

Neo_M590E V1 GPRS Module AT Command Set

Version 1.0



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Notice

This document provides guide for users to use the M590E V1.

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

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Contents

Boot LOG Instruction	1
1 General Commands	2
1.1 Querying the Manufacturer: I.....	2
1.2 Querying the Version: +GMR.....	2
1.3 Querying Signal Quality: +CSQ.....	2
1.4 Querying the Network Registration Status: +CREG.....	3
1.5 GPRS Network Registration: +CGREG.....	4
1.6 Querying IMEI: +CGSN.....	5
1.7 Restart the Module: +CFUN.....	6
1.8 Multiplexing Mode: +CMUX.....	6
1.9 Setting the Baudrate of the Module: +IPR.....	7
1.10 Querying the Module Status: +CPAS.....	8
1.11 Enabling or Disabling the Sleep Mode: +ENPWRSAVE.....	9
1.12 Clock: +CCLK.....	9
1.13 Entering the PIN Codes: +CPIN.....	10
1.14 Enabling PIN and Querying MT and Network Device: +CLCK.....	11
1.15 Modifying the Password of the PIN: +CPWD.....	12
1.16 Setting GPRS Attach and Detach: +CGATT.....	12
1.17 Setting PDP Format: CGDCONT.....	13
1.18 GPRS Dialup: ATD*99#.....	14
1.19 Switching Data Mode to Command Mode: +++.....	14
1.20 Switching Command Mode to Data Mode: O.....	15
1.21 Selecting and Registering a GSM Network: +COPS.....	15
2 SMS Commands	17
2.1 Setting Preferred SMS Storage: +CPMS.....	17
2.2 Setting SMS Inputting Mode: +CMGF.....	18
2.3 Setting the TE Character Set: +CSCS.....	18
2.4 Setting the SMS Indication Mode: +CNMI.....	19
2.5 Reading SMS Messages: +CMGR.....	21
2.6 SMS Message List: +CMGL.....	22
2.7 Sending SMS Messages: +CMGS.....	23
2.8 Writing SMS Messages: +CMGW.....	24
2.9 Sending Stored SMS Messages: +CMSS.....	25
2.10 Deleting SMS Messages: +CMGD.....	26
2.11 Setting the SMS Center Number: +CSCA.....	26
2.12 Setting the Parameters of the Text Mode: +CSMP.....	27
2.13 Displaying the Parameters of the Text Mode: +CSDH.....	27
3 TCP/UDP Data Service	28
3.1 Setting Up a PPP Link: +XIIC.....	28
3.2 Setting Up TCP connection: +TCPSETUP.....	29
3.3 Sending TCP Data: +TCPSEND.....	30
3.4 Receiving TCP Data: +TCPRECV.....	31
3.5 Closing TCP Connection: +TCPCLOSE.....	31

3.6 Setting Up UDP Connection: +UDPSETUP	31
3.7 Sending UDP Data: +UDPSSEND	32
3.8 Receiving UDP Data: +UDP_RECV	33
3.9 Closing UDP Connection: +UDPCLOSE	33
3.10 Querying TCP/UDP Connection Status: +IPSTATUS	34
3.11 Setting Local UDP Port: +UDPLPORT	34
3.12 Setting Up TCP Transparent Transmission Connection: +TCPTRANS	35
3.13 Setting Up UDP Transparent Transmission Connection: +UDPTRANS	35
3.14 Setting Automatic TCP Data Sending: +TCPAUTO	36
4 DNS Command	39
4.1 Querying the IP Address: +DNS	39
5 FTP AT Commands.....	40
5.1 Logging In to the FTP Server: +FTPLOGIN	40
5.2 Logging Out from the FTP Server: +FTPLOGOUT	41
5.3 Downloading Data from the FTP Server: +FTPGET	41
5.4 Uploading Data to the FTP Server: +FTPPUT	42
5.5 Querying FTP Connection Status: +FTPSTATUS	43
6 TCP Server AT Commands	44
6.1 Setting TCP Listening for the Server: +TCPLISTEN	44
6.2 Closing the Listening Connection: +CLOSELISTEN	44
6.3 Closing Connections of the Client: +CLOSECLIENT	45
6.4 Receiving Data from the Client: +TCP_RECV(S)	45
6.5 Sending Data to the Client: +TCPSENDS	45
6.6 Querying the Connection Status on the Client: +CLIENTSTATUS	46
7 Unlimited UDP Server AT Commands.....	47
7.1 Setting UDP Listening for Server: +FUDPLISTEN	47
7.2 Receiving Data from the Client: +FUD_RECV(S).....	48
7.3 Sending Data to the Client: +FUDSENDS	48
7.4 Closing Listening for UDP Server: +CLOSEFUDPLISTEN.....	48
8 LBS Command	50
8.1 Obtaining the Location of the Module: +CIPGSMLOC	50
9 Other AT Commands	52
9.1 Querying Base Station Information: +POSI.....	52
9.2 Getting the Local Port of a Socket: +GETLPORT	53
10 TCP Command Example Process	54
10.1 TCP Link through Internal Protocol.....	54
10.2 TCP Connection through External Protocol.....	55
A Reference Process of AT Command Programming.....	57
A.1 Content of PDU SMS Messages	57
A.2 Flowchart of Sending Text SMS Messages (Through UART).....	59
A.3 Flowchart of Sending PDU SMS Messages (Through UART).....	60

Boot LOG Instruction

The default baudrate of the module is in automatic detection. The mobile terminal (MT) sends AT\r in accordance with the standard baudrate (9600bps, 19200bps, 38400bps, 57600bps, and 115200bps), and the module will automatically detect the baudrate. Before your repower on the module, it accomplishes UART communications at the automatically detected baudrate. If you need to change the original baudrate during communication, you must set a new baudrate for the module on the MT. Then the MT will change its transmitting baudrate.

If you send **AT+IPR** to the module to set the baudrate to a certain value, the module cannot automatically detect a baudrate unless you run the command **AT+IPR=0\r**.

After the module is started, send AT\r to the UART1 of the module. The module returns AT characters, indicating that the baudrate matches successfully. Send AT\r to the UART again and the module will return **OK**. Then, the module is ready to execute AT commands.

Boot log in automatic baudrate detection

The module will not output any boot log before you enter an AT command because the baudrate is unknown.

- \r\nMODEM:STARTUP\r\n is output if you enter AT/r before starting the module and \r\nMODEM:STARTUP\r\n is output after the phonebook is ready.
- Only \r\n+PBREADY\r\n is output after the phonebook is ready if you enter AT/r after starting the module.

1 General Commands

1.1 Querying the Manufacturer: I

Description	To query the manufacturer information, including manufacturer, model, and version	
Format	ATI<CR>	
Parameter	N/A	
Return Value	<CR><LF><Manufacturer> <CR><LF><Module mode> <CR><LF> <Version> <CR><LF>OK<CR><LF>	
Example	ATI NEOWAY M590 V1 REVISION V001 OK	Manufacturer Module mode Version
Remarks	N/A	

1.2 Querying the Version: +GMR

Description	To query the software version	
Format	AT+GMR<CR>	
Parameter	N/A	
Return Value	<CR><LF>+GMR: <version> <CR><LF>OK<CR><LF>	
Example	AT+GMR +GMR: M590_1169_R9S63000_V001 OK	Query the version of the software.
Remarks	N/A	

1.3 Querying Signal Quality: +CSQ

Description	To check the receiving signal strength indication (RSSI) and the bit error rate (BER) of the channel	
Format	AT+CSQ<CR>	
Parameter	N/A	

Return Value	<CR><LF> +CSQ: < signal >, <ber>	
	<CR><LF> OK <CR><LF>	
	< signal >	
	The following table shows the relationship between the signal and the RSSI.	
	signal	rsi
	<4 or 99	<-107 dBm or unknown
	<10	<-93dBm
	<16	<-71 dBm
	<22	<-69dBm
	<28	<-57dBm
	>=28	>=-57 dBm
	<ber>	
	0...7	Refer to the value of RXQUAL in the table of GSM 05.08 8.2.4.
	99	Not known or not detectable
Example	AT+CSQ +CSQ: 19,2 OK	Query the current signal strength of the module.
Remarks	N/A	

1.4 Querying the Network Registration Status: +CREG

Description	To query the network registration status of the module
Format	<ul style="list-style-type: none"> • AT+CREG=[<n>]<CR> • AT+CREG?<CR> • AT+CREG=?<CR>
Parameter	<p><n>:</p> <p>0: Forbid unsolicited result codes of network registration (default setting). 1: Allow unsolicited result codes of network registration 2: Allow unsolicited location information of network registration</p> <p><stat>:</p> <p>0: Unregistered. The device is not searching for new carriers. 1: Registered the local network 2: Unregistered. The device is searching for base stations. 3: The registration is rejected. 4: Unknown code 5: Registered, roaming</p> <p><lac>: string type; two-byte location area code in hexadecimal format</p>

	<ci>: string type; two-byte cell ID in hexadecimal format <Act>: 0: GSM 2: UTRAN 3: GSM w/EGPRS	
Return Value	<CR><LF>OK<CR><LF> <CR><LF>+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]] <CR><LF>OK<CR><LF> <CR><LF>+CREG: (list of supported <n>s) <CR><LF>OK<CR><LF>	
Example	AT+CREG=1 OK	Allow the module to provide unsolicited network registration code.
	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.
Remarks	N/A	

1.5 GPRS Network Registration: +CGREG

Description	To control the presentation of an unsolicited result code of the module's GPRS network registration status
Format	<ul style="list-style-type: none"> • 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 2: Enable network registration and location information unsolicited result code <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>OK<CR><LF> <CR><LF>+CGREG: <n>,<stat>[,<lac>,<ci>[,<Act>]] <CR><LF>OK<CR><LF> <CR><LF>+CGREG: (list of supported <n>s) <CR><LF>OK<CR><LF>	
Example	AT+CGREG? +CGREG: 0,1 OK	Query the current GPRS network registration status. The network registration unsolicited result code is disabled.
	AT+CGREG=1 OK	Enable network registration result code.
	AT+CGREG=? +CGREG: (0-2) OK	Query the available parameter range.
Remarks	After the module registers the GPRS network, the data service is available.	

