WCDMA module AT command

version 1.0

Strong Rising Electronics Co.Ltd

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1 Summary

1.1 AT Command Summary

SPW9P、SPW9S、SPW9T、SPW9V_V1_225、SPW9U_V0_107 module supply AT command interface, with the module can easily communicate with external equipment by using these AT commands.

1.1.1 AT Command Type

AT command as a interface standard.Its return values and format are all fixed.， there are four forms in general：

No parameter command：A concise instruction,Format：AT[＋|&]<command>

Example：AT+CSQ、AT&W

Notes：Part of AT commands support to set as default value without parameter.They are not all be listed,We do not recommend customers to use these not listed commands that support this kind of function.

Query command：Queries the current value of command. Format：AT[＋|&]<command>?

Example： AT+CNMI?

Help command：List the parameter of the command,format：AT[＋|&]<command>=?

Example： AT^HCMGL=?

Commandwith parameter: a common format，It provides strong flexibility for commands.format ：AT[＋|&]<command>=<par1>,<par2>,<par3>…
This kind of command’s return value are different according to the different commands.It will be given a detailed specific behind.But the basic framework format of return value is:

<CR><LF><Response String><CR><LF>

<CR><LF><OK/ERROR>[Error Information]<CR><LF>

1.1.2 AT Command Return Format

It provide the format and return explain of AT command that supported by module below.
AT command return format：
<CR><LF><AT command related string><CR><LF>
Exceptions for example：AT＋ZPWROFF，Return string“OK”
AT command status report（OK、ERROR）has Several situations below:
If AT command ‘s format is wrong,it will return string“ERROR”
If AT command executed successfully ,it will return string“OK”

1.1.3 AT Command Format

AT command start with “AT” and end with <CR>.After module started,The default setting for the serial port are:eight bit data bits,a stop bit, no parity check bit,no Hardware Flow control（CTS/RTS）,rate 115200bps.

1.2 Abbreviations

ADC	Analog-Digital Converter
AFC	Automatic Frequency control
AGC	Automatic Gain control
ARFCN	Absolute Radio Frequency Channel Number
ARP	Antenna Reference Point
ASIC	Application Specific Integrated Circuit
B	
BER	Bit Error Rate
BTS	Base Transceiver Station
C	
CDMA	Code Division Multiple Access
CDG	CDMA Development Group
CS	Coding Scheme
CSD	Circuit Switched Data
CPU	Central Processing Unit
D	
DAI	Digital Audio interface

DAC	Digital-to-Analog Converter
DCE	Data Communication Equipment
DSP	Digital Signal Processor
DTE	Data Terminal Equipment
DTMF	Dual Tone Multi-Frequency
DTR	Data Terminal Ready
E	
EFR	Enhanced Full Rate
EGSM	Enhanced GSM
EMC	Electromagnetic Compatibility
EMI	Electro Magnetic Interference
ESD	Electronic Static Discharge
ETS	European Telecommunication Standard
F	
FDMA	Frequency Division Multiple Access
FR	Full Rate
G	
GPRS	General Packet Radio Service
GSM	Global Standard for Mobile Communications
H	
HR	Half Rate
I	
IC	Integrated Circuit
IMEI	International Mobile Equipment Identity
ISO	International Standards Organization
ITU	International Telecommunications Union
L	
LCD	Liquid Crystal Display
LED	Light Emitting Diode
M	
MCU	Machine control Unit
MMI	Man Machine Interface
MS	Mobile Station

p	
PCB	Printed Circuit Board
PCL	Power control Level
PCS	Personal Communication System
PDU	Protocol Data Unit
PLL	Phase Locked Loop
PPP	Point-to-point protocol
R	
RAM	Random Access Memory
RF	Radio Frequency
ROM	Read-only Memory
RMS	Root Mean Square
RTC	Real Time Clock
S	
SCV	Strong Rising Electronics Co.Ltd
SIM	Subscriber Identification Module
SMS	Short Message Service
SRAM	Static Random Access Memory
T	
TA	Terminal adapter
TDMA	Time Division Multiple Access
TE	Terminal Equipment also referred it as DTE
U	
UART	Universal asynchronous receiver-transmitter
UIM	User Identifier Management
USB	Universal Serial Bus
V	
VSWR	Voltage Standing Wave Ratio

2 AT command

2.1 Basic Configuration Commands

2.1.1 A/–Command for Repeating the Previous Command

Description	This command is used to repeat previous command line	
Syntax	A/	
Example	AT+CSQ	Query for the current signal intensity
	A/	Repeat AT+CSQ command

2.1.2 ATE： Enable command echo

Description	This command is used to set whether MS will echo the characters received from TE.	
Syntax	ATE<n>	
Example	ATE0 OK OK	ATE0 not echo the characters received from TE.
	ATE1 OK ATE1 OK	ATE1 echo the characters received from TE
parameters	<value>: 0:MS does not echo the characters received from TE. 1:MS echoes the characters received from TE. (Default) If no <value> is included, it is equivalent to the effect that the <value> is 1. Notes: After boot up, the value will be 1 by default.	

2.1.3 +CGMI： Query manufacturer information

Description	This command is used to query the manufacturer information
Syntax	AT+CGMI

Example	AT+CGMI +CGMI:Shenzhen Strong Rising ElectronicsCo.,Ltd OK	This command is used to query the manufacturer information

2.1.4 +CGMR： Query software version number

Description	Query software version number	
Syntax	AT+CGMR	
Example	AT+CGMR +CGMR: TBL2140.10.010 OK	Query software version number

2.1.5 +CGSN： Query international mobile equipment identity

Description	Query international mobile equipment identity	
Syntax	AT+CGSN	
Example	AT+CGSN +CGSN:354972031660642 OK	Query international mobile equipment identity

2.1.6 +CSCS： Select TE character set

Description	The SET command informs TA which character set <chset> is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets. When TA-TE interface is set to 8-bit operation and used TE alphabet is 7-bit, the highest bit shall be set to zero. Read command shows current setting and test command displays conversion schemes implemented in the TA	
Syntax	AT+CSCS=<chest>	
Example	AT+CSCS=<chest> OK AT+CSCS? +CSCS:<chest> OK	querythe current TE character

parameters	<chset>: "GSM": GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems "IRA": international reference alphabet (ITU-T T.50 [13]).(Default) "UCS2": 16-bit universal multiple-octet coded character set (ISO/IEC10646 [32]); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bitcharacters with decimal values 65, 98 and 99.

2.1.7 +CIMI： Request international mobile subscriber identity

Description	This command is used to query IMSI of SIM/USIM.	
Syntax	AT+CIMI	
Example	AT+CIMI 460018938641065 OK	query IMSI of SIM.
parameters	<IMSI>: String values without quote, the IMSI stored in the SIM/USIM. The digits are decimal numbers that range from 0 to 9。	

2.1.8 +GCAP： List of features queries

Description	List of features queries	
Syntax	AT+GCAP	
Example	AT+GCAP +GCAP: +CGSM,+DS,+ES OK	Query the list of features
parameters	<NAME>:+CGSM,+DS, +ES	

2.1.9 +CMEE： Set terminal error reporting format

Description	This command is used to set whether to use result code: +CME ERROR: <err> indicates the error related to MS. When you set to use result code, the MS-related error will generate a result code: +CME ERROR: <err>, which will replace the ordinary ERROR result code. If the error reasons are not related to MS, the ordinary ERROR will still be returned.
Syntax	AT+CMEE

Example	AT+CPIN=123,456 +CME ERROR: memory full AT+CMEE? +CMEE: 2 OK AT+CMEE=1 OK AT+CPIN=123,456 +CME ERROR: 20 AT+CMEE=0 OK AT+CPIN=123,456 ERROR	
parameters	<n>: 0 : Do not use +CME ERROR : <err>result code, only ERROR is returned in case of error occurrence. 1 : Use +CME ERROR : <err>result code, <err> adopts the error code value. 2 : Use +CME ERROR : <err>result code, <err> adopts the detailed string value of the error. (Default) <err>: The value is given in the CME ERROR list in the Appendix 15.2.The “AT+CMEE” will be set <n> to 0.	

2.1.10+ZHWV： Query hardware version number

Description	The command returns the hardware version number	
Syntax	AT+ZHWV	
Example	AT+ZHWV +ZHWV:SPW9P OK	

2.1.11+ZDRNT： Query data services dormant state

Description	Query the data services Hibernation	
Syntax	AT+ZDRNT	
Example	AT+ZDRNT +ZDRNT:<N> OK	

parameters	<N> 0：Hibernation 1：No Hibernation Test steps: data business status before 1

2.1.12 +ZSSPA：Check system status and system parameters

Description	query system status and system parameters
Syntax	AT+ZSSPA
Example	AT+ZSSPA +ZSSPA:ROAM,RSSI,SIM_STATE,SRV
parameters	ROAM: 0：ROAM_STATUS_OFF, 1：ROAM_STATUS_ON, 2：ROAM_STATUS_BLINK: RSSI: 0－5 SIM: 1：SIM_STATE_AVAILABLE, 0：SIM_STATE_NOT_AVAILABLE SRV: 0：No service, 1：Limited service, 2：Service available, 3：Limited regional service , 4：MS is in power save or deep sleep

2.1.13 +ZUCT：Check phone card type and status

Description	check phone card type and status	
Syntax	AT+ZUCT	
Example	AT+ZUCT +ZUCT:<card_type>,<sim_state> OK	

parameters	Card_type: 0: NONE CARD or NONE INIT -NO CARD 1: USIM 2: SIM 3: SIM_USIM sim_state: 0:not initialize 1:initialized

2.1.14+ZGVT： Query mobile phone voice channel type

Description	query mobile phone voice channel type
Syntax	AT+ZGVT
Example	AT+ZGVT +ZGVT: <voice_type> OK
parameters	voice_type: 0: by PC 1: not by PC

2.2 Call control Commands

2.2.1ATA： Answer Call

Description	TE uses this command to answer a new coming call	
Syntax	ATA	
Example	RING	Call in
	ATA	Answer the call

2.2.2 ATD： Originate Call

Description	This command used to originate a call which may be a voice call or a data call. Voice call is not supported currently.

Syntax	ATD<phone number>; ATD>mem<n>; ATD<string>;	
Example	ATD13800138000;	call 13800138000
	AT+CPBS=“SM” ATD>6;	Select the SIM card phone book as Current phone book,then call the sixth numbers
	ATD>“chang”;	To make a call in the phone book to find a number called "chang"
parameters	< phone number >:The dial string. ASCII characters includes ‘0’-‘9’,’*’,’#’,’+’.’+’only can be the first character of the dial string. The length of the dial string cannot bigger than 24(notincluding ‘+’). ATD>mem<n>： Initiate a call to the record number in the designated phone book <n>: index of the phone book <string>:call name	

2.2.3 ATDL： Dial the last call phone number

Description	This command is used to dial the last call phone number	
Syntax	ATDL	
Example	ATD13800138000； OK	call 13800138000
	ATH OK	hangup
	ATDL OK	Call again 13800138000

2.2.4 ATH： Command for Disconnecting the calling

Description	This command disconnects the data service connection with a remote subscriber.	
Syntax	ATH	
Example	ATA OK	Answer the call
	ATH	End the call

2.2.5 S0： Command for Setting Automatic Answer

Description	This command sets the automatic answer function. After the automatic answer function is enabled, the MT starts automatic answer when there is a new incoming call.	
Syntax	ATS0=<value>	
Example	ATS0=2 OK	Automatic answer the call when ring twice.
	ATS0? 2	querythe current setting
	ATS0=0 OK	Cancel automatic answer
parameters	<value>: 0: Automatic answer is disabled (default value after startup) 1–255: Automatic answer is enabled. An incoming call will be answered after The number of rings set by <value>..	

