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MEIG Module

AT Command Set

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1. Introduction

MeiG wireless module products support network standards like TD-LTE/FDD-LTE/TD-SCDMA/WCDMA/EVDO/CDMA/GSM(vary according to different models). Apart from providing high-speed broadband data access, it also provides functions of voice(optional), SMS, address book, GPS, embedded protocol stacks, which can be widely applied in products of mobile broadband access, video surveillance, security and vehicle devices.

1.1 Purpose of this document

This document introduces AT command set supported by MeiG wireless module in detail, including standard AT command set and extended AT commands used by MeiG only.

1.2 Content list

This text includes:

Chapter 1: Introduction of document purpose, references, modified records, commands format and interpretation of terms.

Chapter 2: AT commands of 3GPP TS 27. 007 standard;

Chapter 3: AT commands of ITU-T Rec. V25ter standard;

Chapter 4: AT commands of GPRS standard;

Chapter 5: AT commands of GSM Rec. 07. 05 standard;

Chapter 6: Exclusive commands of UMTS supplier;

Chapter 7: Compatible command of LTE special packet domain modulation and demodulation;

Chapter 8: Expansion commands of FangG;

Chapter 9: Commands in CDMA mode.

1.3 Related documents

1.4 Modified records

Table 1: Modified records

Version	Name	Release Date	Modifying Description
V1. 1	Gao Mingjun	2016-06-17	V1. 1 is the created version

V1. 2	Gao Mingjun	2016-07-27	V1. 2 added related AT commands of PCM
V1. 3	Gao Mingjun	2016-08-01	V1. 3 added related AT commands of FTP
V1. 4	Ding Lei	2016-09-10	V1. 4 modified related examples of FTP、HTTP; modified UARTNMEA command
V1. 5	Wei Wenwen	2016-10-08	V1. 5 added related AT commands of ADCREAD
V1. 6	Hu Wuming	2016-11-04	V1. 6 modified part of unsupported parameters' notes
V1. 7	Yang Xiaojun	2016-11-28	V1. 7 added related AT commands of HTTP cache
V1. 8	Li Shihong	2016-12-06	V1. 8 added AT commands of NV automatic backup
V1. 9	Gao Mingjun	2016-12-21	V1. 9 added ECM dial commands
V2. 0	Wei Wenwen	2017-02-06	V2. 0 modified part of AT returned parameters
V2. 1	Wei Wenwen	2017-02-25	V2. 1 added hardware version number inquiry and modified part of AT returned parameters
V2. 2	Wei Wenwen	2017-03-17	V2. 2 modified part of AT returned parameters
V2. 3	Gao Mingjun	2017-06-07	V2. 3 revised meaning of parameter 8 in ^mode; Revised meaning of AT+mododr=4; Add locking SIM card ICCID command in 8.1.48

1.5 Command format

1. 5. 1 AT command format

1) Each AT command line begins with character AT(some begin with "+") and ends up with <CR>;
2) Each command line consists of one or more commands, separated by semicolon"; ";
3) Standard AT commands comply with standard of GSM Rec. 07. 07、07. 05、3GPP TS 27. 005、27. 007 and ITU-T Rec. V25ter;
4) Each expansion command provides a test command to test whether it exists and the type or range of parameters;
5) Commands with parameters provide a read command to read parameters' current values;
6) Set commands are used for setting parameters and completing corresponding functions.

Figure1 shows the command line structure of MeiG AT commands:

AT CMD1 CMD2=12; +CMD1 ; +CMD2=,, 15; +CMD2?; +CMD2=? <CR>
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①：指令前缀；
②：基本指令；
③：辅助参数；
④：扩展指令(前缀是“+”)；
⑤：扩展指令分界（以“;”分界）；
⑥：辅助参数，可被忽略不写；
⑦：读指令，核对当前的辅助参数值；
⑧：测试指令，可获取参数的类型和范围；
⑨：指令终止符。

Figure 1: Command line structure of AT command

1. 5. 2 AT command syntax

MeiG module command set consists of GSM Rec. 07. 07, 07. 05, 3GPP TS 27. 005, 27. 007, ITU-T Rec. V25ter and expansion command of Signal company. It mainly includes basic syntax and expanded syntax.