1.6 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>+CGSN: <IMEI> <CR><LF>OK<CR><LF>	
Example	AT+CGSN +CGSN: "860998021170687" OK	Query the IMEI number.
Remarks	The IMEI is a character string of 15 digits.	

1.7 Restart the Module: +CFUN

Description	To restart the module	
Format	<ul style="list-style-type: none"> • AT+CFUN=<fun>,<rst><CR> • AT+CFUN?<CR> • AT+CFUN=?<CR> 	
Parameter	<p><fun>: Module work mode 0: sleep mode 1: work mode</p> <p><rst>: Specifies whether to restart the module 0: Do not restart the module 1: Restart the module</p>	
Return Value	<CR><LF>OK<CR><LF>	
	or	
	<CR><LF>ERROR<CR><LF>	
	<CR><LF>+CFUN: <fun> <CR><LF>OK<CR><LF>	
Example	AT+CFUN=1,1 OK	Restart the module
	AT+CFUN? +CFUN: 1 OK	Query the current functions.
	AT+CFUN=? +CFUN: (0,1),(0,1) OK	Query the range of the parameter value.
Remarks	N/A	

1.8 Multiplexing Mode: +CMUX

Description	To enable/disable the GSM 07.10 multiplexing protocol control channel	
Format	<ul style="list-style-type: none"> • AT+CMUX=<mode>[,<subset>[,<port_speed>[,<N1>[,<T1>[,<N2>[,<T2>[,<T3>[,<k>]]]]]]]]<CR> • AT+CMUX=?<CR> 	
Parameter	<p><mode>: integer type (multiplexer Transparency Mechanism) 0: Basic option 1: Advanced option (not supported)</p> <p><subset>: integer type.</p>	

	0: UIH frames used only (default value) 1: UI frames used only (not supported) <port_speed> : integer type (transmission rate) 1: 9600 bit/s 2: 19200 bit/s 3: 38400 bit/s 4: 57600 bit/s 5: 115200 bit/s 6: 230400 bit/s 7: 460800 bit/s 8: 921600 bit/s <N1> : integer type (maximum frame size), ranging from 1 to 32767, where the 512 is default <T1> : integer type (acknowledgement timer in units of ten milliseconds), ranging from 1 to 255, where 10 is default (100 ms) <N2> : integer type (maximum number of re-transmissions) (not supported) <T2> : integer type (response timer for the multiplexer control channel in units of ten milliseconds) (not supported) <T3> : integer type (wake up response timer in seconds) (not supported) <k> : integer type (window size) (not supported)	
Return Value	<CR><LF>OK<CR><LF>	
Example	AT+CMUX=0 OK	Basic option. Other parameters are left out.
	AT+CMUX=? +CMUX: (0) OK	Query the available range of parameters.
Remarks	Only default setting is supported.	

1.9 Setting the Baudrate of the Module: +IPR

Description	To set the baudrate of the module
Format	<ul style="list-style-type: none"> AT+IPR=<baud rate><CR> AT+IPR?<CR> AT+IPR=?<CR>
Parameter	<baud rate> : Baudrate The value can be: 0, 2400, 4800, 9600, 14400, 19200, 28800, 33600, 38400, 57600, 115200, 230400, 460800, 921600, and 1843200.
Return Value	<CR><LF>OK<CR><LF>
	<CR><LF>+IPR: <baud rate><CR><LF> <CR><LF>OK<CR><LF>

	<CR><LF>+IPR: (list of supported <baud rate>s) <CR><LF> <CR><LF>OK<CR><LF>	
Example	AT+IPR=115200 OK	Set the baudrate of the module to 115200 bit/s.
	AT+IPR? +IPR: 115200 OK	Query the current baudrate of the module.
	AT+IPR=? +IPR: 0,2400,4800,9600,14400,19200,28800,33600,38400,57600,115200,230400,460800,921600,1843200 OK	Query the valid baudrate range of the module.
Remarks	<ul style="list-style-type: none"> • If the queried baudrate is 0, the baudrate is not set for the module. • The settings by this command will be saved after the module is powered off. • The module can automatically detect the following baudrate: 9600, 14400, 19200, 38400, 57600, and 115200. 	

1.10 Querying the Module Status: +CPAS

Description	To query the work status of the module	
Format	<ul style="list-style-type: none"> • AT+CPAS<CR> • AT+CPAS?<CR> 	
Parameter	<p><pas>:</p> <p>0: ready. The module is ready and is able to execute AT commands.</p> <p>1: unavailable. The command is not allowed by the module terminal (MT).</p> <p>3: ringing. There is an incoming call and the module is ringing. The module can execute AT commands.</p> <p>4: call in progress. A call is going on and the module can execute AT commands.</p>	
Return Value	<CR><LF>+CPAS: <pas> <CR><LF>OK<CR><LF>	
	<CR><LF>+CPAS: (list of supported < pas >s) <CR><LF>OK<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: 0,1,3,4 OK	To query the value range of the module work status

Remarks	N/A
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1.11 Enabling or Disabling the Sleep Mode: +ENPWRSAVE

Description	To enable or disable the sleep mode	
Format	<ul style="list-style-type: none"> AT+ENPWRSAVE=<n><CR> AT+ENPWRSAVE?<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).	
Return Value	<CR><LF>OK<CR><LF> <CR><LF>+ENPWRSAVE:<n><CR><LF> <CR><LF>OK<CR><LF> <CR><LF>+ENPWRSAVE:(list of supported <n>s)<CR><LF> <CR><LF>OK<CR><LF>	
Example	AT+ENPWRSAVE=1 OK	Enable the sleep mode of the module.
Example	AT+ENPWRSAVE? +ENPWRSAVE: 1 OK	Query the enabling status of the sleep mode of the module.
Example	AT+ENPWRSAVE=? +ENPWRSAVE:0,1 OK	To query the value range of the module work status
Remarks	<ul style="list-style-type: none"> The setting of the parameter <n> will not be saved after the module is powered off. After the sleep mode is enabled and the DTR signal is at low level, the module can enter the sleep mode only when all circuits of the module allows the sleep mode. 	

1.12 Clock: +CCLK

Description	To set and query the real-time clock	
Format	<ul style="list-style-type: none"> 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 required.	

Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+CCLK: <time> <CR><LF> OK<CR><LF>	
Example	AT+CCLK="08/07/01,14:54:01" OK	Set the real-time clock of the module.
	AT+CCLK? +CCLK: "08/07/01,14:54:10" OK	Query the setting of the real-time clock.
	AT+CCLK=14/07/02,10:48:50 ERROR	Command format is incorrect.
Remarks	The settings will not be saved after the module is powered off.	

1.13 Entering the PIN Codes: +CPIN

Description	To query the PIN status and enter the PIN codes	
Format	<ul style="list-style-type: none"> AT+CPIN=<pin>[,<newpin>]<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>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="0000" ERROR	PIN code is incorrect.
	AT+CPIN="1234" OK	The input PIN code is correct.
Remarks	<ul style="list-style-type: none"> To enter PIN code, you must lock the current SIM card (running AT+CLCK="SC",1,"1234") and then restart the module. If you enter wrong PIN code for three times, you must enter PUK to unlock. 	

1.14 Enabling PIN and Querying MT and Network

Device: +CLCK

Description	To lock, unlock or interrogate an ME or a network facility	
Format	<ul style="list-style-type: none"> AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]<CR> AT+CLCK=?<CR> 	
Parameter	<p><fac>: A pair of quotation marks is required for the value.</p> <p>"OI": Outgoing international calls</p> <p>"AI": All incoming calls</p> <p>"IR": Incoming calls when roaming outside the home country</p> <p>"SC": SIM card</p> <p>"AO": All outgoing calls</p> <p>"OX": All outgoing international calls except to the home country</p> <p>"FD": SIM fixed dialing memory feature</p> <p><mode>:</p> <p>0: Unlock</p> <p>1: Lock</p> <p>2: Query the status</p> <p><status>:</p> <p>0: not active</p> <p>1: active</p> <p><passwd>: Password or code, string type. A pair of quotation marks is required for the value.</p> <p><classx>:</p> <p>1: Voice service</p> <p>2: Data service</p> <p>4: Fax service</p> <p>8: SMS</p> <p>16: Synchronous data service</p> <p>32: Asynchronous data service</p> <p>64: Dedicated packet access</p> <p>128: Dedicated PAD access</p>	
Return Value	<p>When <mode>=2 and command successful:</p> <p><CR><LF>+CLCK:<status> [, <class1> [<CR><LF>+CLCK:<status>, <class2> [...]]<CR><LF></p>	
Example	<pre>AT+CLCK="SC",2 +CLCK: 0 OK</pre>	
	<pre>AT+CLCK=? +CLCK:("SC","AO","OX","FD","OI") OK</pre>	Query the network information related to the module.