2.2.6 +CSTA： Select the phone number type

Description	This command is used to set the address type	
Syntax	AT+CSTA=<type>	
Example	AT+CSTA=129	Set the address type
	AT+CSTA? +CSTA：145	Query current site
	AT+CSTA=? +CSTA：129，145	List the address type
parameters	<type>: 129: National Number 145: with an international number identifier "+" number Note: dialing the international number need to open the corresponding service	

2.2.7 +CHUP： Hang up interactive data mode phone

Description	This command use to hang up a interactive data mode phone	
Syntax	AT+CHUP	
Example	AT+CHUP OK	hangup

2.2.8 +CEER： Extended error reporting

Description	this command use to report the reason if call origination or answer a call failed	
Syntax	AT+CEER	
Example	ATD13800138000； NO CARRIER AT+CEER +CEER： *** OK	Initiate voice calls Call setup failure Query the reason for the failure *** As an error, defined in the GSM protocol 04.08

2.2.9 +CRC： The ringing type results code

Description	This command allows more detailed RING for incoming telephone voice or data calls instructions using extended string instead	
Syntax	AT+CRC=<num>	
Example	AT+CRC=1 OK +CRING:VOICE	Set show ringing phone type A voice telephone
parameters	<num>: 0：Do not display the ringing phone type 1：display the ringing phone type Ringing phone type description:： VOICE GPRS FAX	

2.2.10+CVHU： Command for Disconnecting a Voice Call

Description	This command disconnects a voice call.	
Syntax	AT+CVHU=<mode>	
Example	AT+CVHU=0 OK	give a response ,ATH disconnect the voice call
	AT+CVHU? +CVHU：0 OK	Query current mode

	AT+CVHU=? +CVHU：(0-1) OK	Lise the mode range
parameters	<mode>: 0: The connection is interrupted and "OK" is returned only when the value is **0** 1： The connection cannot be interrupted when the value is not **0**, and the response result is "ERROR".	

2.2.12+CMUT: control Microphone mute

Description	This command is used to enable and disable the uplink voice muting during a voice call.	
Syntax	AT+CMUT=<n>	
Example	AT+CMUT=0 OK	Enable the voice mute
Example	AT+CMUT? +CMUT：0 OK	querycurrent mute state
	AT+CMUT=? +CMUT: (0-1) OK	querythe mute value range
parameters	<mode>： 0: enable the voice muting 1: disable the voice muting	

2.2.14 +VTS: Send DTMF tones

Description	This command sends a dual tone multiple frequency (DTMF) key value to the network through signaling in the call status	
Syntax	AT＋VTS＝<n>	
Example	AT+VTS＝? +VTS:(0-9,#,*) OK	List VTS Values
	ATD**********; AT+VTS=n OK	Call phone Send the DTMF which value is n

parameters	<n>: ASCII characters, indicating a DTMF key value. Allowed characters include only 0 – 9, *, and #. Only one character is allowed each time

2.2.15+CLCC： Command for Querying the Call Status

Description	This command queries the number of current calls and the state of each call. If there are no calls, "OK" is returned when this command is executed.	
Syntax	AT＋CLCC	
Example	AT+CLCC +CLCC： <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[<alpha>]][+CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[<alpha>]][…]]]	Query current calls
parameters	<idx>: Specifies the call ID. The value ranges from 1 to 9. <dir>: Specifies the call direction. The values are as follows: 0: MO 1: MT <state>: Specifies the call state. The values are as follows: 0: active 1: held (not supported at present) 2: dialing 3: alerting (not supported at present) 4: incoming 5: waiting (not supported at present) <mode>: Specifies the call type. The values are as follows: 0: voice 1: data <mpty>: Specifies the multiparty call. The values are as follows: 0: non-multiparty call 1: multiparty call (not supported at present) <number>: Specifies a call number. It is a string with double quotation marks. Allowed characters include only 0–9, *, #, and +. In addition, the + symbol can only be at the start of the number. <type>: Specifies the type of a call number. "145" indicates an international number,and "129" indicates a national number. For details, see section 14.5 "Phone Number Type."	

2.2.16 ATD: Three-way calling

Description	Process through the ATD to achieve three-way calling	
Syntax	Reference + ATD, + CCWA such as command	
Example	ATD13800138000; OK +ZCORG：13800138000; +ZCCNT：3	call the first way voice
	ATD13333333333; OK	Maintain the first road call state, call the second road
	AT+CHLD=3 OK	comply three-way calling
	AT+CHLD=2 OK	Disconnect second road, switch to the first road
	ATD13590376020; OK +ZCORG:0,10 +ZCCNT:0,10 ATD86360386; OK +ZCORG:0,11 +ZCCNT:0,11 at+chld=3 OK ath +ZCEND:8,137,29,0 +ZCEND:9,126,29,0 OK	
parameters	<phone number>	

2.2.17 ATS<X>: Set the basic S-register

Description	S registers to store the configuration parameterss for the call or the call setup process, the command used to set the value of the S registers. X is the number of registers.	
Syntax	ATS<X>=<value>	
Example	ATS<0>=0 OK	set S0 register value 0
	ATS<0>? ATS<0>:0	Check S0 register value
parameters	ATS0: set up automatic response time or cancel the automatic response, ranges from 0 to 255 0: cancel the automatic response 1-255: [(automatic answering of value-1) x6 seconds ATS3: Enter Enter symbol ATS4: wrap symbol ATS5: refund the word symbol ATS6: waiting for a dial-up time ranging from 2 to 10 ATS7: remote signal time to wait after dialing the range of 1 to 255 ATS8: comma pause time, the range of 0 to 255. ATS9: signal detection reflect the time to 0.1 seconds as the unit ranges from 0 to 255 ATS10: signal disappears time to hang up the phone reflects the range of 1 to 254, the value for 255 canceled signal detection ATS11: control dialing speed of DTMT, in milliseconds, a value of 50 to 255	

2.2.19+ZCORG： Command for Indicating the Origination of a Call

Description	This command indicates that the MT is originating a call.	
Syntax	+ZCORG：<call_type>,<call_x>	
Example	ATD13800138000; OK +ZCORG:0,1 +ZCCNT:0,1	Indicates the MT is originating a call.

parameters	<call_type>: Specifies the call type. The values are as follows: 0: voice call 7: OTA call (standard OTASP numbers) 8: OTA call (non-standard OTASP numbers) 9: emergency call <call_x>: Specifies the call ID, uniquely identifying the call. The value ranges from 1to 9.

2.2.20+ZCCNT： Command for Indicating a Call Connection

Description	If the MT is the caller, when a call request is successfully sent to the network and a response from the network is received, the MT reports the response to the TE even when the call is not answered If the MT receives an incoming call, the MT reports this indication to the TE when the MT answers the call.	
Syntax	+ZCCNT：<call_type>,<call_x>	
Example	ATD13800138000; OK +ZCORG:0,1 +ZCCNT:0,1	Make a call
parameters	<call_type>: Specifies the call type. The values are as follows: 0: voice call 7: OTA call (standard OTASP numbers) 8: OTA call (non-standard OTASP numbers) 9: emergency call <call_x>: Specifies the call ID, uniquely identifying the call. The value ranges from 1to 9.	

2.2.21+ZCEND： Command for Indicating the End of a Call

Description	After a call is terminated, the MT reports this indication to the TE to notify the TE of the call end cause and the call duration.	
Syntax	+ZCEND：<call_X>,<duration>,<end_status>[,<cc_cause>]	
Example	ATD13800138000; OK +ZCORG:0,1 +ZCCNT:0,1 ATH +ZCEND:1,30,0,0 OK	Indicating the end of a call

parameters	<call_x>:Specifies the call ID, uniquely identifying the call. The value ranges from 1 to 9. <duration>:Specifies the call duration in the unit of second. The time starts from reporting of the +ZCEND command until the call is complete. <end_status>: 0: phone is offline 21: phone has no service （Backwards compatibility） 25: received release from BS 27: received incoming call from BS 29: client ended the call 34: RUIM is not present 35: Access attempt already in progress 36: Access failure for reason other than the above 38: Concurrent servive is not supported by base station 39: No response received from base station 100: rxd a reason from lower layer 101: call orig request failed 102: client rejected the incoming call 103: client rejected the setup_ind 104: network ended the call 106: Phone has no service <cc_cause>: Specifies call control information (not supported at present).

2.2.22+CCWA: control call Waiting

Description	This command use to control call waiting	
Syntax	AT+CCWA=<n>[,<mode>,<class>]	
	AT+CCWA=0,1,1 OK	When mode! = 2, if successful, returns: OK
	AT+CCWA=1,2,1 +CCWA: 1,1 OK	When mode == 2, return: + CCWA: <status>, <class> OK
	AT+CCWA =? +CCWA: (0-1) OK	List value range <n>
	AT+CCWA ? +CCWA: <n> O	Check current value <n>
parameters	<n>: 0: do not take the initiative to issue a call waiting the result code	

	1: unsolicited result code call waiting <mode>: 0: to call waiting 1: Activate call waiting 2: check the current status <class> 1: voice service 2: data services 4: Fax business 7: voice + data + fax business 8: SMS service 16: Circuit domain data synchronization 32: asynchronous circuit domain data 64: dedicated packet access 128: dedicated PAD access 255: All Types <status> 0: deactivated state 1: active state

2.2.23+CHLD：Call hold and multi-party conference

Description	This command is used to set the call hold and multi-party conferencing operation	
Syntax	AT+CHLD=<n>	
Example	AT+CHLD=0 OK	Set to release all the held call
	AT+CHLD=? +CHLD(0,1,1x,2,2x,3,4) OK	List all values <n>
parameters	<n>: 0,1,1 X, 2,2 X, 3,4 0: release all held call or set a waiting call to UDUB 1: release all active calls and receiving a hold or waiting call 1X: release call X 2: to keep all the activities of the call and receive another one hold or wait call 2X: keep all call excpet X 3: maintain a telephone to the multi-party conference 4: connect the two calls or hang up the two calls Note: 1. This command is used only for the telecommunications business 2. X range: 1 to 7 3. When both maintained and waiting call, the above processes should be used for waiting 4. Release the call, please use the AT + CHLD = 1 to release the current call, hang up and then use the ATH 5. AT + CHLD = 3 to use, depending on the carrier to provide the multi-party call	

2.2.24+CCFC： Call forwarding and conditions set

Description	This command is used to set the Call forwarding number and conditions	
Syntax	AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<.class>[,<subaddr>[,<saytype>[,time]]]]]	
Example	AT+CCFC=0,2 +CCFC: 0,255 OK AT+CCFC=1,1,"13138867768",145 +CME ERROR: network rejected request AT+CCFC=1,3,"13138867768",145 OK AT+CCFC=1,1 OK AT+CCFC=1,2 +CCFC: 1,1,"+8613138867768",145,,, OK	Call forwarding when the mobile device is busy Unregistered enable fail Successful registration Registered enable successful Check status
parameters	<reason>: 0: unconditional 1: The mobile device is busy 2: No Reply 3: You can not reach 4: All calls 5: All conditional call <mode>: 0: Disable 1: Enable 2: Check status 3: Register 4: Remove <number>: Phone Number <type>: 145: International Number	

2.2.25 +SPEAKER: Switch Sound Path

Description	This command is used to switch sound path in voice call. The executive command is used only in the calling. Resetting the module will not affect the value. Module updating will reset the value to default value.	
Syntax	AT+SPEAKER=<n>	
Example	AT+ SPEAKER =0 OK	Select the headset
	AT+ SPEAKER? + SPEAKER：0	Query the current setting
	AT+ SPEAKER =? +SPEAKER: (0-2) OK	Query the vaule range
parameters	<n>： 0：headset. 1：handset. 2：PCM	