1) Basic syntax

The format of basic syntax is AT<x><CR>; <x> is the corresponding command, <CR>

is the command terminator.

eg. ATZ<CR>

2) Expanded syntax

See the following table.

Table 2: types of expanded syntax command

Type	Syntax	Examples
Test command	AT+<x>=?	AT+CMEE=?
Query command	AT+<x>?	AT+CMEE?
Execution command(parameters)	AT+<x>=<…>	AT+CMEE=0
Execution command(no parameters)	AT+<x>	AT+CGSN

1.6 Returned results

1. 6. 1 Returned results of executing AT commands

1) Returned results of executing AT commands begin and end up with <CR> or <LF>, exceptions are ATV0 (returned result is 0<CR>) and ATQ1 (no returned results);
2) Return to character string ERROR if syntax of AT command is wrong;
3) Return to +CME ERROR: <err>(no short message command) or +CMS ERROR: <err>(short message command) if correct command syntax and false parameter appear;
4) Return to OK if AT commands are executed correctly;
5) Character string of specific format will be sent to terminal on receiving short messages; refer to the following introductions of AT command;
6) Set different return results through using AT+CMEE=<…> if returning to false messages; refer to the following introductions.

1.7 Related abbreviations

Table 3: Abbreviations and corresponding Descriptions

Abbreviations	Descriptions
AMR	Adaptive Multi-rate
BER	Bit Error Rate
BTS	Base Transceiver Station
PCI	Peripheral Component Interconnect
CS	Circuit Switched (CS) domain
CSD	Circuit Switched Data
DCE	Data communication equipment
DTE	Data terminal equipment
DTR	Data Terminal Ready
EDGE	Enhanced Data rates for GSM Evolution
EFR	Enhanced Full Rate
EGSM	Enhanced GSM
EMC	Electromagnetworkic Compatibility
ESD	Electrostatic DSCIharge
FR	Frame Relay
GMSK	Gaussian Minimum Shift Keying
GPIO	General Purpose Input Output
GPRS	General Packet Radio Service
GSM	Global Standard for Mobile Communications
HR	Half Rate
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
HSPA	HSPA High-Speed Packet Access
HSPA+	HSPA High-Speed Packet Access+
IEC	International Electro-technical Commission
IMEI	International Mobile Equipment Identity
MEID	Mobile Equipment Identifier
I/O	Input/Output
ISO	International Standards Organization
ITU	International Telecommunications Union

bps	bits per second
LED	Light Emitting Diode
M2M	Machine to machine
MO	Mobile Originated
MT	Mobile Terminated
NTC	Negative Temperature Coefficient
PC	Personal Computer
PCB	Printed Circuit Board
PCS	Personal Cellular System
PCI	Peripheral Component Interconnect
PCM	Pulse Code Modulation
PCS	Personal Communication System
PDU	Packet Data Unit
PPP	Point-to-point protocol
PS	Packet Switched
QPSK	Quadrate Phase Shift Keying
SIM	Subscriber Identity Module
TCP/IP	Transmission Control Protocol/ Internetwork Protocol
UART	Universal asynchronous receiver-transmitter
USIM	Universal Subscriber Identity Module
UMTS	Universal Mobile Telecommunications System
USB	Universal Serial Bus
WCDMA	Wideband Code Division Multiple Access
TD-SCDMA	Time Division-Synchronous Code Division Multiple Access
TD-LTE	Time Division Long Term Evolution
FDD-LTE	Frequency Division Duplexing Long Term Evolution

2. AT commands of 3GPP TS 27. 007 standard

2. 1 Overview

This chapter introduces AT commands of 3GPP TS 27. 007 standard from the following aspects:

General command;

Call control command;

Network service command;

ME control and status command;

ME false reports command;

Commands sent by TIA IS-101.

