UDPSETUP=0.58.60.184.213.10012 +UDPSETUP:ERROR	The punctuations in the command are incorrect.
	AT+UDPSET=0,58.60.184.213,10012 ERROR	The AT command is not complete.
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>:Socket number, ranging from **0** to **4**. A UDP link is established on the socket. <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 socket 0. Then send the characters to be sent 50 ms to 100 ms after the module returns >. The data is sent successfully.
	AT+UDPSEND=0,1024 > +UDPSEND:ERROR	Network congestion occurs when 1024-byte data is sent. Only some data is sent successfully.
	AT+UDPSEND=0,1025 +UDPSEND:DATA LENGTH ERROR	1025-byte data fails to be sent on socket 0 because data length exceeds the limit.
	AT+UDPSEND=0 > OK +UDPSEND:0,21	21-byte data is successfully sent through socket 0. The command ends with \r if no data length is contained. The data length should not exceed 4096 bytes.
	AT+UDPSEND=0,10 > +UDPSEND:0,OPERATION EXPIRED	After you input the data sending command and > is returned, no more data is entered in one minute. Then the expiration information is displayed.
Remarks	• Ensure that the UDP link has been set up before sending UDP 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.	

9.9 Receiving UDP Data: +UDPRECV

Description	To receive UDP data
Format	+UDPRECV:<n>,<length>,<data><CR>
Parameter	<n>:Socket 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	See the Example.

Value		
Example	+UDPRECV: 0,10,1234567890	10-byte data is successfully received on socket 0. The data is 1234567890.
	+UDPRECV: 0,10,31323334353637383930	10-byte of data is received on socket 0. The data is 31323334353637383930 in ASCII format.
Remarks	N/A	

9.10 Closing UDP link: +UDPCLOSE

Description	To close the UDP link	
Format	AT+UDPCLOSE=<n><CR>	
Parameter	<n>:Socket number, ranging from 0 to 4	
Return Value	If the value of **<n>** is illegal, the module returns: **+UDPCLOSE: ERROR**. Otherwise, the module returns **+UDPCLOSE:<n>,OK**.	
Example	AT+UDPCLOSE=1 +UDPCLOSE:1,OK	The TCP link on socket 1 is closed successfully.
	AT+UDPCLOSE=5 +UDPCLOSE:ERROR	Socket 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>: Socket 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>:Socket 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:<CONNECT or DISCONNECT>[,<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 TCP or UDP link is set up on socket 1.
	AT+IPSTATU ERROR	The AT command is not complete.
	AT+IPSTATUS=5 ERROR	The socket number in the command is incorrect.
	AT+IPSTATUS +IPSTATUS:CONNECT,TCP,4096	A TCP link in transparent transmission mode has been set up. The available buffer is 4096 bytes.
	AT+IPSTATUS +IPSTATUS:CONNECT,UDP,4096	A UDP link in transparent transmission mode has been set up. The available buffer is 4096 bytes.
	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>:Socket 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 socket <acked_recv>: Data acknowledged by the receiver +TCPACK:<n>,< DISCONNECT > No connection is set up on this socket. +TCPACK:NO TCP LINK A UDP link has been set up on this socket. • AT+TCPACK<CR> (Transparent transmission) +TCPACK:<data_sent>,<acked_recv> < data_sent >:Data transparently transmitted through this socket 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 from socket 0 and the receiver acknowledged 20-byte data.
	AT+TCPACK=0 + TCPACK:0,128,120	128-byte data has been transmitted from socket 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 link is set up on link 2.
	AT+TCPACK=5 ERROR	The socket number in the command is incorrect.
	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 +TCPRECV: 0,10,31323334353637383930	Set the hexadecimal ASCII code format to receive data.
	AT+ASCII=1 OK	Set the char type to receive data.

	+TCPRECV: 0,10,1234567890	
	AT+ASCII? +ASCII: 0 OK	Query the current data type used for data receiving.
Remarks	• The received data is displayed in char type by default. • The setting by this command is not saved after the module is powered off.	

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. （default value） <m>: Received data type 0: Hexadecimal ASCII code 1: Char type (default value)	
Return Value	See the Example.	
Example	AT+DATAFORMAT=0,0 OK AT+,TCPSEND=0,5 > OK +TCPSEND:0,5 +TCPRECV: 0,5,6162636465	Set the data transmitting and receiving in hexadecimal ASCII code format.
	AT+DATAFORMAT=1,0 OK AT+TCPSEND=0,10 > OK +TCPSEND:0,10 +TCPRECV: 0,10,31323334353637383930	Data is transmitted in char type and received in hexadecimal ASCII format.

	AT+DATAFORMAT? +DATAFORMAT: 1,1 OK	Query the current data type used for data RX/TX.
Remarks	• The data is transmitted/received in char type by default. • The setting is not saved after the module is powered off.	

9.15 Setting Data Receiving Mode: +TRANMODE

Description	To set the TCP/UDP data receiving type	
Format	• AT+TRANMODE=<mode><CR> • AT+TRANMODE=?<CR>	
Parameter	<mode>: 0: Original data without header, that is, transparent receiving mode 1: Data with header, that is, non-transparent receiving mode (default)	
Return Value	See the Example.	
Example	AT+TRANMODE=1 OK	Set the receiving mode with data header The received data is in the following format: +TCPRECV:0,10,1234567890
	AT+TRANMODE? +DATA RECEIVE MODE: 1 OK	Query the current TCP/UDP data receiving mode.
	AT+TRANMODE=0 OK	Set the receiving mode without data header The received data is in the following format: 1234567890
Remarks	The setting is not saved after the module is powered off.	

9.16 Setting Local TCP Port: +TCPLPORT

Description	To set the local TCP port
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 socket 0 to **6800**.
	AT+TCPLPORT=0,0 OK	The local port ID of socket 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.	

9.17 Setting Local UDP Port: +UDPLPORT

Description	To set the local UDP port	
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 socket 0 to 6800.
	AT+UDPLPORT=0,0 OK	The local port ID of socket 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.	

9.18 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

	The default value is **10** (s).	
Return Value	+SSTP ERROR: INVALID VALUE (The parameter value exceeds its range.) OK	
Example	AT+SSTP? +SSTP: 10 OK	Query the current timeout period.
	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.
	AT+SSTP=31 +SSTP ERROR: INVALID VALUE	The set value of the parameter exceeds its range.
Remarks	• The setting by this command is not saved after the module is powered off. • This command is used to set the timeout period of TCP/UDP link setup.	

9.19 Setting Up TCP Transparent Transmision Connection: +TCPTRANS

Description	To set up TCP transparent transmission connection	
Format	AT+TCPTRANS=<ip>,<port><CR>	
Parameter	<ip>: Destination IP address, in xx.xx.xx.xx format or domain name format (www.*XXXXXX*.com) <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.
	AT+TCPTRANS=neowayjsr.oicp.net,60010 OK +TCPTRANS:OK	A TCP transparent transmission link is set up by using domain name successfully.
	AT+TCPTRANS=220.199.66.56, +TCPTRANS:ERROR	The command is in wrong format.
	AT+TCPTRANS=220.199.66.56,6800	Failed to set up a TCP transparent

	OK +TCPTRANS:FAIL	transmission link.
	AT+TCPTRANS=220.199.66.56,6800 ERROR	**ERROR** is returned after the command is executed because a transparent transmission (TCP, UDP, TCP server) link has been set up.
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. • TCP data can be transparently transmitted after the TCP link is set up successfully and **+TCPTRANS:OK** is returned.	

9.20 Setting Up UDP Transparent Transmission Connection: +UDPTRANS

Description	To transparently transmit UDP data	
Format	AT+UDPTRANS=<ip>,<port><CR>	
Parameter	<ip>: Destination IP address, in xx.xx.xx.xx format or in domain name format (www.*XXXXX*.com). <port>: Destination port ID in decimal ASCII code	
Return Value	See the Example.	
Example	AT+UDPTRANS =220.199.66.56,6800 OK +UDPTRANS:OK	A UDP transparent transmission link is set up successfully.
	AT+UDPTRANS=neowayjsr.oicp.net,60010 OK +UDPTRANS:OK	A UDP transparent transmission link is set up by using domain name successfully.
	AT+UDPTRANS=220.199.66.56, +UDPTRANS:ERROR	The command format is incorrect.
	AT+UDPTRANS=220.199.66.56,6800 OK +UDPTRANS:FAIL	Failed to set up a UDP transparent transmission link.
	AT+UDPTRANS=220.199.66.56,6800 ERROR	**ERROR** is returned after the command is executed because a transparent transmission (TCP, UDP, TCP server)

		link has been set up.
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. • UDP data can be transparently transmitted after the UDP link is set up successfully and **+UDPTRANS:OK** is returned.	

