ZTE Welink

Welink Your Smart

AT Command Reference Guide for MG2639_V3 Module

Version 1.3, 2014-09-17

MG2639_V3

ZTE中兴

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Revision History

Version	Date	Description
V1.0		1st release,Completely follow MG2639_V2 AT command Set user manual.
V1.1		Add AT command:EPIN1,EPIN2,EPINC
V1.2		Add AT command: CCED
V1.3	2014-09-17	1. Update the document to consistent with the Chinese document V1.5 2. Add the command of +ZFTPSIZE, +ZFTPDNLOADEX, +ZBCCH, +ZBAND, +ZOPT ,+ZCALIST, +ZUDPLISTEN, +ZUDPSENDP, +TTS commands, Recording commands, MMS service commands, MMS application case 3. Update the format and template of this document 4. Delete the command of +ZGPIO

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Note: The users can consult our website for up-to-date product descriptions, documentation, application notes, firmware upgrades, troubleshooting tips, and press releases. ZTEWelink appreciates feedback from the users of our information.

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Preface

Target Readers

This manual is mainly applicable for the following engineers:

- System designing engineers
- Hardware engineers
- Software engineers
- Test engineers

Contents

1 General Description

1.1 Description of AT Commands

MG2639_V3 provides AT command interfaces, through which the module could communicate with the external devices conveniently. The AT commands set provided by MG2639_V3 module not only covers the standard GSM voice call and SMS applications, but adds some other commands based on GSM specification and some ZTE exclusive commands for users to use conveniently.

1.1.1 Type of AT Commands

As a standard interface, the returned values and syntax of AT commands are both fixed. As a whole, the AT commands could be divided into four types:

- Without parameter: a type of simple commands; Syntax: AT[+|&]<command>,e.g.: AT+CSQ, AT&W
- Query: used to inquire the current setting value; Syntax: AT[+|&]<command>?, e.g.: AT+CNMI?
- Help: used to list the possible parameters of the command; Syntax: AT[+|&]<command>=?, e.g.: AT+CMGL=?
- Parameter: a kind of mostly common syntax, which provides strong flexibility to the command, Syntax: AT[+|&]<command>=<par1>,<par2>,<par3>…

The returned values of this type of commands are all the same. This will be clarified in details later. The basic frame of the returned value is:

<CR><LF><Response string><CR><LF>
<CR><LF><OK\ERROR>[ERROR INFO]<CR><LF>

1.1.2 Returned Syntax of AT Commands

The following describes the AT commands and returned descriptions supported by MG2639 module:

- AT command returned syntax:
  --<CR><LF><corresponding strings ><CR><LF>
  --An exceptional case: e.g.: AT+ ZPWROFF, directly return with “OK”
- AT command status report (OK, ERROR):
  --If there is error in AT command syntax, return with “ERROR”;
  --If AT command executes successfully, return with “OK”;

1.1.3 AT Command Syntax

- AT command starts with “AT” and ends with <CR>;
- After the module runs, the serial port default setting will be: 8-digit data bit, 1-digit stop bit, no parity check, no CTS/RTS, data rate 115200bps.

1.2 Abbreviations

A		
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		
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	
Z		
ZTE	ZTE Corporation	

2 AT Commands

2.1 Common Commands

2.1.1 A/: repeat

Description	This command is used to repeat the previous command.	
Syntax	A/	
Example	AT+CSQ	Inquire current signal strength
	A/	Repeat AT+CSQ command
	AT+CMGS=”13714393404” >123→	Send a text message
	A/ >123→	Repeat AT+CMGS command

2.1.2 ATA: answer

Description	This command is used to answer a call.	
Syntax	ATA	
Example	RING	An incoming call rings.
	ATA	Answer the incoming call.

2.1.3 ATD: dial

Description	This command is used to originate a voice call, data and fax call.	
Syntax	ATD<string>; ATD><mem><n>; ATD><n>; ATD>”name”;	
Example	AT+CPBS="SM" ATD13024540756;	Select SIM card phonebook as the current phonebook Search the number from SIM card phonebook and dial

	AT+CPBS="SM" ATD>2; OK	Select SIM card phonebook as the current phonebook Search the second phone number in current phonebook
	ATD>SM1;	Dial the first number in SIM card phonebook
	ATD13714393404;	Directly dial the phone number
	ATD>”name”;	Search the phone number with “name” in SIM card and nvram
Parameters	<mem>: phonebook “SM”: SIM card phonebook. “ME”: local phonebook. “LD”: last dialled calls in phonebook. “MC”: missed calls “RC”: received calls <n>: the n-th option in phonebook. <string>: the number of called party, e.g., *99#.	

2.1.4 ATDL: call the last number dialled

Description	This command is used to dial the last outgoing number.	
Syntax	ATDL	
Example	ATD34394036; OK	Dial 34394036
	ATH OK	Hang up the call
	ATDL	Dial 34394036 again

2.1.5 ATE: enable command echo

Description	This command is used to enable echo display.	
Syntax	ATE<n>	
Example	ATE0 OK OK	ATE0, don’t display input command on the terminal
	ATE1 OK ATE1 OK	ATE1, displays input command on the terminal
Parameters	<n>=0 Disable echo display. <n>=1 Enable echo display.	

2.1.6 ATH: hang up

Description	This command is used to hang up the call.	
Syntax	ATH	
Example	ATA OK	Answer the call
	ATH	Hang up the call

2.1.7 ATI: Information

Description	This command is used to display the module manufacturer's information.	
Syntax	ATI	
Example	ATI ZTE Mobile LTD GSM/GPRS Mobile Station Revision: 1.0 OK	Display the module manufacturer's information.

2.1.8 ATQ: set whether or not to display the returned value.

Description	This command is used to set whether or not to display the returned value.	
Syntax	ATQ<n>	
Example	ATQ0 OK ATQ0 OK	Set the terminal displays the returned value
	ATQ1 OK ATQ1ATQ1	Set the terminal doesn't display the returned value.

2.1.9 +++: switch from data mode to command mode

Description	This command is used to switch from data mode to command mode.	
Syntax	+++	
Example	ATD*99# CONNECT +++ …… AT OK	Dial to enter data mode Switch from data mode to command mode

2.1.10 ATO: switch from command mode to data mode

Description	This command is used to switch from command mode to data mode.	
Syntax	ATO	
Example	ATD*99# CONNECT +++ …… ATO ……	Dial to enter GPRS data connection Switch from data mode to command mode Switch from command mode to data mode

2.1.11 ATP: pulse

Description	This command is used for pulse dialling.	
Syntax	ATP	
Example	ATP OK	Set pulse dialling method

2.1.12 ATS0: auto answer setting

Description	This command is used to control the module's auto answer mode.	
Syntax	ATS0=<value>	
Example	ATS0=2 OK	Auto answer after ringing twice
	ATS0? 2 OK	Check current settings
	ATS0=0 OK	Cancel auto answer
Parameter	<value>: ringing times	

2.1.13 +CRC: set ringer type

Description	This command is used to display the type of ringer.	
Syntax	AT+CRC=<num>	
Example	AT+CRC=1 OK +CRING:VOICE	Set RING as ringer type Set CRC as ringer type
Parameters	<num>: 0: Do not display the type of ringer 1: display the type of ringer	

	Descriptions of ringer type: VOICE: Voice GPRS: GPRS service FAX: Fax

2.1.14 +CLVL: volume level

Description	This command is used to set the volume level of the speaker.	
Syntax	AT+CLVL=<level>	
Example	AT+CLVL=100 OK	Set current receiver volume as 100
	AT+CLVL? +CLVL:100 OK	Check the current receiver volume
Parameters	<level> ranging 0～100, the lower the level is, the smaller the volume is.	

2.1.15 +CLIP: Calling Line Identification Presentation

Description	This command is used to set CLIP. The default settings are to disable CLIP.	
Syntax	AT+CLIP=<mode> +CLIP:<mode> return from AT+CLIP? +CLIP:<number>,<type>,<name>,<subaddr>,<cli_validity> AT+CLIP? +CLIP:<mode>,<status>	
Example	AT+CLIP=1 OK RING:+CLIP: “130********”,129, “name”,“”,0	Enable CLIP There is an incoming call, incoming number is 130********
	AT+CLIP=0 OK RING	Disable CLIP No CLIP
	At+CLIP? +CLIP: 0,1 OK	Inquire CLIP

Parameters	<mode>: 0: disable CLIP 1: enable CLIP; <number>: incoming number (need apply for relevant service) <type>: 129. <name>: contact's name <subaddr>:syntax of sub address specified by satype. Default as null by MTK. <status>: CLIP status 0: Do not provide CLIP service 1: Provide CLIP service 2: Unknown unavailable network

2.1.16 +ZSETMUTE: mute control

Description	This command is used for mute control and it can be used only during the call.	
Syntax	AT+ZSETMUTE=<Mode>	
Example	AT+ZSETMUTE=? +ZSETMUT:(0-1) OK	check the setting parameters
	AT+ZSETMUTE=1 OK	Mute on
	AT+ZSETMUTE=0 OK	Mute off
Parameters	<Mode>: 0: Turn off mute 1: Turn on mute.	

2.1.17 +CIMI: International Mobile Identification

Description	This command is used to read the International Mobile Identification of SIM card and check current PIN.	
Syntax	AT+CIMI	
Example	AT+CIMI 460030916875923 OK	Check CIMI Return CIMI

2.1.18 +CGMR: get product version

Description	This command is used to obtain the module's current product version.	
Syntax	AT+CGMR	
Example	AT+CGMR=? OK	No meaning

	AT+CGMR +CGMR: Revision: 1.0 OK	Return current module's version

2.1.19 +ECHO: echo remove

Description	This command is used to remove the echo.	
Syntax	AT+ECHO=num	
Example	AT+ECHO? +ECHO:1 OK	Check current echo settings
	AT+ECHO=0 OK	Cancel echo remove
Syntax	Num: default value 1. 1: set echo remove function 0: cancel echo remove function	

2.1.20 +(C)GSN: get current IMEI

Description	This command is used to get the current device's IMEI.	
Syntax	AT+GSN	
Example	AT+GSN N OK	Return current IMEI

2.1.21 +ZVERS: get current software version

Description	This command is used to get the current software version.	
Syntax	AT+ZVERS	
Example	AT+ZVERS +ZVERS: ***.bin OK	get the current software version.

2.1.22 +CLCK: lock

Description	This command is used to lock the terminal or network function.
Syntax	AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]] +CLCK:<status>
Example	AT+CLCK=? +CLCK:("PF","SC","AO","OI","OX","AI","IR","AB","AG","AC","FD","PN","PU","PP","PC") OK

Parameters	<fac>: "SC" SIM card; "AO" all outgoing calls barring; "OI" Outgoing international calls barring; "OX" Outgoing international calls barring except for local; "AI" all incoming calls barring; "IR" Incoming roaming barring; "AB" all services barring; "AG" barring of all outgoing calls; "AC" barring of all incoming calls; "FD" Fixed dial; "PN" Personalized network; "PU" Personalized sub network; "PP" Personalized provider; "PC" Personalized corporate. <mode>: 0 unlock 1 lock 2 check the status <passwd>: password or operation code, character string type "***". <class>: 1 voice call 2 data 4 fax 7 All <status>: 0: Disable 1: Enable

2.1.23 +CCFC: call forwarding number and conditions

Description	This command is used to set call forwarding number and conditions.	
Syntax	AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<saytype>[,time]]]]]] If mode!=2, setting successfully return: OK; If mode=2, setting successfully return: +CCFC:<status>,<class>	
Example	AT+CCFC=? +CCFC: (0,1,2,3,4,5) OK	Check call forwarding control setting Return reason range.

Parameters	<reason>: 0:unconditional 1: mobile device busy 2: No answer 3: Can't be connected 4: All calls 5: all conditions <mode>: 0: disabled 1: enabled 2: check status 3: register 4: delete <number>: phone number <type>: 145: international number 129: other number <subaddr>: address of character string type <saytype>: 128 <class>: 1: voice 2: data 4: fax 7: all <time>: 1..20..30 multiples 5 seconds <status>: 0: deactivate 1: activate
Remarks	Need apply for relevant services.

2.1.24 +CCWA: call waiting

Description	This command is used for call waiting.	
Syntax	AT+CCWA=[<n>] [,<mode> [,<class>]]	
Example	AT+CCWA=?	List all supported <n> +CCWA: (list of supported <n>s) OK
	AT+CCWA?	Read current <n> +CCWA: <n> OK

	AT+CCWA=[<n>][,<mode>[,<class>]]	Call waiting setting As mode!=2, if successful: OK As mode!=2, return: +CCWA:<status>,<class1>[<CR><LF> +CCWA:<status>,<class2>[...]] OK If there is an error in operation: +CME ERROR: <err> If <n>=1, send the result code of call waiting: +CCWA: <number>,<type>,<class> [,<alpha>][,<CLI validity>] Under the premise of call waiting activated, during the call connection process; As the call terminates in the system, send the result code of call waiting.
Parameters	<n> 0:do not send the result code of call waiting; 1: send the result code of call waiting. <mode> 0:Deactivate call waiting; 1:Actiavte call waiting; 2:Check current state; <class> 1: voice call <status> 0: deactivate, 1: activate. <number> call waiting number, and its syntax designated by <type>; <type> <number> syntax <alpha>, <CLI validity> see AT+CLIP	

2.1.25 +CHLD: call hold

Description	This command is used to set call held and conference call.	
Syntax	AT+CHLD=[<n>]	
Example	AT+CHLD=?	Check supported <n> +CHLD: (list of supported <n>s) OK
	AT+CHLD=[<n>]	Set call held and conference call; If the setting is successful: OK If there is an error in operation: +CME ERROR: <err>

Parameters	**<n>** 0: release all held calls or set a waiting call as UDUB 1: Release all activated calls and receive a held or waiting call. 1X: Release call X 2: Hold all activated calls and receive another held or waiting call. 2X: hold all calls except for call X 3: Add the held call into the conference call 4: Connect two calls or end two calls. 5: Activate call request from busy subscriber
Remarks	1. This command is used for telecom service; 2. The range of X value:1~7 3. When there is both held call and waiting call, the process above should be applied for the waiting call. 4. When releasing call, please firstly use AT+CHLD=1 to release the current call, and use ATH to hang up the call. 5. Please refer to the method of conference call provided by the operator when using AT+CHLD=3.