2. 2 General command

2. 2. 1. Inquire manufacture name: AT+CGMI

Table 4: AT+CGMI operation command

Type	Command	Possible return results	Description
Execution command	AT+CGMI	<manufacturer> OK	DCE returns to manufacture name
Test command	AT+CGMI =?	OK	
Command routine	AT+CGMI	+CGMI: MEIG INCORPORATED OK	
	AT+CGMI =?	OK	

2. 2. 2. Inquire module type: AT+CGMM

Table 5: AT+CGMM operation command

Type	Command	Possible return	Description

		results	
Execution command	AT+CGMM	<model> OK	DCE returns to product mode
Test command	AT+CGMM=?	OK	
Command routine	AT+CGMM	+CGMM: SLM730 OK	Returns to module mode
	AT+CGMM=?	OK	

2. 2. 3. Inquire module version information: AT+CGMR

Table 6: AT+CGMR operation command

Type	Command	Possible return results	Description
Execution command	AT+CGMR	<revision> OK	DCE returns to product firmware version information
Test command	AT+CGMR =?	OK	
Command routine	AT+CGMR	+CGMR: SLM730_2. 0. 2_EQ001 OK	
	AT+CGMR =?	OK	Current version supports the command

2. 2. 4. Inquire product IMEI number: AT+CGSN

Table 7: AT+CGSN operation command

Type	Command	Possible return results	Description
Execution command	AT+CGSN	<sn> OK	DCE returns to IMEI number
Test	AT+CGSN=?	OK	

command			
Command routine	AT+CGSN	869635010008012 OK	
	AT+CGSN=?	OK	Current version supports the command

2. 2. 5. Set DTE character set: AT+CSCS

Set command informs DCE the required characters of DTE to make sure that DCE and DTE convert character string exactly between the agreed character sets.

Table 8: AT+CSCS operation command

Type	Command	Possible return results	Description
Set command	AT+CSCS=<chset>	OK	Success
Query command	AT+CSCS?	+CSCS: <chset> OK	Success
Test command	AT+CSCS=?	+CSCS: (<chset>value list) OK	Return to parameter value list of CSCS command
Command routine	AT+CSCS="GSM"	OK	Set current character set as "GSM"
	AT+CSCS?	+CSCS: "IRA" OK	Inquire current character set
	AT+CSCS=?	+CSCS: ("IRA", "GSM", "UCS2") OK	Parameter value list of CSCS command

Table 9: Detailed description of AT+CSCS parameter

Parameter	Value	Description	
<chset>	"GSM"	GSM 7-bit default character set(3GPP TS 23. 038 [25])	

	["IRA"]	International referenced character set(ITU-T T. 50[13])	
	"PCCPXXX"	PC character set coding page xxx	TBD
	"PCDN"	PC character set in Danish/Norwegian	TBD
	"8859-n"	ISO 8859 character set n(1-6) in Latin	TBD
	"8859-C"	ISO 8859 character set in Latin/Slavic	TBD
	"8859-A"	ISO 8859 character set in Latin/Arabic	TBD
	"8859-G"	ISO 8859 character set in Latin/Greek	TBD
	"8859-H"	ISO 8859 character set in Latin/Hebrew	TBD
	"HEX"	Hex; value range: 00-FF. eg. 052FE6 indicates three 8-bit characters; it becomes 5, 47, 230 respectively if converted to decimal format.	TBD
	"UCS2"	16-bit multi-byte universal character set(ISO/IEC10646 [32]). UCS2 value range: 0000 to FFFF. eg. "004200620063" indicates three 16-bit characters; it becomes 66, 98 and 99 if converted to decimal format.	TBD
	"UTF-8"	Intact UCS character encoding(RFC 3629 [69]) of 8-bit; each UCS character of UTF-8 encoding is a variable bytes and the number of bytes depends on integer value assigned to UCS. Output format is a 8-bit stream and it can't be converted to the hex. The byte need a 8-bit TA-TE interface.	TBD

2. 2. 6. International mobile device identifier IMSI number request: AT+CIMI

Use IMSI to require execution command; DCE returns to <IMSI> and reads enclosed IMSI number of USIM/SIM on mobile devices.