9.21 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 ERROR	No TCP/UDP transparent transmission link is set up.
	AT+TRANSCLOSE +TRANSCLOSE:1,OK Quit Transparent Success!!!	A UDP transparent transmission link is closed successfully.
	+TCPTRANS:Link Closed Quit Transparent Success!!!	The TCP transparent transmission link is closed by the server or because of network abnormality.
	+UDPTRANS:Link Closed Quit Transparent Success!!!	The UDP transparent transmission link is closed by the server or because of network abnormality.
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.
	AT+DNS="neowayjsr.oicp.net" OK +DNS:219.133.101.207 +DNS:OK	Query the IP address of neowayjsr.oicp.net, and the module returns the IP address 219.133.101.207.
	AT+DNS=www.china.com ERROR	The command format is incorrect. A pair of quotation marks ("") is required for the parameter.
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. • **+FTPLOGIN:GPRS DISCONNECTION**: The user logged in to the FTP servr before a PPP link is set up.	
Example	At+FTPLOGIN=219.134.179.52,21,user1,pwd2009 OK +FTPLOGIN:User logged in	**user1** logs in to the server 219.134.179.52 through port 21 successfully. And the password for **user1** is **pwd2009**.
	AT+FTPLOGIN=58.60.184.213,21,neoway,neoway OK +Connection timed out - Auto closed link to server! +FTPLOGIN:Error	**neoway** fails to log in to the FTP server because the connection times out.
	AT+FTPLOGIN=58.60.184.210,21,neowayftp,neowayftp OK +CME ERROR: OTHER ERROR +FTPLOGIN:Error	IP is set incorrectly.

	AT+FTPLOGIN=58.60.184.213,21,neowayftp ,neowayftp OK +FTP:Server Control Link Disconnect +FTPLOGIN:Error	Fail to log in to the FTP server.
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
	AT+FTPLOGOUT +CME ERROR: INVALID SOCKET ID ERROR	Log out of the FTP server because the FTP server is offline.
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>[,<size>]<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 <size>: Specifies where file data starts. This parameter is valid only when **<content or info>** is 1. 0 (or blank): Obtain all data of the file. Other values: Smaller than the data length of the file.	
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**. • **+FTPGET:OK.partial length is <n>**: The module reads the data of <n> byte successfully. • **+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. • **+FTP:Create data link Error**: The data link fails to set up and it will automatically connect when downloading the data again. • **+FTPGET:SIZE Error**: The value of **<size>** is greater than the data length of the file.	
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 -rw-rw-rw- 1 user group 10 Jan 15 15:01 test.txt +FTP:Server Data Link Disconnect +FTPGET:OK.total length is 446	Obtain information in the root directory.
	AT+FTPGET=test.txt,1,2 +FTPGET:65,-rw-rw-rw- 1 user group 10 Jan 15 15:01 test.txt	Obtain the information about **test.txt**.

	+FTP:Server Data Link Disconnect +FTPGET:OK.total length is 65	
	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**.
	AT+FTPGET=hellotest.txt,1,1,1000 +FTPGET:24,01234567890123456789end! +FTPGET:OK.partial length is 24 +FTP:Server Data Link Disconnect	Obtain file content starting from the 1000th byte. The length of **hellotest.txt** is 1024 bytes.
	AT+FTPGET=Test\hello.txt,1,1 +FTPGET:10,1234567890 +FTPGET:OK.total length is 10 +FTP:Server Data Link Disconnect	Obtain the information in the **hello.text** file in the **Test** folder.
	AT+FTPGET=\TEST\test\zhang\pv.txt,1,1 +FTP:Create data link Error	Fail to set up data link.
	AT+FTPGET=TEST\test\zhang\pv.txt,1,1,1024 +FTPGET:SIZE Error	The value of <size> exceeds its range.
Remarks	• There is an 8-second delay from the last frame data to **+FTPGET:OK.total length is <n>**toensurethe reliability of data transmission.Do not perform next FTP operation until **+FTPGET:OK.total length is <n>** is displayed. • This command supports data download from cascading directories.	

11.4 Uploading Data to 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

<table>
<tr><td></td><td colspan="2"><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 exceed 1024.</td></tr>
<tr><td>Return Value</td><td colspan="2">• +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.</td></tr>
<tr><td rowspan="7">Example</td><td>AT+FTPPUT=test.txt,1,1,1024
>
+FTPPUT:OK,1024</td><td>Upload the text.txt file, which is 1024 bytes. The file is transferred in ASCII and the operated in STOR.</td></tr>
<tr><td>AT+FTPPUT=t.txt,1,1,1
+FTP:Create data link Error</td><td>Upload the file again after deleting it.
An error is returned for the first time.</td></tr>
<tr><td>AT+FTPPUT=test.txt,1,2,1024
>
+FTPPUT:OK,1024</td><td>Upload the text.txt file, which is 1024 bytes. The file is transferred in ASCII and the operated in APPE.</td></tr>
<tr><td>AT+FTPPUT=tt.txt,1,1,1024
>
+FTPPUT:OPERATION EXPIRED</td><td>After you input the uploading command and > is returned, no more data is entered in one minute. Then the expiration information is displayed.</td></tr>
<tr><td>AT+FTPPUT=Test\test.txt,1,2,1024
>
+FTPPUT:OK,1024</td><td>Upload the test.txt file, which is 1024 bytes (to the Test folder in the root directory of the FTP server). The file is transferred in ASCII mode and operated in APPE.</td></tr>
<tr><td>AT+FTPPUT=test.txt,1,3,0
+FTPPUT:Delete File OK</td><td>Delete the test.txt file.</td></tr>
<tr><td>AT+FTPPUT=FTP\1024.txt,1,1,1024
>
+FTPPUT:Send Fail</td><td>No FTP folder under the FTP server root directory.
Data uploading fails.</td></tr>
</table>

	AT+FTPPUT=zhang\1024.txt,1,3 +FTPPUT:MODE Error	Command format is incorrect. **<size>** is not set.
Remarks	Data can be uploaded to cascading directories.	

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	Query the FTP link status. The module is successfully connected to the FTP server. The IP address of the FTP server is 119.139.221.66 and the port is 21.
	AT+FTPSTATUS +FTPSTATUS:0,0.0.0.0,21	The FTP link has not been set up.
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 or the client disconnects the link.

	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>	
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 are 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>:Socket 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	Socket 1 receives 10-byte data in char format from the client.

	+TCPRECV(S):0,10,30313233343536373839	Socket 0 receives 10-byte data in hexadecimal ASSCII format from the client.
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 socket 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.
	AT+TCPSENDS=0 > OK +TCPSENDS:0,21	21-byte data is successfully sent through socket 0. The command ends with \r if no data length is contained. The data length should not exceed 4096 bytes.
	AT+TCPSENDS=0,1024 > +TCPSENDS:ERROR	The module (server) sends TCP data and encounters data congestion.
	AT+TCPSENDS=0,10 +TCPSENDS:0 is not link AT+TCPSENDS=0 +TCPSENDS:0 is not link	The module (server) fails to set up link to socket 0.
	AT+TCPSENDS=0,5 >	After you input the sending command and > is returned, no more data is entered in one minute. Then the expiration information is

	+TCPSENDS:0,OPERATION EXPIRED	displayed.
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>	
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.
	AT+CLIENTSTATUS +CLIENTSTATUS:DISCONNECT,TCP,4096	No TCP transparent transmission link is set up. The available buffer is 4096.
	AT+CLIENTSTATUS=1 +CLIENTSTATUS:1,DISCONNECT,TCP,1024	No TCP link is set up on socket 1. The available buffer is 1024 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	Send the command to obtain the local IP address. The local IP address is 119.139.220.13.
	AT+GETIP ERROR	PDP is not inactivated.
Remarks	N/A	

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

Description	To set 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	Listening port ID: 6800 The listening function of the server in transparent transmission mode is started.
	AT+TCPSRVTRANS=6800 +TCPSRVTRANS:bind error	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.
	AT+TCPSRVTRANS=5000 PLEASE BUILD PPP LINK FIRST!	PDP is not inactivated.
	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>	
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 on the 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=url, ERROR	The AT command is not complete.
	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	To 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 Date:Thu, 28 Nov 2013 03:06:57 GMT Connection:close Content-Length: 13842	Set the destination path. The default port is 80. Set up an HTTP link. GET request Receive the response from the HTTP server.