2.3 Network Service Interface Commands

2.3.1 +CNUM：Query the user number

Description	Execute command returns associated with the user MSISDN(Mobile Station International ISDN Number), The information can be stored in the SIM card,also can be stored in ME. If the user is able to meet the different business MSISDN, each MSISDN will occupy a separate line returns.	
Syntax	AT+CNUM +CNUM: [<alpha1>],<number1>,<type1> [<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>[...]]	
Example	AT+CNUM	+CNUM: ,"+8613145854693",145 OK
		+CME ERROR: <err>

parameters	<alphax>: about <numberx>, options, alphanumeric mixed string. The character set used to be use the "select TE character set " command of the +CSCS character set. <numberx>: Specifies the character type number <typex>: integer eight bit byte address type (please refer to GSM 4.08 [8] 10.5.4.7)

2.3.2 +CREG： Command for Registering with the Network

Description	The set command controls whether the +CREG indication is automatically reported.When <n>=1 and the network registration status changes, "+CREG:<stat>" is reported.	
Syntax	AT+CREG=<n>set the CREG display format AT+CREG? check CREG state,return syntax flows: +CREG: <n>,<stat>[,<lac>,<ci>] AT+CREG=? +CREG: <n>,<stat>[,<lac>,<ci>]	
Example	AT+CREG?	+CREG: 0,2 OK
	AT+CREG=2 OK AT+CREG?	+CREG: 2,1, A550, 1722667 OK
	AT+CREG=?	+CREG: (0-2) OK
	asynchronous prompt registration status	+CREG: 2,1, A550, 1722667

parameters	<n> 0 prohibit tips. The 1 enable prompt, Syntax : +CREG: <stat>. The 2 enable prompt, Syntax : +CREG: <stat>[, <ci>, <lac>]. <stat> 0: not logged on to the network, there are currently no web search 1: login local network 2: no login network, currently the search network 3: registration was rejected 4: do not know the current status 5: have logged on to the network, roaming in the state <lac> String type; two byte sixteen prohibited Syntax location area code (location area code) <ci> String type; two bytes sixteen to ban Syntax cell ID (cell ID)

2.3.3 +COPS： PLMN select

Description	Set command forced choice and register the GSM network operators. <mode> set ME is automatically selected operator <oper>, or use the commands of forced choice operator <oper>. If the selected operator is not available, you cannot choose other carriers, but <mode>=4. When <mode>=2, shows from the network forced logoff. Registration mode will affect all future registration act. For example, when <mode>=2, ME not registered, until <mode>=0 or 1 ME register	
Syntax	AT+COPS=[<mode>[,<format>[,<oper>[,< AcT>]]]] AT+COPS? +COPS: <mode>[,<format>,<oper>] AT+COPS=? +COPS: [(<stat>, <oper>][,,(<mode>),(<format>)]	
Example	AT+COPS=0，2，46001，2	OK
	AT+COPS=1，2，46001，2	+CME ERROR: no network service
	AT+COPS? OK	+COPS: 0,2,"46000" +COPS: 0,0,"CHN-CUGSM",0
	AT+COPS=? OK	+COPS: (1,"CHINA MOBILE","CMCC","46000",0),(3,

		"CHN-CUGSM","CU-GSM","46001",2),,(0,1,2,3,4),(0,1,2) OK
parameters	<mode> 0 automatic registration (ignore the <format> <oper> parameters) 1 manual registration 2 forced logoff 3 set Syntax 4 first manually and automatically <format> 0 character Syntax<oper> 1 short character Syntax<oper> 2 digital Syntax<oper> <oper> Operator name, according to the format given Access technology of <AcT> 0 GSM 1 GSM COMPACT 2 UTRAN	

2.3.4 +CLCK：Command for Enabling the PIN and Querying the Status

Description	The execution command locks or unlocks the R-UIM card and query the locking status.	
Syntax	+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	
Example	at+clck="SC",2 Quety the SIM lock state	+CLCK: 0 OK
	at+clck="SC",1，"1234" Set pin1’s cipher	OK
	at+clck=? query CLCK’s fac	+CLCK: ("AB","AC","AG","AI","AO","IR","OI","OX","SC","FD","PN","PU","PP","PC","PF") OK

parameters	<fac>: Specifies the equipment on which this command is executed. "SC": R-UIM card <mode>: Specifies the operation mode. The values are as follows: 0: unlocking 1: locking 2: status query <status>: 0: deactivated 1: activated <passwd>: A string with double quotation marks. It should be the same as the password set by running the +CPWD command. This item is mandatory when mode is set to 0 or 1. The parameters value must be a string consisting of digits 0 – 9. Otherwise, "ERROR" is returne <class>: Reserved and not supported at present

2.3.5 +CPWD: Command for Changing the Password

Description	The execution command changes the PIN and PIN2 codes of the equipment. The test command queries the supported equipment and the maximum length of the equipment password	
Syntax	AT+CPWD=<fac>,<oldpwd>,<newpwd> AT+CPWD=? +CPWD: <fac>,<pwdlength>	
Example	AT+CPWD= “SC”,1234,5555 PIN1 modify 5555	OK
	at+cpwd=? Display support fac	+CPWD: ("AB",4),("AC",4),("AG",4),("AI",4),("AO",4),("IR",4),("OI",4),("OX",4),("SC",8),("P2",8) OK
parameters	<fac> " AB " all prohibition of business " SC " SIM PIN1 " P2 " SIM PIN2 <oldpwd>, <newpwd> character; it is same with ME user device password and modify password command set password. <pwdlength> integer type, equipment support maximum password length	

2.3.6 +CLIP： Caller ID display setting

<table>
<tr><td>Description</td><td colspan="2">The set command sets whether reporting of the caller ID unsolicited result code (URC) is allowed. If the caller ID URC is allowed to be reported, when there is an incoming call, the caller ID indication is provided following the RING indication and periodically (every five seconds) reported to the TE</td></tr>
<tr><td>Syntax</td><td colspan="2">AT+CLIP=[<n>]
+CLIP: <n>,<m>
Asynchronous presentation format
+CLIP:<number>,<type>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]</td></tr>
<tr><td rowspan="3">Example</td><td>AT+CLIP=1
OK
Enable +CLIP</td><td rowspan="3">a call come in</td></tr>
<tr><td>RING
+CLIP：”1001”,129</td></tr>
<tr><td>AT+CLIP=0
Disable +CLIP</td></tr>
<tr><td>parameters</td><td colspan="2"><n>:
0: Caller ID URC reporting is not allowed (default value after startup).
1: Caller ID URC reporting is allowed.
v<m> display user CLIP service in a network service state
0 did not provide CLIP service
1 CLIP business
2 unknown (such as: no network etc.)
<number>: Specifies a calling number. It is a string with double quotation marks. Allowed characters include only 0 – 9, *, #, and +.
<type>: Specifies the number type. "145" indicates an international number, and "129" indicates a national number. For details, see section 14.5 "Phone Number Type."
<subaddr> prescribed by <satype> character sub address Syntax
<satype> integer type eight bit byte address type
<alpha> selectable character (using alphanumeric mixed mode); display for telephone directories in the corresponding entry; the character set used should use TE character set command AT+CSCS of the same.
<CLI validity>:
0: The call line identity (CLI) is valid.
1: The CLI is rejected by the call originator。
2: The CLI is unavailable because of the limitation of the originating network or a network problem.</td></tr>
</table>

2.3.7 +CLIR： Limitations of calling number

Description	The command used to set whether to send the calling number. The command refers to the GSM 2.81 standard [3] CLIR business. When the calling party initiates a call, use this command can be enabled or disabled in the called side show CLI. Query command for a given state of the <n>, and according to GSM 2.81 [3], can be triggered to COLP service configuration status query (<m>).	
Syntax	AT+CLIR=<n> AT+CLIR？ +CLIR: <n>,<m>	
Example	AT+CLIR?	+CLIR: 0,2 OK
	AT+CLIR=?	+CLIR: (0-2) OK
parameters	<n> set outgoing call state of adjustment 0 according to the CLIR business enlightened state using the tips of Deixis 1 CLIR calls 2 CLIR inhibition <m> display calling in network service CLIR state 0 did not provide CLIR service 1 permanent manner to provide CLIR service 2 unknown (such as: no network etc.) 3 temporary mode to provide CLIR Services Limited 4 temporary mode to provide CLIR service is not restricted Note: n is currently set to 1 limiting exhalation, set to 2 to allow exhaled the functional operators need to support	

2.3.8 +CPOL: PLMN Preferably list.

Description	This command is used to edit the SIM card’s preferred operator list. Execute this command, available in the list (EFPLMNsel) in writing new entries. If a <index>given , but <oper>, the item will be removed. If the <oper> given , but <index>, <oper> will be placed to next idle position. If the <format> given , query command <oper> format will be modified.

Syntax	AT+CPOL=[<index>][,<format>[,<oper>[,<GSM_AcT>,<GSM_Compact_AcT>,<UTR AN_AcT>]]]	
Example	AT+CPOL=2，2，"46000"，1,0,0 Eidt PLMN list	OK
	AT+CPOL=2 Delete list 2	OK
	AT+CPOL? Query current list	+CPOL: 1,2,"46001",0,0,1 OK
	at+cpol=? Check<index>,<format>parameters range	+CPOL: (1-8),(0-2) OK
parameters	<index>: number <format>: operator name character <oper>format <oper> based on the <format> display to the operator name character access technology format options, 0 :select the access technology, 1: not select the access technology <GSM_AcT> <GSM_Compact_AcT> <UTRAN_AcT> Note: last 3 parameters is optional.	

2.3.9 +CPLS： Select PLMN Preferably list

Description	The command is used to select the prefer PLMN list to search for PLMN network	
Syntax	+CPLS=<list>	
Example	AT+CPLS=1 Select PLMN optimum	OK
	AT+CPLS? Query	+CPLS: 0 OK
parameters	<list>=0 if the SIM card without EFPLMNsel, according to EFPLMNwAcT to select PLMN. <list>=1 based on EFOPLMNwAcT to select PLMN. <list>=2 依据 EFHPLMNwAcT 选择 PLMN。	

2.3.10+COPN： Query operator name

Description	The command is used to query terminal support operator name.

Syntax	AT+COPN (return format) +COPN:<numeric1>,<alpha1>[<CR><LF>+COPN: numeric2>,<alpha2>[...]]	
Example	AT+COPN	… +COPN: "46000","CHINA MOBILE" +COPN: "46001","CHN-CUGSM" … OK
		+CME ERROR: <err>
parameters	<numericx> character; digital type operators (Reference +COPS) <alphax> character; the long string type (using alphanumeric Syntax) operator (Reference +COPS)	

2.3.11+CGREG： Command for Registering with the Network

Description	The set command controls whether the +CGREG indication is automatically reported.	
Syntax	AT+CGREG=<n> AT+CGREG? (return format) +CGREG: <n>,<stat>[,<lac>,<ci>] Asynchronous tips +CGREG: <n>,<stat>[,<lac>,<ci>]	
Example	at+cgreg? Query current register state	+CGREG: 0,2 OK
	at+cgreg=2 OK at+cgreg?	+CGREG: 2,1, A550,1722668 OK
	Asynchronous prompt state	+CGREG: 2,1, A550,1722668
parameters	<n>=0 forbade prompt . <n>=1 enables the prompt , format: +CGREG: <stat>. <n>=2 enables the prompt , format : +CGREG: <stat>[, <ci>, <lac>]. <stat> 0: not logged on to the network, current there are no web for search 1: login local network 2: no login network, search currently network 3: registration was rejected 4: do not know the current status 5: have logged on to the network, roaming in the state	

2.3.12+FCLASS： Select mode

Description	This command used to select mode	
Syntax	AT+FCLASS=<n>	
Example	AT+FCLASS=1 Set to fax mode	OK
	AT+FCLASS? Query	0 OK
parameters	<n>=0 data mode。 <n>=1 fax mode。	

2.3.13+CUSD： USSD service

Description	According to the GSM 2.90 [23],it is used to control USSD (Unstuctured Supplementary Service Data) . The command support network and mobile launch operation. <n> is used to enable or disable the unsolicited result code (network returned USSD's return result or network operation is initiated) +CUSD: <m>[, <str>, <dcs>] display on TE.<str> specified, movement initiated by USSD string or network initiated operation results returned by the USSD string will be sent to the network. Through unsolicited result code +CUSD, return the network side of the USSD string return results.	
Syntax	+CUSD=[<n>[,<str>[,<dcs>]]] +CUSD: <m>[,<str>,<dcs>]	
Example	AT+CUSD=1 enable USSD prompt	
	USSD Asynchronous prompt	+CUSD: 0

parameters	<n>: 0: close prompt 1: enable prompt 2: cancel session <str>: USSD string <dcs>: character type <m> 0 do not require the user to continue to operate (network initiated USSD notification, or mobile originated after the operation no longer needed Information) 1 requires the user to continue to operate (network launched the USSD request, or in a mobile originated after the operation still need information) 2 USSD network terminate

2.4 Terminal control command

2.4.1 +CPAS: Query mobile equipment status

Description	This command used to query the mobile equipment status
Syntax	AT+CPAS
Example	Query current equipment status AT+CPAS +CPAS:<pas> OK AT+CPAS=? +CPAS:(list of supported <pas>s) OK
parameters	<pas> 0 ready 3 calling state 4 calling or call hold in

2.4.2 +CFUN: Command for Setting the Operating Mode

Description	The execution command sets the operating mode of the MT.	
Syntax	AT+CFUN=<fun>,<rst>	
Example	AT+CFUN=<fun>,<rst> OK	set the operating mode of the MT.