2.1.26 *TSIMINS: check SIM card status

Description	This command is used to check SIM card status.	
Syntax	AT*TSIMINS=<num>, <status>	
Example	AT*TSIMINS? *TSIMINS:0,0 OK	Check SIM card status. No SIM card.
Parameters	<num>: take 0 or 1, no meaning. <status>: 0:There is no SIM card; 1:There is SIM card.	

2.1.27 +CPWD: change password

Description	This command is used to change the password.	
Syntax	AT+CPWD=<fac>,<passwd>,<newpasswd> +CPWD:<fac,length>s	
Example	AT+CPWD=? +CPWD: ("SC",8),("P2",8),("AO",4),("OI",4),("OX",4),("AI",4),("IR",4),("AB",4),("AG",4),("AC",4) OK AT+CPWD ="SC","1234","2345" OK	Check the setting range. Return the list of parameters; Change password of SIM card

Parameters	<fac>: "SC" SIM card; "AO" all outgoing calls barring; "OI" Outgoing international calls barring; "OX" Outgoing international calls barring except for local; "AI" all incoming calls barring; "IR" Incoming roaming barring; "AB" all services barring; "AG" barring of all outgoing calls; "AC" barring of all incoming calls; "FD" Fixed dial; <passwd>: password or operation code, character string type "***". <newpasswd>: new password or operation code, character string type "***". <length>: password length supported by fac.

2.1.28 +CGMI: inquire manufacturer's information

Description	This command is used to inquire manufacturer's information.	
Syntax	AT＋CGMI	
Example	AT+CGMI +CGMI: ZTE Mobile LTD OK	Inquire manufacturer's information

2.1.29 +CSCS: character set selection

Description	This command is used to select the type of languages;	
Syntax	AT+CSCS=<string>	
Example	AT+CSCS=? +CSCS: "IRA", "GSM", "HEX", "PCCP437", "8859-1", "UCS2", "UCS2_0X81" OK AT+CSCS="IRA" OK AT+CSCS? +CSCS: "IRA" OK	
Parameters	<string>: a type of string, selecting IRA, GSM, etc. "IRA" International Reference Alphabet (refer to ITU-T T.50[13]), excluding some special alphabets. "GSM" GSM default symbols (refer to section 6.2.1 in GSM 03.38). "UCS2" 16bit(ISO/IEC10646[32]); UCS2 string converts to hexadecimal number ranging from 0000 to FFFF;	

2.1.30 +CLCC: check call status

Description	This command is used to check the status of current calls or each call;

Syntax	AT+CLCC +CLCC:<id1>,<dir>,<stat>,<mode>,<mpty>,[,<number>,<type> [,<alpha>[,<priority>]]] +CLCC:<id2>,<dir>,<stat>,<mode>,<mpty>,[,<number>,<type> [,<alpha>[,<priority>]]] …… OK	
Example	AT+CLCC OK ATD10086 ; OK AT+CLCC +CLCC: 1,0,2,0,0,"10086",129 OK	
Parameters	<idx>: caller ID <dir>: call direction, taking the following value: 0: MO 1: MT <stat> call status, taking the following value: 0: activated 1: call held status 2: call originated, dialing 3: call originated, ringing 4: Incoming call ring status 5: call waiting <mode>: call type, taking the following value: 0: voice call 1: data call 2: fax <mpty>:multi-party call, taking the following value: 0: Non multi-party call 1: Multi-party call <number>: call number, ASCII code <type>: call number type; <alpha>: the text information corresponding to the call number in the phonebook (don't support temporarily, reserve the string) <priority>: do not support string temporarily	

2.2 DTMF Command

2.2.1 +VTS: send DTMF

Description	This command is used to send DTMF.	
Syntax	AT+VTS=<string>	
Example	AT+VTS=? +VTS:(0-9,*#,A,B,C,D),,(1-255) OK	Check +VTS parameter
	ATD********; AT+VTS="3,6,9" AT+VTS=3 AT+VTS=6 AT+VTS=9	Dial Send 369 DTMF
Parameters	String is a combination of characters, separated by comma. The character ranges from 0 to 9,*, #, A-D.	

2.3 Network Service Command

2.3.1 +CREG: network registration and roaming

Description	This command is used to check the module's network registration and roaming status. Note: Need AT&W to save the result when setting 0 or 1.	
Syntax	AT+CREG=<mode> +CREG :<mode>,<stat> return code	
Example	AT+CREG=0 OK	Disabled network registration and provide result code
	AT+CREG? +CREG: 0,1 OK	Display the module's registration status
	AT+CREG=? +CREG: (0-2) OK	Check status range
Parameter	<mode>: 0 Disabled network registration and provide result code (default) 1 Enabled network registration and provide result code: +CREG: <stat> 2 Enabled network registration and provide the location information. <stat>: 0: Not logged on the network yet, currently not searching for new operator 1: Already logged on the local network. 2: Not logged on the network, currently searching for the BS 4: unknown code 5: Already logged on the network, under roaming status	

2.3.2 +COPS: network selection

Description	This command is used for network selection.	
Syntax	AT+COPS=[<mode>[,<syntax>[,<oper>]]]	
Example	AT+COPS? +COPS: <mode>[,<syntax>,<oper>] OK	Return current network's registration mode and network
	AT+COPS=[<mode>[,<syntax>[,<oper>]]] OK	Select and register network

	AT+COPS? +COPS: 0,0,"China Mobile" OK AT+COPS=? +COPS:(2,"China Mobile","CMCC","46000",0),(3,"China Unicom","CU-GSM","46001",0),,(0,1,2,3,4),(0-2) OK AT+COPS=4,0,"China Mobile" OK	+COPS:<mode>[,<format>,<oper>] +COPS:[list of supported (<stat>, long alphanumeric <oper>, short alphanumeric <oper>,numeric <oper>,[,<Act>]),……,(mode),(format)
Parameter	<mode> 0 auto select, omit <syntax> <oper> 1 manual select, need <syntax><oper> 3 not involve network registration, this command is used to set syntax only; at this point, need <syntax> 4 manual/auto; If manual registration fails, auto register <syntax>: 0 long syntax alpha <oper>,up to 16 character 1 format of short character <oper>, up to 8 character 2 numeric syntax <oper> (MCC+MNC), default <stat> 0 unknown 1 available 2 current registered network 3 forbidden registered network <Act> 0 GSM 1 GSM COMPACT 2 UTRAN	

2.4 Mobile Device Control and Status Report

2.4.1 +CPAS: check module's status

Description	This command is used to check the module's work status.	
Syntax	AT+CPAS	
Example	AT+CPAS +CPAS:2 OK	Check the module's current work status.
Parameter	<pas>: 0: ready to receive AT command; 1: Not ready to receive AT command; 2: Unrecognized status; 3: Incoming call (Ring); 4: can receive AT command, but in a process of calling 5: In low power consumption mode, can't normally receive AT command.	

2.4.2 +CFUN: set module's function

Description	This command is used to enable/disable some functions of the module.	
Syntax	AT+CFUN=<func>,<rst>	
Example	AT+CFUN=? +CFUN(1,4),(0-1) OK	Check the setting range
	AT+CFUN=1,0	Settings validate, invalid after reset
	AT+CFUN=1,1	Settings valid after reset
Parameter	<fun> 0 Close the RF Tx&Rx function 1 Full function (default) 4 Disable RF Tx. and Rx. Function <rst> 0 valid after settings 1 valid after restart	

2.4.3 +CMEE: mobile equipment errors

Description	This command is used for mobile equipment's error report.
Syntax	AT+CMEE=<n>

Example	AT+CMEE?	+CMEE:<n> OK Check current error report method
	AT+CMEE=<n>	OK Select error report method
Parameter	<n> 0 Only ERROR 1 Provide error's specific number 2 Provide error's specific number and detailed prompt	

2.4.4 +ZPWROFF: power off

Description	This command is used to power off the module.	
Syntax	AT+ZPWROFF	
Example	AT+ZPWROFF OK	Power off the module

2.4.5 +CPIN: input PIN

Description	This command is used to check PIN status and input PIN. The functions can be used only after the correct PIN is entered. When input PIN error three times, need to input the PUK code to decode.	
Syntax	AT+CPIN="***"	
Example	AT+CPIN? +CPIN:READY OK	check PIN status No need to input new PIN
	AT+CPIN? +CPIN:SIM PIN AT+CPIN="****" OK	check PIN status Need input PIN Enter correct PIN
Parameter	AT+CPIN?: check if what passwords need to be entered. +CPIN: READY: don't need to enter any password. +CPIN: SIM PIN: need enter PIN. +CPIN: SIM PUK:PIN unlock password +CPIN: PH-SIM PIN: SIM card bundle password +CPIN: SIM PIN2: PIN2 password +CPIN: SIM PUK2: PIN2 unlock password +CPIN: PH-NET PIN: network password <pin>: string value.	

2.4.6 +EPIN: input PIN1

Description	This command is used to check PIN1 status and input PIN1. The functions can be used only after the correct PIN1 is entered. When input PIN1 error three times, need to input the PUK1 code to decode.	
Syntax	AT+EPIN1=”***”	
Example	AT+EPIN1? +EPIN1:READY OK	check PIN1 status No need to input new PIN1
	AT+EPIN1? +EPIN1:SIM PIN AT+EPIN1="****" OK	check PIN status Need input PIN1 Enter correct PIN1
Parameter	AT+EPIN1?: check if what passwords need to be entered. +EPIN1: READY: don’t need to enter any password. +EPIN2: SIM PIN: need enter PIN1. +EPIN2: SIM PUK:PIN1 unlock password +EPIN2: SIM BLOCKED: SIM card is locked. <Pin1>: string value.	

2.4.7 +EPIN2: input PIN2

Description	This command is used to check PIN2 status and input PIN2. The functions can be used only after the correct PIN2 is entered. When input PIN2 error three times, need to input the PUK2 code to decode.	
Syntax	AT+EPIN2="****"	
Example	AT+EPIN2? +EPINE: READY OK	check PIN2 status No need to input new PIN2
	AT+EPIN2? +EPIN2:SIM PIN AT+EPIN2="****" OK	check PIN2 status Need input PIN2 Enter correct PIN2
	AT+ EPIN2=”****”,”****” OK //PUK2 NEW PIN2	Input PUK2 and PIN2 PUK2 is correct and the new PIN2 is stored
Parameter	AT+EPIN2?: check if what passwords need to be entered. +EPIN2: READY: don’t need to enter any password. +EPIN2: SIM PIN: need enter PIN1. +EPIN2: SIM PUK:PIN1 unlock password +EPIN2: SIM BLOCKED: SIM card is locked. <Pin2>: string value.	

2.4.8 +EPINC: check PIN, PUK remaining input times

Description	This command is used to check PIN, PUK remaining input times	
Syntax	AT+ EPINC +EPINC: PIN1C, PIN2C, PUK1C, PUK2C	
Example	AT+ EPINC +EPINC: 3, 3, 10, 10 OK	check PIN1, PIN2,PUK1,PUK2 remaining input times
	AT+ EPINC? +EPINC: 3, 3, 10, 10 OK	Check remaining input times of PIN1, PIN2, PUK1, PUK2
parameters	PIN1C: PIN2 remaining input times PIN2C: PIN2 remaining input times PUK1C: PUK1 remaining input times PUK2C: PUK2 remaining input times	

2.4.9 +CSQ: check signal strength

Description	This command is used to check received signal strength indicator(rssi) and bit error rate (ber)	
Syntax	AT+CSQ	
Example	AT+CSQ +CSQ:<rssi>,<ber>	
parameters	<rssi>: 0–113dbm 1-111dbm 2..30–109..-53dbm 31-51dbm 99:network unavailable <ber>: 0～7:normal 99:network unavailable	

2.4.10 +CCLK: clock management

Description	This command is used to set and check the date/time of real-time clock.	
Syntax	AT+CCLK=<time>	
Example	AT+CCLK? +CCLK: "04/02/09,17:34:23"	Check current time and date Current network time and date
parameters	AT+CCLK="04/02/09,18:34:23"	Set current date and time

	Time string syntax: "yy/mm/dd,hh: mm: ss "

2.5 Message Service Command

2.5.1 +CSCA: SMS center number

Description	This command is used to set SMS center number.	
Syntax	AT+CSCA=<sca>[,<tosca>]	
Example	AT+CSCA="+861380****500" OK AT+CSCA? +CSCA: "8613800755500", 145 OK	Set SMS center number Check SMS center number
Parameters	<sca>:SMS center address <tosca>: SMS center syntax	

2.5.2 +CNMA: message acknowledgement

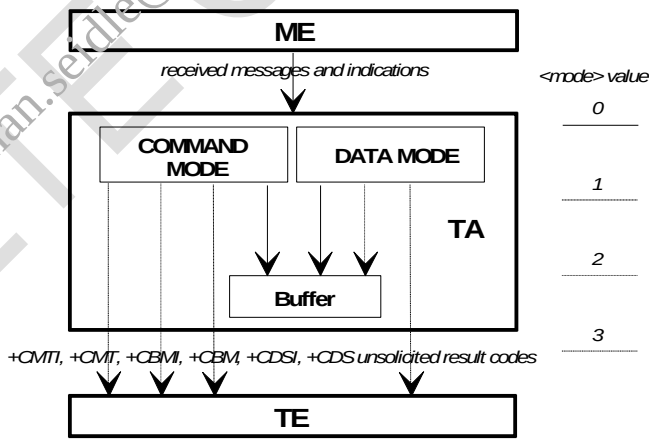
Description	This command is used for message acknowledgement.	
Syntax	AT+CNMA	
Example	at+cnmi=2,2,0,0,0 OK at+csms=1 +CSMS: 1,1,1 OK +CMT:,60 …… AT+CNMA OK	Set message indication syntax Set message service syntax Message acknowledgement
Parameters	Valid when setting +CNMI=2,2,0,0,0 and +CSMS=1,1,1,1	

2.5.3 +CMGF: SMS mode

Description	This command is used to set SMS input method.	
Syntax	AT+CMGF=<num>	
Example	AT+CMGF=1 OK AT+CMGF? +CMGF:1 AT+CMGF=? +CMGF=(0-1) OK	Set the text mode Check current input method Current settings as text mode Check current setting range