	AT+CLCK="SC",0,"1234" OK	Lock the current SIM card. "1234" is the PIN code of current SIM card.
	AT+CLCK="SC",1,"2222" ERROR	The PIN code is incorrect.
Remarks	The settings of this command take effect after the module is restarted.	

1.15 Modifying the Password of the PIN: +CPWD

Description	To modify the password of the lock function of the module	
Format	<ul style="list-style-type: none"> • AT+CPWD=<fac>,<oldpwd>,<newpwd><CR> • AT+CPWD=?<CR> 	
Parameter	<p><fac>: A pair of quotation marks is required for the value. "P2":SIM PIN2 "SC": SIM card</p> <p><oldpwd>: Old password or code, string type. A pair of quotation marks is required for the value.</p> <p><newpwd>: New password or code, string type. A pair of quotation marks is required for the value.</p>	
Return Value	<p><CR><LF>OK<CR><LF></p> <p><CR><LF>+CPWD: list of supported (<fac>,<pwdlength>)s</p> <p><CR><LF>OK<CR><LF></p> <p><CR><LF> ERROR<CR><LF></p>	
Example	<p>AT+CPWD=? +CPWD: ("SC",8),("P2",8) OK</p> <p>AT+CPWD="SC","1234","0000" OK</p> <p>AT+CPWD=SC,1234,0000 ERROR</p>	<p>Query the service range of the PIN password allowed by the module.</p> <p>Modify the PIN code of the current SIM card. "1234" is the old PIN code and "0000" is the new PIN code.</p> <p>The command format is incorrect. A pair of quotation marks (") is required for each parameter.</p>
Remarks	To modify the PIN code, you must lock the SIM card (running AT+CLCK="SC",1,"1234").	

1.16 Setting GPRS Attach and Detach: +CGATT

Description	To set GPRS attach and detach	
Format	<ul style="list-style-type: none"> • 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 ERROR	No SIM card is installed, so the module returns ERROR .
	AT+CGATT? +CGATT: 0 OK	Query the GPRS status.
	AT+CGATT=? +CGATT:(0-1) OK	Query the valid parameter values for the command.
Remarks	<ul style="list-style-type: none"> 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 attach manually by executing the command AT+CGATT=1. 	

1.17 Setting PDP Format: CGDCONT

Description	To set the packet data protocol (PDP) format of the GPRS
Format	AT+CGDCONT=<cid>,<type>,<APN><CR>
Parameter	<p><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.</p> <p><type>:(Packet Data Protocol type) a string parameter. IP Internet Protocol (IETF STD 5)</p> <p><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.</p> <p><addr>: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.</p> <p><d_comp>: a numeric parameter that controls PDP data compression (applicable for SNDTCP only)</p>

	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 of the first PDP to CMNET.
	AT+CGDCONT=2, "IP", "CMNET" OK	Set APN of the second PDP to CMNET.
	AT+CGDCONT=1, "IP", "UNINET" OK	Set APN of the first PDP to UNINET.
	AT+CGDCONT=2, "IP", "UNINET" OK	Set APN of the second PDP to UNINET.
Remarks	The APN of each carrier is different from each other.	

1.18 GPRS Dialup: ATD*99#

Description	GPRS dialup through the external protocol	
Format	ATD*99#<CR>	
Parameter	N/A	
Return Value	<CR><LF>CONNECT<CR><LF>	
Example	ATD*99# CONNECT	Dial up Successful
	ATD*99# ERROR	No SIM card is installed.
Remarks	<ul style="list-style-type: none"> This command is applicable only to external protocol. Ensure that the module has registered the network and APN has been set before dialup. 	

1.19 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	+++	Switch to command mode

	OK	
Remarks	This command can be used only for external protocol stack.	

1.20 Switching Command Mode to Data Mode: O

Description	To switch the module from the command mode to the data mode	
Format	ATO<CR>	
Parameter	N/A	
Return Value	See the Example.	
Example	ATO CONNECT	Switch to data mode.
Remarks	This command can be used only for external protocol stack.	

1.21 Selecting and Registering a GSM Network: +COPS

Description	To select and register a GSM network
Format	<ul style="list-style-type: none"> • AT+COPS=[<mode>[,<format>[,<oper>>[,<AcT>]]]] • AT+COPS?<CR> • AT+COPS=?<CR>
Parameter	<p><mode>: To set automatic network selection or manual selection:</p> <p>0: Automatic selection (ignore the parameter <oper>)</p> <p>1: Manual selection</p> <p>2: Deregister from the network</p> <p>3: Set <format>only</p> <p>4: Manual/automatic selection (if the manual selection fails, automatic mode starts)</p> <p><format>:</p> <p>0: Long alphanumeric <oper> (default value)</p> <p>1: Short format alphanumeric <oper></p> <p>2: Numeric <oper></p> <p><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).</p> <p><AcT>: Indicates the radio access technology and its value can be 0, 1, and 2.</p> <p>0: GSM</p> <p>1: GSM compact</p> <p>2: UTRAN</p>
Return Value	<p><stat>:</p> <p>0: Unknown network</p>

	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 AT+COPS? +COPS: 0,2,"46000" OK	China Mobile (Please note the two spaces between CHINA and MOBILE.) If it is set to digital mode, get the number 46000
	AT+COPS? +COPS:0,0,"CHINA UNICOM" OK AT+COPS? +COPS: 0,2,"46001" OK	China Unicom (Please note the two spaces between CHINA and UNICOM.) If it is set to digital mode, then get the number 46001.
Remarks	N/A	

2 SMS Commands

2.1 Setting Preferred SMS Storage: +CPMS

Description	To set preferred SMS storage	
Format	<ul style="list-style-type: none"> AT+CPMS=<mem1>[[,<mem2>][,<mem3>]]<CR> AT+CPMS?<CR> AT+CPMS?<CR> 	
Parameter	<p><mem1>: from where SMS messages are read or deleted, string type, for example, "SM", "ME"</p> <p><mem2>: where SMS messages are written or sent from, string type</p> <p><mem3>: where SMS messages received are stored, string type</p> <p>"SM": SIM only</p> <p>"ME": ME only</p>	
Return Value	<p><CR><LF>+CPMS:<used1>,<total1>,<used2>,<total2>,<used3>,<total3><CR><LF></p> <p><CR><LF>OK<CR><LF></p> <p>OR</p> <p><CR><LF>+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3><CR><LF></p> <p><CR><LF>OK<CR><LF></p> <p>OR</p> <p><CR><LF>+CPMS:(list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s)<CR><LF></p> <p><CR><LF>OK<CR><LF></p> <p><used>: Used quantity</p> <p><total>: Total capacity of the storage</p>	
Example	<pre>AT+CPMS="SM" +CPMS: 0, 50, 0, 50, 0, 50 OK</pre>	Set the SMS storage to "SM", that is, store SMS messages in SIM card.
	<pre>AT+CPMS? +CPMS: "SM", 14, 50, "SM", 14, 50, "SM", 14, 50 OK</pre>	Query the capacity of current SMS storage.
	<pre>AT+CPMS=? +CPMS: ("ME","SM"),("ME","SM"),("ME","SM") OK</pre>	Query the available storages.
	<pre>AT+CPMS="SM"</pre>	No SIM card is installed.

	ERROR	
Remarks	N/A	

2.2 Setting SMS Inputting Mode: +CMGF

Description	To set the SMS inputting mode	
Format	<ul style="list-style-type: none"> AT+CMGF=[<mode>]<CR> AT+CMGF?<CR> AT+CMGF=?<CR> 	
Parameter	<mode>: 0: PDU mode 1: Text mode	
Return Value	<CR><LF>OK<CR><LF>	
	<CR><LF>+CMGF: <mode> <CR><LF>OK<CR><LF>	
	<CR><LF>+CMGF: (list of supported <mode>s) <CR><LF>OK<CR><LF>	
	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	

2.3 Setting the TE Character Set: +CSCS

Description	To set the format of the TE character set	
Format	<ul style="list-style-type: none"> AT+CSCS=[<chset>]<CR> AT+CSCS?<CR> AT+CSCS=?<CR> 	
Parameter	< chset >: <ul style="list-style-type: none"> "IRA": International reference alphabet (ITU-T T.50) "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 	

	<p>the source MT character set.</p> <ul style="list-style-type: none"> "PCCP936": PC character set Code Page 936 "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	<CR><LF>OK<CR><LF>	
	<CR><LF>+CSCS: <chset> <CR><LF>OK<CR><LF>	
	<CR><LF>+CSCS: (list of supported <chset>s) <CR><LF>OK<CR><LF>	
Example	AT+CSCS="HEX" OK	Set HEX character set.
	AT+CSCS? +CSCS:"HEX" OK	Query the format of current character set.
	AT+CSCS=? +CSCS: ("IRA","GSM","HEX","PCCP936","UCS2") 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.	