Table 10: AT+CIMI operation command

Type	Command	Possible return	Description

		results	
Execution command	AT+CIMI	<IMSI> OK	<IMSI>is inquired IMSI number
		ERROR/+CME ERROR: <err>	Failure. USIM/SIM card is not in place, initialization is not completed or SIM is locked; enter the pin code or PUK to unlock.
Test command	AT+CIMI=?	OK	USIM/SIM card has initialized
		ERROR/+CME ERROR: <err>	Failure. USIM/SIM card is not in place, initialization is not completed or SIM is locked; enter the pin code or PUK to unlock.
Command routine	AT+CIMI	460011512662442 OK	Return to current IMSI number
	AT+CIMI=?	OK	Current version supports the command
	AT+CIMI	ERROR/+CME ERROR: <err>	Failure. USIM/SIM card is not in place, initialization is not completed or SIM is locked; enter the pin code or PUK to unlock.
	AT+CIMI	ERROR/+CME ERROR: <err>	Failure. USIM/SIM card is not in place, initialization is not completed or SIM is locked; enter the pin code or PUK to unlock.

2. 2. 7. Select wireless network: AT+WS46

The command is used for Wireless Data Service of TA terminal(WDS）

Table 11: AT+WS46 operation command

Type	Command	Possible return results	Description
Set command	AT+WS46=[<n>]	OK	success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+WS46?	<n> OK	
Test command	AT+WS46=?	+WS46: (<n>value list) OK	
Command routine	AT+WS46=12	OK	GSM ONLY
	AT+WS46=22	OK	UMTS ONLY
	AT+WS46?	25 OK	UMTS priority
	AT+WS46=?	+WS46: (12, 22, 25, 28, 29) OK	-

Table 12: Detailed description AT+WS46 parameter

Parameter	Value	Description
<n>	12	GSM network
	22	UMTS network
	[25]	GERAN, UTRAN and E-UTRAN
	28	E-UTRAN only
	29	GERAN and UTRAN

2. 3. Call control command

2. 3. 1. Select address type: AT+CSTA

Set command selects number type of dial command(ATD) according to GSM regulation.

Test command returns to type value supported by DCE.

Table 13: AT+CSTA operation command

Type	Command	Possible return results	Description
Set command	AT+CSTA=[<type>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CSTA?	+CSTA: <type> OK	
Test command	AT+CSTA=?	+CSTA: (<type>value list) OK	
Command routine	AT+CSTA=145	return: OK	Dial character string should include international access code"+"
	AT+CSTA?	+CSTA: 145 OK	
	AT+CSTA=?	+CSTA: (129, 145) OK	Current version support 129, 145 only

Table 14: Detailed description of AT+CSTA parameter

Parameter	Value	Description
<type>8 bit, integer	145	Default value, Dial character string should include international access code"+"
	[129]	Else

2. 3. 2. Call mode: AT+CMOD

Set command is used to select subsequent dial command(ATD) or call mode of next answer command. Both single or alternative mode is ok(Refer to GSM load or telecommunication service; varied services like voice, data and fax can be integrated in a call). In the single mode call and hang up flow is similar to steps of ITU-T

Recommendations V. 25ter[14]. Query command returns to current <mode> value. Test command returns to mode value supported by DCE.

Table 15: AT+CMOD operation command

Type	Command	Possible return results	Description
Set command	AT+CMOD=[<mode>]	ERROR/+CME ERROR: <err>	Error relates to terminal functionality
		OK	Set success
Query command	AT+CMOD?	+CMOD: <mode> OK	
Test command	AT+CMOD=?	+CMOD: (<mode>value list) OK	
Command routine	AT+CMOD?	+CMOD: 0 OK	Current version supports single mode only
	AT+CMOD=0	OK	
	AT+CMOD=?	+CMOD: (0) OK	

Table 16: Detailed description of AT+CMOD parameters

Parameter	Value	Description	
<mode>	[0]	Single mode	
	1	Voice/fax alternative mode(telecom service 61)	TBD
	2	Voice/data alternative mode(bearer service 61)	TBD
	3	Data follow voice mode(bearer service 81)	TBD

In alternative mode, value of AT+CMOD will be set to 0 whether call succeeded or failed, whether power on, shipment(&F) or user-defined resetting.

2. 3. 3. Telephone dial: ATD

2. 3. 3. 1. Call off reporting information command ^DSCI

Report command actively; SLM730 will report connecting hang-up information in +DSCI

format if a call ends.