Parameters	0:PDU mode 1:Text mode

2.5.4 +CNMI: message indication

Description	This command is used to set new message indication.	
Syntax	AT+CNMI=<mode>,<mt>,<bm>,<ds>,<bfr>	
Example	AT+CNMI=? +CNMI: (0-3),(0-3),(0,2,3),(0,1),(0,1) OK	Check current setting range
	AT+CNMI=3,1,0,0,0 OK +CMTI: "SM",19	Set message receiving mode as +CMTI: men, index Receive new messages
	AT+CNMI=3,2,0,0,0 OK AT+CMGF=1 OK +CMT: "+86130********","","07/02/14, 10:29:04+32" text	Set message receiving mode Set as TEXT mode Received a message TEXT from 130********
Returned results	+CMTI:<mem>,<index> : receive new message +CMT:,<length><CR><LF><pdu> : directly output message (PDU mode) +CBM:<length><CR><LF><pdu> : directly output cell broadcast message (PDU mode)	
Parameters	**<mode>**: control the processing of message alert code.  0: message alert code cached in TA; if TA is full, the alert code may be saved in other place or the oldest code might be abandoned and replaced by the latest code. 1: when the connection of TA-TE is held, abandon the saved message alert code and reject the new alert code; in other cases, directly display the alert code on the terminal;	

Parameters	2: when the connection of TA-TE is held, the message alert code is cached in TA, as the connection is released, directly display the alert code on the terminal;; in other cases, directly display the alert code on the terminal; 3: directly display the alert code on the terminal; **<mt>**: set the syntax of new message alert code. 0: save received messages to default memory (including class 3), do not notify TE. 1: The syntax of new message alert code is +CMTI: "MT",<index>, message contents saved but not directly displayed; 2: The syntax of New message alert code is: (Text mode) +CMT :<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs> <sca>,<tosca>,<length><CR><LF><data>, message contents directly displayed but not saved; (PDU mode) +CMT:[<alpha>],<length><CR><LF><pdu> 3: For class 3 messages, directly send to TE just as ＜mt＞＝2. For other class, the same goes to ＜mt＞＝1. **<bm>:** Indication method upon the receipt of broadcast message. 0: No CBM alert sent to TE. 2: Send new CBM directly to TE (text mode) +CBM :<sn>,<mid>,<dcs>,<page>,<pages> <CR><LF><data>(text mode), cell broadcast contents directly displayed but not saved; (PDU mode) +CBM:<length><CR><LF><pdu> 3: Class 3 CBM uses the result code (defined in <mt>=2)and directly sends to TE. **<ds>:** message status report 0: no message status report sent to TE. 1: send message status report to TE: +CDS: <length><CR><LF><pdu> (PDU mode) +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (TEXT mode) **<bfr>:** 0: as <mode> is set as 1..3, the code saved in TA will be sent to TE (return OK prior to transmitting the code). 1: as <mode> is set as 1..3, the code saved in TA will be erased.

2.5.5 +CMGR: message read

Description	This command is used to read the received message.
Syntax	AT+CMGR=?

Example	AT+CMGF=1 AT+CMGR=1 +CMGR:"REC UNREAD","133********",, "04/02/25,12 :58 :04＋04" ABCD OK	+CMTI: “MT”:1 Receive the message, saved at index 1 Set TEXT syntax Read the first TEXT message
	AT+CMGF=0 AT+CMGR=1 +CMGR: 1,,127 0891683108705505F00408A1705581 0600087010919055642 36E5C0A656C 76845BA26237FF0C60A85DF27ECF62 10529F5F00901A4E86003100300030 5143004700500052005359579 9104F 1860E04E1A52A1FF0C4ECE00320030 003000375E74003000326708003000 3165E55F0059CB751F654830028C22 8C22FF016DF1573379FB52A8 516C53F8	Set PDU mode Read first PDU message
Returned results	AT+CMGR=<index> Return syntax: The terminal adaptor would return the message of index saved in mem1 -if select text mode (+CMGF=1): +CMGR :<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>, <sca>,<tosca>,<length>] <CR><LF> <data> (used to read received message) +CMGR :<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>, <tosca>,<length>] <CR><LF> <data> (used to read transmitted message) --if select PDU mode (+CMGF=0): +CMGR: <stat>,[<alpha>],<lenth>,<CR>,<LF>,<pdu> OK -if error occurs, prompt: +CMS ERROR:<err> Note: after reading message, the status will change from “REC UNREAD” to “REC READ”.	

Parameter	<alpha>:the name of corresponding <da> or <oa> on the terminal. <stat>:the message status in memory. <oa>:message original number string <da>:message target string <scts>:message service center time string <lenth>: length of message body <data> <pdu>:ME/TA hex value <stat>: 0:"REC UNREAD" received unread message. 1:"REC READ" received read message. 2:"STO UNSENT" saved unread message. 3:"STO SENT" saved read message 4: "All" all messages

2.5.6 +CMGW: message write

Description	This command is used to save the messages into <mem2>.	
Syntax	TEXT mode: (AT+CMGF=1) AT+CMGW=<phone number> >string<ctrl-Z> PDU mode:(AT+CMGF=0) AT+CMGW=<string len> >pdu string<ctrl-Z>	
Example	AT+CMGF=1 OK AT+CMGW="13714393404" > AT+CMGW="13714393404"<ctrl-Z> +CMGW: 41 OK AT+CMGF=0 OK AT+CMGW=17 >0891683108705505f011000b813120 882624f700f1ff0361f118<ctrl-Z> +CMGW: 42 OK	Write messages under Text mode Write messages under PDU mode
Parameters	<phone number>: phone number <string len>: length of PDU string	

2.5.7 +CSMS: select SMS service

Description	The command is used to select SMS <service>. Send(SMS-MO), receive(SMS-MT), cell broadcast SMS-CB.

Syntax	AT+CSMS = <service>	
Example	AT+CSMS? +CSMS:0,1,1,1 OK	Check the current SMS service Support receive/transmit message and cell broadcast
	AT+CSMS=0 +CSMS: 1,1,1 OK AT+CSMS? +CSMS:0,1,1,1 OK	Set current SMS service as GSM Phase 2 Support receive/transmit message and cell broadcast Check the settings Succeed
Parameter	<service> 0:compatible with GSM07.05 Phase 2 version 4.7.0 1:compatible with GSM07.05 Phase 2+ version <mo> 1:support send message <mt> 1:support receive message <bm> 1:support cell broadcast	

2.5.8 +CMGS: message send

Description	This command is used to send the message from the terminal to the network. Return the parameter to the terminal after the message is sent. Note: there is error prompt as the message is sent to illegal number.	
Syntax	Text mode (AT+CMGF=1) AT+CMGS=<de><CR> <data><Ctrl-Z/ESC> PDU mode(AT+CMGF=0) AT+CMGS=<length><CR> <pdu><Ctrl-Z/ESC>	
Example	AT+CMGF=1 OK	Set as text mode
	AT+CMGS="13316538879"<CR> ABC<ctrl/Z> OK AT+CMGF=0 OK	Send a “ABC” message to 13316538879 Set as PDU mode
	AT+CMGS=17<CR> 0891683108705505f011000b81312 0882624f700f1ff0361f118<Ctrl-Z> +CMGS:2 OK	Send a “ABC” message to 13028862427

Parameter	<de>:message sending number under text mode <length>:length of bytes in TPDU under PDU mode <data>: message under text mode

2.5.9 +CPMS: preferred message storage

Description	This command is used for preferred message storage.	
Syntax	AT+CPMS=<mem1>[,<mem2>[<mem3>]] +CPMS=<used1>,<total>	
Example	AT+CPMS="SM","SM","SM" ＋CPMS:4,50,4,50,4,50 OK AT+CPMS=? +CPMS: ("SM", "ME", "SM_P", "ME_P", "MT"), ("SM", "ME", "SM_P", "ME_P", "MT"), ("SM", "ME", "SM_P", "ME_P", "MT") OK AT+CPMS? +CPMS: "SM", 4, 50, "SM", 4, 50, "SM", 4, 50 OK AT+CPMS="me","me","me" +CPMS: 0, 450, 0, 450, 0, 450 OK AT+CPMS? +CPMS: "ME", 0, 450, "ME", 0, 450, "ME", 0, 450 OK	Check message storage in SIM card mem1 total capacity 50 entries, 4 used mem2 total capacity 50 entries, 4 used mem3 total capacity 50 entries, 4 used
Parameters	<mem1>:used to read, delete message in SIM card <mem2>:used to write and send message in SIM card <mem3>:used for messages not saved to PC in SIM card <used>:used entries <total>:total number of memory SM: SIM card ME: NVRAM	

2.5.10 +CMGD: message delete

Description	This command is used to delete a message from selected memory.	
Syntax	AT+CMGD=<Index>	
Example	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 AT+CMGD=2 OK 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 AT+CMGD=1 OK	Set as text mode List all messages Delete the second message Set as PDU mode List all messages Delete the first message

	AT+CMGD=1,1 OK AT+CMGD=1,2 OK AT+CMGD=1,3 OK AT+CMGD=1,4 OK	Delete all read messages Delete all read and sent messages Delete all read, sent and unsent messages Delete all messages
Parameters	<start_Index>: index of saved messages <mode>: delete marks 0: delete the message at the designated index 1: delete all read messages 2: Delete all read and sent messages 3: Delete all read, sent and unsent messages 4: Delete all messages: delete the message at the designated index	

2.5.11 +CMGL: message list

Description	The command is used to read a kind of messages saved in the selected memory via +CPMS command.	
Syntax	AT+CMGL=<stat>	
Example	AT+CMGF=1 OK AT+CMGL="ALL" +CMGL:1,"REC READ","130********","", abcdefg +CMGL:2,"REC READ","131********","", abcdef +CMGL:3,"STO SENT","1331********","", opqrxt OK	Set as text mode Use text mode Check all messages

Returned syntax	1) text mode as below: +CMGL :<index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<tooa/toda>,<length>] <CR><LF><data><CR><LF> +CMGL :<index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<tooa/toda>,<length>] <CR><LF><data> […] (Received/transmitted message list) OK 2)PDU mode as below: +CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu>
Parameters	1. text mode(+CMGF=1) <stat> REC UNREAD: receive unread message REC READ: receive read message STO UNSENT: store unsent message STO SENT: store sent message ALL: all messages 2.PDU Mode (+CMGF=0) <stat>: 0: received unread message 1: received read message 2: saved unsent message 3: saved unsent message 4: All messages <index>:message index <length>:TPDU length in PDU mode <pdu>:binary system in PDU mode <data>:message text in text mode

2.5.12 +CMSS: messages saved in SIM card

Description	This command is used to send the messages saved in SIM card.	
Syntax	AT+CMSS=<index>[,<da> [,<toda>]] Return syntax: +CMSS : <mr> 或+CMS ERROR: <err> If the new target number is designated, the new number will replace the number saved in the message.	
Example	AT+CMGF=1 AT+CMGW="1331653****"<CR> ABC<ctrl-Z> +CMGW:2 OK	Set as text mode Write a message and send it to 1331653**** The message will be saved in index 2
	AT+CMSS=2 +CMSS:0 OK	Send the messages saved in index 2 Message sent CMSS return initial value 0

	AT+CMSS=2 +CMSS:1 OK	As the message is saved Do not designate the number to send the message Message sent,(send to the address used to save the message CMSS return value 1
	AT+CMSS=2,"1302755****" +CMSS:2 OK	Use number 1302755**** to replace the original number 1331653****, and send a message to new number
Parameters	<index>:message index	

2.5.13 +ZSMGS: message full indication

Description	This command is used to indicate the message full status.	
Syntax	+ZSMGS:<status>	
Example	+ZSMGS:FULL OK	+ZSMGS:FULL OK
Parameters	<status>:messages status full <da>:message target number <toda>: the type of number	

2.6 Phonebook Command

2.6.1 +CPBS: phonebook storage

Description	This command is used to select phonebook memory.	
Syntax	AT+CPBS=<type>	
Example	AT+CPBS? +CPBS: "SM",1,250 OK	Check current phonebook settings Select SIM card as current phonebook
	AT+CPBR=1 +CPBR=1,"130********",129,"" OK	Check phonebook storage memory
	AT+CPBS=? +CPBS: ("ME", "SM", "LD", "MC", "RC","FD","DC","ON") OK	Select the phonebook saved in SIM card
Parameters	<type>: "SM" SIM card "FD" Fixed dial "LD" Last dial "MC" Missed calls "ME" Module memory "DC" Dialed calls "RC" Received calls "ON": number list in SIM card (or ME)	

2.6.2 +CPBR: phonebook read

Description	This command is used to read the phonebook information.	
Syntax	AT+CPBR=<index1>,[<index2>] +CPBR:<index>,<number>,<type>,<text>	
Example	AT+CPBR=? +CPBR: (1-10),40,13 OK	Check current phonebook information
	AT+CPBR=1 +CPBR=1,"130********",129,"" OK	Read the first number of currently selected phonebook

	AT+CPBS="SM" OK AT+CPBR=? +CPBR: (1-10),40,13 AT+CPBR=1,3 +CPBR: 1,"8151****",129,"" +CPBR: 2,"8636****",129,"" +CPBR: 3,"8604****",129,""	Select SIM card phonebook Check SIM card phonebook information Read the contacts information from 1 to 3
Parameters	<index1>: read phonebook index <index2>: read the contacts information from index1 to index2 <index>: index <number>: phone number <type>: phone type 129: domestic 145: international <text>: number's corresponding name	

2.6.3 +CPBW: phonebook write

Description	This command is used to write information into the phonebook.	
Syntax	AT+CPBW= <index>,<number>,<type>,<name> +CPBW:(<index>),<length>,(<type>),<tlength>	
Example	AT+CPBW=? +CPBW: (1-250),40,(129,145),14 OK	AT+CPBW=? +CPBW: (1-250),40,(129,145),14 OK
	AT+CPBS="SM" OK AT+CPBW=1,"130********",129, "john" OK AT+CPBR=1 +CPBR:1,"130********",129, "john" OK AT+CPBW=1 OK	Select SIM card memory Write the number and number at Index 1 in the phonebook Read the first name and number in phonebook Delete the first entry in phonebook

Parameters	<Index>: index <length>: number length <type>: phone type 129: domestic 145: international <tlength>: length of contact's name <number>: phone number <name>: name corresponding to the number
Remarks	For Chinese name, the limit length of Chinese name is not 14 because the Chinese string is ended with "\0\0".