2.4 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	<ul style="list-style-type: none"> AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]<CR> AT+CNMI?<CR> AT+CNMI=?<CR>
Parameter	<p><mode>: controls the processing of unsolicited result codes specified within this command.</p> <p>0: Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.</p> <p>1: Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.</p> <p>2: Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE.</p> <p>3: Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.</p>

	<p><mt>: sets the result code indication routing for SMS-DELIVERs. The default value is 2. 0: No SMS-DELIVER indications are routed to the TE. 1: Indication of SMS-DELIVER is routed to the TE using unsolicited result code: +CMTI: "MT" ,<index>. The SMS message is stored rather than directly displayed. 2: SMS-DELIVERs (except class 2 messages) are routed directly to the TE using unsolicited result code: +CMT :<oa>,<scts>,<tooa>,<lang>,<encod>,<priority>[,<cbn>],<length><CR><LF><data> (text mode). SMS messages are directly displayed rather than stored. 3: Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other classes result in indication as defined in <mt>=1.</p> <p><bm>: sets the result code indication routing for CBMs. The default value is 0. 0: No CBM indications are routed to the TE. 1: The cell broadcast instruction code is +CBMI:" BC" ,<index> and the cell broadcast is stored. 2: Indication of new CBM is routed to the TE using unsolicited result code: +CBM:<oa>,<alpha>,<scts>[,<tooa>,<length>] <CR><LF><data>(text mode). The cell broadcast will be directly displayed rather than stored. 3: Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. Messages of other classes result in indication as defined in <bm>=1.</p> <p><ds>: sets the result code indication routing for SMS-STATUS-REPORTs. The default value is 0. 0: No SMS-STATUS-REPORTs are routed to the TE. 1: SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS :<fo>,<mr>,<ra>[,<tora>],<scts> ,<dt>,<st>(text mode).</p> <p><bfr>: defines the handling method for buffered result codes when <mode> 1, 2 or 3 is enabled. The default value is 0. 0: TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1..2 is entered (OK response shall be given before flushing the codes). 1: TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1..3 is entered.</p>	
Return Value	<p><CR><LF>OK<CR><LF></p> <p><CR><LF>+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr> <CR><LF>OK<CR><LF></p> <p><CR><LF>+CNMI: (list of supported <mode>s), (list of supported <mt>s), (list of supported <bm>s), (list of supported <ds>s), (list of supported <bfr>s) <CR><LF>OK<CR><LF></p>	
Example	<p>AT+CNMI=1,1,0,0 OK</p> <p>AT+CNMI=? +CNMI: (0-3), (0-3), (0,2), (0-1), (0,1) OK</p>	<p>Set the SMS message indication mode.</p> <p>Query the value ranges of the paramters.</p>

	AT+CNMI? +CNMI: 1, 1, 0, 0, 0 OK	Query the current setting of the parameters.
Remarks	<ul style="list-style-type: none"> The default settings of this command are 0, 2, 0, 0, 0. 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). <p>SMS messages are classified into four classes based on the storing:</p> <p>Class 0: displayed only Class 1: Stored in the ME memory Class 2: Stored in the SIM card Class 3: Directly transmitted to TE</p>	

2.5 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	<ul style="list-style-type: none"> if text mode (+CMGF=1), command successful: <CR><LF>+CMGR: <stat>,<oa>,[<alpha>],<scts>[,<toa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>] <CR><LF><data><CR><LF><CR><LF>OK<CR><LF> if PDU mode (+CMGF=0) and command successful: <CR><LF>+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu><CR><LF><CR><LF>OK<CR><LF> <p><alpha>: Name of <da> or <oa> on MT <stat>: Message status in store <oa>: character string of source number <scts>: character string of SMSC time <length>: data length in text mode; TPUD bytes in PDU mode. <pdu>: hexadecimal value of ME/TA <data>: SMS data</p>	
Example	AT+CMGR=12 +CMGR: "REC READ","13410995077","","14/07/02,14:06:25+32" asdf?@123 OK	Read the 12 th message in text mode.
	AT+CMGR=12 +CMGR: 1,,27 0891683110808805F0240BA13114905970F7000041	Read the 12 th message in PDU mode.

	70204160522309E139D9FC03C46433 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.	

2.6 SMS Message List: +CMGL

Description	To read SMS messages of one type from the current memory specified by the +CPMS command
Format	<ul style="list-style-type: none"> • AT+CMGL[=<stat>]<CR> • AT+CMGL=?<CR>
Parameter	<p><state>: String type or numeric type</p> <p>When you set AT+CMGF=1,</p> <ul style="list-style-type: none"> • "REC UNREAD": Unread SMS messages received • "REC READ": Read SMS messages received • "STO UNSENT": Stored unsent SMS messages • "STO SENT": Stored sent SMS messages • "ALL": All SMS messages <p>When you set AT+CMGF=0,</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • if text mode (+CMGF=1),command successful: <CR><LF>+CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>],[<tooa/toda>,<length>]<CR><LF> <data><CR><LF> <CR><LF>+CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>],[<tooa/toda>,<length>]<CR><LF> <data><CR><LF>>[...] • 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	<pre>AT+CMGL="ALL" +CMGL: 1,"REC READ","10010","", "14/06/23,14:42:27+32" 0500034F0302672C77ED4FE14E2D768452694F596D4191CF5305542B53E052A05305 6D4191CFFF0C8BF76CE8610F533A52064F7F7528FF093002672C6B2167E58BE27E D3679C5B5857285EF665F6FF0C8BF74EE551FA8D264E3A51C63002767B96468054</pre>

	<pre>901A624B673A84254E1A53850020007700610070002E00310030003000310030002E0 063006F006D +CMGL: 2,"REC READ","10010",",",,"14/06/23,14:42:27+32" 0500034F03016E2999A863D0793AFF0C622A6B62003667080032003265E5FF0C60A8 5F5367085957991051856D4191CF5DF24F7F752800340033002E00360031004D0042F F0C52694F596D4191CF003200350036002E00330039004D0042FF08598260A88BA28 D2D4E867EA256F4811662164E9196C0621660A6005400566D4191CF53E052A05305 FF0C5219 OK.</pre>	
	<pre>AT+CMGL=? +CMGL:("REC UNREAD", "REC READ", "STO UNSENT", "STO SENT", "ALL") OK</pre>	Query in text format (AT+CMGF=1).
	<pre>AT+CMGL=? +CMGL: (0-4) OK</pre>	Query in PDU format (AT+CMGF=0).
	<pre>AT+CMGF=1 OK AT+CMGL=4 ERROR</pre>	The parameter should be set to 0 .
	<pre>AT+CMGF=0 OK AT+CMGL="ALL" ERROR</pre>	The parameter should be set to 1 .
Remarks	N/A	

2.7 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	<ul style="list-style-type: none"> AT+CMGS=<da>[,<toda>]<CR>text is entered<Ctrl-Z/ESC> (Text command syntax) AT+CMGS=<length><CR>PDU is given<Ctrl-Z/ESC> (PDU command syntax)
Parameter	<da>: The destination number to which the SMS message is sent in text mode <text>: SMS message content in text mode <length>: The byte length of the SMS message content in PDU mode <mr>: The storage location <CR>: End character

	<p><Ctrl-Z>: Indicates the end of the input message, → in the example.</p> <p><ESC>: Indicates giving up the input message</p>	
Return Value	<ul style="list-style-type: none"> if text mode (+CMGF=1) and sending successful: <CR><LF>+CMGS: <mr>[,<scts>] <CR><LF>OK<CR><LF> if PDU mode (+CMGF=0) and sending successful: <CR><LF>+CMGS: <mr>[,<ackpdu>] <CR><LF>OK<CR><LF> 	
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> >0891683108705505F001000B815118784271F20008146DF15 7335E025B9D5B89533A59276D6A80545EFA → +CMGS: 0 OK	PDU mode (+CMGF=0)
Remarks	<ul style="list-style-type: none"> 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. 	

2.8 Writing SMS Messages: +CMGW

Description	<p>To write an SMS message into the memory</p> <p>The location information <index> will be returned after the message is saved correctly.</p>
Format	<p>Command syntax (text mode): AT+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR>text is entered<Ctrl-Z/ESC></p> <p>Command syntax (PDU mode): AT+CMGW=<length>[,<stat>]<CR>PDU is given<Ctrl-Z/ESC></p>
Parameter	<p><da>: The destination number to which the SMS message is sent in text mode</p> <p><text>: SMS message content in text mode</p> <p><length>: The byte length of the SMS message content in PDU mode</p> <p><index>: Location information</p> <p><CR>: End character</p> <p><Ctrl-Z>: Indicates the end of the input message</p> <p><ESC>: Indicates giving up the input message</p>
Return Value	<CR><LF>+CMGW:<index>

	<CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF>	
Example	AT+CMGW="091137880"<CR> >"This is the text"<Ctrl-Z> +CMGW: 15 OK	Text mode (+CMGF=1)
	AT+CMGW=31<CR> >0891683108705505F001000B813124248536F300081200 400026002A535A53D153A653C1532052C7<Ctrl-Z> +CMGW: 1 OK	PDU mode (+CMGF=0)
Remarks	Press Enter or send <CR> in hexadecimal form after AT+CMGS if you use a UART debugging tool to send PDU messages.	

2.9 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	<ul style="list-style-type: none"> if text mode (+CMGF=1) and sending successful: <CR><LF>+CMSS: <mr>[,<scts>] <CR><LF>OK<CR><LF> if PDU mode (+CMGF=0) and sending successful: <CR><LF>+CMSS: <mr>[,<ackpdu>] <CR><LF>OK<CR><LF> 	
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	

2.10 Deleting SMS Messages: +CMGD

Description	To delete SMS messages from the current memory.	
Format	<ul style="list-style-type: none"> 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	<CR><LF>OK<CR><LF>	
	<CR><LF>+CMGD: (list of supported <index>s, list of supported <delflag>s) <CR><LF>OK<CR><LF>	
Example	AT+CMGD=1,3 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.
Remarks	If you set <delflag>, ignore the parameter <index>.	