Table 17: ^DSCI report command

Type	Command	Possible return results	Description
Report command	^DSCI:	^DSCI: <id>, <idr>, <stat>, <type>, <number>, <num_type>,	
Command routine	ATD10086;	ATD10086; OK ^DSCI: 1, 0, 2, 0, 10086, 0	

Table 18: Detailed description of ^DSCI parameter

Parameter	Description
<id>	Link Id, value[0-30]
<idr>	Call direction, 0 originating call, 1 incoming call
<stat>	Value [1-6], 1 indicates CALL_ACTIVATING, 2 indicates CALL_ORIG, 3 indicates CALL_CONNECT, 4 indicates CALL_INCOM, 5 indicates CALL_WAITING, 6 indicates CALL_END
<type>	Value [0, 1], 0 indicates voice, 1 indicates non-voice(data)
<number>	Number
<num_type>	Number type, eg. 0 indicates unknown, 1 indicates international numbers, 2 indicates domestic number, etc.

2. 3. 3. 2. Mobil originated call: ATD[<dial_string>][;]

Execution command is used to establish originated call of voice, data or fax, or control supplementary services. The command may cease to execute if it receives ATH command in the process of execution. It continues to execute in some status of establishing connection(eg. Signal exchange).

Table 19: ATD[<dial_string>][;] operation command

Type	Command	Possible return	Description	

		results		
Execution command	ATD[<dial_string>][;]	ERROR/ +CME ERROR: <err>	Error relates to ME functionality	
		BUSY	Busy(parameter ATX3)	
		NO CARRIER	Connecting failure	
		CONNECT<text>	TA shifts to data status if non-voice call connects successfully. Note: output <text> and return to result only when ATX parameter is greater than 0.	
		OK	The first OK indicates ATD command is executed successfully. TA returns to command mode.	TBD
		OK	Return to second OK if connection succeeds as a voice call.	
Command routine	ATD10086;	atd10086; OK ^DSCI: 2, 0, 2, 0, 10086, 0 SIGNALIND: 1 +NWTYPEIND: 33 SIGNALIND: 5 ^MODE: 3, 2	-	

		CONNECT ^DSCI: 2, 0, 3, 0, 10086, 0		

Table 20: Detailed description of ATD[<dial_string>][;] parameter

Description	
<dial_string>	Dial digit character string and optional V. 25ter modified amounts(dial digit): 0 ~ 9, *, #, +, A, B, C. V. 25ter modified amounts: negligible: , (comma), T, P, !, W and @
	Use general emergency call number 112 if there is a emergency call; USIM/SIM card is not required.
[;]	Used to establish voice call only. DCE command mode remains unchanged.

Check current status of all calls at any time by using AT+CLCC command.

2. 3. 3. 3. Originating call: ATD><str>[I][G];

The command is used for making calls according to names in the phonebook. AT+CPBR command is executed first and it's used to find specific user character string<str> in current phonebook. Dial corresponding number if the finding item exists. Set current phonebook by using AT command AT+CPBS; AT+CPBW is used to write specific user character string in phonebook. TA attempts to call stored numbers. The command continues to execute in some status of establishing connection(eg. Signal exchange). The returned results is the same as ATD[<dial_string>][;].

Table 21: ATD><str>[I][G] operation command

Type	Command	Possible return results	Description
Execution command	ATD><str>[I][G][;]	ERROR/+CME ERROR: <err>	Error relates to ME functionality
		BUSY	Busy (parameter ATX3)
		NO CARRIER	Connecting failure
		OK	The first OK indicates ATD

			command is succeeded. TA returns to command mode.
		OK	Return to second OK if connection succeeds as a voice call.
Command routine	ATD>"TEST"; Dial number named TEST	OK ^DSCI: 2, 0, 2, 0, 15091582551, 0 SIGNALIND: 1 +NWTYPEIND: 34 SIGNALIND: 5 ^MODE: 3, 3	Find the user in phonebook and the call gets through
		ERROR	Unable to find the user in phonebook