	/*neoway homepage, html Format, 13842 bytes*/ …….. /* neoway 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 +HTTPRECV: HTTP/1.1 200 OK Cache-Control:private, max-age=0	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 the HTTP server.

	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 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 +HTTPCLOSE:HTTP Link Closed	Set URL The HTTP link is set up through port 80. Send 76-byte user-defined packets Receive the response from the HTTP server. 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	Report the data received from the HTTP link.
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, a pair of quotation marks ("") is a must. <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	Log in to the server smtp.163.com through port 25.
	AT+SMTPSRV="smtp.qq.com",25 OK	Log in to the server smtp.qq.com through port 25 through port 25.
	AT+SMTPSRV=smtp.qq.com,25 +SMTPSRV:Error	The command format is incorrect. A pair of quotation marks ("") is required for each parameter.
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, a pair of quotation marks ("") is a must. <password>: Password for the account, a pair of quotation marks ("") is a must.	
Return Value	See the Example.	
Example	AT+SMTPAUTH="zhangyanun101","167483" OK	Log in to the email zhangyanun101 with the password 167483.
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, a pair of quotation marks ("") is a must.

	< name >: The name of the sender (user-defined), a pair of quotation marks ("") is a must.	
Return Value	See the Example.	
Example	AT+SMTPFROM="zhangyanun101@163.com","Damon" OK	Send emails to zhangyanun101@163.com with the sender name Damon.
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, a pair of quotation marks ("") is a must. < receiver_name >: The name of the receiver, a pair of quotation marks ("") is a must.	
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.
	AT+SMTPRCPT=2,1,"571783427@qq.com",yl +SMTPRCPT:Error	A pair of quotation marks are required for the recipient and name.

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. A pair of quotation marks ("") is a must.	
Return Value	See the Example.	
Example	AT+SMTPSUB="flower" OK	The email subject is **flower**.
Remarks	The email subject must be in character string type.	

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. A pair of quotation marks ("") is a must.	
Return Value	See the Example.	
Example	AT+SMTPBODY="rose is better" OK	Email content: rose is better.
Remarks	The email content must be in character string type.	

14.7 Sending an Email: +SMTPSEND

Description	To send an email
Format	AT+SMTPSEND<CR>
Parameter	N/A
Return	See the Example.

Value		
Example	AT+SMTPSEND OK	The email is sent successfully.
	AT+SMTPSEND +SMTPSEND:ERROR	The email fails to be sent because bad network connection, incorrect SMTP server setting.
	AT+SMTPSEND +CME ERROR: OTHER ERROR +SMTPSEND:ERROR	**OTHER ERROR** is returned if an email is sent without email server settings.
	AT+SMTPSEND +SMTPSEND:ERROR +SMTP CLOSE_2: SMTP Link Closed	An email is sent without email body or subject settings.
Remarks	• There is a delay to return OK. • The email service must support SMTP function.	

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	Connect to 163 server.
	AT+POPSRV="pop.qq.com",110 OK	Connect to Tencent server.
	AT+POPSRV="pop.qq.com",112 OK	The target port number is incorrect.
	+POP:POP Link Closed	The link to the server is closed.
Remarks	Some email servers supports POP but do not support 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. A pair of quotation marks ("") is a must. <password>: Password for the account. A pair of quotation marks ("") is a must.	
Return Value	See the Example.	
Example	AT+POPAUTH="zhangyanun101","167483" OK	Log in to the emailbox successfully.
	AT+POPAUTH="547618730","tanyanjiao82564988" +POPSTAT:Error +POP:POP Link Closed	The account or the password for the account is incorrect.
	AT+POPAUTH="547618730","tanyanjiao82564982"	The POP session is end.

	+POPSTAT:Error	
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	Query the email box status. Receive 15 bytes, 36 emails in total from the server and the email size is 327235 bytes.
	AT+POPSTAT +POPSTAT:Error	The POP session is end.
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	Query the information of email 1. Receive 12 bytes. One email in total, 7743 in size.

		There is line space after **+OK 1 7743**.
	AT+POPLIST +POPRECV:344 +OK 36 327235 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 .	Obtain the sizes of all emails

		There is line space after the period (.).
	AT+POPLIST +POPRECV:5 +OK +POPRECV:228 1 730 2 938 3 1137 4 1185 5 1205 6 1215 7 1221 8 1223 9 825 10 428 11 427 12 824 13 825 14 826 15 326 16 826 17 763 18 827 19 798 20 327 21 426 22 826 23 826 24 326 25 2091 26 2090 27 2087 28 2087 .	Obtain the sizes of all emails.
	AT+POPLIST +POPLIST:Error	The POP session is end.
	AT+POPLIST=1	Query email 1 which is marked as deleted.

	+POPRECV:30 -ERR Message already deleted +POPLIST:Error +POP:POP Link Closed	
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	Delete the email 1. The email is deleted successfully.
	AT+POPDELE=1 +POPDELE:Error	The POP session is end.
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	Cancel all deleting marks. The marks are cancelled successfully.
	AT+POPRSET +POPRSET:Error	The POP session is end.
Remarks	N/A	

15.7 Ending the Session: +POPQUIT

Description	To end a session	
Format	AT+POPQUIT<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	AT+POPQUIT OK +POP:POP Link Closed	End the POP session. The session is ended successfully.
	+POP:POP Link Closed	POP session is ended.
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>	Read the email 7.

	Date:Tue, 12 Jun 2012 23:28:55 +0800 (CST) From:postmaster@recro.or.kr +POPRECV:3.	
	AT+POPRETR=6 +POPRETR:Error	The POP session is end.
	AT+POPRETR=1 +POPRECV:30 -ERR Message already deleted	Email 1 has been marked as deleted.
	AT+POPRETR=6 +POPRECV:5 +OK +POPRECV:1265 Date: Wed, 12 Mar 2014 10:04:19 +0800 X-QQ-mid: esmtp33t1394589857t528t23097 Received: from abcdefg-PC (unknown [14.29.99.200])by esmtp4.qq.com (ESMTP) with SMTP id 0for <547618730@qq.com>; Wed, 12 Mar 2014 10:04:14 +0800 (CST) X-QQ-SSF:B1010000000000F0FF902000000000H From:"yanjiao"<547618730@qq.com> To:"tanyanjiao"<547618730@qq.com> Subject:ABCDEFabcdefABCDEFabcdefABCDEFabcdefABCDEFabcdefABCDEFabcdefABCDEFabcdefABCDEFabcdefABCDEFabcdefA100aABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabc100ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabc100ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabc100ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFab39ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabc100ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabc100ABCDEFabcdef1234567890ABCDEFabcdef1234567890AB	Read email 6.

	CDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabc100ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFabcdef1234567890ABCDEFab39	
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	Enable the DSP monitoring.
	AT%EMSD=0 OK	Disable the DSP monitoring.
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	N/A
Example	N/A
Remarks	N/A

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> • AT+RSMODE?<CR>	
Parameter	<val>: 0: No buffer for recording, output as a data block (default) 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
	AT+RSMODE? +RSMODE:0 OK	Query recording buffer status.
Remarks	• Set the buffer mode for recording before you start recording. • The setting is not saved after the module is powered off.	

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 to read recording data. • 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	Read the recording data.
	+REC:BUFFER FULL +REC:BUFFER FULL	The recording buffer has been full.
	AT+RECR OK	Read recording data (data is blank.)
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 LBS Command

18.1 Obtaining the Location of the Module: +CIPGSMLOC

Description	To obtain the location information of the module	
Format	AT+CIPGSMLOC<CR>	
Parameter	N/A	
Return Value	See the Example	
Example	AT+CIPGSMLOC OK +CIPGSMLOC: {"location":{"lat":22.69083,"lng":113.985228},"accuracy":0.0} +CIPGSMLOC: OK	The command is sent successfully. The module reports location information.
	AT+CIPGSMLOC GPRS DISCONNECTION +CIPGSMLOC: CONTACT FAIL	No SIM card is installed.
	AT+CIPGSMLOC +CIPGSMLOC: CONTACT FAIL	The server domain name fails to be translated.
	AT+CIPGSMLOC +CIPGSMLOC: LINK FAIL	The link to the server fails to be set up.
	AT+CIPGSMLOC OK +CIPGSMLOC: FAIL	The location request is sent successfully, but the server returns invalid data.
Remarks	• The obtained location information is the GPS coordinates. • The location information is reported in one or two minutes after the command is sent successfully. • The current coordinates of latitude and longitude are valid and precision is reserved (0.0 by default).	