	AT+CFUN=? +CFUN:(listof supported<fun>s),(list of supported <rst>s) OK	List the operating mode of the MT
	AT+CFUN? +CFUN: <fun> OK	Query the current operate mode
parameters	<fun>: 0: The operating mode is set to the low power consumption (LPM) mode (the previous operating mode of the MT must be the non-offline mode). 1: The operating mode is set to the online mode (the previous operating mode of the MT must be the non-offline mode) (default value after startup). <rst>: Specifies whether the MT is restarted before the mode is set (reserved and not supported at present).	

2.4.3 +CPIN： PIN Management Command

Description	The execution command verifies and unlocks the PIN and PIN2 codes.If PIN or PIN2 is requested, run +CPIN=<pin> for verification.If PUK or PUK2 is requested,run+CPIN=<pin>,<newpin> for unlocking. The firstparameters is R-UIM PUK or R-UIM PUK2. The second parameters is the new PIN or PIN2 code. If the PIN is not requested and the execution command is run, the error information +CME ERROR is returned.
Syntax	AT+CPIN= +CPIN:status,pin1_retry, pin1_unblock_retry, pin2_retry, pin2_unblock_retry
Example	Query current PIN state at+cpin? +CPIN: READY,3,10,3,10 OK Need input PIN code AT+CPIN="****" OK
parameters	<pin>, <newpin>: Strings with double quotation marks. The string

	consists of digits 0 – 9 only. Otherwise, "ERROR" is returned. <code>: string (without quotation marks) READY: The MT does not have a password entry request. R-UIM PIN: UICC/R-UIM PIN password request R-UIM PUK: UICC/R-UIM PUK password request, and used to unlock the locked PIN code R-UIM PIN2: PIN2 password request (not supported at present) R-UIM PUK2: PUK2 password request, and used to unlock the locked PIN2 code (not supported at present)

2.4.4 +CSQ： Command for Querying the RSSI

Description	The execution command queries the current receive signal strength indicator (RSSI)
Syntax	AT+CSQ
Example	AT+CSQ +CSQ:<rssi>,<ber>
parameters	<rssi>: Indicates the received signal strength. The values are as follows: 0: The strength is equal to or less than – 113 dBm. 1: The strength is equal to – 111 dBm. 2...30: The strength is between – 109 and – 53 dBm. 31: The strength is equal to or greater than – 51 dBm. 99： The strength is unknown or cannot be measured.。 <ber>: A percentage value. BER query is not supported at present. "99" is returned when the execution command and the test command are executed.

2.4.5 +CCLK： Command for Querying the System Time on the Network Side

Description	This command reads the current system time from the network. If the system time
Syntax	AT+CCLK=<time>
Example	Query current system time AT+CCLK？ +CCLK: "04/02/09,17:34:23" Set the system time AT+CCLK="04/02/09,18:34:23+08"
parameters	<time>: time’s format "yy/mm/dd,hh： mm： ss".

2.4.6 +ZPWROFF： Shutdown Command

Description	This command powers off the MT. When the command is executed, the MT logs out of the network, saves subscriber data, and is then shut down.
Syntax	AT+ZPWROFF
Example	AT+ZPWROFF OK

2.4.7 +CLAC： List all effective AT command list

Description	List all effective AT command list
Syntax	AT +CLAC
Example	AT +CLAC <AT Command1> [<CR> <LF> <AT Command2>[…]]

2.4.8 +CTZU： Automatically update the time zone

Description	Automatically update the time zone
Syntax	AT+CTZU=<onoff>
Example	AT+CTZU=? +CTZU: (list of supported <onoff>s) AT+CTZU? +CTZU: <onoff> OK AT+CTZU=<onoff> OK
parameter	<onoff> 0 disable automatic time zone update 1 enable automatic time zone update

2.4.9 +CTZR： Report the time zone

Description	Report the time zone
Syntax	AT+CTZR=<onoff>

Example	AT+CTZR=? +CTZR: (list of supported <onoff>s) OK AT+CTZR? +CTZR: <onoff> OK AT+CTZR=<onoff> OK
parameters	<onoff> 0 disables the time zone change event reporting 1 enabled the time zone change event reporting

2.4.10 +CLVL: Tune loudspeaker volume level

Description	This command is used to select the volume of the internal loudspeaker of the MT. Test command returns supported values as compound value.
Syntax	AT+CLVL=<level>
Example	AT+CLVL=5 OK AT+CLVL? +CLVL:5
parameters	<level>: 0~7 integer type value with manufacturer specific range (smallest value represents the lowest sound level). 0 means mute. Default value is 4. Resetting the module will not affect the value. Module updating will reset the value to default value.

2.4.11 &D: Command for Setting the MT Action in Response to the DTR Signals

Description	This command sets the MT action when data terminal ready (DTR) signals change
Syntax	AT&D
Example	AT&D0 OK AT&D1 OK AT&D2 OK

parameters	<value>: 0: The MT ignores the DTR status. 1: When DTR signals changes from ON to OFF, the MT switches to the command mode and maintains the current conversation (reserved and not supported at present). 2: When DTR signals changes from ON to OFF, the MT switches to the command mode and interrupts the current data conversation (CSD, packet-switched (PS) data service); when DTR=OFF, automatic answer is disabled (default value after startup).

2.4.12 +IPR： Command for Setting the Fixed Baud Rate

Description	This command sets the baud rate of the current physical serial port on the MT. Thedefault value upon startup is 115200
Syntax	AT+IPR=<baud rate>
Example	AT+IPR? +IPR: 9600 OK AT+IPR=? +IPR: (),(300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400) OK AT+IPR=38400 OK
parameters	<rate>: Specifies the baud rate. It is a decimal integer. The values are as follows: 300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400

2.4.13 &F： Command for Restoring Factory Settings

Description	This command sets the related parameterss to the default values set by the manufacturer.
Syntax	AT&F
Example	AT&F OK
parameters	

2.4.14 &W： store defined parameters settings

Description	This command is used to save the current parameters settings,o execute the command,the module will stored define the parameters in RAM to FLASH.
Syntax	AT&W

Example	AT&W OK
parameters	

2.5 SMS Interface Commands

2.5.1 +CMGD: Command for Deleting a Short Message

Description	The execution command deletes the short messages in the <index> position of the storage medium specified by <mem1>. For the setting and description of <mem1>,see the +CPMS command. If the second parameters <delflag> is provided, and the value is not 0, the MT ignores <index> and performs operations based on <delflag>.The current storage position of short messages and the supported <delflag> valuesare returned when the test command is executed.	
Syntax	+CMGD=<index>[,<delflag>]	+CMS ERROR: <err>
Example	AT+CMGD=? +CMGD: (),(0-4) OK	Query the value range <delflag>the range is（0-4）
	AT+CMGD=3 OK	Delete index= 3 message
	AT+CMGD=,1 OK	Delete all read short messages
	AT+CMGD=,2 OK	Delete all read and sent short messages
	AT+CMGD=,3 OK	Delete all read, sent, and unsent short messages
	AT+CMGD=,4 OK	Delete all message
parameters	<index>: Identifies the storage position of a short message <delflag>: 0: The short messages specified by <index> are deleted. The execution result corresponds to the execution result without the parameters. 1: All read short messages on the preferred storage medium are deleted; unread,sent, and unsent short messages are retained. 2: All read and sent short messages on the preferred storage medium are deleted;unread and unsent short messages are retained. 3: All read, sent, and unsent short messages on the preferred storage medium are deleted; unread short messages are retained. 4: All short messages (including unread short messages) on the preferred storage medium are deleted.	

2.5.2 +CMGF： Command for Set Message Type

Description	The SET command is used to set the format of the short message. The format has two modes, and depends on the <mode> parameters. The two modes are: PDU mode and TEXT mode. The TEXT mode is unable to display Chinese. The format of message in PDU mode, refers to +CMGS command	
Syntax	+CMGF=[<mode>]	
Example	AT+CMGF? +CMGF: 0 OK	Query current mode PDU mode
	AT+CMGF=? +CMGF: (0-1) OK	The mode value range （0-1）
	AT+CMGF=0 OK	Set the mode to PDU
parameters	<mode>： 0 PDU modes (Default) 1 TEXT mode	

2.5.3 +CMGL： Short Message List Command

Description	The execution command returns all short message indexes with the status value of <stat> from the storage medium specified by <mem1>. Status report short messages are considered as received common short messages. All supported stat values are returned when the test command is executed.	
Syntax	+CMGL[=<stat>]	if pdu mode (+CMGF=0), command successful. <CR><LF>+CMGL：<index>, <tag>,[<reserved>],<length><CR><LF >< Layer3 packet ><CR><LF> <CR><LF>+CMGL：<index>, <tag>,<reserved>],<length><CR><LF >< Layer3 packet ><CR><LF> …… <CR><LF>OK<CR><LF> if text mode (+CMGF=1), command successful. <CR><LF>+CMGL:<index>, <tag><CR><LF>

		<CR><LF>+CMGL:<index>, <tag><CR><LF> …… <CR><LF>OK<CR><LF> Else： <CR><LF>+CMS ERROR:<err><CR><LF>
Example	AT+CMGF=0 OK AT+CMGL=? +cmgl: (0-4) OK	Set PDU mode Query the list range
	AT+CMGF=1 OK AT+CMGL=? +cmgl: ("REC UNREAD","REC READ","STO UNSENT","STO SENT","ALL") OK	Set TEXT mode Query the list range
	AT+CMGF=1 AT+CMGL="all" +CMGL:1,"REC READ","130********","", abcdefg +CMGL:2,"REC READ","131********","", abcdef +CMGL:3,"STO SENT","1331********","" opqrxt OK	Set TEXT mode List all messages