2.6.4 +CPBF: phonebook find

Description	This command is used to find the information in phonebook.	
Syntax	AT+CPBF= <name> +CPBF: <index>,<number>,<type>,<name> +CPBF:<nlength>,<tlength>	
Example	AT+CPBF=? +CPBF:40,14 OK	Check current phonebook information Phone number length 40 Name length 14
	AT+CPBS="SM" OK AT+CPBW=1,"130********",129, "john" OK AT+CPBR=1 +CPBR:1,"130********",129, "john" OK AT+CPBF="john" +CPBF: 1,"130********",129,"john" OK	Select phonebook Write phone information in the first field of current phonebook Read relevant information Search the contacts with the name John
Parameter	<index>: index <nlength>: number length <type>: phone type 129: domestic 145: international <tlength>: length of contact's name <number>: phone number <name>: name corresponding to the number	
Remarks	Only find in "SM","ME", can't find in "LD", "MC", "RC","FD","DC","ON".	

2.6.5 +CNUM: owner's number

Description	This command is used to read the owner's number.	
Syntax	AT+CNUM	
Example	AT+CNUM +CNUM: "","130********",129,7,4 OK	Read the owner's number
Parameter	The owner's number can be written into SIM card through AT+CPBS="ON" ;AT+CPBW command and read through AT+CNUM command.	

2.7 Data Compression Command

2.7.1 +IFC: flow control

Description	This command is used to set the flow control between TE-TA.	
Syntax	AT+IFC=[<mode1 >[,<mode2>]]	
Example	AT+IFC=2,2 OK	Set mode1 of TE-TA flow control as RTS, mode2 as CTS
Parameter	<mode1>: 0: no flow control. 1:XON/XOFF, don't transmit data; 2:RTS; 3: XON/XOFF, transmit data. <mode2>: 0: no flow control. 1: XON/XOFF; 2: CTS;	

2.7.2 &D: set DTR mode

Description	This command is used to set DTR mode	
Syntax	AT&D[<value>]	
Example	AT&D0 OK	Omit DTR signal
Parameter	<value>: 0:Omit DTR signal; 1: DTR from OFF to ON; 2: DTR from ON to OFF;	

2.7.3 &C: set DCD mode

Description	This command is used to set DCD mode;	
Syntax	AT&C[<value>]	
Example	AT&C0 OK	DCD signal is always valid
Parameter	<value>: 0: DCD signal is always valid; 1: DCD signal is valid if there is data;	

2.7.4 +IPR: set module's baud rate

Description	This command is used to set the module's baud rate and automatically save the current baud rate.	
Syntax	AT+IPR=<baud rate>	
Example	AT+IPR? +IPR: 115200 OK	Check current module's baud rate
	AT+IPR=?	Check supported baud rate
	AT+IPR=115200 OK	Set the baud rate as 115200
Remarks	The default is the saved setting of baud rate.	

2.7.5 &F: restore factory settings

Description	This command is used to restore factory settings.	
Syntax	AT&F	
Example	AT&F	Restore factory settings
Remarks	AT&F command's parameters include ATS, ATQ & ATE. AT&F basic parameters can't be validated from the echo of AT commands. Reference validation method: after turning on the module, firstly input AT&V, obtain basic parameters; use the set parameters such as ATS, CREG; after setting, use AT&F to obtain the basic parameters. Compare these parameters and check if they are identical.	

2.7.6 &W: save settings

Description	This command is used to save the current parameter settings.	
Syntax	AT&W	
Example	AT&W	Save the current parameter settings.
Remarks	AT&W command's parameters used to save include ATE, ATQ and ATS. The user parameters saved by AT&W can't be validated from the echo of AT commands. Reference validation method: firstly use the set parameters such as ATE, ATQ & ATS, use AT&V to read the user information, and then input ZT&W; after restarting the module, use ATZ1 to read NV and use AT&V to read the user information. Compare to the parameters before restarting and check if they are identical.	

2.8 GPRS Command

2.8.1 +CGDCONT: set PDP

Description	This command is used to set GPRS PDP syntax;	
Syntax	AT + CGDCONT=<cid>, <type>, <APN>[,<PDP_ADDR>]	
Example	At + CGDCONT=1, "IP","CMNET" ATD*99# …… Connect	
Parameters	<cid>: used to mark the number of PDP, minimum 1; <type>: a type of PDP package; <IP>: use TCP/IP package; <APN>: access point network <PDP_ADDR>: user designated IP address (optional)	

2.8.2 +CGACT: activate/deactivate PDP

Description	This command is used to activate/deactivate PDP settings.	
Syntax	AT+CGACT= [<state> [, <cid> [, <cid> [,..]]]]	
Example	At + CGDCONT=1,"IP","CMNET" OK AT+CGACT=1,1 OK AT+CGACT? +CGACT: 1,0 +CGACT: 2,0 +CGACT: 3,0 OK	
Parameters	<cid>: used to mark PDP parameter; <state>: used to indicate PDP status; 0: deactivate; 1: activate;	

2.8.3 +CGATT: set GPRS

Description	This command is used to set GPRS service.

Syntax	AT+CGATT=[<state>]	
Example	AT+CGATT? +CGATT:0 OK AT+CGATT=1 OK	Check GPRS service status Set GPRS service status
Parameter	<state>: 0: detach 1: attach	

2.8.4 +CGCLASS: GPRS device class

Description	This command is used to check GPRS device levels.	
Syntax	AT+CGCLASS=[<class>]	
Example	AT+CGCLASS? +CGCLASS:"B" OK	Check GPRS device levels.
Parameter	<class>: B: support Class B CG :support GPRS only CC: support circuit exchange only	

2.9 ZTE Exclusive Commands

2.9.1 +ZSTR: check module's status

Description	This command is used to check the module's operation status;	
Syntax	AT+ZSTR=<status> +ZSTR: <status>,<value>	
Example	AT+ZSTR=1	Check initialization status
	AT+ZSTR=2	Check network status
	AT+ZSTR=?	Check the list of parameters
Parameters	<status> 1:No meaning, input AT+ZSTR=1, and display ZSTR: 1,2. 2: network status. <value> 0:network unavailable; 1:network available; 2: no meaning.	

2.9.2 +ZGETICCID: set ICCID

Description	Read ICCID in SIM card	
Syntax	AT+ZGETICCID	
Example	No parameter	
Returned values	+ZGETICCID:89860042190733578148 OK	Description: ICCID value as 89860042190733578148

2.9.3 +ZCSQ: set auto display CSQ

Description	This command can be used to set a threshold value <NUM>. As the RSSI is larger than the threshold value, the module will send +CSQ at the COM port. Note: Note: the threshold value <NUM> does not refer to the RSSI. The threshold value is identical to the <rssi> displayed by the command AT+CSQ. Besides, the command would affect RI status. Please pay attention and avoid mixing with incoming call indication.	
Syntax	AT+ZCSQ＝<NUM>	
Example	AT+ZCSQ=5	+CSQ:24,0 OK
	AT+ZCSQ?	5 OK

	AT+ZCSQ=?	+ZCSQ: (0-32) OK
Parameter	<NUM> range: 0～32	
Remarks	As the RSSI is larger than the threshold value <NUM>, the module would pull RI pin (ME3000 Pin15) down 50ms and display the current RSSI value in the syntax of "+CSQ: <rssi>,<ber>" while restoring RI pin's high level. If the threshold value <NUM> is equal to 0, stop reporting the signal quality. If the threshold value <NUM> default value is 0, the module will auto restore to the default settings after restart. When checking RSSI, if return "+CSQ:99,99"; 99 doesn't represent the actual <rssi> value, but the valid <rssi> value which is not yet obtained.	

2.9.4 +ZEDT: set DTR inspection mode

Description	This command is used to set the inspection mode for DTR pin. There are two inspection modes: A)the module reads DTR pin's level; as DTR pin is at low level, the module think DTR signal is valid, namely the module is effectively connected with DTE device; otherwise, the module is disconnected with DTE device; B)the module doesn't read DTR pin's level; and the DTR signal would be always valid, namely the module will be always connected with DTE device effectively.	
Syntax	AT+ZEDT＝<NUM>	
Example	AT+ZEDT=1	OK
	AT+ZEDT?	+ZEDT: 1 OK
	AT+ZEDT =?	+ZEDT: (0,1) OK
Parameter	<NUM> range: 0～1	

Remarks	The command “+ZEDT” is mainly used to set the module at low power consumption mode; under low power consumption mode; the module could intermittently turn off the RF components, besides, the MCU、DSP、PLL , external clock at digital baseband part can enter dormant mode, and 26MHz main crystal oscillator would enable/disable regularly to reduce the module’s power consumption. Whether or not the module can enter low power consumption mode depends on the following factors: 1) Key (including ON/OFF key) event and exception/external interruption; 2) whether or not receive valid DTR signal; 3) OTA event (e.g., receive text message, incoming call, etc.) In order to make the module enter low power consumption mode, please use the command “AT+ZEDT?” to check the module’s current settings after start-up; if returning with “+ZEDT: 0”, please use the command “AT+ZEDT=1” to change the settings; If you ever use the ON/OFF jumper cap, remove it. Disconnect the COM port---including AT port and debugging port. The module would enter the low power consumption mode after a while (1～3 minutes). The default value of the setting value <NUM> is 0. Besides, the command “+ZEDT” would effect the status LED. After setting AT+ZEDT=1, the status LED would not flash. The status LED will restore normally after changing the settings through the command AT+ZEDT=0 and restarting the module.

2.9.5 +ZDSLEEP: 32KHz Deep sleep mode

Description	This command is used to enable/disable 32KHz sleep mode.	
Syntax	AT+ZDSLEEP=<mode>	
Example	AT+ZDSLEEP=1	Enable sleep mode
	AT+ZDSLEEP=0	Disable sleep mode
Parameter	<mode> 0: disable sleep mode 1: enable sleep mode	
Remarks	After entering sleep mode, awaken through DTR. Valid at high level.	

2.9.6 +CUSD: send USSD data

Description	Send USSD data(ASCII code)
Syntax	AT+CUSD=<n>,0,”str”,<dcs>
Parameter	<n> : 0 disable result code presentation in the TA 1 enable result code presentation in the TA 2 cancel session <str> string type: USSD string (see 3GPP 27.007 for use).

	Please use ASCII code. <dcs> integer type: 3GPP 23.038 Cell Broadcast Data Coding Scheme. Recommended to use 15.	
Descriptions of returned value	+CUSD: <m>[,<str>,<dcs>] OK Among: <m> 0 no further user action required 1 further user action required 2 USSD terminated by network 3 other local client has responded 4 operation not supported 5 network time out	
Example	AT + CUSD=1,0,"*100#",15 +CUSD: 1,"6b228fce4f7f75285e7f4e1c79fb52a85feb4fe10031003 00030ff01000a003165b095fb59296c14000a003280a1796 8884c60c5000a00334f1195f29a7f7ad9000a00346c11751 f67e58b e2000a00357ecf51786d4b8bd5000a0036621176845feb4f e1000a00374f7f75285e2e52a9000a",72 OK	Connect *100#, and returned information is within"", and the encoding method is UCS2.
Note	The second parameter must be 0.	

Description	Send USSD data(binary)
Syntax	AT+CUSD==<n>,< len>, <dcs >
Parameter	<n> : 0 disable result code presentation in the TA 1 enable result code presentation in the TA 2 cancel session <len> The length of binary data required, unit: byte <dcs> integer type: 3GPP 23.038 Cell Broadcast Data Coding Scheme; Recommended to use 15.
Descriptions of returned value	+CUSD: <m>[,<str>,<dcs>] OK Among: <m> 0 no further user action required 1 further user action required 2 USSD terminated by network 3 other local client has responded 4 operation not supported 5 network time out

Example	AT+CUSD=1,5,15 > OK +CUSD: 1,"6b228fce4f7f75285e7f4e1c79fb52a85feb4fe1003100300030ff01000a003165b095fb59296c14000a003280a17968884c60c5000a00334f1195f29a7f7ad00a00346c11751f67e58be2000a00357ecf51786d4b8bd5000a0036621176845feb4fe1000a00374f7f75285e2e52a9000a",72	1. Connect *100#, and returned information is within ””, and the encoding method is UCS2. 2. After > appears, you can input any data stream in binary mode, but there is no display.
Note	1. The second parameter must be larger than 0. 2. There is no data display.	

2.9.7 +ZRINGPINMODE: set RING PIN signal mode

Description	This command is used to set RING PIN signal mode.	
Syntax	AT+ZRINGPINMODE=<N> OK AT+ZRINGPINMODE? +ZRINGPINMODE：<M> OK	
Parameters	<N> 0:RING PIN is at original signal mode; the pin is at low level upon incoming call; and is at high level during other time. No change (remaining to be at high level) upon the receipt of text message. 1:RING Pin is at new signal mode; The PIN generates 1s low level and 4s high level upon an incoming call, until the call is ended or terminated; and is at high level during other time. Generate 1s low level pulse upon the receipt of new messages; maintain high level during other time. <M>: When <N> is set before the read command, the return value <M>=<N>, otherwise return 3, which stands for <N> is not set.	
Example	AT+ZRINGPINMODE = 0	Set RING pin as original mode
	AT+ZRINGPINMODE = 1	Set RING pin as new signal mode
	AT+ZRINGPINMODE? +ZRINGPINMODE: 1 OK	Read the value
Descriptions of returned values	No returned value	

2.10 Network Parameter Commands

2.10.1 +ZPNUM: set APN, username and password

Description	This command is used to set the operator's APN, username and password.	
Syntax	AT+ZPNUM=<APN>,<USER>,<PWD>,<MODE>,<AUTH>	
Example	AT+ZPNUM="cmnet", "user", "pwd",1,0 OK	
	AT+ZPNUM?	Check current APN,USER,PWD settings
Parameter	<APN>:GPRS APN provided by operator; <USER>: username <PWD>: password <APN>,<USER>,< PWD> is a kind of character "string". <MODE>: choose the domain type, 0 PS domain; 1 CS domain <AUTH>: 0 pap; 1 chap	

2.10.2 +ZPPPOPEN: open GPRS connection

Description	This command is used to open GPRS connection.	
Syntax	AT+ZPPPOPEN	
Example	AT+ZPNUM="cmnet", "user", "pwd" OK AT+ZPPPOPEN +ZPPPOPEN:CONNECTED OK …. AT+ZPPPOPEN +ZPPPOPEN: ESTABLISHED OK	

2.10.3 +ZPPPCLOSE: close GPRS connection

Description	This command is used to close GPRS connection.	
Syntax	AT+ZPPPCLOSE	
Example	AT+ZPPPCLOSE +ZPPPCLOSE:OK OK	
	AT+ZPPPCLOSE +ZPPPCLOSE: DISCONNECTED OK	

2.10.4 +ZIPGETIP: check current IP address

Description	This command is used to obtain the IP address.	
Syntax	AT+ZIPGETIP	
Example	AT+ZIPGETIP +ZIPGETIP: *.*.*.* OK	Obtain the module's IP address
Parameter	* is a value from 0～255;	

2.10.5 +ZDNSSERV: set DNS IP address

Description	This command is used to set the IP address of the DNS.	
Syntax	AT+ZDNSSERV=<IP1>,<IP2>	
Parameter	<IP1>: the IP address of main DNS; <IP2>: the IP address of sub DNS;	
Example	AT+ZDNSSERV="211.136.20.203","211.136.18.171" OK AT+ZDNSSERV="211.136.20.203","" OK AT+ZDNSSERV? +ZDNSSERV: "211.136.20.203","211.136.18.171" OK	Set DNS IP address Check DNS IP address
Remarks	When setting the server, you must mandatorily set the main DNS server and selectively set the secondary DNS server. For IP settings, the parameter can't exceed 255.	