Table 22: Detailed description of ATD><str>[I][G] parameter

Parameter	Description
<str>	Character type: should be the same as at least one field(use mixed alpha-numeric mode) in the searched memory, and use character set selected by AT+CSCS command. In the following two cases, <str> must be put in double quote. Otherwise double quote is optional. Use escape character or parameter[I]、[G], mixed alpha-numeric character, or strings with space.
[I]	Ignore the default value of the call caller identification supplementary service registration; I = request(forbid your own cellphone number to display in called cellphone); -- TBD i = restriction(allow your own cellphone number to display in called

	cellphone); Refer to "call identify restriction: AT+CLIR" command
[G]	Control the call's CUG supplementary service; use collection of index and information value by sending AT+CCUG command: G=activate closed user group request for the call only. G= activates only closed user group requests for this call; G= only activates the closed user group request for this call; Refer to "closed user group: AT+CCUG" command
[;]	Semicolon can't be omitted for voice call supports phonebook dial only.

2. 3. 3. 4. Redial last call number: ATDL[;]

The command is used to redial ATD last call number.（To be realized）

Table 23: ATDL operation command

Type	Command	Possible return results	Description
Execution command	ATDL[;]	ERROR/+CME ERROR: <err>	No last called number or it is invalid
		BUSY	Busy (parameter ATX3)
		NO CARRIER	Connecting failure
		CONNECT<text>	TA switches to data status if non-voice call connects successfully. Note: output <text> and return to result only when ATX parameter is greater than 0.
		OK	The first OK indicates ATD command is succeeded. TA returns to command mode.
		OK	Return to second OK if connection succeeds as a voice call.
Command routine	ATDL;	ATDL; OK ^DSCI: 2, 0, 2, 0,	-TBD

		15091582551, 0 SIGNALIND: 1 +NWTYPEIND: 34 SIGNALIND: 5 ^MODE: 3, 3	

2. 3. 3. 5. Call Mem<n> number: ATD>mem<n>[I][G][;]

Execution command is used to dial numbers in given phonebook. Abbreviation consists of two letters should be entered into phonebook <mem> when making a call, followed by memory unit of required item. TA attempts to call selected numbers. The command continues to execute in some status of establishing connection(eg. Signal exchange).

Table 24: ATD>mem<n>[I][G] operation command

Type	Command	Possible return results	Description
Execution command	ATD>mem<n>[I][G][;]	ERROR/+CME ERROR: <err>	Error relates to ME functionality
		BUSY	Busy (parameter ATX3)
		NO CARRIER	Connecting failure
		OK	The first OK indicates ATD command is succeeded. TA returns to command mode.
		OK	Return to second OK if connection succeeds as a voice call.
Command routine	ATD>SM3; Dial	ATD>SM3; OK	Number exists and call gets through

	number stored in fourth unit in SIM phonebook	^DSCI: 2, 0, 2, 0, 10086, 0 SIGNALIND: 1 +NWTYPEIND: 33 SIGNALIND: 5 ^MODE: 3, 2 CONNECT ^DSCI: 2, 0, 3, 0, 10086, 0	
		ERROR	Number does not exist
	ATD>DC2; Dial last number stored in second unit in SIM phonebook	OK ^DSCI: 2, 0, 2, 0, 15191582771, 0 SIGNALIND: 1 +NWTYPEIND: 34 SIGNALIND: 5 ^MODE: 3, 3	Number exists and call gets through
		ERROR	Number does not exist

Table 25: Detailed description of ATD>mem<n>[I][G] parameter

Parameter	Value	Description	
<mem> Phonebook	"MT"	Merging of ME phonebook and condensed bits dialing phonebook(non-standard) includes ME and	TBD

		SIM phonebook(storage capability depends on SIM card, but actually EM310 does not have a ME phonebook)	
	"FD"	SIM fixed dialing number phonebook(open of the function and storage capability depend on SIM card)	TBD
	"DC"	ME phonebook of last dialed numbers(non-standard)	TBDSM, ME unit description
	"MC"	ME phonebook of last missed numbers(non-standard)	
	"RC"	ME phonebook of last replied numbers(non-standard)	
	"ON"	Number of this phone(MSISDN); storage capability depends on SIM card	TBD
	"EN"	Emergency call number phonebook(open of the function and storage capability depend on SIM card)	
	"SD"	Service dialing number phonebook(open of the function and storage capability depends on SIM card)	TBD
<n>	-	A memory cell that is within the range of available memory cells in the selected memory, such as the index number that can be returned using AT+CPBR	
[I]	-	Ignore the default value of the call caller identification supplementary service registration; I = request(forbid your own cellphone number to display in called cellphone); i = restriction(allow your own cellphone number to display in called cellphone); Refer to “call identify restriction”: AT+CLIR" command	I-TBD
[G]	-	Control the call’s CUG supplementary service; use collection of index and information value by sending AT+CCUG command:	