	AT+CMGF=0 AT+CMGL=4 +CMGL: 1,3,,21 0891683108705505F0010F0B813 120882624F700 0808738B54084F1F5927 +CMGL: 2,3,,21 0891683108705505F001100B813 120882624F700 0808738B54084F1F5927 +CMGL: 3,3,,21 0891683108705505F001110B8131 20882624F700 0808738B54084F1F5927 OK	set PDU mode List all message
parameters	Set TEXT mode (+CMGF=1) <stat>： REC UNREAD： 0: received unread short messages 1: received read short messages 2: stored unsent short messages 3: stored sent short messages 4: all short messages <index>: An integer, identifying the position in the storage medium. <tag>: An integer, specifying the status of a short message. The values are as follows: 1: unread short messages 3: read short messages 5: unsent short messages 7: sent short messages <data>：message content。 <alpha>: string type alphanumeric the corresponding the entry address <da> or <oa> representative MT phone book to find the implementation, this characteristics defined by the manufacturer, using the character set should be used to select a character set command + CSCS choose the definition of this command (see 3GPP TS 27.007 [9]) <scts>: TP-Service Centre time scale (time string type (reference <dt>) <tooa>: TP-source address, the address type, array integer type the (default reference <toda>) <toda>: TP-destination address, the address type 8-digit group integer type(when the first character of the <da> + (IRA 43) default is 145, otherwise	

	default is 129) <length>: integer value ,indicating the body of information <data> <cdata> character length s; or in. PDUmode (+ CMGF = 0), the length of the actual TP data unit in octets (ie the RP layer SMSC address octets are not counted in the length) <fo>: depending on the command or result code: SMS-DELIVER, the SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) integer type first eight array. <mr>: TP-parameters (integer) <ra>: TP-receiver address (string type), BCD code (or GSM 7 bit default alphabet characters) are converted into current TE character set selected (see 3GPP TS 27.007 [9] command + CSCS) address type given by <tora>. <tora>: TP-receive address, address type octet integer type (default See <toda>) <dt>: TP-release time to time string format: "yy / MM / dd hh: mm: ss ± zz" character indicates the year (two digits), month, day, hour, minute, seconds and time zone . Such as: 6th of May 1994, 22:10:00 GMT +2hours, said: "94/05/06, 22:10:00 +08" <st>: TP state integer type. <ct>: TP-command type for integer type(default is 0) <sn>: CBM Serial Number, Integer type <mid>: CBM message identifier integer type <page>: CBM paging parameters, bits 4-7 to an integer <pages>: CBM paging parameters, bits 0-3 integer type
	PDU mode (+CMGF=0) <stat>: Specifies the type of a short message. The values are as follows: 0: received unread short messages 1: received read short messages 2: stored unsent short messages 3: stored sent short messages 4: all short messages <index>: An integer, identifying the position in the storage medium. <tag>: An integer, specifying the status of a short message. The values are as follows: 1: unread short messages 3: read short messages 5: unsent short messages 7: sent short messages

2.5.4 +CMGR: Command for Reading a Short Message

Description	The execution command returns short messages with the storage position of <index> from the storage medium specified by <mem1>. Whether to modify the short message status depends on the value of <mode>.

Syntax	+CMGR=<index>，<mode>	PDU mode (+CMGF=0) command +CMGR:<stat>,[<alpha>],<length><CR><LF><pdu> else： +CMS ERROR: <err>
	AT+CMGR=<index>	TEXTmode (+CMGF=1)command Recive message（SMS-DELIVER）： +CMGR:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data> Send message（SMS-SUBMIT）： +CMGR:<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]<CR><LF><data> Message state report（SMS-STATUS-REPORT）： +CMGR:<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> Message command（SMS-COMMAND）： +CMGR:<stat>,<fo>,<ct>[,<pid>,[<mn>],[<da>],[<toda>],<length><CR><LF><cdata>] CBM storage： +CMGR:<stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> else： +CMS ERROR:<err>
Example	AT+CMGF=0 OK AT+CMGR=1，0 +CMGR: 1,,127 0891683108705505F00408A17055810 60008701091905564236E5C0A656C76 845BA26237FF0C60A85DF27ECF621 0529F5F00901A4E8600310030003051 43004700500052005359579910 4F1860 E04E1A52A1FF0C4ECE00320030003 000375E74003000326708003000 3165E 55F0059CB751F654830028C228C22F F016DF1573379FB52A8516C53F8	Set PDU mode Read the first message in PDU mode

	AT+CMGF=1 OK AT+CMGR=1 +CMGR:"REC UNREAD","133********",, "04/02/25,12 :58 :04＋04" ABCD OK	Set TEXT mode Read the first message in TEXT mode
parameters	<index>: An integer, identifying the position in the storage medium. <mode>: Specifies the change mode of the short message status. The values are asfollows: 0: The short message status is changed to read 1: The short message status is not changed <callerID>: Specifies the number of the short message sender. <format>: Specifies the encoding format of a short message. The values are asfollows: 0: GSM 7 bit (not supported at present) 1: ASCII encoding 2: IA5 (not supported at present) 3: octet (not supported at present) 4: Latin (not supported at present) 5: Latin_Hebrew (not supported at present) 6: UNICODE encoding <year, month, day, hour, minute,second>: The year, month, day, hour, minute, and second when a short message is received. <Length>: Specifies the length of a received short message. <lang>: Specifies the language. The values are as follows: 0: unspecified 1: English 6: Chinese <prt>: Specifies the priority of a short message. The values are as follows: 0: normal 1: interactive 2: urgent 3: emergency <Prv>: Specifies the confidentiality level. The values are as follows: 0: normal 1: restricted 2: confidential 3: secret <type>: Specifies the type of a short message. The values are as follows: 0: normal 1: CPT (not supported at present) 2: voice mail (not supported at present)	

	3: SMS report <stat>: Specifies the type of a short message. The values are as follows: 0: received unread short messages 1: received read short messages 2: stored unsent short messages 3: stored sent short messages 4: all short messages <Msg>: The received short message. <ctrl-Z>: Indicates the end of the content of a short message. The character is '0x1A' when the encoding format is not UNICODE encoding; the character is '0x001A' when the encoding format is UNICODE encoding.

2.5.5 +CMGS: Command for Sending a Short Message

Description	This command sends a short message to the network.	
Syntax	If PDU mode (+CMGF=0): ^HCMGS=<length><CR><Layer3 packet><ctrl-z/ESC>	If PDU mode (+CMGF=0): <CR><LF>^HCMGS: <mr><CR><LF><CR><LF>OK<CR><LF>
	If text mode (+CMGF=1): ^HCMGS=<da>[,<toda>]<CR> text is entered<ctrl-z/ESC>	If TEXT mode (+CMGF=1): <CR><LF>^HCMGS: <mr><CR><LF><CR><LF>OK<CR><LF>
示 例	AT+CMGF=1 OK AT+CMGS="13316538879"<CR> “test” <ctrl-Z> +CMGS: 19 OK AT+CMGF=0 OK AT+CMGS=19<CR> 0031000D91683120882624F70000A704D4F29C0E<Ctrl-Z> +CMGS: 20 OK 0031000D91683120882624F70000A704D4F29C0E	Set to TEXT mode send message to 13316538879 “test” Set to PDU mode send message to 13028862427 “ 0031000D91683120882624F70000A704D4F29C0E”

	0031000D91683131887667F80000A704D4F29C0E	
parameters	<length>: the length is the bytes of layer3 packet. <da>: Specifies the number of the recipient of a short message. It is a string with double quotation marks, consisting of a maximum of 20 characters. The value can be 0 – 9, *, #, and +. The "+" symbol can only be at the start of the number. <toda>: Specifies the address encoding format. It is a digit of one byte. It is not supported at present. The default value is 0. <mr>: A decimal digit, specifying the identifier of a short message. The value ranges from 0 to 65535. <ctrl-Z>: Identifies the end of a short message. The character is '0x1A' ('0x001A' in the Unicode). <ESC>: Indicates that the sending of a short message is canceled. The character is '0x1B' ('0x001B' under the Unicode).	

2.5.6+CMGW： Write messages to the memory

Description	This command stores a short message to the storage location specified by <mem2>in the +CPMS command. The short message can be saved to the "SM" or "ME".	
Syntax	If PDU mode enabled： +CMGW=<length>,<tag><CR><Layer3 packet><ctrl-z/ESC>	<CR><LF>+CMGW:<index><CR><LF> <CR><LF>OK<CR><LF> +CMS ERROR: <err>
	If TEXT mode enabled： +CMGW[=<oa/da>][,<tooa/toda>],<stat>,<ptr>,<type>,<format>,<lang>[,<year>,<month>,<day>,<hour>,<minute>,<second>]<CR><text><ctrl-Z/ESC>	<CR><LF>+CMGW:<index><CR><LF> <CR><LF>OK<CR><L> +CMS ERROR: <err>
Example	AT+CMGF=0 OK AT+CMGW=19 0031000D91683120882624F70000A704 D4F29C0E<ctrl-Z> +CMGW: 0 OK	Set to PDU mode Write the message to index =19
	at+cmgf=1 OK at+cmgw="13028862427" > "test" +CMGW: 1 OK	Set to TEXT mode Write the message to index=1

parameters	<oa/da>: Specifies the number of the sender or recipient of a short message. It is a string with double quotation marks, consisting of a maximum of 20 characters. The value can be 0 – 9, *, #, and +. The + symbol can only be placed at the beginning of a number. <length>：the length is the bytes of layer3 packet <stat>: Specifies the storage status of a short message. The values are as follows: 0: received unread short messages 1: received read short messages 2: stored unsent short messages 3: stored sent short message <index>: A number consisting of decimal digits (0 – 9), specifying the position number in the storage medium. The value ranges from 0 to the value of the maximum memory capacity minus one.

2.5.7+CMSS： Send SMS in memory

Description	This command is used to send stored SMS witch has the record number <index>in specified <mem2> . If specify a destination number of <da>, the new number will replace the number stored in the SMS>. Sent successfully will to return parameters <mr>, when + CSMS <service> set to 1 and network support, and may return to <ackpdu>.	
Syntax	+CMSS=<index>[,<da>[,<to da>]]	Send success: +CMSS: <mr>[,<ackpdu>](PDU mode) +CMSS: <mr>[,<scts>](TEXT mode) Send failed: +CMS ERROR: <err>
Example	AT+CMGF=0 OK AT+CMGW=19 0031000D91683113865589F80000 A704D4F29C0E +CMGW: 2 OK AT+CMSS=2 +CMSS: 21 AT+CMGF=1 OK AT+CMGW="13316855988" > test<ctrl-Z> +CMGW: 3 OK	Set to PDU mode Write SMS“Test”（destination number 13316855988） SMS was store in record number 2 Send the SMS Set to TEXT mode Write SMS test （destination number 13316855988） Store in record number 3

	AT+CMSS=3 +CMSS: 22	Send the SMS
parameters	<index>:stored record numbers <da>: destination number <mr>: Information parameters <ackpdu>: RP-user data unit RP-ACK PDU mode <pdu>, but there is no SC address , parameters like the same type of string delimited by double quotes.	

2.5.8+CNMI： Command for Setting the Mode of New Short Message Notification

Description	The set command sets the mode of notifying the TE of a new short message.	
Syntax	+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]	<CR><LF>OK<CR><LF> In case of an SMS-related error: <CR><LF>+CMS ERROR:<err><CR><LF>
Example	AT+CNMI? +CNMI: 0,0,0,0,0 OK	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>
	AT+CNMI=? +CNMI: (0,1,2),(0,1,2,3),(0,2),(0,1,2),(0,1) OK	+CNMI: (<mode>Values range)， <mt>Values range）， (<bm>Values range), (<ds>Values range), (<bfr> Values range)
	AT+CNMI=1,2,0,0,0 OK AT+CMGF=1 OK +CMT: "+8613316855988",,"09/09/08,15:56:35+32" TEST	Set recive mode Set TEXT mode 90/9/8/15： 56： 35 recive message from 13316855988 TEST
parameters	<mode>: Specifies the short message notification mode. 0: The short message notification is stored in the buffer of the MT. If the buffer of the MT is full, the new notification overwrites the oldest notification. 1: The short message notification is sent to the TE. If the short message notification fails to be sent (for example, in online data mode), the notification is discarded (default value after startup). 2: Send a message notification and message status report to the TE. If the sending fails (for example, in the online data mode), buffer the message notification in the	

MS and send it to the TE later.