2.10.6 +ZDNSGETIP: obtain Internet Domain name's IP address

Description	This command is used to obtain Internet Domain name's IP address.	
Syntax	AT+ZDNSGETIP=<domain name>	
Parameter	<domain name>:Internet domain name;	
Example	AT+ZDNSGETIP="WWW.163.COM" 202.108.09.32 202.108.09.33 OK	Obtain IP address

2.11 TCP Link Commands

2.11.1 +ZIPSETUP: Set up TCP server link

Description	This command is used to send data to a bundled TCP server.	
Syntax	AT+ZIPSETUP=<N>,<IP>,<M>	
Example	AT+ZIPSETUP=1,61.144.216.219,2332 +ZIPSETUP:CONNECTED OK	Connect to TCP server.
Parameter	<N>: the channel No. of TCP links, ranging from 0 to 4; support 5 TCP links with 5 different IP addresses and ports; <IP>:IP value of one target address, *.*.*.*. * range: 0～255. <M>: port number;	
Remarks	MTK only supports 6 sockets online at the same time. The total number of TCP and UDP links can't exceed 6 when establishing the links.	

2.11.2 +ZIPSEND: send TCP data to target address

Description	This command is used to connect the target server.	
Syntax	AT+ZIPSEND= <port>, <length><CR> Send data after prompt with '>'	
Example	AT+ZIPSEND=1,10 >abcdefghij +ZIPSNED:OK OK	Send data to TCP server after successfully connecting the server. Send 10 bytes: abcdefghij
Parameter	<port>: the channel number of TCP links; <length>: data length (support up to 1000 bytes, and support 0x00~0xff transmitting).	

2.11.3 +ZPPPSTATUS: check GPRS connection status

Description	This command is used to check GPRS link status.	
Syntax	AT+ZPPPSTATUS	
Example	AT+ZPPPSTATUS +ZPPPSTATUS: ESTABLISHED OK	Check GPRS link status
	AT+ZPPPSTATUS +ZPPPSTATUS: DISCONNECTED OK	Check GPRS link status

2.11.4 +ZIPCLOSE: close TCP link

Description	This command is used to close TCP link.	
Syntax	AT+ZIPCLOSE=<N>	
Example	AT+ZIPCLOSE=1 +ZIPCLOSE:OK OK	Close TCP link.
Parameter	<N>: the number of TCP links and the value is 1;	

2.11.5 +ZIPSTATUS: check current TCP link status

Description	This command is used to check the status of current TCP link.	
Syntax	AT+ZIPSTATUS=<N>	
Example	AT+ZIPSTATUS=1 +ZIPSTATUS: ESTABLISHED OK	Check the current TCP link status
Parameter	ESTABLISHED: TCP link established. DISCONNECTED: TCP link disconnected.	

2.11.6 +ZIPRECV: receive data from current data link

Description	This command is used to receive data asynchronously.	
Syntax	+ZIPRECV:<N>,<LEN>,<DATA>	
Example	…… +ZIPRECV:1,5,abcde ……	…… Received 5 data abcde from No.1 TCP data link
Parameter	<N>: the number of TCP links and the value is 1; <LEN>: length of received data; <DATA>: received data	

2.12 UDP Link Commands

2.12.1 +ZIPSETUPU: set up UDP server link

Description	This command is used to bundle with the UDP server link.	
Syntax	AT+ZIPSETUPU=<N>,<IP>,<M>	
Example	AT+ZIPSETUPU=1,61.144.216.219,2332 +ZIPSETUPU:CONNECTED OK	The UDP server's bundled address is 61.144.216.219, with the port no. 2332. Return with bundling succeeded.
Parameter	<N>: the channel No. of UDP links, ranging from 0 to 4; support 5 UDP links with 5 different IP addresses and ports; <IP>: IP address of target server; *.*.*.*. * ranges from 0~255. <M>: port number.	
Remarks	MTK only supports 6 sockets online at the same time. The total number of TCP and UDP links can't exceed 6 when establishing the links.	

2.12.2 +ZIPSENDU: send data to UDP server

Description	This command is used to send data to the bundled UDP server.	
Syntax	AT+ZIPSENDU= <port>, <length><CR> Send data after prompt with '>'.	
Example	AT+ZIPSENDU=1,10 >abcdefghij +ZIPSNEDU:OK OK	Send data to UDP server after successfully connecting the server. Send 10 bytes: abcdefghij
Parameter	<port>: the channel number of UDP links; <length>: data length (support up to 1000 bytes, and support 0x00~0xff transmitting).	

2.12.3 +ZIPSTATUSU: check UDP status

Description	This command is used to check current UDP link status.	
Syntax	AT+ZIPSTATUSU=<N>	
Example	AT+ZIPSTATUSU=1 +ZIPSTATUSU: ESTABLISHED OK	Check the No. 1 UDP status The No. 1 UDP is in use
Parameter	ESTABLISHED: UDP already ESTABLISHED. DISCONNECTED:UDP already disconnected	

2.12.4 +ZIPCLOSEU: close UDP link

Description	This command is used to close the designated UDP link.	
Syntax	AT+ZIPCLOSEU=<N>	
Example	AT+ZIPCLOSEU=1 +ZIPCLOSE:OK OK	Successfully close the No. 1 UDP link Prompt that the No.1 UDP link closed.
Parameter	<N>: the channel number of UDP links; representing the channels to be closed, ranging from 0 to 4.	

2.12.5 +ZIPRECVU: receive UDP data

Description	This command is used to receive UDP data from UDP server	
Syntax	+ZIPRECVU:<N>,<LEN>,<DATA>	
Example	…… +ZIPRECVU:1,5,abcde ……	…… Received 5 data abcde from the No.1 UDP data link
Parameter	<N>: the channel number of UDP links, ranging from 0 to 4; <LEN>: received data length; <DATA>: received data; (The size of each UDP package shall not exceed 1500 bytes, otherwise, error occurs)	

2.13 Server Commands

2.13.1 +ZTCPLISTEN: set port monitoring

Description	This command is used to enable/disable port monitoring function.	
Syntax	AT+ZTCPLISTEN=<on/off>,<portNum> AT+ZTCPLISTEN?	
Parameter	<on/off> 1:start listening 2:stop listening <portNum> the listening port num If <on/off> is 2, please set this parameter as 0.	
Example	AT+ZTCPLISTEN=1,1174 OK	Monitoring port 1174
	AT+ZTCPLISTEN? +ZTCPLISTEN:1,1174 OK	Check monitoring status
	AT+ZTCPLISTEN=2,0 OK	Stop monitoring
	+ZTCP(P): (0,1) INCOMING CONNECT ACCEPTED	Indicating one monitoring to one external connection, and the connection is accepted.
Note	1. One port can be monitored currently, and only two connections are allowed on each port; 2. Prior to the monitoring, please firstly use AT+ZPPPOPEN to open the PPP link;	

2.13.2 +ZTCPSENDP: send data through passively opened link

Description	This command is used to send data through (monitored) passively opened link.	
Syntax	AT+ZTCPSENDP=<channel>,<n>	
Parameter	<channel>: the sign of connected client ends; <n>: the length of data to send	
Descriptions of returned value	Input AT command according to the above syntax, press carriage return to display ">". In this case, you can input the data to transmit. When inputting (size+1) data (it can be any data, 0x0d recommended), it will trigger the transmitting process.	
Example	AT+ZTCPSENDP=10 >1234567890 +ZTCPSEND(P):OK OK	Send 10 characters through the monitored link.
Note	Prior to the use of this command, the monitored connection must be established.	

2.13.3 +ZTCPCLOSEP: close monitored connection

Description	This command is used to close the monitored connection.	
Syntax	AT+ZTCPCLOSEP=<channel>	
Descriptions of returned value	OK: connection closed ERROR: link not existed or other error	
Example	AT+ZTCPCLOSEP +ZTCPCLOSEP:OK OK	Close the No.1 connection monitored
Note	Prior to the use of this command, the monitored connection must be established.	

2.13.4 +ZTCPRECV(P): receive data report

Description	This command is used to receive data report	
Syntax	+ZTCPRECV(P):<channel>,<dataLength>,<data>	
Parameter	<channel>: upon multiple connections, mark the connection through which transmits the data. <dataLength>: the length of received data <data>: received data	
Example	+ZTCPRECV(P):1050, 789012345678901234567890123456789012345678 901234567801234567890123456789012345678901 234567890123456789012345678901234567890123 456780123456789012345678901234567890123456 789012345678901234567890123456789012345678 012345678901234567890123456789012345678901 234567890123456789012345678901234567801234 567890123456789012345678901234567890123456 789012345678901234567890123456780123456789 012345678901234567890123456789012345678901 234567890123456789012345678012345678901234 567890123456789012345678901234567890123456 789012345678901234567801234567890123456789 012345678901234567890123456789012345678901 234567890123456780123456789012345678901234 567890123456789012345678901234567890123456 789012345678012345678901234567890123456789 012345678901234567890123456789012345678901 234567801234567890123456789012345678901234 567890123456789012345678901234567890123456 780123456789012345678901234567890123456789	1050 characters received

	01234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678	

2.13.5 +ZTCPSTATUSP: check passively opened link

Description	This command is used to check if there is any passively opened link.	
Syntax	AT+ZTCPSTATUSP=<channel>	
Descriptions of returned value	+ZTCPSTATUS(P):DISCONNECT One passively link not existed +ZTCPSTATUS(P):CONNECT One passively link existed	
Example	AT+ZTCPSTATUSP=0 +ZTCPSTATUS(P):DISCONNECT OK AT+ZTCPSTATUSP +ZTCPSTATUS(P):DISCONNECT OK	No passively opened link The current monitoring port does not start working.

2.13.6 +ZIPTIMEOUT: timeout set for connecting the server & sending data

Description	This command is used to set the timeout for connecting the server and sending data as the module works as the client end.	
Syntax	AT+ZIPTIMEOUT=<connect_timeout>,<send_data_timeout>	
Description of parameters	<connect_timeout>: connection timeout; <send_data_timeout>: sending data timeout. If the module does not send out the data within the specified time, it might think that there is something wrong with the server or network and close the connection. (The module works as the server and client end)	
Descriptions of returned value	OK setting succeeded ERROR setting failed	
Example	AT+ZIPTIMEOUT=? +ZIPTIMEOUT:(5-120),(5-18000) OK AT+ZIPTIMEOUT=30,60 OK AT+ZIPTIMEOUT? +ZIPTIMEOUT:30,60 OK	Check the range of timeout value Set the timeout Check the range of current timeout

2.13.7 +ZUDPLISTEN: set port monitoring

Description	This command is used to enable/disable port monitoring function.	
Syntax	AT+ZUDPLISTEN=<on/off>,<portNum> AT+ZUDPLISTEN?	
Parameter	<on/off> 1:start listening 2:stop listening <portNum> the listening port num If <on/off> is 2, please set this parameter as 0.	
Example	AT+ZUDPLISTEN=1,1174 OK	Monitoring port 1174
	AT+ZUDPLISTEN? +ZTCPLISTEN:1,1174 OK	Check monitoring status
	AT+ZUDPLISTEN=2，0 OK	Stop monitoring
Note	Prior to the monitoring, please firstly use AT+ZPPPOPEN to open the PPP link;	

2.13.8 +ZUDPSENDP: send data through passively opened link

Description	This command is used to send data through (monitored) passively opened link.	
Syntax	AT+ZUDPSENDP=<IP>,<PORT>，<LEN>	
Parameter	<IP>: The IP address of destination <PORT>: the port of destination <LEN>: The length of send data	
Descriptions of returned value	Input AT command according to the above syntax, press carriage return to display ">". In this case, you can input the data to transmit. When inputting (LEN+1) data (it can be any data, 0x0d recommended), it will trigger the transmitting process.	
Example	AT+ZUDPSENDP=10.197.50.10,50112,10 >1234567890 +ZUDPSEND(P):OK OK	Send 10 characters through the monitored link.
Note	Prior to the use of this command, the monitored connection must be established.	

2.14 FTP Commands

2.14.1 +ZFTPLOGIN: log in FTP server

Description	This command is used to log in the FPT server.	
Syntax	AT+ZFTPLOGIN=<IP>,<PORT>,<Username>,<Password>	
Description of parameters	<IP>: server's IP address; <PORT>: server's FTP port number, 21 by default (Note: according to RFC959, it's advised to set the port number as 21) <Username>: username used to log in FTP server <Password>: password used to log in FTP server	
Example	AT+ZFTPLOGIN=183.37.36.5,21,test,test OK +ZFTPLOGIN:OK AT+ZFTPLOGIN=218.18.232.161,21,test,test FTP IS LOGIN	Logged in FTP server successfully Already logged in, prompt with logged in
	AT+ZFTPLOGIN=183.37.36.5,21,test,test OK +ZFTPLOGIN: CONNECT FAIL	Log in FTP server, connection timeout
Remarks	1. As long as the syntax of command is correct, return OK. However, this doesn't mean logged-in successfully. The log-in is successful only after +ZFTPLOGIN: OK is returned. 2. Prior to logging in FTP server, you must open PPP.	

2.14.2 +ZFTPTYPE: set FTP file type

Description	This command is used to set the type of FTP file.
Syntax	AT+ZFTPTYPE=<TYPE>
Description of parameters	<TYPE>: file type 1: ASCII 2: Binary

Example	AT+ZFTPTYPE=1 OK +ZFTPTYPE:OK	Set the file type as text mode
	AT+ZFTPTYPE? +ZFTPTYPE:1	Check the settings of file type
Remarks	If you upload or download the files for the first time, you have to set the file type and perform relevant operation. If you need not change the file type, you can ignore the settings.	