2.11 Setting the SMS Center Number: +CSCA

Description	To set the SMS center number	
Format	<ul style="list-style-type: none"> 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	<CR><LF>OK<CR><LF>	
	<CR><LF>+CSCA: <sca>, <tosca> <CR><LF>OK<CR><LF>	
Example	AT+CSCA="8613800755500",145 OK	Set an international SMSC number.
	AT+CSCA? +CSCA: "8613800755500", 145	Query the SMSC number.

	OK	
Remarks	N/A	

2.12 Setting the Parameters of the Text Mode: +CSMP

Description	To select required values for the additional parameters in the text mode, and set the validity period since the message is received from the SMSC, or the absolute time defining the end of the validity period											
Format	<ul style="list-style-type: none"> AT+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]<CR> AT+CSMP?<CR> 											
Parameter	<p><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)</p> <p><vp>:</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Validity Period</th> </tr> </thead> <tbody> <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> </tbody> </table> <p><pid>: Integer-type TP-protocol-ID (default value: 0)</p> <p><dcs>: Encoding plan for integer-type cell broadcast data (default value: 0)</p>		Value	Validity Period	0-143	(vp+1)*5mins, 12 hours at most	144-167	12hours +((vp-143)*30mins), 24 hours at most	168-196	(vp-166)*1day	197-255	(vp-192)*1week
Value	Validity Period											
0-143	(vp+1)*5mins, 12 hours at most											
144-167	12hours +((vp-143)*30mins), 24 hours at most											
168-196	(vp-166)*1day											
197-255	(vp-192)*1week											
Return Value	See the Example.											
Example	<pre>AT+CSMP=17,167,0,0 OK</pre>	<p>Text mode parameters:</p> <p>17: 00010001 in binary system, indicating no status report</p> <p>167: The validity period of the information is 24 hours.</p> <p>0: Default value</p> <p>0: Only messages in text format can be sent (8 indicates PDU messages).</p>										
	<pre>AT+CSMP? +CSMP: 17,167,0,0 OK</pre>	Query the current settings of the text mode.										
Remarks	N/A											

2.13 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
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Format	<ul style="list-style-type: none"> • 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=26 +CMGR: "REC READ","18665312109","", "15/12/16 09:08:25+08" 0038003700320030003000380034003000390040007100 71002E0063006F006D OK	Set the header information to not display Read the 26 th message.
	AT+CSDH=1 OK AT+CMGR=26 +CMGR: "REC READ","18665312109","", "15/12/16 09:08:25+08",161,17,0,0,"+8613010888500",145,16 0038003700320030003000380034003000390040007100 71002E0063006F006D OK	Set the detailed header information to display. Read the 26 th 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 .	

3 TCP/UDP Data Service

3.1 Setting Up a PPP Link: +XIIC

Description	To set up a PPP connection
Format	<ul style="list-style-type: none"> • AT+XIIC=<n><CR> • AT+XIIC?<CR> Query the PPP connection status

Parameter	<n>: 1	
Return Value	See the Example.	
Example	AT+XIIC=1 OK	The module is required to set up a PPP connection.
	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 connection 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 connection has not been set up successfully. There are four spaces before 0 .
	GPRS DISCONNECTION	PPP connection is disconnected.
Remarks	<ul style="list-style-type: none"> • Ensure that a PPP connection has been set up before you establish a TCP connection. You can run the +XIIC command to check. • Use the AT+CGDCONT command to set the APN and other parameters before you set up a PPP connection. • Ensure that the module has registered the network before you use the AT+XIIC=1 command to set up PPP connection. 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. 	

3.2 Setting Up TCP connection: +TCPSETUP

Description	To set up a TCP connection
Format	AT+TCPSETUP=<n>,<ip>,<port><CR>
Parameter	<n>: Socket number, ranging from 0 to 5 <ip>: Destination IP address, in xx.xx.xx.xx or domain name format <port>: Destination port ID in decimal ASCII code
Return Value	<CR><LF>OK<CR><LF> <CR><LF>+TCPSETUP:<n>,OK<CR><LF> Or <CR><LF>OK<CR><LF> <CR><LF>+TCPSETUP:<n>, FAIL<CR><LF> Or:

	<CR>+TCPSETUP:Error <err><CR>	
	<err>: Error code	
Example	AT+TCPSETUP=0,220.199.66.56,6800 OK +TCPSETUP:0,OK	The connection to 220.199.66.56,6800 is successfully set up on socket 0.
	AT+TCPSETUP=0,192.168.20.6,7000 OK +TCPSETUP:0,FAIL	Failed to set up the connection to 192.168.20.6,7000 on socket 0. The server is probably not started, the IP address is incorrect, or the SIM card is out of credit.
	AT+TCPSETUP=0,201.128.20.6,7000 +TCPSETUP:Error 1	A TCP/UDP connection has been set up on socket 0.
	AT+TCPSETUP=201.128.20.6,7000 +TCPSETUP:Error 2	The command format is incorrect.
Remarks	Use the AT+XIIC=1 command to set up a PPP connection before running this command.	

3.3 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 5. A TCP connection is established on the socket. <length>: The length of the data to be sent, ranging from 1 to 2000 , unit: byte.	
Return Value	See the Example.	
Example	AT+TCPSEND=0,10 > OK +TCPSEND:0,10	10-byte data is successfully sent through socket 0.
	AT+TCPSEND=0,10 > +TCPSEND:Error	Failed to send 10-byte data through socket 0.
	AT+TCPSEND=0,536 +TCPSEND:Buffer not enough,439	2800-byte data fails to be sent on socket 0 because the buffer is not enough.
	AT+TCPSEND=0,2800 +TCPSEND>Data length error	2800-byte data fails to be sent on socket 0 because data length exceeds the limit.

Remarks	<ul style="list-style-type: none"> • Ensure that the TCP connection 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. • Network congestion can result in sending failure. • Before > is 0x0d, 0x0a.
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3.4 Receiving TCP Data: +TCPRECV

Description	To receive TCP data	
Format	+TCPRECV:<n>,<length>,<data><CR><LF>	
Parameter	<n>:Socket number, ranging from 0 to 5 <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 .
Remarks	N/A	

3.5 Closing TCP Connection: +TCPCLOSE

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

3.6 Setting Up UDP Connection: +UDPSETUP

Description	To set up a UDP connection
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Format	AT+UDPSETUP=<n>,<ip>,<port><CR>	
Parameter	<n>:Socket number, ranging from 0 to 5 <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 connection to 220.199.66.56.7000 is successfully set up on socket 1.
	AT+UDPSETUP=1,192.168.20.6,7000 OK +UDPSETUP:1,FAIL	Failed to set up the connection to 192.168.20.6,7000 on socket 1 because socket 1 is unavailable.
	AT+UDPSETUP=0,201.128.20.6,7000 +UDPSETUP:Error 1	A TCP/UDP connection has been set up on socket 0.
	AT+UDPSETUP=201.128.20.6,7000 +UDPSETUP:Error 2	The command format is incorrect.
Remarks	<ul style="list-style-type: none"> Use the AT+XIIC=1 command to set up a PPP connection before running this command. The local address of UDP varies with PPP connections. 	

3.7 Sending UDP Data: +UDPSSEND

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+UDPSSEND=<n>,<length><CR>	
Parameter	<n>: Socket number, ranging from 0 to 5 . A UDP connection is established on the socket. <length>: The length of the data to be sent, ranging from 1 to 2000, unit: byte.	
Return Value	<ul style="list-style-type: none"> If the AT command is input in correct format, the module returns >. If the command is input in incorrect format, the module returns <CR><LF>+UDPSSEND:Error<CR><LF>. After entering the command, input the data to be sent until the module returns >. If the UDP data is sent successfully, the module returns <CR><LF>+UDPSSEND:<n>,<length><CR><LF>. <length> indicates the length of data already sent. 	
Example	AT+UDPSSEND=0,10 >1234567890 OK	10-byte data is successfully sent through socket 0.

	+UDPSEND:0,10	
	AT+UDPSEND=0,2800 +UDPSEND:Data length error	2800-byte data fails to be sent on socket 0 because data length exceeds the limit.
Remarks	<ul style="list-style-type: none"> Ensure that the UDP connection has been set up before sending UDP data. Before > is 0x0d, 0x0a. 	