<mt>: Specifies the storage and notification rules for received short messages.

The storage and notification for a new short message has the two modes:

1. The short message is stored in the MT, and a storage position notification is sent to the TE (default value after startup).

The short message notification uses the +CMTI command, that is, a new short message is stored in <mem3> specified by the +CPMS command; the storage location and the index value are reported to the TE.

2. The short message is not stored in the MT but is directly sent to the TE.

The short message notification uses the ^HCMT command. A new short message is not stored on the board. It is reported to the TE. The TE needs to call the AT+CNMA command to acknowledge the reported short message. If the AT+CNMA command is not received within two seconds, the MT sends a receiving error to the network.

Figure 1-1 shows the interaction between the TE and the MT in the preceding two modes.

Figure 8-1 Interaction between the TE and the MT

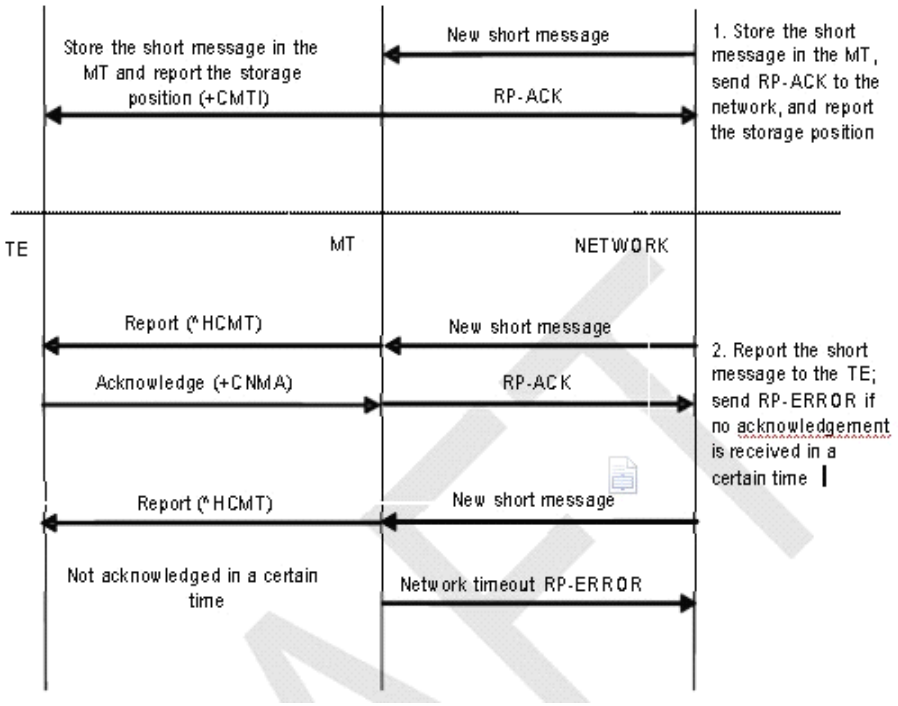

Table 1-1 describes the combinations of the preceding two parameterss.

Table 1-1 Combinations of the preceding two parameterss

<mode>	<mt>	Saving a Short Message or Not	Reporting a Short	Reporting Command
0	1	Yes	No	
1	1	Yes	Yes	+CMTI

	0	2	No	No	
	1	2	No	Yes	+CMT

<bm>: Not supported at present. The value is always 0.
<ds>: Used to set a short message return receipt.
0: A short message return receipt is not sent to the TE.
1: The short message return receipt is not stored in the MT but is sent to the TE.
If PDU mode enabled:
+CMT: <layer3 packet><CR><LF>
If Text mode enabled:
+CMT:<callerID>,<year>,<month>,<day>,<hour>,<minute>,<lang>,<format>,<length>,<prt>,<prv>,<type><CR><LF><msg><ctrl-z><CR><LF>
2: The short message return receipt is stored in the MT, and a storage position notification is sent to the TE by using the +CMTI command (default value after startup).
+CMTI： <mem>,<index><CR><LF>

<bfr>: Set the buffer processing when <mode>=1, 2 is entered from <mode>=0.
0: In the <mode>1-2 mode, MS sends all URCs to TE in one time.
1: In the <mode>1-2 mode, clear all URCs..

2.5.9 +CPMS： Command for Setting the Short Message

Description	The set command sets the short message storage medium corresponding to the short message operations (such as read or write) and return the current usage of the selected medium.	
Syntax	+CPMS=<mem1>[, mem2>[,<mem3>]]	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> +CMS ERROR: <err>
Example	AT+CPMS? +CPMS:"ME",4,23,"ME",4,23,"SM",32,50 OK	Quety current setting ： <mem1> ME， account 4 ， total 23 ； <mem2> account 4 ， total 23 ； <mem> SM account 23 ， total 50 ；
	AT+CPMS=? +CPMS:("ME","MT","SM","SR"),("ME","MT","SM","SR"),("ME","MT","SM","SR")	List memory<mem1>, <mem2>， <mem3>（support ME、MT、SM、SR）

	OK	
	AT+CPMS="SM","ME","MT" +CPMS: 32,50,4,23,4,23 OK AT+CPMS? +CPMS: "SM",32,50,"ME",4,23,"MT",4,23 OK	Set the <mem1>, <mem2>，<mem3> as SM、ME、MT； Query <mem1>, <mem2>，<mem3>
parameters	<mem1>: Specifies the medium for short message read and deletion. It is a string with double quotation marks. The optional values are as follows: "SM": R-UIM card "ME": nonvolatile memory on the module (default value after startup) <mem2>: Specifies the medium for short message write and sending. It is a string with double quotation marks. Its optional values and default value are the same as those of <mem1>. <mem3>: Specifies the medium for storing the received short message. It is a string with double quotation marks. Its optional values and default value are the same as those of <mem1>. <total n>: An integer, specifying the total number of short messages that can be saved in <mem n>. <used n>: An integer, specifying the number of short messages that are saved in<mem n> .	

2.5.10+CSCA： SMS center number

Description	Set command to update the SMS center number, MO send SMS by SMS center . In TEXT mode, use the send and write text messages command settings; PDU mode, use the same command settings, but the length of the field in the PDU SMSC 0	
Syntax	+CSCA=<sca>[,<tosca>]	
Example	AT+CSCA? +CSCA: "+8613800755500",145 OK	Query the SMS center number 13800755500
	AT+CSCA=? OK	
parameters	<sca>: SMS center address <tosca>: SMS center type	

2.5.11+CSCB: Select Cell Broadcast Information Type

Description	Setting command to select the type of ME receives the CBM cell broadcast information. Test command returns the supported mode composite value.

Syntax	+CSCB=[<mode>[,<mids>[,<dcss>]]]	
Example	AT+CSCB? +CSCB:0,"0,100,6,1,221,2,3,4,30, 6458,13,29420,255,19,20,5,18,11, 26214,10,40,50,223,227,3084,2453 6,21807,12222,25,54,69,68,67,66, 65,64,63,62,61,60,59,57,56,55,53 ,52,51,2121,9,45330,0-1275,0-382 5,0-7650,0,0,0,0,0,0-52639,200-0 ,0,0,0-52617,200-0,0-52631,200-0 ,0-59708,262-0,0-59708,262-59708 ,262-0,0,0-7650,0-7650,0","" OK	Query current CBMparameters type<mode>=0；<mids> "0,100,6,..."compose string， <dcss>为“”（null）
	AT+CSCB=? +CSCB: (0-1) OK AT+CSCB=1 OK AT+CSCB? +CSCB: 1, "","" OK AT+CSCB=0 OK AT+CSCB? +CSCB: 0, "0-65535","" OK AT+CSCB=0,"0-1","1-2" OK AT+CSCB? +CSCB: 0, "0-1,0-65535","1-2" OK AT+CSCB=0,"2-3","3-4" OK AT+CSCB? +CSCB: 0, "2-3,0-1,0-65535","3-4" OK AT+CSCB=0,"4-7","" OK AT+CSCB? +CSCB: 0, "4-7,2-3,0-1,0-65535","" OK AT+CSCB=1,"5-6","1-5" OK	List parameters range（0－1） Set mode to 1 result ： <mode>=1；<mids>， <dcss> default“”（null） Set <mode>=0 Quety current <mids> Default range 0-65535， <dcss>default null Set the CSCB and update

	AT+CSCB? +CSCB: 1, "4-7,2-3,0-1,0-65535","1-5" OK	
parameters	<mode>: 0: accept <mids>and <dcss> defined type of information. 1: do not accept the type of information in <mids>and <dcss> defined. <mids>: string type, CBM identifiers of all the possible different combinations (reference <mid>) (default the empty string), such as "0,1,5,320-478,922" <dcss>: string type, CBM data encoding rules of all possible different combinations (reference <dcs>) (default is an empty string), "0-3,5"	

2.5.12+CSMP： set TEXT mode parameters

Description	Select TEXT mode send SMS to the network or store messages to the memory , this command is used to select the value of additional parameters. When the SMS center SMSC receives SMS, you can set the effective start time (<vp> range from 0 to 255) or define the absolute effective end time (<vp> string).<vp> of mode given by the <fo>., if TA support EVPF (see 3GPP TS23.040 [3]), it is 16 hexadecimal string with double quotes (see <pdu>)	
Syntax	+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]	
Example	AT+CSMP? +CSMP: ,,0,0 OK	+CSMP: <fo>,<vp>,<pid>,<dcs>
	AT+CSMP=? OK	
parameters	<fo>: dependent on the command or result code: first 8 bytes (3GPP TS 23.040 [3]) SMS-DELIVER, SMS-SUBMIT (default 17) SMS-STATUS-REPORT, or SMS-COMMAND (default 2) Integer type <vp>: depends on the SMS-SUBMIT <fo> setting: 3GPP TS 23.040 [3] TP-Validity-Period for integer type(default 167), the time string type(Participation Hexadecimal encoding reference <dt>) or Enhanced Syntax (such as support for EVPF) (with double quotes String). <pid>: 3GPP TS 23.040 [3] TP-Protocol-Identifier integer type(default 0) <dcs>: dependent on the command or result code: 3GPP TS 23.038 [2] SMS data coding rules (Default 0), cell broadcast data encoding rules (integer type)	

2.5.13 +CSMS: Select the SMS service

Description	Set command select SMS services <service>. Back to ME support SMS type:

	<mt> MT SMS, <mo> MO SMS, <bm> broadcast SMS. If the ME does not support the selected service the (but TA support), returns the the intercept code + CMS ERROR: Read command returns the current setting of SMS type. The test command returns a list of all the services supported by the TA.	
Syntax	+CSMS=<service>	+CSMS: <mt>,<mo>,<bm> +CMS ERROR: <err>
Example	AT+CSMS? +CSMS: 0,1,1,1 OK	Query current parameters
	AT+CSMS=? +CSMS: (0-1) OK	List all service（0-1）
	AT+CSMS=0 +CSMS: 1,1,1 OK	Set CSMS=0
parameters	<service>: 0:3 GPP TS 23.040 [3] and in 3GPP TS 23.041 [4] The 1:3 3GPP TS 23.040 [3], and in 3GPP TS 23.041 [4] corresponding commandDescription set to 12-127: Reserved 128 ...: equipment manufacturer defined <mt>, <mo>, <bm>: 0: does not support the type 1: Type of Support	