2.14.3 +ZFTPUPLOAD: upload files

Description	This command is used to upload files to FTP server.	
Syntax	AT+ZFTPUPLOAD=<dir&filename>,<put_mode>,<size>	
Description of parameters	<dir&filename>: file directory or file name <put_mode>: Upload operation mode: 1: STOR mode: create the file on the server and write the data. If the file exists already, cover the original file. 2: APPE mode: if the file doesn't exist on the server, create it. If it exists, attach the data at the end of the file. <size>: size of file	
Example	AT+ZFTPUPLOAD=test1.txt,2,511 > OK +ZFTPUPLOAD:OK	Upload a txt file to the server with the file's name test1.txt and size of 511 bytes.
Remarks	The data length sent each time does not exceed 4K byte. If you want to write a large file, use STOR mode and then APPE mode; Prior to the uploading, you'd better set the file type.	

2.14.4 +ZFTPSIZE: Get the File size

Description	This command is used to get the file size from the FTP server.
Syntax	AT+ZFTPSIZE=<dir&filename>
Parameters	<dir&filename>: File path or file name;

Example	AT+ZFTPSIZE=log.txt +ZFTPSIZE:16587 OK	Get the file size of log.txt from server, the size is 16587 bytes
	AT+ZFTPSIZE=xxx.txt +ZFTPSIZE:GET FILE SIZE FAIL ERROR	There is on file named xxx.txt, return ERROR

2.14.5 +ZFTPDNLOADEX: Download FTP File

Description	This command is used to download FTP file, and it is different from the command of +ZFTPDNLOAD.	
Syntax	AT+ZFTPDNLOADEX=<dir&filename>,<mode>[,offset] [,length]	
Description of parameters	<dir&filename>: File path or file name; <mode>:the mode to get the FTP data from the serial port 0:Passive mode, the data begins with "+ZFTPDNLOADEX:Recv Start", and the block data reports as "+ZFTPDNLOADEX:1024,…" from the serial port, and ends as "+ZFTPDNLOADEX:Recv End" 1: Active mode, the data begins with "+ZFTPDNLOADEX:Recv Start" and ends with "+ZFTPDNLOADEX:Recv End". <offset>:The offset in the document, if this parameter is omitted, download from the very beginning of the file. <length>:The length of download data, if this parameter is omitted, download the whole file.	
Example	AT+ZFTPDNLOADEX=test1.txt,0 OK +ZFTPDNLOADEX:Recv Start +ZFTPDNLOADEX:1024,123456789012345678	Download a txt file from the server with the file's name test1.txt and size of 1533 bytes.

	9012345678901234567890123456789012345678901123456 7890123456789012345678901234567890123456789012345 6789012345678901234567890123456789012345678901234 5678901234567890123456789012345678901234567890123 4567890123456789012345678901234567890123456789012 3456789012345678901234567890123456789012345678901 2345678901234567890123456789012345678901234567890 1234567890123456789012345678901234567890123456789 0123456789012345678901234567890123456789012345678 9012345678901234567890123456789012345678901234567 8901234567890123456789012345678901234567890123456 7890123456789012345678901234567890123456789012345 6789012345678901234567890123456789012345678901234 5678901234567890123456789012345678901234567890123 4567890123456789012345678901234567890123456789012 3456789012345678901234567890123456789012345678901 2345678901234567890123456789012345678901 +ZFTPDNLOADEX:509,3456789012345678901234567890 1234567890123456789012345678901234567890123456789 0123456789012345678901234567890123456789012345678 9012345678901234567890123456789012345678901234567 8901234567890123456789012345678901234567890123456 7890123456789012345678901234567890123456789012345 6789012345678901234567890123456789012345678901234 5678901234567890123456789012345678901234567890123 4567890123456789012345678901234567890123456789012 3456789012345678901234567890123456789012345678901 2345678901234567890123456789012345678901 +ZFTPDNLOADEX:Recv End	
	AT+ZFTPDNLOADEX =test1.txt,1,0,512 OK +ZFTPDNLOADEX:Recv Start 1234567890123456789012345678901234567890123456789 0123456789012345678901234567890123456789012345678 9012345678901234567890123456789012345678901234567 8901234567890123456789012345678901234567890123456 7890123456789012345678901234567890123456789012345 6789012345678901234567890123456789012345678901234 5678901234567890123456789012345678901234567890123 4567890123456789012345678901234567890123456789012 3456789012345678901234567890123456789012345678901 2345678901234567890123456789012345678901234567890	Download the data at the beginning of 512 bytes of a txt file from the server with the file's name test1.txt.

	1234567890123456789011 +ZFTPDNLOADEX:Recv End	
Remarks	1、One download task at one time, when you have send +ZFTPDNLOAD or +ZFTPDNLOADEX command, you must wait until data reception completed or report the download errors, then you can send another +ZFTPDNLOAD or +ZFTPDNLOADEX command. Otherwise the module behavior is unpredictable. 2、We use the passive way to read the serial port data currently, the length of each packet data is 1024 bytes, and only the last packet data may less than 1024 bytes.	

2.14.6 +ZFTPDNLOAD: download files

Description	This command is used to download files from FTP server.	
Syntax	AT+ZFTPDNLOAD=<dir&filename>,<mode>,<output_interval>	
Description of parameters	<dir&filename>: file directory or file name <mode>: specify what you want to obtain is Content or Info: 1: obtain file contents 2: obtain file or designated directory information 3: Breakpoint download mode <output_interval>: interval (1500 byte each time) as the module outputs through COM port. Take the value from 0～10, with the unit of second. 0 represents the default value 20ms. <offset>:The offset in the document, it only effective when mode is 3.	
Example	AT+ZFTPDNLOAD=test1.txt,1,4 OK +ZFTPDNLOAD:Recv Start 1234567890123456789012345678901234567890123456789 0123456789012345678901234567890123456789012345678 9012345678901234567890123456789012345678901234567 8901234567890123456789012345678901234567890123456 7890123456789012345678901234567890123456789012345 6789012345678901234567890123456789012345678901234 5678901234567890123456789012345678901234567890123 4567890123456789012345678901234567890123456789012 3456789012345678901234567890123456789012345678901 2345678901234567890123456789012345678901234567890 123456789012345678901 +ZFTPDNLOAD:Recv End	Download a txt file from the server with the file's name test1.txt and size of 511 bytes.

	AT+ZFTPDNLOAD=test1.txt,2,4 OK +ZFTPDNLOAD:Recv Start -rw-r--r-- 1 ftp ftp 511 Jun 08 16:28 test1.txt +ZFTPDNLOAD:Recv End	Obtain the relevant information of test1; output at the interval of 4s.
Remarks	1. This command is only used to read the file not larger than 10K; if the file is larger than 10K, the data might be lost. 2. Pay attention to the setting of output_interval. As you download larger files, the data might be lost if you set a smaller value of output_interval. Generally select a value from 5 to 10. For large files, select 10. 3. As you download larger files, data echo might be displayed in sections; The file information would generally not be packaged; 4. Prior to the downloading, you'd better set the file type. 5. If there is no command operation or data transmitting within a certain period of time, the FTP server may initiatively close. Therefore, during the process of data echo, the timeout prompt might appear.	

2.14.7 +ZFTPDEL: delete files

Description	This command is used to delete the files on the FTP server.	
Syntax	AT+ZFTPDEL=<dir&filename>	
Parameter	<dir&filename>: file directory or file name	
Example	AT+ZFTPDEL=test1.txt OK +ZFTPDEL:OK	Delete the file test1.txt on the FTP server.
Remarks	None	

2.14.8 +ZFTPQUIT: quit FTP

Description	This command is used to quit the FTP server.	
Syntax	AT+ZFTPQUIT	
Parameter	None	
Example	AT+ZFTPQUIT OK +ZFTPQUIT:OK	Quit the FTP server

	AT+ZFTPQUIT FTP IS NOT LOGIN	Quitted FTP server already, execute the delay command
Remarks	None	

2.15 Transparent Transfer Command

2.15.1 +ZTRANSFER: Transparent transfer

Description	Transparent transmission	
Syntax	AT+ZTRANSFER=<net_channel>,<mode>,<cfgt>,<cfgp>	
Description of parameters	<net_channel>:socket connection channel number; <mode>:socket connection mode; value: 1 or 2; 1: UDP; 2: TCP. <cfgt>: used for transparent transfer; the time spent while waiting for each package to transmit: 50-65535ms <cfgp>: the size of each package is 536-1460 during transparent transfer;	
Description of returned value	+ZTRANSFER:<net_channel> OK	

Example	**1. TCP example:**
	AT+ZPPPOPEN
	
	+ZPPPOPEN:CONNECTED
	
	OK
	AT+ZIPSETUP=1,183.37.41.143,6800
	
	+ZIPSETUP:CONNECTED
	
	OK
	AT+ZTRANSFER=1,2,3000,1000
	
	+ZTRANSFER:1
	
	OK
	ATO
	
	Enter into data mode, please input data:
	
	OK
	abcabcabcabcabcabcabacabcabcabcabcabc
	+++
	Enter into cmd mode, please input AT command:
		//open PDP connection
		
		/
		/establish TCP connection
		
		//execute transparent transfer
		
		//enter data mode
		
		//transmitted data
		//enter command mode

	AT
	
	OK
	
	2. UDP example:
	AT+ZPPPOPEN
	
	+ZPPPOPEN:CONNECTED
	
	OK
	AT+ZIPSETUPU=1,183.37.32.104,7000
	
	+ZIPSETUPU:CONNECTED
	
	OK
	AT+ZTRANSFER=1,1,1000,1000
	
	+ZTRANSFER:1
	
	OK
	ATO
	
	Enter into data mode, please input data:
	
	OK
	3abcabcabcabcabcabcabacabcabcabcabcabc
	
	+++
	Enter into cmd mode, please input AT command:
	
	AT
	OK
		// open PDP connection
		
		// establish UDP connection
		
		//execute transparent transfer
		
		// enter data mode
		
		// transmitted data
		//enter command mode

Remarks	The overall size of data transmitted through transparent transfer should not exceed 4096M bytes, while the data size transmitted at a time should not exceed 2K, and the interval for data input should not be too short (better make sure the rate of input data is large than 1 k/s), otherwise it might cause data loss. As t he echo display of transmitted data is incorrect, it means there is data loss. In order to avoid data loss, it's advised to use the command +IFC to enable flow control while transmitting data; when receiving data under UDP mode, the size of data transmitted by the server at a time can't exceed 2k, but the overall size of data transmitted by the server is unlimited. When using +++ for data mode, you'd better input +++ all together, and make sure the input	

	interval is not too long; otherwise, +++ might be sent out as data. However, +++ actually means data mode. The transparent transfer won't be used with other common TCP UDP port at the same time.

2.16 Relevant Audio Commands

2.16.1 +ZCALLTONE: set pick-up tone

Description	Play/pause the pick-up tone.	
Syntax	AT+ZCALLTONE=<n> AT+ZCALLTONE=? AT+ZCALLTONE?	
Parameter	<n> 0:pause the pick-up tone 1:play 400Hz pick-up tone 2:play 400Hz/25Hz pick-up tone 3:play 400Hz/50Hz pick-up tone	
Descriptions of returned value	OK +ZCALLTONE:<n> OK	
Example	AT+ZCALLTONE=2 OK AT+ZCALLTONE? +ZCALLTONE:2 OK AT+ZCALLTONE=0 OK AT+ZCALLTONE? +ZCALLTONE:0 OK	Play pickup tone Stop pickup tone

2.16.2 +ZDTMFTONE: set ZDTMF tone

Description	Set the pick-up tone.
Syntax	AT+ZDTMFTONE=<n>,<Duration> AT+ZDTMFTONE =? AT+ZDTMFTONE?
Parameter	<n> 0~9:play DTMF tone from 0 to 9; 10~13:play DTMF tone from A to D; 14:play * DTMF tone; 15:play # DTMF tone; 16:stop playing DTMF tone ; <Duration>

	DTMF playing duration, unit: 20ms. Value range: 0-1000. Set as 0, continue to play	
Descriptions of returned value	OK +ZDTMFTONE:<n>,<Duration> OK	
Example	AT+ZDTMFTONE=1,0 OK AT+ZDTMFTONE? +ZDTMFTONE:1,0 OK AT+ZDTMFTONE=16,0 OK AT+ZDTMFTONE? +ZDTMFTONE:16,0 OK AT+ZDTMFTONE=2,100 OK	Continue to play DTMF tone of number key 1; Stop playing DTMF tone Play DTMF tone of number key 2 for 2s;

2.16.3 +ZKTDSWITCH: Set DTMF inspection function

Description	This command is used to set DTMF inspection function.	
Syntax	AT+ZKTDSWITCH=<mode>	
Example	AT+ZKTDSWITCH=1 OK	Open the DTMF inspection function
	AT+ZKTDSWITCH=0 OK	Close the DTMF inspection function
	AT+ ZKTDSWITCH =? + ZKTDSWITCH:(0-1) OK	Check status
Parameters	<mode> 0:Close the DTMF inspection function 1:Open the DTMF inspection function	

2.16.4 +ZKTDIND: Report the DTMF buttons inspected

Description	This command is used to report the DTMF buttons inspected during the call.	
Syntax	+ZKTDIND:<val>	
Example	+ZKTDIND:*	The other side press the “*”
Parameters	<val> :0~9,*,#	

2.16.5 +SPEAKER: audio channel switch command

Description	This command is used to switch between the microphone and headset.	
Syntax	AT+SPEAKER=<mode>	
Example	AT+SPEAKER=0 OK	Switch to microphone
	AT+SPEAKER=1 OK	Switch to headset
	AT+SPEAKER=? +SPEAKER:(0-1) OK	Check status
Parameters	<mode> 0:microphone(default) 1:headset	

2.16.6 +ZMICGB: set MIC audio parameters

Description	This command is used to change MIC input channel's audio parameters.	
Syntax	AT+ZMICGB=<Gain>,<Bias>,<PGA> //set parameters AT+ZMICGB=? //check parameter setting syntax AT+ZMICGB? //check current parameters	