		G= activates only closed user group requests for this call; G= only activates the closed user group request for this call; Refer to "closed user group: AT+CCUG" command	
[;]	-	Semicolon can't be omitted for voice call support phonebook dial only.	

Emergency call does not have<mem>;

The command does not apply to data call; any data call dialed from <mem> will return to "+DSCI: 1, 0, 0, 31, "…", 129";

Parameter [I] or [G] is only applied when there is no *# codes in dialing character string;

ATD command with *# code will be treated as voice call, so the command must be end up with semicolon;

Refer to ATX command in "ITU-T Rec. V25ter AT command", chapter 3 about detailed description of results code and call monitor parameter.

Refer to 2. 3. 2 mobile station calling a number: ATD.

2. 3. 3. 6. Call storage unit<n>number: ATD><n>[I][G] [;]

The command is used for making a call to numbers in storage unit<n>; execution command is used to dial numbers in current storage. Test command AT+CPBS=? in "selecting phonebook" can be used to query available memory. Enter required number's location when making a call. Each phonebook's location value range can be queried through AT+CPBR.

TA attempts to call selected numbers. Usually the command will be terminate if receiving characters in the executing process. But the command continues to execute in some status of establishing connection(eg. Signal exchange).

Table 26: ATD><n>[I][G] operation command

Type	Command	Possible return results	Description
Execution command	ATD><n>[I][G][;]	ERROR/+CME ERROR:	Error relates to ME functionality

		<err>	
		BUSY	Busy (parameter ATX3)
		NO CARRIER	Connecting failure
		OK	The first OK indicates ATD command is succeeded. TA returns to command mode.
		OK	Return to second OK if connection succeeds as a voice call.
Command routine	AT+CPBS= "SM" ATD>2;	ATD>2; OK ^DSCI: 1, 0, 2, 0, 15191582336, 0 ^DSCI: 1, 0, 6, 0, 15191582336, 0 BUSY	Initiate a call to storage unit 2 of SIM card but not connected
		ATD>2; OK ^DSCI: 1, 0, 2, 0, 15191582636, 0 CONNECT ^DSCI: 1, 0, 3, 0, 15191582336, 0	Initiate a call to storage unit 2 of SIM card and connected
		ERROR	ERROR

Table 27: Detailed description of ATD><n>[I][G] parameter

Parameter	Value	Description
<n>	-	A memory cell that is within the range of available memory cells in the selected memory, such as the index number that can be returned using AT+CPBR
[I]	-	Ignore the default value of the call caller identification supplementary service registration;

		I = request(forbid your own cellphone number to display in called cellphone); i = restriction(allow your own cellphone number to display in called cellphone); Refer to "call identify restriction: AT+CLIR" command
[G]	-	Control the call's CUG supplementary service; use collection of index and information value by sending AT+CCUG command: G= only activates closed user group requests for this call; G= only activates the closed user group request for this call; Refer to "closed user group: AT+CCUG" command
[;]	-	Semicolon can't be omitted for voice call support phonebook dial only.

2. 3. 4. Call hanging up(voice): AT+CHUP

Table 28: AT+CHUP operation command

Type	Command	Possible return results	Description
Execution command	AT+CHUP	OK	Cancel or hang up current call
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CHUP=?	OK	-
Command routine	AT+CHUP	AT+CHUP OK ^DSCI: 2, 0, 6, 0, 10086, 0 +NWTYPEIND: 41 SIGNALIND: 4 ^MODE: 9, 10	Hang up successfully

AT+CHUP is used during the call(the two parties have established call connection); calls

that do not get through is not included.

Function of AT+CHUP is a subset of ATH, not exactly the same as ATH.