2.5.14 +CNMA: Command for Acknowledging a New Short Message

Description	This command replies to the +CMT or +CDS indication received by the TE from the MT. The execution command acknowledges the reception of a new short message sent to the TE. For usage of the command, see the +CNMI command. Before the previous received short message is acknowledged, the MT does not send another +CMT or +CDS command to the TE. If the MT does not obtain a short message acknowledgement in the specified time (about two seconds) (due to network timeout), it sends "RP-ERROR" to the network.	
Syntax	If text mode (+CMGF=1): +CNMA	If text mode (+CMGF=1): <CR><LF>OK<CR><LF> If pdu mode (+CMGF=0): <CR><LF>+CNMA: (list of supported <n>s)
	If pdu mode (+CMGF=0): +CNMA[=<n>[,<length>[<C R> PDU is given<ctrl-	

	z/ESC>]]]	<CR><LF><CR><LF>OK<CR><LF>
	AT+CNMA=? +CNMA: (0-2) OK	Query the value range List value range is（0-2）
parameters	Note: The SMS must be sent directly to the cache to the ME / TA case (when + CNMI parameter <mode> Is 0 or 2) or AT interpreter retained too long, the result code in this state can not be transmitted to the TE(Such as user with the + CMGS input SMS) to confirm (RP-ACK) must be sent to the network (don't wait the TE + CNMA command). Later, when the cache the result code is sent to the TE, TE must confirm each result code throgh sent + CNMA (PDU mode to + CNMA [= 0]) .So ME / TA will be able to decide whether the information should be stored into the nonvolatile memory and shielded sent to the TE (not received + CNMA (PDU mode + CNMA [= 0])). More detailed understanding of reliable use <mode> parameters see of + CNMI command. Test command returns supported <n> list. If only support 0, the device will not support the sending of TPDU. <n>: 0: command operation is similar to the TEXT mode 1: send RP-ACK (or buffer storage received the results of code) 2: send RP-ERROR (if no PDU, ME / TA will send SMS-DELIVER-REPORT (3GPP TS 23.040 [3] TP-FCS value is set to "FF" (undefined cause of the error))) Test step: other phones to send text messages to the module , modules receive SMS using AT + CNMA = N confirm the phone will receive an acknowledgment SMS.	

2.5.15 +CMMS: Coherent send SMS

Description	Set the command to control the continuity of SMS relay protocol connections. When this feature is active (network support), when the connection remains, Multiple SMS are sent. The test command returns supported composite value.	
Syntax	+CMMS=[<n>]	
Example	AT+CMMS? +CMMS: 0 OK	Query current parameters
	AT+CMMS=1 OK AT+CMMS? +CMMS: 1 OK	Set <n>=1

	AT+CMMS=? +CMMS: (0-2) OK	Query paraments range（0-2）
parameters	<n>: 0: mask 1: remain active until the last message send command (+ CMGS, + CMSS, etc.) answers to the next send command between the time more than 1-5 seconds (the exact value depends on the ME implementation), and then close the connection ME, TA <n> automatically switch to 0. 2: remain active until the last message send command (+ CMGS, + CMSS) answers to the next send command between the time more than 1-5 seconds (the exact value depends on the ME implementation), then ME closes the connection, but TA does not automatically <n> switches to 0.	

2.5.16+CGSMS： Select MO Short Message Service

Description	the command is used to specify the MT sending MO short message service or preferred service	
Syntax	+CGSMS= [<service>]	OK ERROR
Example	AT+CGSMS=1 OK	Set to circuit-switched
	AT+CGSMS? +CGSMS: 1 OK	Query current setting
	AT+CGSMS=? +CGSMS: (0-3) OK	List parameters range（0-3）
parameters	<service>: digital parameters (marked by the use of the service or preferred service) 0: Data Domain 1: circuit-switched 2: data field preferred (if GPRS is not available, use circuit-switched) 3: Preferably, the circuit-switched (if the circuit switching is unavailable, using data fields) Other: reserved, will return ERROR response	

2.5.17+CMT： Directly display the information received

Description	The response marked a message has been received, and according to the

	information stored parameters to select (+ CNMI) displayed directly.	
Syntax	+CMT ： <oa>, [<alpha>],<scts> [,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tos ca>,<length>]<CR><LF><data>（TEXT mode） +CMT：<alpha>],<length><CR><LF><pdu>（PDU mode）	OK ERROR
Example	AT+CNMI=1,2,0,0,0 OK AT+CMGF=1 OK +CMT: "+8613316855988",,"09/09/08,15:56:35 +32" TEST	Set the SMS receive mode Set to TEXT mode 90/9/8/15：56： 35+32 receive SMS form 13316855988: TEST
parameters	<oa>: Send information address <scts>: service center which standard string type format : "yy / MM / dd, hh: mm: ss ± zz" (Year / Month / Day, Hour: Min: Seconds ± TimeZone) <tooa>: <oa> address type <length>: <data> number of the character of the area <data>: message Content	

2.5.18 +CMTI: Received information are stored in the memory

Description	Marked a response has been received and stored in the memory according to the information storage parameters selected (+ CNMI) parameters.	
Syntax	+CMTI：<mem>,<index>	OK ERROR
Example	AT+CNMI=1,1,0,0,0 OK AT+CMGF=1 OK +CMTI: "SR",32	 Set to TEXT mode Received message store in memory “SR” ,and 32 records
parameters	<mem>: NVRAM storage area (usually this response as "MT") <index>: the location of the information in the storage area	

2.5.19+ZMGF： Memory is full

Description	This information indicates that the short message service center attempts to send a short message to the module but was refused, because of the short message memory is full, you need to delete some messages with AT + CMGD command

Syntax	+ZMGF：n	
Example	+ZMGF	New short message, but was rejected
parameters	n: indicates that the message memory is full 1: WMS_MEMORY_STORE_RAM_GW 2: WMS_MEMORY_STORE_SIM 3: WMS_MEMORY_STORE_NV_GW Which 1 and 3 can be regarded as a module, 2 can be seen as a SIM card	

2.5.20+CSDH： Display text mode parameter:

Description	The command is use to control whether Display detailed header information in TEXT mode results code.	
Syntax	+CSDH=[<show>]	
Example	AT+CSDH=0 OK AT+CSDH? +CSDH: 0 OK AT+CSDH=? +CSDH: (0-1) OK	Set parameter Values as 0 Queries the current parameter value. List the parameter value area.
Defined Values	<show>: 0: when it is send in TEXT mode （ SMS-SUBMITs ） and receive （SMS-DELIVERs）message,it does not display the header values that defined in command +CSCA and +CSMP (<sca>, <tosca>, <fo>, <vp>,<pid> ,<dcs>) There are not <length>, <toda> or <tooa> in +CMT, +CMGL, +CMGR's results code）; For message command， in +CMGR（Read message）results code， do not display<pid>, <mn>, <da>,<toda>, <length> or<cdata> 1: Display the results code's value. Test procedure： Set as 0 diaplay<pid (unknow)>, <mn(unknow)>, <da (Short Message Service Center number)>, <toda (number state145 or 129)>, <length (Message content length)> After set to 1,the header displaies as 161,36,34,0,"+8613010200500 (Short Message Service Center number) ",145(Number type),160 （Message content） NREAD","13794462857",,"10/11/04,16:10:51+32",161,36,34,0,"+8613010200500",145,2	

2.6 Phonebook Interface Commands

2.6.1 +CPBS: CPBS–Command for Selecting a Phonebook Memory

Description	The set command selects a phonebook storage. The initial setting is "SM" after the MT is restarted. Other phonebook-related commands are executed on the phonebook memory selected by this command. The currently selected phonebook memory, number of used entries, and maximum number of entries are returned when the read command is executed.	
Syntax	AT+CPBS=<STORAGE>	
Example	AT+CPBS=<STORAGE> OK AT+CPBS? +CPBS:<STORAGE>[,<USED>,<TOTAL	
Defined Values	<STORAGE> “SM” R-UIM/UICC phonebook. “DC” Dialed call phonebook. “FD” Fixed Dialling phonebook.. “LD” Dialed call number phonebook. “MC” Missed call phonebook. “ME” Nonvolatile memory on the module. “RC” Received call phonebook. “EN” Emergency call phonebook. “ON” The phone number in SIM card（AT+CNUM can read this information） Remark：Only supported Manual writing”ME”and”SM” currently.	

2.6.2 +CPBR： Command for Reading the Phonebook

Description	This command returns the phonebook entries between index1 and index2
Syntax	AT+CPBR=<INDEX1> [,<INDEX2>]

Sample	AT^CPBR=<INDEX1> [,<INDEX2>] [^CPBR: <index1>,<number>,<type>,<text >[[...] <CR><LF>^CPBR: <index2>,<number>,<type>,<text>]] OK AT^CPBR=? ^CPBR:(<index>value list), [<nlength>], [<tlength>] OK	Read phonebook records from INDEX1 to INDEX2.
Parameter Description	<index1> Integer values within the range of location numbers of phonebook storage. <index2> Integer values within the range of location numbers of phonebook storage. <number> Cshar type； <type> Integer type eight bit byte address type（Please refer to GSM 04.08 [8]10.5.4.7） <text> <tlength> The maximum length of the character field；And same as " TE character set " command +CSCS’ s Provisions. <nlength> Indicate the maximum length of the integer value <number> field. <tlength> Indicate the maximum length of the integer value <text> field .	

2.6.3 +CPBF： Find the phone book record:

Description	Find the phone book record.
Syntax	AT+CPBF=<findtext >
Example	AT+CPBF=<text> [+CPBF: <index1>,<number>,<type>,<text>[[...] <CR><LF>+CBPF: <index2>,<number>,<type>,<text>]] OK AT+CPBF=? +CPBF: [<nlength>],[<tlength>] OK

Defined Values	<index1>: Integer values within the range of location numbers of phonebook storage. <index2>: Integer values within the range of location numbers of phonebook storage. <number>： char type；telephone number of the <type> Syntax. <type>： Integer octet address type （Please refer to GSM 04.08 [8] 10.5.4.7） <text><tlength> The maximum length of the character field； Same as the provided character set by “choose TE character set” command +CSCS. <nlength>： Indicate <number> field Maximum length of integer type value <tlength>：Indicate <text> field Maximum length of integer type value.

2.6.4 +CPBW： Writing Entries to the Phonebook：

Interface Description	This command stores phonebook entries in the position specified by the currently selected phonebook memory.
Syntax	AT^CPBW=[<index>][,<number>[,<type>[,<text>[,<tlength>]]]]
Sample	AT^CPBW=[<index>][,<number>[,<type>[,<text>][,<tlength>]]] OK AT^CPBW=? AT^CPBW = 6,"12323223",129,"22",2 OK
Parameter Description	<index> Integer values within the range of location numbers of phonebook storage. <number> Char type； <type> Integer type eight bit byte address type（Please refer to GSM 04.08 [8] 10.5.4.7 ）； When the dial string includes international access code character “+”, the default value is 145; In other conditions,the default value is 129, the rest values between 0 and 255 is keeped for operators.. <text> Char type； <tlength> he maximum length of the character field； And same as " TE character set " command +CSCS’ s Provisions.

2.7 PACKET DOMAIN

2.7.1 +CGDCONT:define PDP context：

Description	Using the set command can define parameters for PDP context.The PDP context is identify by local context identification.