Parameter	Refer to the definitions of three parameters in MIC output circuit in figure 1.
	1. Gain:0～7. refer to the corresponding relationship between the parameter and the gain;
	typedef enum L1BbcMicGainTag
	{
	MIC_GAIN_0 = 0,
	MIC_GAIN_1,
	MIC_GAIN_2,
	MIC_GAIN_3,
	MIC_GAIN_4,
	MIC_GAIN_5,
	MIC_GAIN_6,
	MIC_GAIN_7
	}
	L1BbcMicGain;	

Descriptions of returned value	OK: parameter settings succeeded; ERROR: incorrect parameter syntax	
Example	AT+ZMICGB=0	Note: Gain=0;

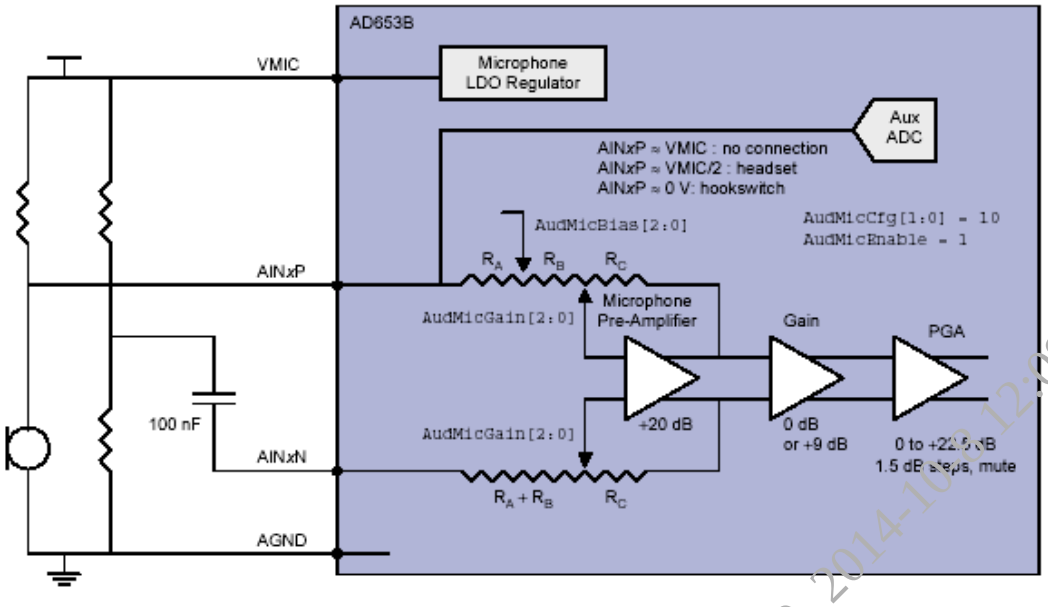


Figure 1

2.17 Base station Commands

2.17.1 +CCED: Cell Environment Description Indication

Description	This command is used to check the environment of main cell and six neighbors	
Syntax	AT+CCED=<mode>[,<requested dump>]	
Example	AT+CCED? +CCED: 0, 1 OK	Check the current setting
	AT+CCED=? +CCED: (0-2), (1, 2, 8, 15) OK	Check parameter range
	AT+CCED=0,1 +CCED: 460,0,247c,f8d,538,56,43,0, 0,0,0,0,0 OK	Get mail cell
	AT+CCED=0,2 +CCED: 460,0,247c,f83,82,50,41 +CCED: 460,0,27a0,fd5,52,46,34 +CCED: 460,0,247c,eda,520,48,33 +CCED: 460,0,247c,e44,64,57,32 +CCED: 460,0,279c,e58,48,50,31 +CCED: 460,0,247c,e9c,13,24,29 OK	Get neighbour cell1~6
Parameters	<mode> 0:return only one time(default) 1:return every 3s 2:stop return on every 3s <requested dump> 1:main cell(default): MCC, MNC, LAC, CI, BCCH Freq (absolute), BSIC,RxLev,RxLev Full,	

	RxLev Sub, RxQual, RxQual Full, RxQual Sub, Idle TS 2:neighbour cell1~6: MCC, MNC, LAC, CI, BCCH Freq (absolute), BSIC, RxLev 8:main cell SSI from 0 to 31 return result and+CSQ command. 15:return the signal and information of main cell

2.17.2 +ZBCCH: Lock BCCH Channel

Description	Lock a specified BCCH channel so as to lock the specified cell identity; Read command is used to get the cell-id, Lac code and service operator code corresponding to the locked BCCH channel; Test command is used to get the strongest 7 BCCH channel.	
Syntax	AT+ ZBCCH =<mode>,<bcch> +ZBCCH:LOCK SUCESS OK ERROR AT+ZBCCH? + ZBCCH: <bcch>,<mcc>,<mnc>,<lac>,<cell-id> OK AT+ZBCCH=? + ZBCCH: <mode list> ,<bcch1>,…<bcchn> OK	Set command Success Failed Read command Test command
Defined values	<mode> 0 Unlock the current BCCH; 1 Lock the specified BCCH <bcch> BCCH Channel No. <mcc> Service operator code 1: 460 <mnc> Service operator code 2: 00/01 <lac> Lac code <cell-id> cell identity corresponding to the Locked BCCH channel	

Example	AT+ZBCCH =? +ZBCCH:600,460,0,247c,10e3 +ZBCCH:512,460,0,2533,fe7 +ZBCCH:598,460,0,2533,f3e +ZBCCH:592,460,0,2533,eed +ZBCCH:530,460,0,247c,f65 +ZBCCH:528,460,0,2533,10c3 OK AT+ZBCCH? +ZBCCH:596,460,0,247c,10e2 OK AT+ZBCCH =1,596 +ZBCCH:LOCK SUCCESS OK

2.17.3 +ZBAND: Lock the GSM Band

Description	Lock the band of GSM: 850/900/1800/1900MHZ. The bands of 900/1800 MHz are supported in China currently. When lock a band, and then use the set command to lock another band, the former band is unlocked automatically.	
Syntax	AT+ ZBAND =<band> OK AT+ ZBAND? + ZBAND: <band> OK AT+ZBAND =? + ZBAND: <band list> OK	Set command Read command Test command
Defined values	<band> : 0 Automatic 1 GSM900MHZ	

	2 DCS1800MHZ	
Possible response(s)	OK //Success ERROR //Fail	
Example	AT+ZBAND =1 OK AT+ZBAND? +ZBAND:1 OK AT+ZBAND=? +ZBAND:(0-2),0:auto,1:gsm900,2:dcs1800 OK	

2.17.4 +ZOPT: Lock the network operator

Description	Lock the GSM/GPRS network operator: China Unicom, China Mobile Communication Corporation, etc.	
Syntax	AT+ ZOPT =<opt> +ZOPT:<state> OK ERROR AT+ ZOPT =? + ZOPT: <opt list> OK	Set success Fail Test command
Defined values	<opt> 0 Automatic 1 China Mobile Communication Corporation 2 China Unicom, <state> The network state.	
Possible response(s)	OK //Success ERROR //Fail	
Example	AT+ZOPT=1 OK AT+ZOPT=? +OPT:(0-2),0:AUTO,1:China Mobile,2:China Unicom OK AT+ZOPTS? +ZOPT:"China Mobile" OK	

2.17.5 +ZCALIST: Get List of Distributed Carrier

Description	This command can be used to read the distributed carrier of the strongest channel when BCCH is not locked, while it will return the distributed carrier of locked band when BCCH is lock.	
Syntax	AT+ ZCALIST +ZCALIST:<ca0>…<ca63> OK	
Defined values	<ca> 0 ~ 63 the number of effective carrier	
Possible response(s)	OK //Success ERROR //Fail	
Example	AT+ZCALIST +ZCALIST:2,8,19,34,45,80,94 OK	

2.18 TTS Commands

2.18.1 +ZTTS: TTS(Text to Speech) Voice Broadcast

Description	This command can be used to broadcast TTS voice.		
Type	Command	Possible response(s)	Remarks
Set command	AT+ZTTS=<Mode>,<Text>	<CR><LF>OK<CR><LF> <CR><LF><Status><CR><LF>	Success
		<CR><LF>ERROR<CR><LF>	fail
Read command	AT+ZTTS?	<CR><LF><Status><CR><LF> <CR><LF><OK><CR><LF>	Success
Test command	AT+ZTTS=?	<CR><LF><OK><CR><LF>	

Defined Values:

Parameter	value	Remarks
< Mode >	0	Stop voice broadcast
	1	Voice broadcast in the format of UCS2
	2	Voice broadcast in the format of GBK
<Text>		The content of voice broadcast, the longest of this is 500 Chinese characters. Note: UCS2 need to encode in the fomat of little-endian
<Status>	0	Not broadcast
	1	Broadcasting

Example:

AT+ZTTS=1,"604F7D59" //UCS2 encode “你好”

OK

+ZTTS: 0 //Broadcast finished

AT+ZTTS=2,"CED2C3C7" //GBK encode “我们”

OK

+ZTTS: 0

AT+ZTTS?

+ZTTS: 0

OK

AT+ZTTS=?

OK

2.18.2 +ZTTSP:set the parameters of TTS

Description	This command is used to set the parameters of TTS voice broadcast. And this command doesn't support the switch of pronunciation people currently.		
Type	Command	Possible response(s)	Remarks
Set command	AT+ZTTSP=<Volume>[,<Gender>],<speed>	<CR><LF>OK<CR><LF>	Success
		<CR><LF>ERROR<CR><LF>	fail
Read command	AT+ZTTSP?	<CR><LF><Volume>[,<Gender>],<speed><CR><LF> <CR><LF><OK><CR><LF>	Success
Test command	AT+ZTTSP=?	<CR><LF><Volume_List>[,<Gender_List>],<speed><CR><LF> <CR><LF><OK><CR><LF>	

Defined Values:

Parameter	value	Remarks
< Volume >	0-100	Set the volume of TTS voice, 0 is the minimum volume
< Gender>	1,2,4,8	1:male voice；2:female voice；4:boy voice；8:girl voice
<speed>	0-100	0:The slowest speed; 100 The fastest speed

Example:

AT+ZTTSP=?

+ZTTSP: (0-100)[,(1,2,4,8)],(0-100)

OK

AT+ZTTSP?

+ZTTSP: 70,8,70

OK

AT+ZTTSP=1,4

OK

2.19 Recording commands

2.19.1 +ZAUDREC: Recording Command

Description	This command can be used to set the recording function. And support two formats of WAV&AMR. Which format is used is depends on the suffix of filename			
Syntax	AT+ZAUDREC=<Mode>[,<Filename>]	<CR><LF>OK<CR><LF>		Success
		<CR><LF>ERROR<CR><LF>		Fail
	AT+ZAUDREC?	+ZAUDREC:<Files_number>,<File_name1>,<len1> ,<File_name2>,<len2> <CR><LF>OK<CR><LF>		Success
	AT+ZAUDREC=?	+ZAUDREC: (0-6) <CR><LF><OK><CR><LF>		Success
Defined Values	< Mode >	0	Start recording. If not input the filename, record to the default file named REC.wav.	
		1	Stop recording	
		2	Play record(and only support headphones play at present)	
		3	Stop play record	
		4	Delete the specific existent record	
		5	Broadcast the recording in the process of calling	
		6	Stop call recording	
		7	Start real-time recording. And the record data output to the the serial port(only support amr format yet)	
	<Files_number>	the number of files		
	<File_name >	The file name, the length of it (not include the suffix)should be less than 10 bytes, when the mode is 2,4, file name need to be input.		
	<len>	The length of file name		

Example	AT+ZAUDREC?
	
	OK
	AT+ZAUDREC=0
	
	OK
	AT+ZAUDREC=1
	
	OK
	AT+ZAUDREC=0,"ZTE1"
		//Read the recording file list, and there is no recording file currently.
		
		//Start recording, and record to the default file named REC.wav
		
		// Stop recording
		
		//Record to the file named ZTE1.wav		

	OK
	AT+ZAUDREC=1
	
	OK
	AT+ZAUDREC=2,"ZTE1"
	
	OK
	
	+ZAUDREC:2,0
	
	AT+ZAUDREC?
	+ZAUDREC:2,REC.wav,25004,ZTE1.wav,25004
	OK
	
	AT+ZAUDREC=4,"REC"
	
	OK
	
	AT+ZAUDREC?
	+ZAUDREC:1,ZTE1.wav,25004
	OK
	
	AT+ZAUDREC=5,"ZTE1"
	
	OK
	
	+ZAUDREC:5,1
		
		// Stop recording
		
		//Broadcast the file named ZTE1.wav
		
		//Broadcast finished, and unsolicited report
		
		// Read the recording file list, and there are two recording files currently.
		