3.8 Receiving UDP Data: +UDPRECV

Description	To receive UDP data	
Format	<CR><LF>+UDPRECV:<n>,<length>,<data><CR><LF>	
Parameter	<n>: Socket number, ranging from 0 to 5 <length>: The length of the data received <data>: The data received Add 0x0d 0x0a to the end of the data. You can identify the end based on <length>.	
Return Value	See the Example.	
Example	+UDPRECV: 0,10,1234567890	10-byte data is successfully received on socket 0. The data is 1234567890.
Remarks	N/A	

3.9 Closing UDP Connection: +UDPCLOSE

Description	To close the UDP connection	
Format	AT+UDPCLOSE=<n><CR>	
Parameter	<n>: Socket number, ranging from 0 to 5	
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 connection on socket 1 is closed successfully.
	AT+UDPCLOSE=2 +UDPCLOSE:ERROR	Socket number error
	+UDPCLOSE:0,Link Closed	The TCP connection is closed. The server sends UDP connection closing command or the network encounters abnormality or weak signals.
Remarks	N/A	

3.10 Querying TCP/UDP Connection Status: +IPSTATUS

Description	To query the TCP/UDP connection status	
Format	AT+IPSTATUS=<n><CR>	
Parameter	<n>: Socket number, ranging from 0 to 5	
Return Value	<CR><LF>+IPSTATUS:<n>,<CONNECT or DISCONNECT>,<TCP or UDP>, <send-buffer-size><CR><LF> <CONNECT or DISCONNECT>:Socket status, value: CONNECT or DISCONNECT <TCP or UDP>:Connection type, value: TCP or UDP <send-buffer-size>:The size of the available send buffer on the module, in decimal ASCII mode, unit: byte	
Example	AT+IPSTATUS=0 +IPSTATUS:0,CONNECT,TCP,2047	A TCP connection has been set up on socket 0 and the buffer size is 2047 bytes.
	AT+IPSTATUS=1 +IPSTATUS:1,DISCONNECT	No TCP or UDP connection is set up on socket 1.
	AT+IPSTATU ERROR	The AT command is not complete.
	AT+IPSTATUS=7 +IPSTATUS:Error 1	The socket number in the command is incorrect.
	AT+IPSTATU=1 ERROR	The command format is incorrect. An "S" is omitted.
Remarks	N/A	

3.11 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 5 <port>: Port ID, ranging from 1 to 65535	
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 by default. The first UDP port is 4096 while the second is 4097.
Remarks	<ul style="list-style-type: none"> 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 by default, that is, the first one is 4096, the second one is 4097, ... 	

3.12 Setting Up TCP Transparent Transmission 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 connection is set up successfully.
	AT+TCPTRANS=newayjsr.oicp.net,60010 OK +TCPTRANS:OK	A TCP transparent transmission connection 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 OK +TCPTRANS:FAIL	Failed to set up a TCP transparent transmission connection.
	AT+TCPTRANS=220.199.66.56,6800 ERROR	ERROR is returned after the command is executed because a transparent transmission (TCP, UDP, TCP server) connection has been set up.
Remarks	<ul style="list-style-type: none"> The UART does not display the data transmitted to the server after the transparent transmission TCP connection 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 connection 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 connection is set up successfully and +TCPTRANS:OK is returned. 	

3.13 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 connection is set up successfully.
	AT+UDPTRANS=neowayjsr.oicp.net,60010 OK +UDPTRANS:OK	A UDP transparent transmission connection 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 connection.
	AT+UDPTRANS=220.199.66.56,6800 ERROR	ERROR is returned after the command is executed because a transparent transmission (TCP, UDP, TCP server) connection has been set up.
Remarks	<ul style="list-style-type: none"> The UART does not display the data transmitted to the server after the transparent transmission UDP connection 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 connection 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 connection is set up successfully and +UDPTRANS:OK is returned. 	

3.14 Setting Automatic TCP Data Sending: +TCPAUTO

Description	To set automatic TCP data sending
Format	<ul style="list-style-type: none"> AT+TCPAUTO=<socket>,<operation>[,<mode>,<time>,<length>]<CR> AT+TCPAUTO=?<CR>
Parameter	<socket>: socket number, ranging from 0 to 5. <operation>: Operation, ranging from 0 to 3. 0: restore to the default setting 1: set automatic sending 2: start automatic sending 3: stop automatic sending <mode>: return value mode, which is valid only when <operation> is set to 1. 0: No return value is displayed after the TCP data is (or not) sent successfully.

	<p>1: Return value is displayed after the TCP data is (or not) sent successfully.</p> <p><time>: Time when the TCP data is sent, ranging from 1 to 1800, unit: s (valid only when <operation> is set to 1)</p> <p><length>: data length, ranging from 1 to 50, unit: byte (valid only when <operation> is set to 1)</p>	
Return Value	See the Example	
Example	<pre>AT+TCPAUTO=0,1,1,120,20 > OK +TCPAUTO: 0,OK AT+TCPSETUP=0,220.199.66.56,6800 OK +TCPSETUP:0,OK AT+TCPAUTO=0,2 OK +TCPAUTO: 0,120,20,OK +TCPAUTO: 0,120,20,ERROR</pre>	<p>Set socket 0 to send 20-byte data after 120 seconds and allow return value. Enter the 20-byte TCP data after > is returned. Set up a TCP connection.</p> <p>Start the automatic sending.</p> <p>Return value after socket 0 successfully sends 20-byte data at the scheduled time.</p> <p>Return value after socket 0 fails to send 20-byte data at the scheduled time.</p>
	<pre>AT+TCPAUTO=0,1,0,120,20 > OK +TCPAUTO: 0,OK</pre>	<p>Set socket 0 to send 20-byte data after 120 seconds and forbid return value. Enter the 20-byte TCP data after > is returned.</p>
	<pre>AT+TCPAUTO=0,1,1,120,20 > +TCPAUTO: 0,OPERATION EXPIRED</pre>	<p>After > is displayed, the operation expired information will be displayed if you do not enter TCP data in 1 minute.</p>
	<pre>AT+TCPAUTO=0,2 OK</pre>	<p>After the TCP connection is set up, send this command to start the automatic sending.</p>
	<pre>AT+TCPAUTO=0,2 ERROR</pre>	<p>ERROR is returned because the TCP connection has not been set up or the automatic sending is not set on socket 0.</p>
	<pre>AT+TCPAUTO=0,3 OK</pre>	<p>Stop automatic sending on socket 0.</p>
	<pre>AT+TCPAUTO=0,3 ERROR</pre>	<p>ERROR is returned because the automatic sending is not set on socket 0 or has been stopped.</p>
	<pre>AT+TCPAUTO=0,0 OR</pre>	<p>Restore the default settings of socket 0, that is, cancel the automatic sending.</p>
	<pre>AT+TCPAUTO=0,0 ERROR</pre>	<p>ERROR is returned because automatic sending is not set on socket 0.</p>
	<pre>AT+TCPAUTO=? +TCPAUTO: (0-5),(0-3),(1-1800),(1-50)</pre>	<p>Query the available range of parameters</p>

	OK	
Remarks	<ul style="list-style-type: none">• The settings by this command will not be saved after the module is powered off.• This command is used only for non-transparent transmission TCP connections.• The auto-sending function will be stopped if you issue the AT+TCPSEND command. It will start again after the AT+TCPSEND command is executed completely.	

4 DNS Command

4.1 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.xxx.com	
Return Value	<CR><LF>OK<CR><LF> <CR><LF>+DNS:<ip> <CR><LF>+DNS:OK<CR><LF>	
Example	AT+DNS=" www.neoway.com.cn " OK +DNS: 112.127.8.18 +DNS:OK	Query the IP address of www.neoway.com.cn, and the module returns the IP address 112.127.8.18.
	AT+DNS="www.neoway.com.cn" OK +DNS:Error	Failed to translate the DNS in to IP address because PPP is not activated
Remarks	<ul style="list-style-type: none"> The URL length should not exceed 250 bytes. Activate PPP before executing this command. 	

5 FTP AT Commands

5.1 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 in general <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	<ul style="list-style-type: none"> • +FTPLOGIN: Error: The format of the AT command is incorrect • +FTPLOGIN:Have Logged In: The user has logged in to the FTP server. • +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:Error Connect Server Fail: Failed to connect the FTP server. • +FTPLOGIN:Error TimeOut: Logging exceeds 30 seconds. • +FTP:Server Control Link Disconnect +FTP:Server Data Link Disconnect: Connected to the FTP server successfully and then the connection disconnected. 	
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=219.134.179.52,21,user1,pwd2009 OK +FTPLOGIN:Error Connect Server Fail	Failed to log in to the FTP server because the PPP is not activated or the server didn't respond.
	AT+FTPLOGIN=58.60.184.213,21,neowayftp,neoway OK +FTPLOGIN:530 Not logged in	Failed to log in to the FTP server because the password is incorrect.
	AT+FTPLOGIN=58.60.184.213,21,neowayftp,neowayftp +FTPLOGIN:Have Logged In	The user has logged in to the FTP server.

Remarks	<ul style="list-style-type: none"> 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. Activate PPP before using this command.
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5.2 Logging Out from the FTP Server: +FTPLOGOUT

Description	To log out from the FTP server	
Format	AT+FTPLOGOUT<CR>	
Parameter	N/A	
Return Value	<CR><LF>OK<CR><LF>	
Example	AT+FTPLOGOUT OK	Log out from the FTP server
Remarks	N/A	

5.3 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 3: Obtain the file length <offset>: file content offset <length>: Specifies the length of file content to be read, ranging from 1 to 1024	
Return Value	<ul style="list-style-type: none"> +FTPGET: Error<n>: The format of the AT command is incorrect. n: Error Code +FTPGET:Error Not Login: The user has not logged in to the FTP server. +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 <m>: The module reads the data of <m> byte 	

	successfully.	
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 +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 +FTPGET:OK.total length is 65	Obtain the information about test.txt .
	AT+FTPGET=test.txt,1,1 +FTPGET:10,0123456789 +FTPGET:OK.total length is 10	Obtain the information in test.txt .
	AT+FTPGET=test.txt,1,1,2 +FTPGET:8,23456789 +FTPGET:OK.total length is 8	Obtain file content starting from the 2nd byte.
	AT+FTPGET=test.txt,1,1,2,4 +FTPGET:4,2345 +FTPGET:OK.total length is 4	Obtain the information of the 4 th byte counting since second byte.
	AT+FTPGET=test.txt,1,3 +FTPGET:OK.file length is 10	Obtain the file length of test.txt.
	Remarks	N/A

5.4 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 <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. You need to set size to 0, and then enter 0x0d after > is displayed. <size>: Data length. The data length cannot exceed 3072.	
Return Value	<ul style="list-style-type: none"> • Error: The format of the AT command is incorrect. • +FTPPUT:Error Not Login: The user has not logged in to the FTP server. • +FTPPUT:length overflow: The value of <length> is greater than 3072. • +FTPPUT:OK,<n>: The file is sent successfully and the file length is n. • +FTPPUT:Delete File OK: The file is deleted successfully. 	
Example	AT+FTPPUT=test.txt,1,1,1024 > +FTPPUT:OK,1024	Upload the test.txt file, which is 1024 bytes. The file is transferred in ASCII and the operated in STORE.
	AT+FTPPUT=test.txt,1,2,1024 > +FTPPUT:OK,1024	Upload the test.txt file, which is 1024 bytes. The file is transferred in ASCII and the operated in APPE.
	AT+FTPPUT=test.txt,1,3,0 +FTPPUT:Delete File OK	Delete the test.txt file.
Remarks	No terminal display for input data.	