<table>
<tr><td></td><td colspan="2">The special format of this command:+CGQMIN=<cid>,cancel defined <cid> service quality.</td></tr>
<tr><td>Syntax</td><td colspan="2">AT+CGDCONT=[<cid> [,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp> [,<h_comp>]]]]]]</td></tr>
<tr><td rowspan="3">Example</td><td>AT+CGDCONT=[<cid> [,<PDP_type> [,<APN>[,<PDP_addr>[,<d_comp> [,<h_comp>]]]]]]</td><td>+OK
+CME ERROR: <err></td></tr>
<tr><td>AT+CGDCONT?</td><td>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>
OK</td></tr>
<tr><td>AT+CGDCONT=1,"IP","CMNET"
（modem SCV USB Modem FFEB attribute→advanced）
NOTE：APN is CMNET，PDP class type is IP</td><td>OK</td></tr>
<tr><td>Defined Values</td><td colspan="2"><cid> （1-16） Numeric type parameter；used to identify PDP context identification,this parameter is local parameter for TE-MT interface.And can be used other commands that relate to PDP context.
<PDP_type> [“IP”]（Packet data type of agreement）char type parameter; used to indicate:
Packet data type of agreement
“IP” IP（Internet Protocol）（IETFSTD 5）
“PPP”
“IPV6”
<APN> - Access point name；indicate a string parameter.Used to choose GGSN or External packet data network’s logic name.If the parameter’s value is null or omitted,then need to ask for Signing value
<PDP_address> - char type parameter；Using toidentify specific PDP context,the distributive address spaceby MT.If the parameter.s value is null or omitted,TE will supply other value in The startup process;If it cannot supply other value,then need ask for dynamic address.Even if address has been distributed in the startup process,the read out format of this command return null.Used +CGPADDR command can read out the distributiveaddress.
<d_comp>
0 close（The value is default value if it is omited）Numeric type parameter; Used to control PDP data compress.
1 open
2 V.42bis compression protocol
<h_comp>
0 close（The value is default value if it is omited）Numeric type parameter; Used to control PDP data compress.</td></tr>
</table>

	Compress 1 open 2 RFC1144 Low speed serial links on the TCP/IP head compression 3 RFC2507

2.7.2 +CGQREQ :Requested quality of service briefing:

Description	This command allows when MT sends “PDP contest activate request ”message,TE allocate a service quality. .Used the set command can allocate a Briefing identified by context identificate parameter value <cid>. The special format of this command:+CGQREQ=<cid>,cancel defined <cid> service quality.		
Syntax	AT+CGQREQ=[<cid>[,<precedence >[,<delay>[,<reliability.> [,<peak>[,<mean>]]]]]]		
Example	AT+CGQREQ=[<cid>[,<precedence >[,<delay>[,<reliability.> [,<peak>[,<mean>]]]]]]		+OK +CME ERROR: <err>
	AT+CGQREQ?		+CGQREQ: <cid>,<precedence >, <delay>,<reliability>,<peak>, <mean> OK
	AT+CGDCONT=?		+CGQREQ:<PDP_type>,(<precedence>Vlaue list), (<delay> Vlaue list), (<reliability> Vlaue list) , (<peak> Vlaue list), (<mean>Vlaue list) OK
Defined Values	Defined	Value	Explain
	cid	1-16	Numeric type specify parameter ； Used to specify Identification of PDP context..The parameter is locall parameter for TE-MT interface.And can bo used to other PDP context related commands.
	precedence used to specify the priority level	0	Network defined parameters
		1	Higher than the priority 2 and 3 priority, ement high priority service commitment
		2	Higher than the priority 3,implement the general priority service commitment.
		3	Implement lower priority service commitment.
	delay used to specify the delay level	0-4	Network defined parameters
	reliability	0	Network defined parameters

		1	Can not handle non-real-time business data loss and error-sensitive application.
		2	Can handle non-real-time business data loss and error-sensitive application
		3	Can handle data loss、GMM/SM and SMS's non-real-time business data loss and error-sensitive application.
		4	Can handle non-real-time business data loss and error-sensitive application
		5	Can handle non-real-time business data loss and error-sensitive application
	peak used to specify the peak throughput level.	0	Network defined parameters
		1	Maximum 1 000 (8 kbit/s)
		2	Maximum 2 000 (16 kbit/s)
		3	Maximum 4 000 (32 kbit/s)
		4	Maximum 8 000 (64 kbit/s)
		5	Maximum 16 000 (128 kbit/s)
		6	Maximum 32 000 (256 kbit/s)
		7	Maximum 64 000 (512 kbit/s)
		8	Maximum 128 000 (1 024 kbit/s)
		9	Maximum 256 000 (2 048 kbit/s)
	mean Define the average throughput level numeric type.	0	Network defined parameters
		1	100 (～0.22 bit/s)
		2	200 (～0.44 bit/s)
		3	500 (～1.11 bit/s)
		4	1 000 (～2.2 bit/s)
		5	2 000 (～4.4 bit/s)
		6	5 000 (～11.1 bit/s)
		7	10 000 (～22 bit/s)
		8	20 000 (～44 bit/s)
		9	50 000 (～111 bit/s)
		10	100 000 (～0.22 kbit/s)
		11	200 000 (～0.44 kbit/s)
		12	500 000 (～1.11 kbit/s)
		13	1 000 000 (～2.2 kbit/s)
		14	2 000 000 (～4.4 kbit/s)
		15	5 000 000 (～11.1 kbit/s)
		16	10 000 000 (～22 kbit/s)
		17	20 000 000 (～44 kbit/s)
		18	50 000 000 (～111 kbit/s)
		31	Minimum limtion

2.7.3 +CGQMIN :The minimum acceptable quality of service

Briefing:

Description	This command allows TE allocate a acceptable minimum service quality.The Briefing is checked by MT,which used to compare with the returned consult Briefing of "PDP context activation" message .Used the set command can identificate a Briefing identified by context specify parameter value <cid>. The special format of this command:+CGQMIN=<cid>,cancel defined <cid> service quality.	
Syntax	AT+CGQMIN=[<cid>[,<precedence >[,<delay>[,<reliability.>[,<peak>[,<mean>]]]]]]	
Example	AT+CGQMIN=[<cid>[,<precedence >[,<delay>[,<reliability.>[,<peak> > [,<mean>]]]]]]	+OK +CME ERROR: <err>
	AT+CGQMIN?	+CGQMIN: <cid>,<precedence >, <delay>,<reliability>,<peak>, <mean> OK
	AT+ CGQMIN =?	+CGQMIN:<PDP_type>, (<precedence>Value list), (<delay> Value list), (<reliability> Value list) , (<peak> Value list), (<mean> Value list) OK
Defined Values	Please refer to Requested quality of service briefing： AT+CGQREQ	

2.7.4 +CGATT: GPRS atach and separate:

Description	Using executive command can let MT attach GPRS service,or separate MT from GPRS service.After this command execute successfully, MT keeps V.25ter command state.If MT is in ask state,ignore the command,and return 'OK'.When the attachment state changes to sepration state,it will deactivate all PDP context automaticly.	
Syntax	AT+CGATT=[<state>]	
Example	AT+CGATT=[<state>]	+OK +CME ERROR: <err>
	AT+CGATT?	+CGATT: <state> OK

	AT+CGATT=1 OK AT+CGATT=0 OK		NOTE：GPRS attach NOTE：GPRS separate
Defined Values	Defined Values	Value	Explain
	<state> GPRS attachment state	[0] 1	Separate Attach

2.7.5 +CGACT :PDP context activation and deactivation:

Description	Using executive command can activate or deactivate specified PDP context.After command execute successfully.MT keeps V.25ter command state,If PDP context is in ask state,keep state invariant. When executing the command activation form,if MT did not attach GPRS,MT attach GPRS first,and the try to activate specific context.		
Syntax	AT+CGACT=<state>[,<cid>[,<cid>[,…]]]		
Example	AT+CGACT=<state> [,<cid>[,<cid>[,…]]]		+OK +CME ERROR: <err>
	AT+CGACT?		+CGACT: <cid>,<state> OK
	AT+CGDCONT=1,"IP","CMNET" OK AT+CGACT=1,1 OK AT+CGACT=0,1 OK		NOTE：Set PDP context. NOTE：PDP activation. NOTE：PDP deactivation.
Defined Values	Defined Values	Value	Explain
	<state>	[0]	Deactivate PDP context’s activation state.
		1	Activate
	<cid> -		Please refer to AT+CGDCONT

2.7.6 +CGDATA : get into data mode：

Description	This command is used to set MT to use one or more GPRS PDP type, Execute the corresponding operation, Establishing Communication between TE and network side,include GPRS attachment and one or more PDP activation context.MT do not handle the commands that after +CGDATA.
Syntax	AT+CGDATA=[<L2P> ,[<cid>[,<cid> [,…]]]]

Example	AT+CGDATA=[<L2P> ,[<cid>[,<cid>[,…]]]]		CONNECT: If communication is established successfully，MT return ‘CONNECT’ and get into V.25ter online data state. OK :After data transport ended and layer 2 protocol terminate process is done.Reenter V.25ter command state,MT return the the final result code ‘OK’. +CME ERROR: <err>
Defined Values	Defined Values	Value	Explain
	<L2P>	“PPP”	Char type Defined Values； Used to indicate the layer2 protocol between TE and MT.
	<cid> -		Please refer to AT+CGDCONT

2.7.7 +CGPADDR :Display PDP address：

Description	The set command is used when received Request PDP activation context message to enable or close auto answer function.		
Syntax	AT+CGPADDR=[<cid>[,<cid>[,…]]]		
Example	AT+CGPADDR=[<cid>[,<cid>[,…]]]		+CGPADDR:<cid>,<PDP_addr> OK +CME ERROR: <err>
	AT+CGPADDR		+CGPADDR: 1,"010.071.035.043" OK
Defined Values	Defined Values	Value	Explain
	<cid>		Numeric type:Defined Values； Used to specify specific PDP contentext definition(Please refer to AT+CGDCONT）。If omit <cid>，Return all defined contentext address.
	<PDP_address>		Char type Defined Values ； used to specify specific PDP context MT obtained address.The address can be static or dynamic. For static address,when context definition passed the address that +CGDCONT command seted. For dynamic address,in the last PDP context activation. Use the context of reference by <cid> defined by the address of the assignment.when the address did not work,omit <PDP_address>.

2.7.8 +CGCLASS: GPRS mobile station class：

Description	The set command can according to specified GPRS mobile station class to set MT To be able to operate.		
Syntax	AT+CGCLASS=<class>		
Example	AT+CGCLASS=<class>		+OK +CME ERROR: <err>
	AT+CGCLASS? +CGCLASS: "A" OK		NOTE ： GPRS The mobile station category query
Defined Values	Defined Values	Value	Explain
	<class> Char type Defined Values；Indicate GPRS Mobile station class	“A”	Class A

sss

2.7.9 +CGEREP :GPRS event report：

Description	The set command is used when some events happened In the GPRS MT or network side to enabled or forbidden send unsolicited results code +CGEV :XXX from MT to TE.		
Syntax	AT+CGEREP=[<mode>[,<bfr>]]		
Example	AT+CGEREP=[<mode>[,<bfr>]]		+OK +CME ERROR: <err>
Example	AT+CGEREP=1 OK AT+CGATT=0 OK +CGEV: ME DETACH		NOTE：GPRS separated
Defined Values	Defined Values	Value	Explain
	<mode>	0	Unsolicited results code in buffer MT；If results code buffer is already full, Discard the oldest results code and not forward results code to TE.
		1	When MT-TE link reserved（for example：online data mode），abandon Unsolicited results code,otherwise send it to TE directly.

		2	When MT-TE link reserved（for example：online data mode），Unsolicited results code in buffer MT, When MT-TE link is worked,write all results code to TE,otherwise send it to TE directly.
	<bfr>	0	When the input parameter value of <mode> is 1 or 2 .Please clear the unsolicited results code in MT defined by this command.
		1	When the input parameter value of <mode> is 1 or 2,the unsolicited results code in MT defined by this command will all be write to TE(It must return 'OK' berore write results code).

2.7.10 +CGSMS : Choose service for MO SMS:

Description	This set command is used when MT sends MO SMS message, Designated service or service priority.		
Syntax	AT+CGSMS=<service>		
Example	AT+CGSMS=<service>		+OK +CME ERROR: <err>
Defined Values	Defined Values	Value	Explain
	<service>	0	GPRS
		1	Circuit switching
		2	Priority to select GPRS （If GPRS is not work，use Circuit switching）