19 Other AT Commands

19.1 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, ranging from 1 to 1024.	
Return Value	+CALMD5:str	
Example	AT+CALMD5=6 > +CALMD5:e10adc3949ba59abbe56e057f20f883e	Calculate the MD5 value of 6-byte data (for example, 313233343536).
Remarks	• The data is entered in hexadecimal system, and the return character string is 32 bytes in hexadecimal system. • Send the data after the module returns >.	

19.2 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, ranging from 1 to 1024.	
Return Value	+CALCRC32:str	
Example	AT+CALCRC32=6 > +CALCRC32:398f3fd4	Calculate the CRC32 verification value of 6-byte data (for example, 313233343536).
Remarks	• The data is entered in hexadecimal system, and the return character string is 8 bytes in hexadecimal system. • Send the data after the module returns >.	

19.3 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, ranging from 1 to 1024.
Return Value	+CALCRC16:str

Example	AT+CALCRC16=6 > +CALCRC16:2ef4	Calculate the CRC16 verification value of 6-byte data (for example, 313233343536).
Remarks	• The data is entered in hexadecimal system, and the return character string is 4 bytes in hexadecimal system. • Send the data after the module returns >.	

19.4 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	Obtain the information of one base station.
	AT+POSI=1 +POSI: 1,460,01,2543,A85D,3E,45,0,460,01,2543,AB13,1E,41,0,460,01,2543,A85E,10,36,0,460,01,2543,AA51,0A,34,0,460,01,2543,B046,11,32,0,460,01,2543,A9A8,3F,31,0,460,01,2543,A805,33,27,1 OK	Obtain the information of multiple base stations.
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.	

19.5 Query Server Information: +SERVINFO

Description	To query server information	
Format	AT+SERVINFO<CR>	
Return Value	+SERVINFO: <ARFCN>,<dBm>,<OperorName>,<NetCode>,<BSIC>,<LAC>,<TA>,<GPRS><CR><LF>OK<CR><LF>	
	<ARFCN>: Absolute RF channel number of the base station system <dBm>: RSSI (dBm) <OperorName>: Operator name (character string type) <NetCode>: Network code (digit format, MCC+MNC) <BSIC>: Base station identification code (hexadecimal format) <LAC>: Location area code (hexadecimal format) <TA>: Timing advance (255 when the network is idle; valid values range from 0 to 63) <GPRS>: To support GPRS or not 1: Support 0: Not support	
Example	AT+SERVINFO +SERVINFO: 16,-56,"China Mobile","46000",05,286F,255,1 OK	ARFCN: 16 RSSI: -56 dBm Network operator: China Mobile LAC: 286F
	AT+SERVINFO +SERVINFO: 0,0,"","0",00,0000,255,0 OK	No server information
Remarks	• After the module is started and registers the network, send this command to query the information of the current base station server. If the network encounters abnormality, no server information is returned. • <TA> is valid only when the module is in GSM communication or GPRS data receiving/sending.	

19.6 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	See the Example.

Value		
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	

19.7 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 (default) 1: Allow extra RING pulse	
Return Value	See the Example.	
Example	AT+EXTRARING=1 OK	Allow additional RING pulse output. 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. • If 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.	

19.8 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>: Available range of the RING pulse width, 100-1000, unit: ms	
Return Value	See the Example.	
Example	AT+RINGTIME=0 +RINGTIME:0,250 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.	

19.9 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> • 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 pin mode is set successfully and the module returns **OK**.
	AT+FCHW=? +FCHW: (0-1) OK	Query the value rage.

	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.	

19.10 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> • AT+OFFTIME=?<CR>	
Parameter	<time>:Integer, ranging from 50 to 5000 (1 s = 1000 ms = 216 ticks). The default value is **50**.	
Return Value	See the Example.	
Example	AT+OFFTIME=50 OK	The offtime is set successfully and the module returns OK.
	AT+OFFTIME=? +OFFTIME: (50 - 5000) OK	Query the value rage.
	AT+OFFTIME? +OFFTIME: 50 OK	Query the set parameter. The module returns OK.
Remarks	For the poweroff procedure of the ON/OFF pin, see the Hardware User Guide. The default offtime is 250 ms.	

19.11 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 >: the volume level, ranging from 0 to 6.	
Return Value	See the Example.	
Example	AT+RINGOUT=2,6 OK	The incoming ring is set successfully and the module returns OK.
	AT+RINGOUT=? +RINGOUT:0-2,0-6 OK	Query the value rage.
	AT+RINGOUT? +RINGOUT: 2,6 OK	Query the set parameter. The module returns **OK**.
Remarks	The default value is **0** and **4**.	

19.12 Resetting the Module: +REST

Description	To reset the module	
Format	• AT+REST[<mode>[,<time>]]<CR> • AT+REST?<CR> • AT+REST=?<CR>	
Parameter	<mode>: Mode selection, ranging from 0 to 2. If this parameter is left blank, the module is reset after the command is sent successfully. 0: Disable the reset function of the module. 1: Reset once 2: Reset loop <time>: Reset delay, ranging from 1 to 3600, unit: s	
Return Value	See the Example.	
Example	AT+REST Start up later,Please wait a second! OK	The return code of the command

	AT+REST=1,10 OK	Set to reset once in 10 seconds.
	AT+REST? +REST: 1,10 OK	Query current settings.
	AT+REST=2,60 OK	Set reset loop. The module is reset in one minute after it is started.
	AT+REST=0 OK	Disable the reset delay function.
	AT+REST=? +REST: (0-2),(1-3600) OK	Query the value range of parameters.
Remarks	• After this command is sent and the return code is displayed, other return codes including **+EIND: 128** will be displayed. • The setting by this command will be saved after the module is powered off. • The recommended reset loop time period is greater than 10 s.	

19.13 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.	

19.14 Timing On/Off Command: +PWROFTIMING

Description	To set the on/off time for the module so that it can start and shut down at scheduled time
Format	• AT+PWROFTIMING=<cnt><type><enable>,<HH:MM><CR> • AT+PWROFTIMING=<cnt><type><enable><CR> • AT+PWROFTIMING=000000<CR>

Parameter	<cnt>: The sequence number of current alarm clock, ranging from 0 to 5 <type>: Alarm clock type 0: Off alarm clock 1: On alarm clock <enable>: Enable the current alarm clock 0: Off 1: On <HH:MM>: Set the on/off time, using 24 hour clock. If the time is incorrect, the command fails to set. 000000: indicates that all six alarm clocks are disabled and the time settings are cleared.	
Return Value	See the Example	
Example	AT+PWROFTIMING=011,00:05 OK	Set the alarm clock 0 to an on alarm clock and the time to 00:05, and enable the alarm clock.
	AT+PWROFTIMING=500 OK	Disable the 5th off alarm clock.
	AT+PWROFTIMING=000000 OK	Disable all alarm clocks and clear the time settings.
Remarks	• The settings will be saved after the module is powered off. • The second format of the command can be used to disable or enable an alarm clock. The enabled alarm clock can reuse last time setting. If no alarm clock has been set, the default time is 00:00 for the enabled alarm clock.	