5.5 Querying FTP Connection Status: +FTPSTATUS

Description	To query the FTP connection status	
Format	AT+FTPSTATUS<CR>	
Parameter	N/A	
Return Value	+FTPSTATUS:<status>,<ip>, <port> <status>: logout: The FTP connection has not been set up. login: The FTP connection has been set up. <ip>: The IP address of the FTP server <port>: The port of the FTP server	
Example	AT+FTPSTATUS +FTPSTATUS:login,219.134.179.521,21	The module is successfully connected to the FTP server.
Remarks	N/A	

6 TCP Server AT Commands

6.1 Setting TCP Listening for the Server: +TCPLISTEN

Description	To set the TCP listening function of the server	
Format	AT+TCPLISTEN=<port><CR>	
Parameter	<Port>: Port ID <Socket>:SOCKET ID	
Return Value	<CR><LF>+TCPLISTEN:<socket>,OK<CR><LF> <Socket>:SOCKET ID, at most five sockets at one time	
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	Activate the PPP before using this command. Only the SIM cards with fixed IP addresses can be used as servers.	

6.2 Closing the Listening Connection: +CLOSELISTEN

Description	To close the listening connection and close all connections	
Format	AT+CLOSELISTEN<CR>	
Parameter	N/A	
Return Value	<CR><LF>+CLOSELISTEN:<socket>,local link closed<CR><LF> Socket: SOCKET ID	
Example	AT+CLOSELISTEN +CLOSECLIENT:1,remote link closed	The local link will be closed if there is any connection to the client.

	+CLOSELISTEN:0,local link closed	
	AT+CLOSELISTEN +CLOSELISTEN:ERROR	No listening connection
Remarks	N/A	

6.3 Closing Connections of the Client: +CLOSECLIENT

Description	To close all connections with the client	
Format	AT+CLOSECLIENT[=<socket>]	
Parameter	<Socket>: Socket ID	
Return Value	<CR><LF>+CLOSECLIENT:<socket>,remote link closed<CR><LF>	
Example	AT+CLOSECLIENT=1 +CLOSECLIENT:1,remote link closed	There is a parameter in this command. Close the connection on socket 1 with the client.
	AT+CLOSECLIENT +CLOSECLIENT:0,remote link closed +CLOSECLIENT:1,remote link closed	There is no parameter in this command. All connections with the client are closed successfully.
Remarks	N/A	

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

Description	To receive data from the client	
Format	<CR><LF>+TCPRECV(S):<SOCKET>,<length>,<data><CR><LF>	
Parameter	< SOCKET>: Socket number <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.
Remarks	Additional (s) makes this command different from the receive mode of the client mode in format.	

6.5 Sending Data to the Client: +TCPSENDS

Description	To send data to the client
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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 2000 , unit: byte.	
Return Value	<CR><LF>OK<CR><LF> <CR><LF>+TCPSENDS: <socket>,<length><CR><LF>	
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=0,1024 > +TCPSENDS:ERROR	The module (server) sends TCP data and encounters data congestion.
Remarks	Ensure that the TCP connection has been set up before sending TCP data.	

6.6 Querying the Connection Status on the Client: +CLIENTSTATUS

Description	To query the status of the connection 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	<CR><LF>+CLIENTSTATUS:<socket>,CONNECT,TCP,<send-buffer-size><CR><LF> > Or <CR><LF>+CLIENTSTATUS:Error 1<CR><LF>	
Example	AT+CLIENTSTATUS=0 +CLIENTSTATUS:0,CONNECT,TCP,2048	A TCP connection has been set up with the socket 0 client and the buffer size is 2048 bytes.
	AT+CLIENTSTATUS=1 +CLIENTSTATUS:Error 1	The connection does not exist.
Remarks	N/A	

7 Unlimited UDP Server AT Commands

7.1 Setting UDP Listening for Server: +FUDPLISTEN

Description	To set UDP listening for the server	
Format	<ul style="list-style-type: none"> • AT+FUDPLISTEN=<port><CR> • AT+FUDPLISTEN?<CR> • AT+FUDPLISTEN=?<CR> 	
Parameter	<port>: Port number, ranging from 1 to 65535 <socket>: SOCKET number	
Return Value	<CR><LF>+FUDPLISTEN:<socket>,OK<CR><LF>	
Example	AT+FUDPLISTEN=6000 +FUDPLISTEN:0,OK or +FUDPLISTEN:bind error	Listening port ID: 6000 The listening function of the server is started. Failed to bind
	AT+FUDPLISTEN=6000 ERROR	Set server listening before setting up PPP connections.
	AT+FUDPLISTEN=6000 Listening...	Transparent listening has been set.
	AT+FUDPLISTEN=? +FUDPLISTEN:(1-65535) OK	Query the value range of the listening port.
	AT+FUDPLISTEN? +FUDPLISTEN:listening status	Query the listening status. Here the server is in the listening status.
	AT+FUDPLISTEN? +FUDPLISTEN:not listening	Query the listening status. Here the server is not in the listening status.
	Remarks	<ul style="list-style-type: none"> • This command is valid only after a PPP connection is set up successfully. • Only the SIM cards with fixed IP addresses can be used as servers.

7.2 Receiving Data from the Client: +FUDPRECV(S)

Description	To receive and output data from the client	
Format	+FUDPRECV(S):<ip>,<port>,<length><data><CR><LF>	
Parameter	<ip>: IP address of the client <port>: ID of the port for the client to communicate <length>: Length of data received, byte <data>: Data received	
Return Value	See the Example.	
Example	+FUDPRECV(S):10.72.170.156,38 061,10,1234567890	FUDP receives 10-byte data (1234567890) from the client (IP: 10.72.170.156, 38061)
Remarks	N/A	

7.3 Sending Data to the Client: +FUDPSENDS

Description	To send data to the client	
Format	AT+FUDPSENDS=<ip>,<port>,<length><CR>	
Parameter	<ip>: IP address of the client <port>: ID of the port for the client to communicate <length>: The length of the data to be sent, value ranges from 1 to 1024 , unit: byte.	
Return Value	See the Example.	
Example	AT+FUDPSENDS=10.230.214.106,44416,10 >0123456789 OK +FUDPSENDS:0,10	Send 10-byte data to the client (IP: 10.230.214.106, 44416).
	AT+FUDPSENDS=10.230.214.106,44416,10 +FUDPSENDS:ERROR	The listening is not enabled.
	AT+FUDPSENDS=10.74.2222.173,41287,10 +FUDPSENDS:IP OR PORT ERROR	The IP address is incorrect.
	AT+UDPSENDS=10.74.2222.173,41287,4000 +UDPSENDS:DATA LENGTH ERROR	The length is incorrect.
Remarks	N/A	

7.4 Closing Listening for UDP Server: +CLOSEFUDPLISTEN

Description	To close listening for UDP server
Format	AT+CLOSEFUDPLISTEN<CR>

Parameter	N/A	
Return Value	<CR><LF>+ CLOSEFUDPLISTEN:<socket>, closed<CR><LF>	
Example	AT+CLOSEFUDPLISTEN +CLOSEFUDPLISTEN:0,closed	Close listening for UDP server
Remarks	N/A	

8 LBS Command

8.1 Obtaining the Location of the Module:

+CIPGSMLOC

Description	To obtain the location information of the module
Format	<ul style="list-style-type: none"> • AT+CIPGSMLOC<CR> • AT+CIPGSMLOC=<n><CR>
Parameter	<p><n>: request selection</p> <p>0: Close location request</p> <p>1: multi-BS positioning request</p>
Return Value	<pre><CR><LF>+CIPGSMLOC: <fail_string><CR><LF></pre> <p><fail_string>: Failure string</p> <p><fail_string>: CONTACT FAIL LINK FAIL LINK NOT FREE</p> <pre><CR><LF>OK<CR><LF></pre> <pre><CR><LF>+CIPGSMLOC: {<result_string>}</pre> <pre><CR><LF>+CIPGSMLOC: OK<CR><LF></pre> <p>< result_string>: string including longitude and latitude</p> <pre><CR><LF>OK<CR><LF></pre> <pre><CR><LF>+CIPGSMLOC: <code></pre> <pre><CR><LF>+CIPGSMLOC: FAIL <CR><LF></pre> <p><code>: return code after request is submitted successfully but not longitude or latitude information is returned.</p> <p>401: No right</p> <p>400: error occurs during request parsing.</p> <p>404: legal request, but the queried BS is not included.</p> <p>408: parsing times out.</p> <p>500: internal error of server</p> <pre><CR><LF>OK<CR><LF></pre> <pre><CR><LF>+CIPGSMLOC: TIMEOUT<CR><LF></pre>