		// Delete the record file of REC.wav
		
		//There is only one file left
		
		// Broadcast the recording “ZTE1.wav” in the process of calling
		
		// Broadcast finished, and unsolicited report

Remark	Unsolicited report syntax: +ZAUDREC:<mode>,<end_cause>	<mode>: the same as above <end_cause>: 0: file broadcast end 1: There is insufficient space for recording 2: Recording space full 3: Idle state 4: Recording 5: Broadcasting When mode=5, 0: End automatically because hang up 1: End automatically because broadcast finished
	Unsolicited report syntax of real-time recording:	Len:the record data length Data:the record content

	\r\n+ZAUDREC:7,Len,Data\r\n	

2.19.2 +ZFILEREAD: Read the file

Description	This command is used to read the recording file		
Syntax	AT+ZFILEREAD=<Filename>[,<Offset>,<Req_len>]	<CR><LF>+ZFILEREAD: <Act_len><CR><LF><CR><LF><Data_content><CR><LF><CR><LF>OK<CR><LF>	Success
		<CR><LF>ERROR<CR><LF>	Fail
		<CR><LF>+ZFILEREAD: <Filename>, <File_len><CR><LF><CR><LF>OK<CR><LF>	When only input filename
	AT+ZAUDREC=?	<CR><LF><OK><CR><LF>	Success
Defined Values	<Filename>	The file name, the length of it (not include the suffix)should be less than 10 bytes, if the file not exist, it will return ERROR.	
	<Offset>	he offset of the data in the file, it's the initial position when reading the file	
	<Req_len>	The length of request reading data, max is 1500	
	<Act_len>	The length of the actual reading	
	<Data_content>	File content, display in hexadecimal	
	<File_len>	File length	
Example	AT+ZAUDREC? +ZAUDREC:1,ZTE1.wav,25004 OK	// Read the recording file list	
	AT+ZFILEREAD="ZTE1"	// Read the information of specific file	
	+ZFILEREAD:ZTE1.wav,25004 OK		
	AT+ZFILEREAD="ZTE1",0,100	// Read the front 100 bytes	
	+ZFILEREAD:100 RIFF WAVEfmt ┼ ┌ ┌	(the content of the file)	

	@ €> □ □ data€a ???? ??? OK	

2.20 MMS Service commands

Note: The MMS function is only supported by the modules whose firmware version is of or above MG2639_V3_DFFF004

2.20.1 +ZMMSSET: Set APN, Gateway and MMS Service Centre

Description	This command is used to set APN,gateway, MMS service centre and port	
Set command	+ZMMSSET=<APN>,<MMSC>,<gateway>,<port>	OK or ERROR
Read command	+ZMMSSET?	+ZMMSSET: <MMSC>,<gateway>,<port> OK
Test command	+ZMMSSET =?	+ZMMSSET: (list of supported <MMSC>s), list of supported<gateway>s, list of supported<port>s OK
Parameters	<APN>: Access Point Name <MMSC>: MMS service centre address <gateway>: Gateway address <port>: Gateway port	

2.20.2 +ZMMSRECP: Set the Recipients Address

Description	Set the Recipients Address, which can be phone number and e-mail address	
Set command	+ZMMSRECP=<Action>,<Address>	OK or +CME ERROR: <err>
Read command	+ ZMMSRECP?	+ ZMMSRECP: 1,List of (Normal Address) + ZMMSRECP: 2,List of (Copy Address) + ZMMSRECP: 3,List of (Secret Address) OK
Test command	+ ZMMRECP =?	+ ZMMSRECP: the list of<Address>s OK

Parameters	<Action> Operate function 0: Delete the specified Recipients Address 1: Set the "TO address" 2: Set the "CC address" 3: Set the "BCC address" <Address> a string which indicates the phone number or email address of recipients. the maximum length of the string is 64
Remarks	1. The total number of recipients can't exceed 30 2. When read the recipients, each type of recipients is interval with semicolon.

2.20.3 +ZMMSSUB: Set the Subject of MMS

Description	Set the Subject of MMS	
Set command	+ZMMSSUB=<Size>,<Timeout>	> ..... OK or ERROR
Read command	+ ZMMSSUB?	+ ZMMSSUB: (Subject) OK
Test command	+ ZMMSSUB =?	+ ZMMSSUB: (list of supported < Size >s),(list of supported < Timeout >s) OK
Parameters	<Size>: The size of MMS subject, max. is 64 bytes <Timeout>: The timeout of receiving, 0 means no timeout	
Remarks	1. MMS subject text only supports ASCII and GB18030 currently 2. When send the set command, the module will enter the mode of data receiving until timeout or receive complete. The received data will be stored in the module to wait encapsulated into MMS packets.	

2.20.4 +ZMMSWRITE: Get Multimedia Files from Serial Port

Description	Get Multimedia Files from Serial Port, such as image, text or audio	
Set command	+ZMMSWRITE=<Type>,<Subtype>,<Size>,<Time>[,<Name>]	> ..... OK or ERROR
Read command	+ ZMMSWRITE?	ERROR

Test command	+ ZMMSWRITE =?	+ ZMMSWRITE: (list of supported <Type>s), (list of supported <Subtype>s), (list of supported <Size>s), (list of supported <Time>s), (list of supported <Name>s) OK
Parameters	<Type>:Multimedia Files type 1:Text 2:Image 3:Audio	
	<Subtype>:Subtype The range of Text's subtype value is 0,that is text/plain The range of Image's subtype value is 0-1,that are image/jpeg and image/gif The range of Audio's subtype value is 0-3,that are audio/midi, audio/amr, audio/wav and audio/mp3	
	<Size>: The size of the received data <Timeout>:The timeout of receiving, 0 means no timeout <Name>:File name, only support ASCII	
Remarks	1. The content of text can't exceed 8k, and only supports ASCII and GB18030, all the files size can't exceed 300k. 2. Please set the timeout is long enough to receive data to avoid receiving failed.请 3. When send the set command, the module will enter the mode of data receiving until timeout or receive complete. The received data will be stored in the module to wait encapsulated into MMS packets	

2.20.5 +ZMMSDEL: Delete the multimedia file received from serial port

Description	Delete the multimedia file received from serial port	
Set command	+ZMMSDEL=<Index>	OK or ERROR
Parameters	<Index>: The index of file	
Remarks	1.If there is no information of files, you can firstly send the command of +ZMMSVIEW to get the basic information of files and then delete the file you want. 2. This command doesn't support delete the files received from the network.	

2.20.6 +ZMMSSEND: Send MMS

Description	Send the MMS to the gateway, if the file is a bit large, the time of sending may be long, but there will be an unsolicited report +ZMMSRATE to show the sending process.

Syntax	+ZMMSSEND	OK or ERROR

2.20.7 +ZMMSRATE: Show the MMS sending process.

Description	Unsolicited report which is used to indicate the process of MMS sending in the format of percentage.	
Syntax	+ZMMRATE:<Rate>	
Parameters	<Rate>:the process of sending, in the format of percentage.	

2.20.8 +ZMMSIND: Push message for MMS Notification

Description	When the module receive the PUSH message for MMS notification, it will report unsolicited result.	
Syntax	+ZMMSIND:<Mem>,<Index>,<Classtype>	
Parameters	<Mem>: the storage position of SMS "SM" - SIM memory storage. <Index>: SMS Index <Classtype>: “MMS PUSH”	

2.20.9 +ZMMSRDPUSH: Read the PUSH Message for MMS Notification

Description	Read the PUSH Message for MMS Notification, if it’s not a push message, it will return ERROR.	
Set command	+ZMMSRDPUSH=<Index>	+ZMMSRDPUSH: <Sender>,<Time>,<TransactionID>,<Subject>,<Location>, <Class>,<Size><CR><LF> OK or ERROR
Test command	+ ZMMSRDPUSH=?	+ ZMMSRDPUSH: (list of supported <index>s) OK
Parameters	<Index>: Message index <Sender>: The address of message sender <Time>: The time of message receiving <Subject>: MMS subject <Transaction ID> MMS transaction ID <Location> MMS location <Class> The class of MMS, it can be: Personal, Advertisement, Informational, Auto <Size>: The size of new MMS which will be received	

2.20.10 +ZMMSRECV: Receive MMS

Description	This command is used to receive MMS. It need to send the command of +ZMMSSET before receiving.	
Set command	+ZMMSRECV=<Index>	+ZMMSRECV: <Sender>,<Time>,<Subject>,<Size><CR><LF> List of (<Index>,<Name>,<Size>)<CR><LF> OK or ERROR
Parameters	<Sender>: The address of message sender <Time>: The time of notification message receiving <Subject>: MMS Subject <Size>: The size of MMS <Index>: The file index <Name>: The file name <Size>: The size of file	

2.20.11 +ZMMSVIEW: Display current MMS information

Description	This command is used to display current MMS information.	
Set command	+ZMMSVIEW	+ZMMSVIEW:<Status>,<Sender/Receipts>,<Subject>,<Time>,<Size><CR><LF> List of (<Index>,<Name>,<Size>)<CR><LF> OK or ERROR
Parameters	<Status>: The MMS status 0: unsent;1: sent; 2: received; <Sender/ Receipts >: The address list of Sender/ Receipts, each of them are separated by “,”; when status is 2, this is the address list of Receipts, otherwise is of the Sender <Subject>: MMS Subject <Time>: Receive MMS Time <Size>: the size of MMS data packet <Index>: The file index <Name>: The file name <Size>: The size of file	

2.20.12 +ZMMSREAD: Read the specified Multimedia file

Description	This command is used to read the specified Multimedia file	
Set command	+ZMMSREAD=<Index>	+ZMMSREAD: <Name>,<Size> File content OK or ERROR
Parameters	<Index>: The index of file, it can be get by the command of +ZMMSVIEW <Name>: The MMS file's name which you want to read <Size>: The MMS file's size which you want to read	
Remarks	In order to avoid output garbled or lost data, the data will be output after translation, such as "a1" corresponding to the "9731"	

3 Application Cases

3.1 SMS Application Case

Note: The inputs are marked in red:

AT+CMGF=1

OK

——Set the message's input mode as text mode.

AT+CMGS="13360504647"<CR>

hallo<ctrl/Z>

+CMGS: 1

OK

——Send one message. "13360504647" is the number of message recipient, and hallo is the message text.

AT+CMGW="13360504647"<CR>

goodbye<ctrl/Z>

+CMGW: 1

OK

——write a message in "SM"."13360504647" is the number of message recipient, and goodbye is the message text. From the returned information +CMGW, we could see that the message is saved to the index 1.

AT+CPMS?

+CPMS: "SM",1,50,"SM",1,50,"SM",1,50

OK

——Check the current memory. From +CPMS, we know there is a message in "SM", which is the newly composed message.

AT+CMGR=1

+CMGR: "STO UNSENT","13360504647",

goodbye

OK

——Read this message with the index No. From the returned information +CMGR, we know that the message is not sent.(" STO UNSENT ").

AT+CMSS=1

+CMSS: 1

OK

——Send the saved message.

AT+CMGR=1

+CMGR: "STO SENT","13360504647",

goodbye

OK

——Read this message with the index No. From the returned information +CMGR, we know that the message has been sent.(" STO SENT ")

AT+CNMI=3,2,0,0,0

OK

——Set the status of newly received message as “Directly display but not save”

+CMT: "+8615986672056","OK","07/08/27,13:23:56+32"

WESDDR

——Receive a new message, which is directly displayed but not saved. "+8615986672056" is the number of message recipient, "07/08/27,13:23:56+32" is the sending time and WESDDR is the message text.

AT+CNMI=3,1,0,0,0

OK

——” Set the status of newly received message as “Save but not display”

+CMTI: "SM", 28

——Receive a new message, which is saved but not displayed. From +CMTI, we know that the message is saved in the index 28 in “SM”.

AT+CMGR=28

+CMGR: "REC UNREAD","15986672056","07/08/27,13:36:48+32"

CDFF

OK

——Read this message with the index No. "REC UNREAD" is the status of the message. "15986672056" is the number of message recipient, "07/08/27, 13:36:48+32" is the sending time and CDFF is the message text.

3.2 Phonebook Application Case

Note: The inputs are marked in red:

AT+CPBS?

+CPBS:"SM",0,200

OK

——Check the current memory. The default phonebook memory is" SM ". From +CPMS, we know that the current phone memory “SM” is empty.

AT+CPBW= 1,"13086672098",129,"john"

OK

——Write a phone entry into current phonebook memory “SM”. “1” represents save by auto searching space. "13086672098" is the telephone number, 120 is the type of phone number, and john is the name.

AT+CPBS?

+CPBS:"SM",1,200

OK

——Check the current memory. From +CPMS, we know that the entry has been stored at the index 1 in the current phone memory “SM”.

AT+CPBR=1

+CPBR: 1,"13086672098",129,"john"

OK

——Read the phonebook entry.

ATD>1;

OK

——Dial the index number in the current phonebook.

ATD>"john";

OK

——Dial the name from the current phonebook.

ATH

OK

——Use ATH to hang up the call.

AT+CPBS =" ME "

OK

——Select "ME" phonebook memory.

AT+CPBS?

+CPBS: "ME",0,18

OK

——Check the current memory. From +CPMS, we know that the current phone memory “ME” is empty.

AT+CPBW= 1,"13086672098",129,"john"

OK

——Write a phone entry into the current phonebook memory “ME”. “1” represents save by auto searching space. "13086672098" is the telephone number, 129 is the type of phone number, and john is the name.

AT+CPBS?

+CPBS:"ME ",1,18

OK

——Check the current memory. From +CPMS, we know that the entry has been stored at the index 1 in the current phone memory “ME”

AT+CPBR=1

+CPBR: 1,"13086672098",129,"john"

OK

——Read this phonebook entry.

3.3 MMS Application Case

Note: The MMS function is only supported by the modules whose firmware version is of or above MG2639_V3_DFFF004

1 MMS Sending

AT+ZMMSSET="cmwap","http://mmsc.monternet.com/","10.0.0.172",80 // Set APN,Gateway and MMS Service Centre

OK

AT+ZMMSRECP=1,"18682113171" // Set the Recipients Address and Operate function

OK

AT+ZMMSSUB=10,0 // Set the Subject of MMS, and the size can't exceed 64bytes.

>

OK

AT+ZMMSWRITE=3,0,7778,30,"midi" //Write the MIDI audio file to the module, which can't exceed 300k

>

OK

AT+ZMMSSEND //Send MMS, in the process of sending, it will report the MMS rate. When the gateway received the MMS successfully and confirm the message is correct, report OK.

+ZMMSRATE: 61

+ZMMSRATE: 73

+ZMMSRATE: 86

+ZMMSRATE: 100

OK

2 MMS Receiving

+ZMMSIND: 41,"SM","MMS PUSH" // When the module receive the PUSH message for MMS notification, it will report unsolicited result.

AT+ZMMSRDPUSH=41 //Read the PUSH Message for MMS Notification

+ZMMSRDPUSH:

18682013070,,PJrkxoWG7XUA,,http://211.136.221.125/PJrkxoWG7XUA,Personal,304885

OK

AT+ZMMSSET="cmwap","http://mmsc.monternet.com/","10.0.0.172",80 // Set APN,Gateway and MMS Service Centre

OK

//Receive the specified MMS, in the process of receiving, it will report the rate of receiving. After receiving finished and the data package parsed successfully, it will report the basic information of MMS files

AT+ZMMSRECV=41

+ZMMSRECV: 18682013070,,,304885

+ZMMSRATE: 10

+ZMMSRATE: 20

+ZMMSRATE: 30

+ZMMSRATE: 40

+ZMMSRATE: 50

+ZMMSRATE: 60

+ZMMSRATE: 70

+ZMMSRATE: 80

+ZMMSRATE: 90

+ZMMSRATE: 100

1,image1.jpg,304360

2,text_1400118197242.txt,27

OK

3 Read the content of MMS

AT+ZMMSVIEW // Display the current MMS information

+ZMMSVIEW: 2,18682013070,,mms,Thu, 15 May 2014 01:43:36 GMT,305197

1,image1.jpg,304360

2,text_1400118197242.txt,18

OK

AT+ZMMSREAD=2 // Read the specified Multimedia file

+ZMMSREAD: text_1400118197242.txt,18

C4E3BAC3A3ACCED2CAC7D6D0B9FAC8CBA3A1

OK