19.15 Timing On/Off Command: +PWROFPERIOD

Description	To set the period for the module to shut down after it starts (to start after it shuts down)
Format	• AT+PWROFPERIOD=<type><enable>,<HH:MM><CR> • AT+PWROFPERIOD=<type><enable><CR> • AT+PWROFPERIOD=00000000<CR>
Parameter	<type>: Alarm clock type 0: Off alarm clock 1: On alarm clock <enable>: Enable the current alarm clock 0: Off 1: On <HH:MM>: Set the on/off time, using 24 hour clock. If the time is incorrect or less than 20 minutes, the command fails to set. 00000000: indicates that all alarm clocks are disabled and the time settings are cleared.
Return Value	See the Example

Example	AT+PWROFPERIOD=01,00:30 OK	Enable the off alarm clock that will shut down the module after it is running for 30 minutes.
	AT+PWROFPERIOD=11,00:30 OK	Enable the on alarm clock that will start the module 30 minutes after it is shut down.
	AT+PWROFTIMING=00 OK	Disable the off alarm clock.
	AT+PWROFTIMING=00000000 OK	Disable all alarm clocks and clear the time settings.
Remarks	• The settings will be saved after the module is powered off. • The second format of the command can be used to disable or enable an alarm clock. The enabled alarm clock can reuse last time setting. If no alarm clock has been set, the default time is 00:00 for the enabled alarm clock.	

19.16 Sending AT Command Remotely: +REMOTEAT

Description	To set the remote AT command sending	
Format	• AT+REMOTEAT=<mode><CR> • AT+REMOTEAT=?<CR> • AT+REMOTEAT?<CR>	
Parameter	<mode>: mode selection 0: Not send remote AT command (default) 1: Remote AT command for TCP data sending (supports only TCP client and data in character string type) 2: Remote AT command for SMS message sending in text mode Delay ranges from 100 to 60000 ms. Any value exceeding this range is counted as 100 ms.	
Return Value	See the Example	
Example	AT+REMOTEAT=1 OK	Set the remote AT command for TCP data sending.
	+TCPRECV: 0,40,AT+CSQ;1000&AT+CGMM;5000&AT+CCID;1000& AT+CSQ +CSQ: 31, 99 OK AT+CGMM +CGMM: M660A	Data receiving formats (1 to 3 AT commands) First AT command: **AT+CSQ** The delay (from receiving TCP data to the sending of the first AT command) is 1000 ms. Second AT command: **AT+CGMM** The delay (from sending the first command to the sending of the second AT command) is 5000 ms.

	OK AT+CCID +CCID: 89860041191110354009 OK	Third AT command: **AT+CCID** The delay (from sending the second command to the sending of the third AT command) is 5000 ms.
	AT+REMOTEAT? +REMOTEAT: 1 OK	Query the current mode. Remote AT command for TCP data transmitting.
	AT+REMOTEAT=? +REMOTEAT: (0-2) OK	Query the value range of parameters.
	AT+REMOTEAT=2 OK	Set the remote AT command for text message sending.
	AT+CMGF=1 OK AT+CSQ +CSQ: 22, 0 OK AT+CGMM +CGMM: M660A OK AT+CCID +CCID: 89860107247552197691 OK	Set the SMS message to text format.
Remarks	• The settings are not saved after the module is powered off. • This command supports only TCP client and text messages. • Remote AT commands must contains semicolon (;) and be separated by ampersand (&). One to three remote AT commands are supported. • Remote AT command cannot contain &. Commands such as AT&W are not supported.	

19.17 Updating Time:+UPDATETIME

Description	To update the module time to the network time

Format	• AT+UPDATETIME=<mode>[,<serv_ip>,<time>[[,< TZ>][,<DST>]]]<CR> • AT+UPDATETIME?<CR> • AT+UPDATETIME=?<CR>	
Parameter	<mode>: 0: Query mode. Query when the time was updated to the network time last time. 1: Setting mode. Synchronize the time to the network time. <serv_ip>: The IP address of the time server, in form of xx.xx.xx.xx or domain name (www.*XXXXX*.com) <time>: the timeout period, ranging from 1 to 30, unit: second <TZ>: Time zone, in format of E/W+digits; E8 by default E: east time zone, 0 to 13 W: west time zone, 0 to 12 0: Zero time zone < DST >: Daylight Saving Time 1: Select DST auto-adjustment 0: Not select (by default)	
Return Value	• No PPP Link • Time Updating,Please Wait... • Time Out • Time Data Is Null • Send Request Fail • Update To yyyy-mm-dd,hh:mm:ss • Last Update Time yyyy-mm-dd,hh:mm:ss	
Example	AT+UPDATETIME=0 +UPDATETIME: Last Update Time 2014-03-31,11:10:26 OK	Query when the time was updated last time.
	AT+UPDATETIME=0 +UPDATETIME: Last Update Time 0000-00-00,00:00:00 OK	Query when the time was updated last time. The time was not updated.
	AT+UPDATETIME=1, 210.72.145.44,10 +UPDATETIME: No PPP Link	You need to set up a PPP link.
	AT+UPDATETIME=1, 210.72.145.44,10 OK Time Updating,Please Wait... +UPDATETIME: Time Out	Update the time to that of the server 210.72.145.44. Timeout period is 10 seconds. Time update times out because of network congestion.

	AT+UPDATETIME=1,128.138.141.172,10, "E8",0 OK Time Updating,Please Wait... +UPDATETIME: Update To 2014-03-31,11:32:55	Update the time to that of the server 128.138.141.172. Timeout period is 10 seconds. Set the default time zone to E8 and do not select DST. Time is updated successfully.
	AT+UPDATETIME=1,time.windows.com,10,"W12",1 OK Time Updating,Please Wait... +UPDATETIME: Update To 2014-04-12,15:17:48	Update time to that of time.windows.com. Timeout period is 10 seconds. Set the default time zone to W12. And select DST. Time is updated successfully.
	AT+UPDATETIME=1,128.138.141.172,10,"W12",1 OK +UPDATETIME: Send Request Fail	Time update request sending fails. The reason probably is bad network connection or inability to support time update.
	AT+UPDATETIME? +UPDATETIME: 128.138.141.172,10 OK	Query the IP address of the server to which the time is updated and the timeout period.
	AT+UPDATETIME=? +UPDATETIME: (0-1),,(1-30),,(0-1) OK	Query the value range of parameters.
Remarks	• The settings by this command will not be saved after the module is powered off. • You must enable PPP link (AT+XIIC=1) before sending this command. • You can send **AT+CCLK?** to query whether RTC is synchronized to the current network time after this command is sent successfully. • Current the following time servers support time update: time.windows.com, time.nist.gov, etc.	

19.18 Querying Channel Information +CGED

Description	To query the channel ID and RX/TX power
Format	AT+CGED<CR>
Parameter	NULL
Return Value	<CR><LF>+CGED: <arfcn>,<rx_level>,<tx_power><CR><LF> <CR><LF>OK<CR><LF> <arfcn>: Current channel <rx_level>: RX level (unit, dBm)

	<tx_power>: TX power (unit: dBm)	
Example	AT+CGED +CGED: 48,-31,-1 OK	Current channel ID: 48 RX level: -31 dBm TX power: -1 (invalid value)
	AT+CGED +CGED: 48,-45,7 OK	Current channel ID: 48 RX level: -45 dBm TX power: 7 dBm
Remarks	The queried TX power value is valid when the phone service and data service are used.	

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

SMSC number is not needed.