Example	AT+CIPGSMLOC OK	The command is sent successfully.
	+CIPGSMLOC: { "location": {"lat":22.69083,"lng":113.985228},"accuracy":0.0} +CIPGSMLOC: OK	The module reports location information.
	AT+CIPGSMLOC GPRS DISCONNECTION	No SIM card is installed.
	+CIPGSMLOC: CONTACT FAIL	
	AT+CIPGSMLOC +CIPGSMLOC: CONTACT FAIL	The server domain name fails to be translated.
	AT+CIPGSMLOC +CIPGSMLOC: LINK FAIL	The connection to the server fails to be set up.
	AT+CIPGSMLOC OK +CIPGSMLOC: 404 +CIPGSMLOC: FAIL	The location request is sent successfully, but the queried BS is not included.
	AT+CIPGSMLOC=1 OK AT+CIPGSMLOC=1 +CIPGSMLOC: LINK NOT FREE	Request multi-BS positioning The connection is occupied
	AT+CIPGSMLOC=0 OK	Close the request. The link will be released.
AT+CIPGSMLOC=1 OK +CIPGSMLOC: { "location": {"lat":22.689646628671216,"lng":113.98586121790129},"accuracy":0.0} +CIPGSMLOC: OK	Request multi-BS positioning The module reports its location.	
Remarks	<ul style="list-style-type: none"> • Activate the PPP before using this command. • The obtained location information is the GPS coordinates. • If the server does not reply in 10 seconds after the request is submitted successfully, the module returns +CIPGSMLOC: TIMEOUT. • The current coordinates of latitude and longitude are valid and precision is reserved (0.0 by default). 	

9 Other AT Commands

9.1 Querying Base Station Information: +POSI

Description	To query the base station information	
Format	AT+POSI=<mode><CR>	
Parameter		
Return Value	<p><CR><LF>+POSI: MODE,MCC,MNC,LAC,CI,BSIC, RxLev,ENDED[...]<CR><LF><CR> <LF>OK<CR><LF></p> <p>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.</p>	
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,41,0,460,0 1,2543,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.
--	--

9.2 Getting the Local Port of a Socket: +GETLPORT

Description	To get the local port of a socket	
Format	AT+GETLPORT=<n><CR>	
Parameter	<n>: Socket ID, ranging from 0 to 5	
Return Value	<CR><LF>+GETLPORT: <port_num><CR><LF> <CR><LF>OK<CR><LF> or <CR><LF>ERROR<CR><LF> <port_num>: Local port ID	
Example	AT+GETLPORT=1 +GETLPORT: 4096 OK	Obtain the local port ID of socket 1. Its port ID is 4096.
Example	AT+GETLPORT=2 ERROR	Obtain the local port of socket 2. Error is returned because no link is set up on socket 2.
Remarks	N/A	

10 TCP Command Example Process

10.1 TCP Link through Internal Protocol

```
MODEM:STARTUP           // Boot log at a fixed baudrate.

+PBREADY                // Run the following commands unless you see this code.

AT+CPIN?                // Check the SIM card status.
+CPIN: READY
OK

AT+CCID                 // Read the CCID of the SIM card.
+CCID: 89860109247552607598

OK

AT+CSQ                  // Query the RSSI.
CSQ: 26,0
OK

AT+CREG?                // The module registered the GSM network.
+CREG: 0,1
OK

AT+XISP=0               // Set to internal protocol
OK
AT+CGDCONT=1,"IP","CMNET" // Set APN.
OK

AT+CGATT?               // Query the GPRS attach status.
+CGATT: 1               // Attached
OK

AT+XIIC=1               // Activate the PPP connection.
OK

AT+XIIC?                // The PPP connection is set up.
+XIIC: 1, 10.10.73.214
OK
```

```
AT+TCPSETUP=0,220.199.66.56,6800 // Set up a TCP connection.
OK

+TCPSETUP:0,OK // Successful

AT+TCPSEND=0,10 //Send data through the TCP connection.
>0123456789 // Send data at least 50 ms after getting >.

OK

+TCPSEND:0,10 //Data is sent successfully.

AT+IPSTATUS=0
+IPSTATUS:0,CONNECT,TCP,2047 //Query the connection status.

AT+TCPCLOSE=0 // Close the TCP connection on socket 0.
+TCPCLOSE:0,OK

AT+CGATT=0 // Close the PPP connection.
GPRS DISCONNECTED

OK
```

10.2 TCP Connection through External Protocol

```
MODEM:STARTUP // Boot log at a fixed baudrate

+PBREADY // Run the following commands unless you see this code.

AT+CPIN? // Check the SIM card status.
+CPIN: READY
OK

AT+CCID // Read the CCID of the SIM card.
+CCID: 89860109247552607598

OK

AT+CSQ // Query the RSSI.
```

```
CSQ: 30,1
```

```
OK
```

```
AT+CREG?
```

```
+CREG: 0,1 // The module registered the GSM network.
```

```
OK
```

```
...
```

```
AT+CGDCONT=1,"IP","CMNET" // Set APN.
```

```
OK
```

```
AT+CGATT? // Query the GPRS attach status.
```

```
+CGATT: 1 // Attached
```

```
OK
```

```
ATD*99# // Dial up
```

```
CONNECT
```

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 Mobile

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

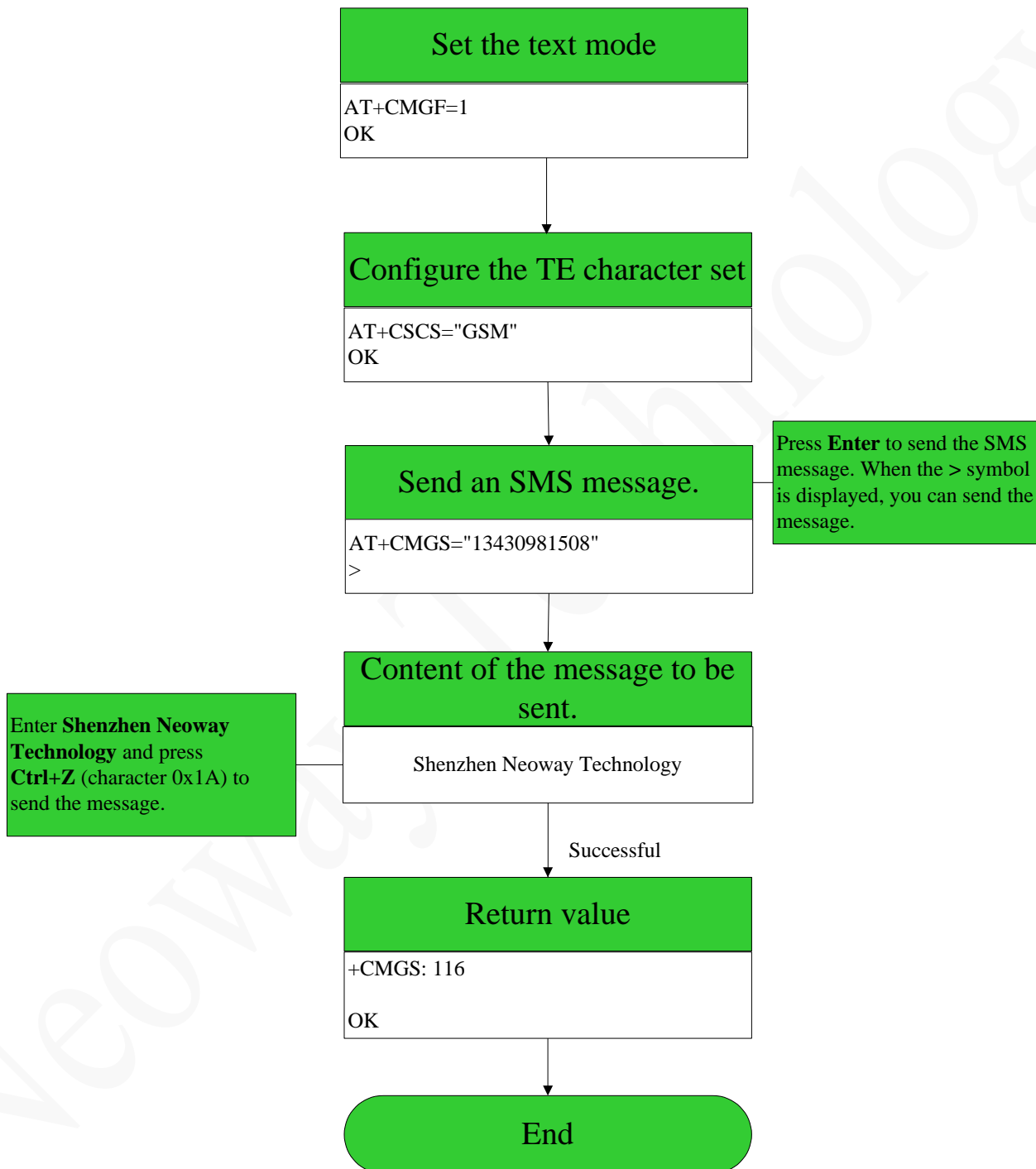
00680065006C006C006F: SMS message content

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