0100

0B: the length of the recipient number

81: Receiving mode

3124819396F3: The number of recipient

0008

0A: The length of the content

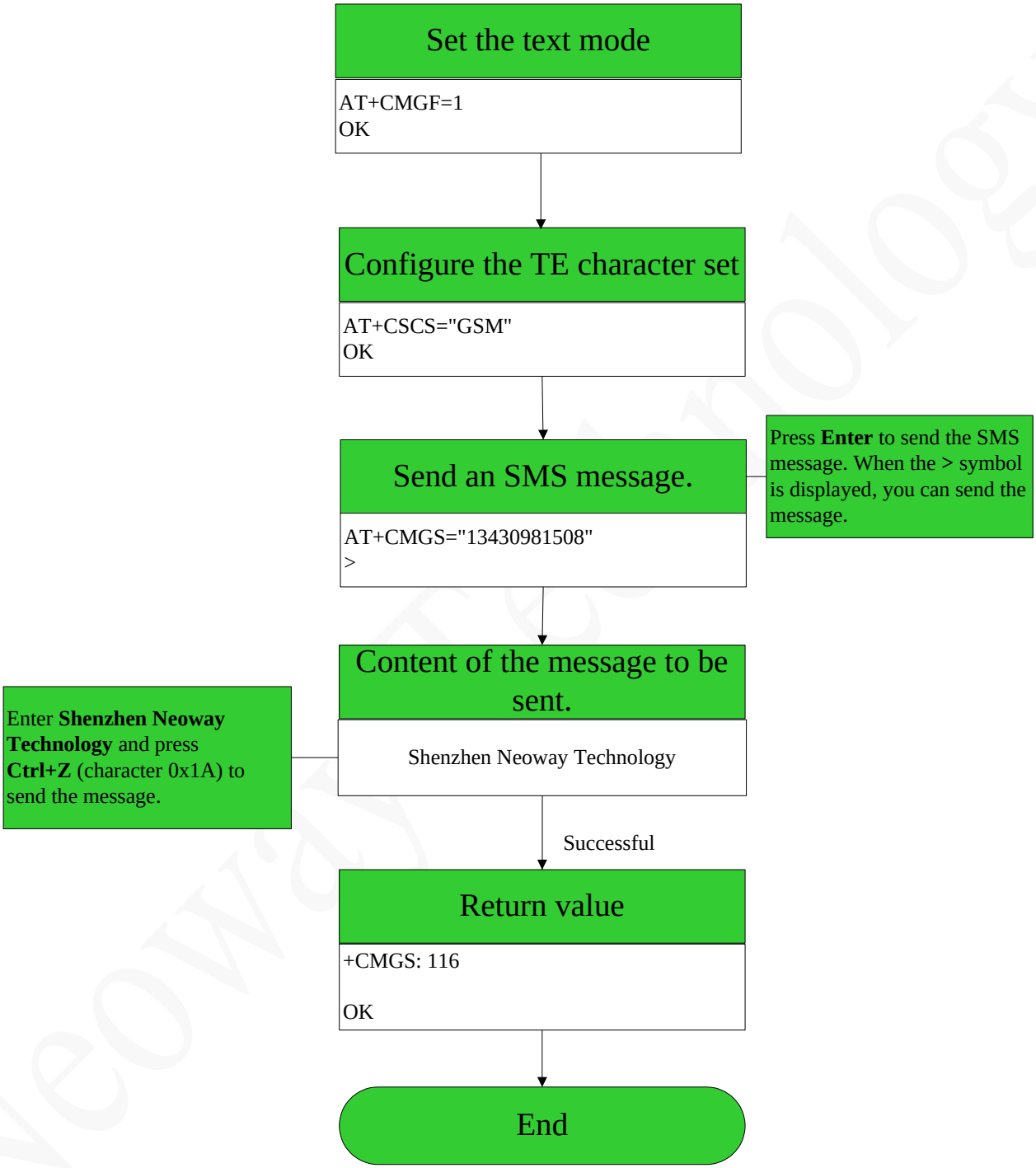
00680065006C006C006F: SMS message content

SMS message content: hello

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

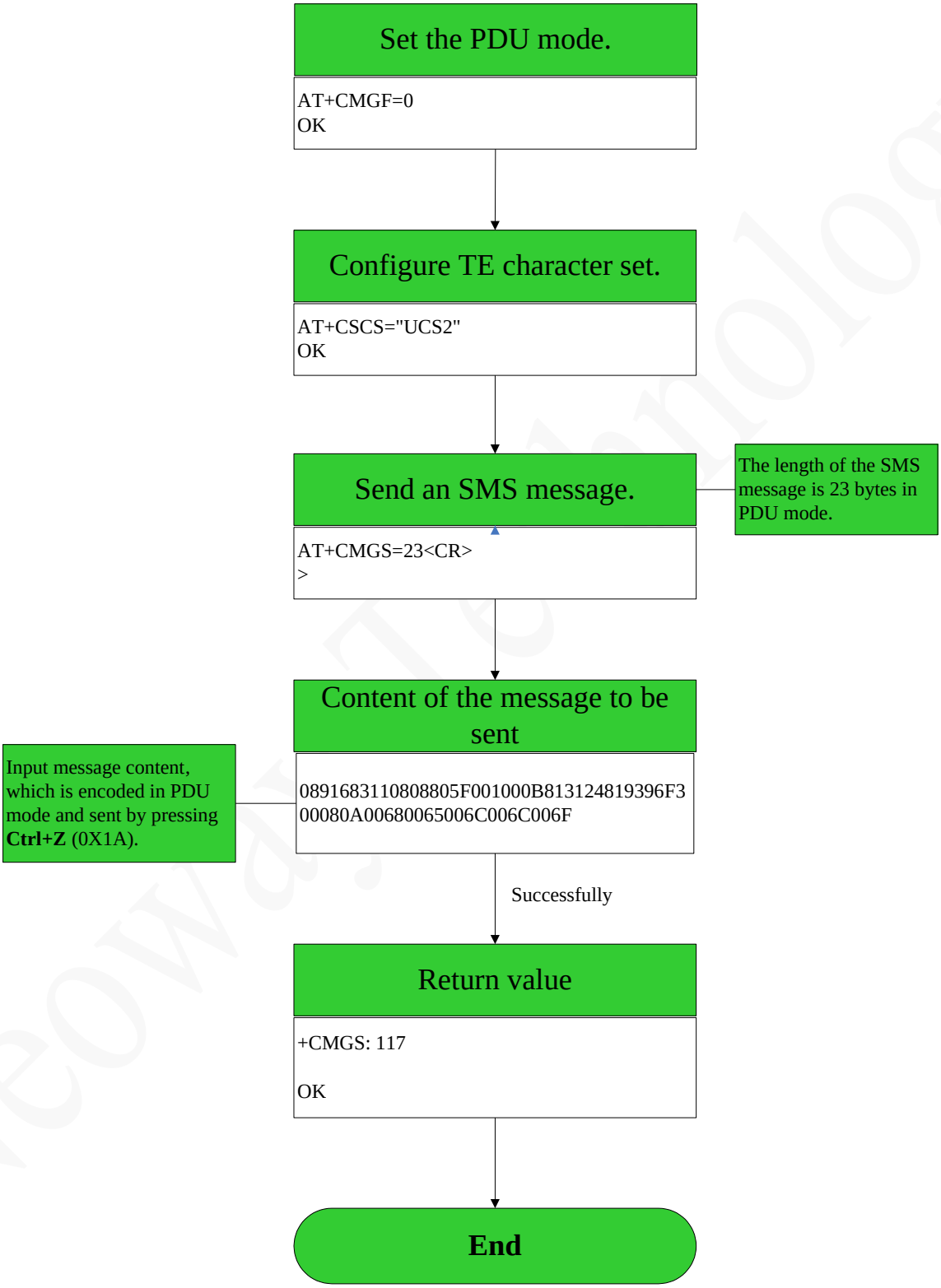
A.2 Flowchart of Sending Text SMS Messages (Through UART)

Figure A-1 Flowchart of sending text format SMS messages



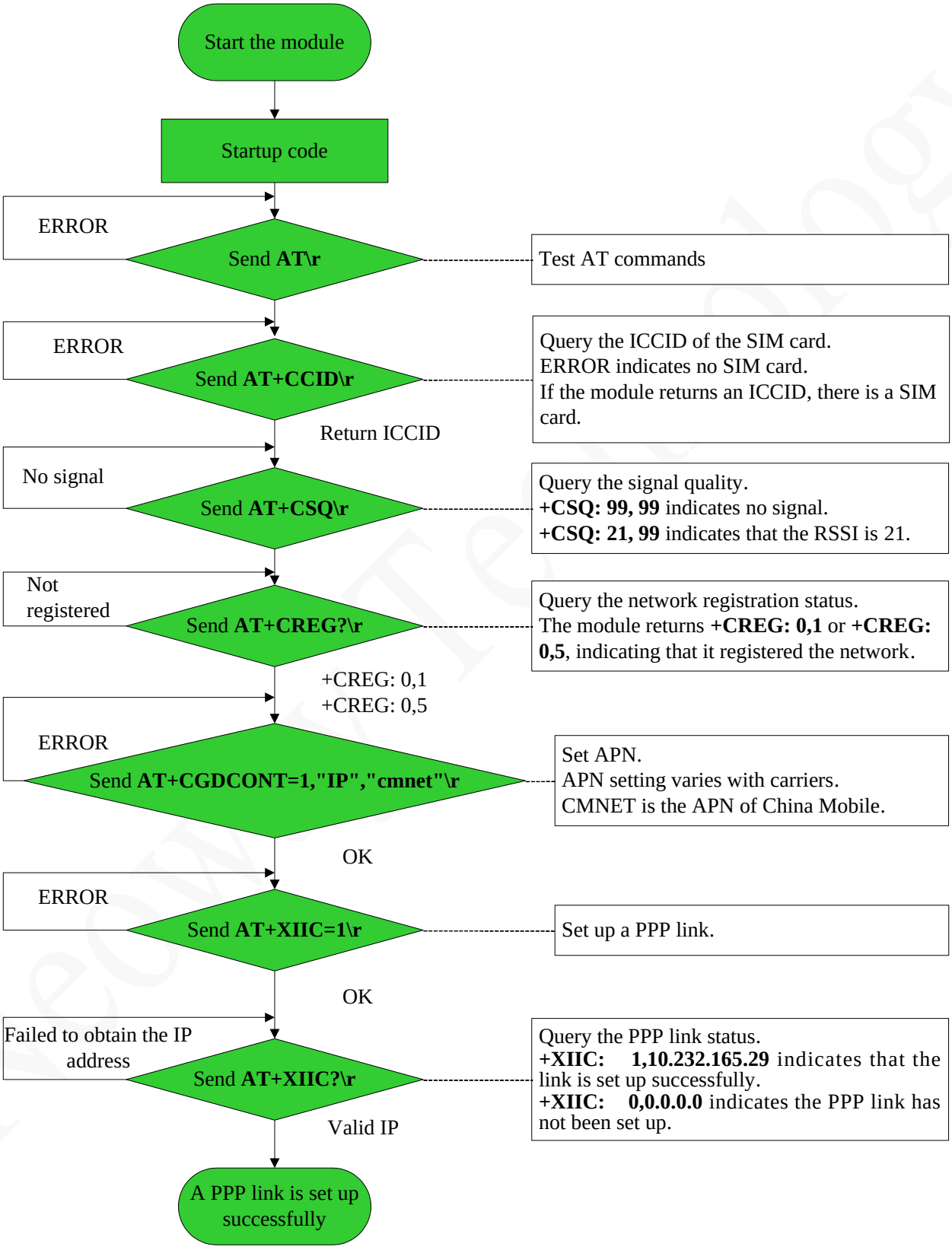
A.3 Flowchart of Sending PDU SMS Messages (Through UART)

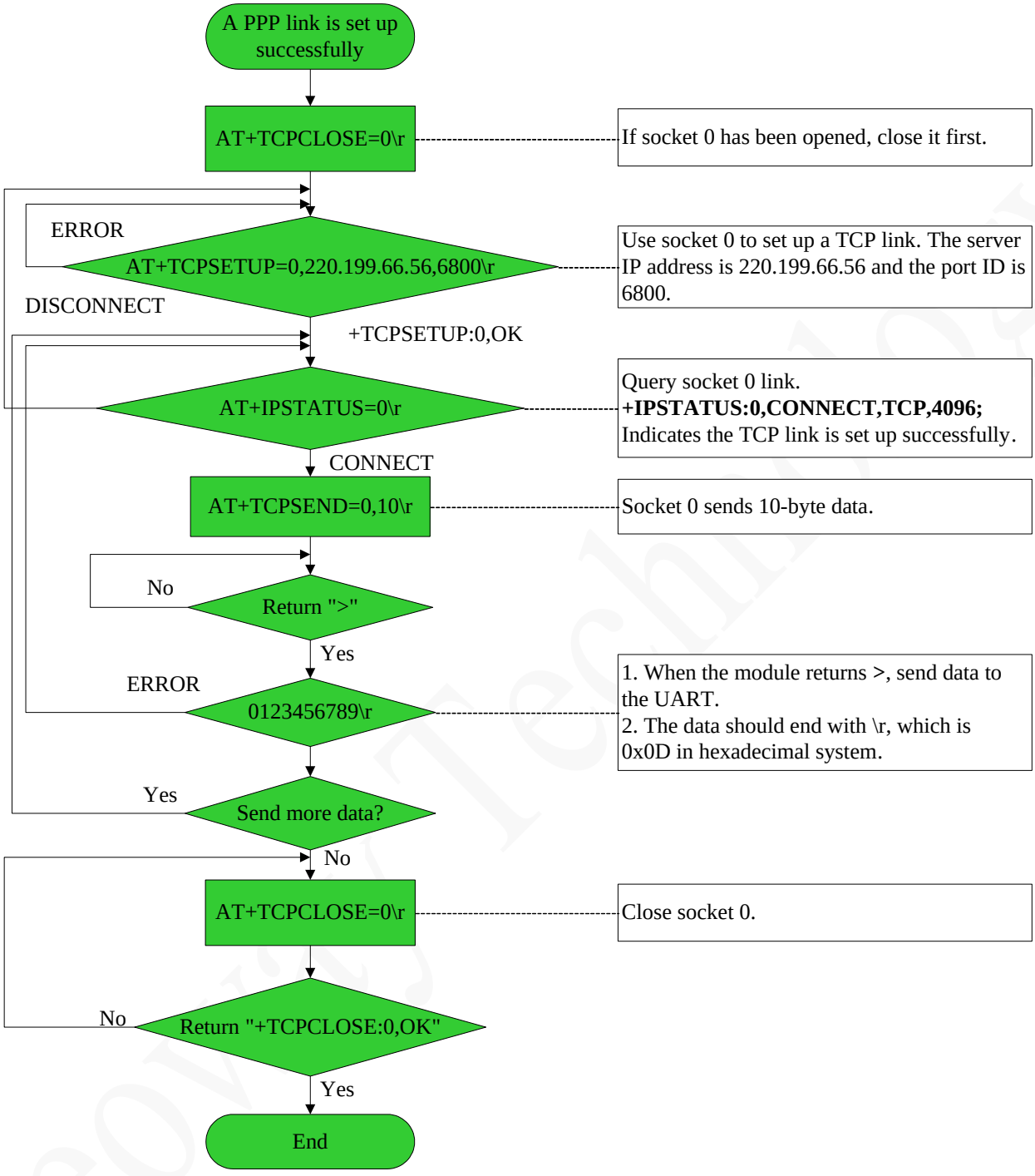
Figure A-2 Flowchart of Sending PDU SMS messages



A.4 Flowchart of AT Commands to Establish TCP Link

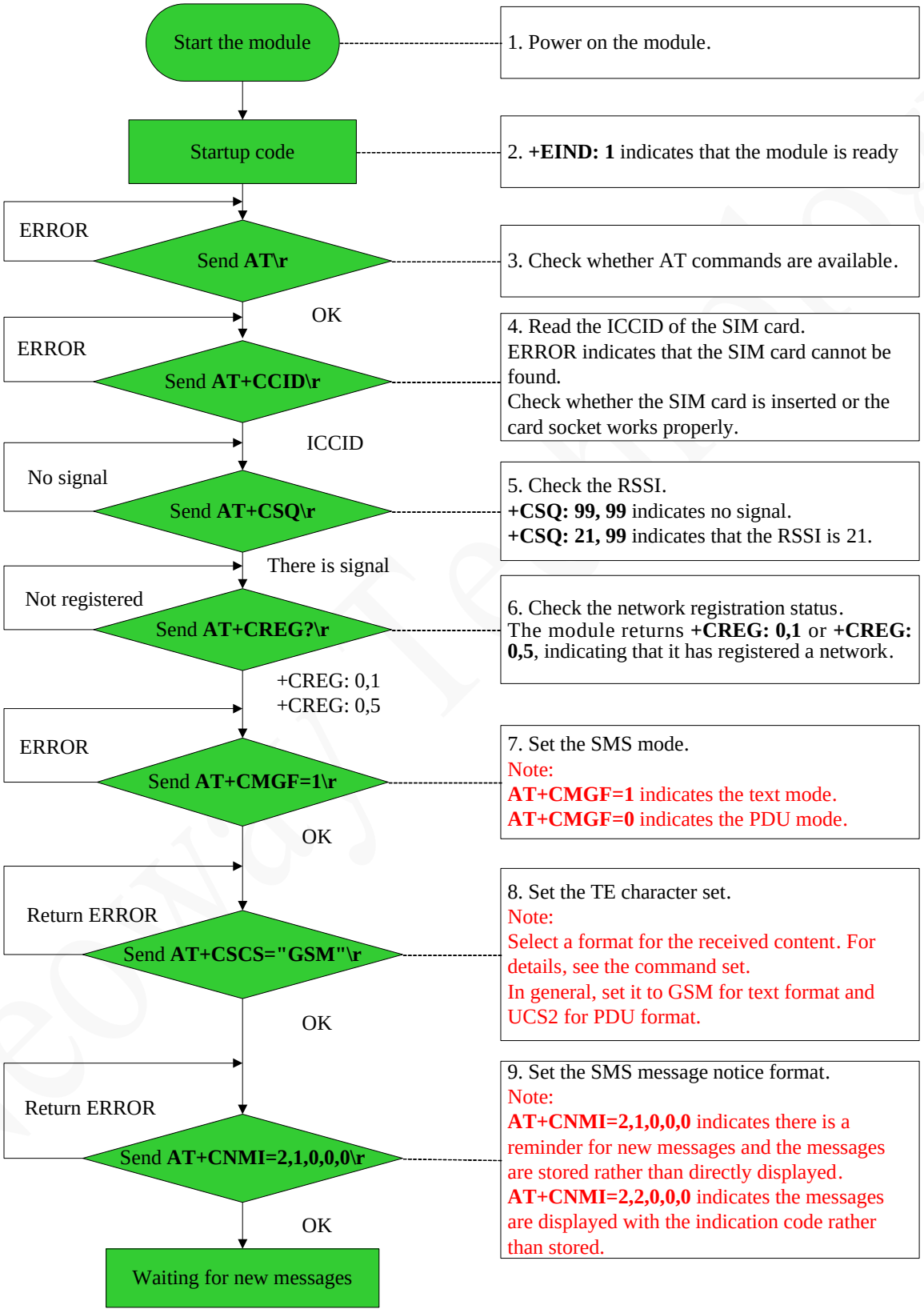
Figure A-3 Flowchart of using AT commands to establish TCP link

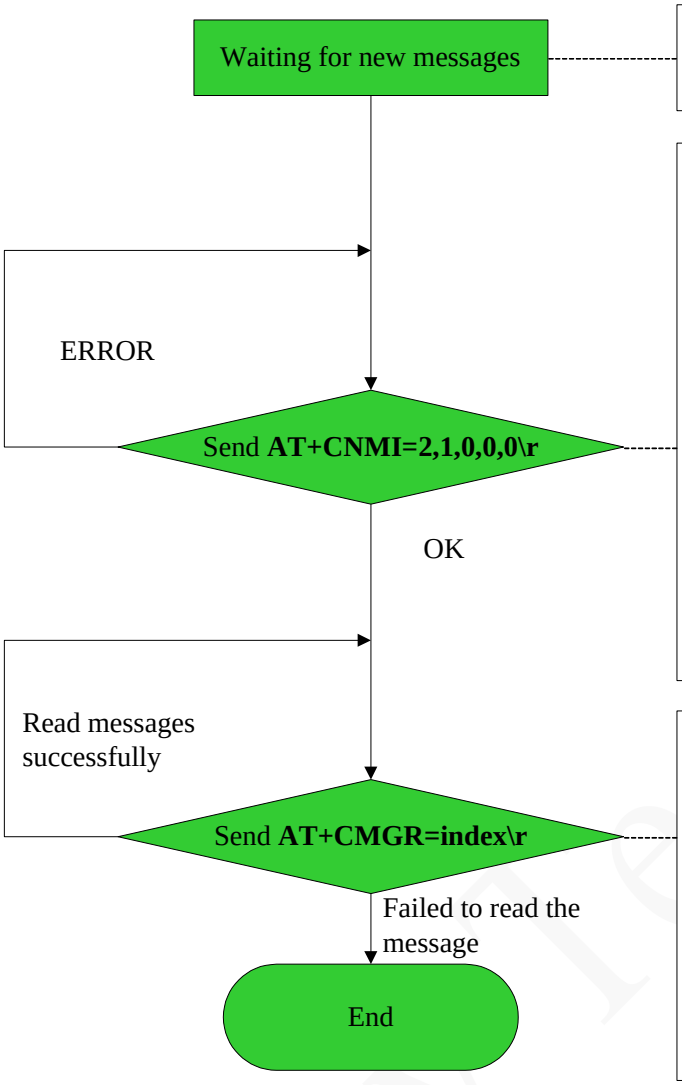




A.5 Flowchart of Receiving SMS Messages

Figure A-4 Flowchart of receiving SMS messages





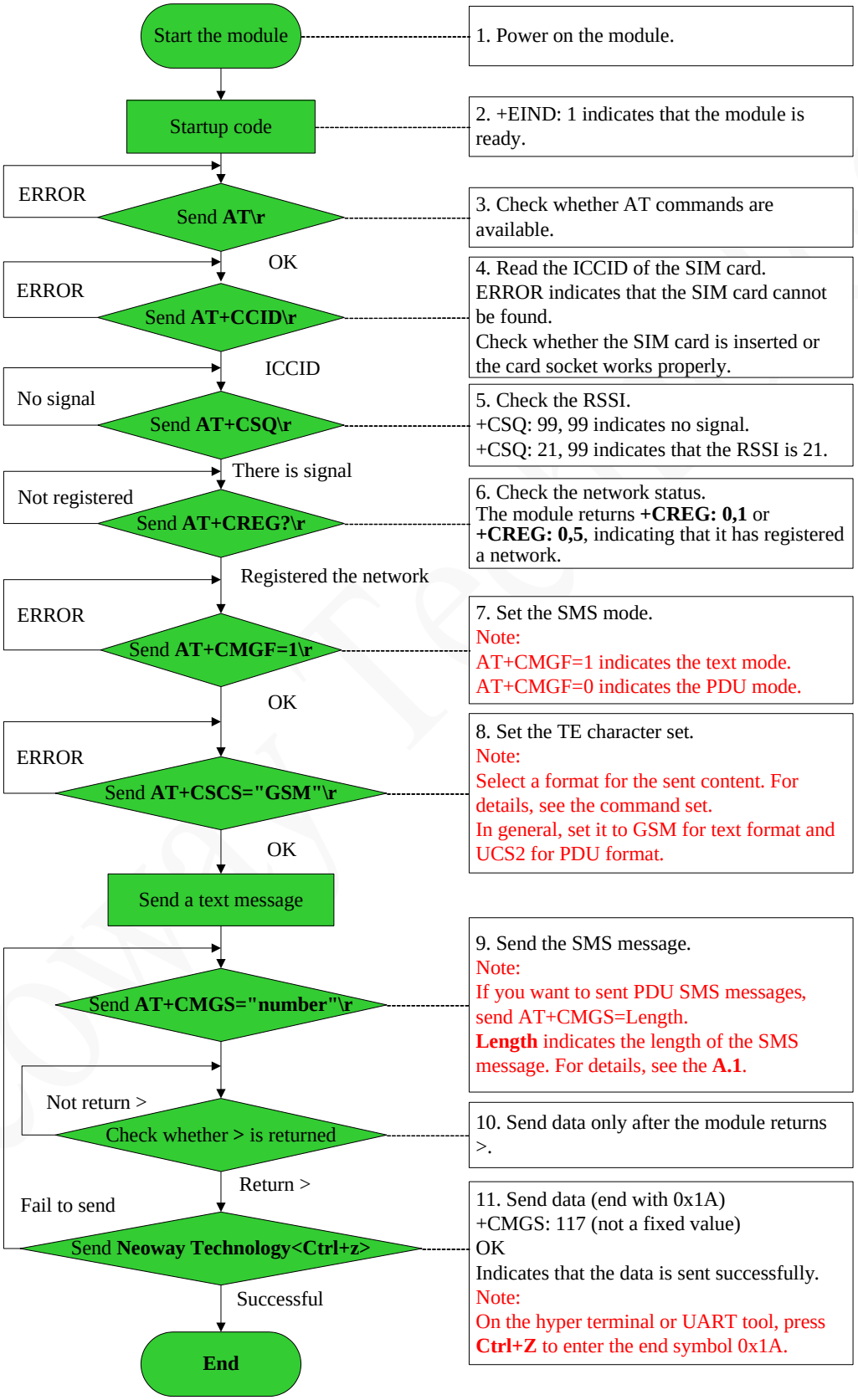
10. Relevant functions have been configured. Wait for SMS message reminder.

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.

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.

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 send 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 =4**. • The unread SMS messages change to read messages after all messages are listed. • If **AT+CMGF=1** is sent, the command to read all SMS message is AT+CMGL="ALL"
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 login to the FTP server