2. 3. 5. Select bearer service type: AT+CBST

The command is used to set command and select bearer service<name> with data speed<speed> and linking elements<ce> when initiating data calls. Use the following values when mobile terminal ends data call, especially when the code is single; refer to AT+CSNS for detailed information. Test command returns to compound value supported by TA.

Table 29: AT+CBST operation command

Type	Command	Possible return results	Description
Set command	AT+CBST=[<speed > [, <name>[, <ce>]]]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CBST?	+CBST: <speed>, <name>, <ce> OK	-
Test command	AT+CBST= ?	+CBST: (<speed>value list), (<name>value list), (<ce>value list) OK	-
Command routine	AT+CBST= 0, 0, 1	OK	-
	AT+CBST?	+CBST: 0, 0, 1 OK	-
	AT+CBST= ?	+CBST: (0, 7, 12, 14, 16, 17, 39, 43, 48, 51, 71, 75, 80, 81, 83, 84, 116, 134), (0, 1, 4), (0, 1) OK	-

Table 30: Detailed description of AT+CBST parameter

Parameter	Value	Description
<speed>	[0]	Set automatic baud rate
	1	300bps (V. 21)
	2	1200bps (V. 22)
	3	1200/75bps (V. 23)
	4	2400bps (V. 22bis)
	5	2400bps (V. 26ter)
	6	4800bps (V. 25)
	7	9600bps (V. 25)
	12	9600bps (V. 34)
	14	14400bps (V. 34)
	15	19200 bps (V. 34)
	16	28800 bps (V. 34)
	17	33600 bps (V. 34)
	34	1200 bps (V. 120)
	36	2400 bps (V. 120)
	38	4800 bps (V. 120)
	39	9600 bps (V. 120)
	43	14400 bps (V. 120)
	47	19200 bps (V. 120)
	48	28800 bps (V. 120)
	49	38400 bps (V. 120)
	50	48000 bps (V. 120)
	51	56000 bps (V. 120)
	65	300bps (V. 110)
	66	1200bps (V. 110)
	68	2400bps (V. 110 or X. 31 flag stuffing)
	70	4800bps (V. 110 or X. 31 flag stuffing)
	71	9600bps (V. 110 or X. 31 flag stuffing)
	75	14400bps (V. 110 or X. 31 flag stuffing)

	79	19200 bps (V. 110 or X. 31 flag stuffing)
	80	28800 bps (V. 110 or X. 31 flag stuffing)
	81	38400 bps (V. 110 or X. 31 flag stuffing)
	82	48000 bps (V. 110 or X. 31 flag stuffing)
	83	56000 bps (V. 110 or X. 31 flag stuffing; this setting can be used in conjunction with asynchronous non-transparent UDI or RDI service in order to get FTM)
	84	64000 bps (X. 31 flag stuffing; this setting can be used in conjunction with asynchronous nontransparent UDI service in order to get FTM)
	115	56000 bps (bit transparent)
	116	64000 bps (bit transparent)
	120	32000 bps (PIAFS32k)
	121	64000 bps (PIAFS64k)
	130	28800 bps (multimedia)
	131	32000 bps (multimedia)
	132	33600 bps (multimedia)
	133	56000 bps (multimedia)
	134	64000 bps (multimedia)
<name>	[0]	Asynchronous data circuit (UDI or Modem of 3. 1 kHz)
	1	Synchronous data circuit (UDI or Modem of 3. 1 kHz)
	2	PAD Access (asynchronous) (UDI)
	3	Packet Access (synchronous) (UDI)
	4	data circuit asynchronous (RDI)
	5	data circuit synchronous (RDI)
	6	PAD Access (asynchronous) (RDI)
	7	Packet Access (synchronous) (RDI)
<ce>	0	Transparent transmission
	[1]	Non-transparent transmission
	2	both, transparent preferred
	3	both, non-transparent preferred

2. 3. 6. Wireless link protocol: AT+CRLP

Initiate non-transparent data transmission call when setting commands; return to current settings supported by RLP, version 1 when inquiring commands.

Table 31: AT+CRLP operation commands

Type	Command	Possible return results	Description
Set command	AT+CRLP=[<iws>[, <mws> [, <T1>[, <N2>[, <ver>[, <T4>]]]]]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CRLP?	+CRLP: <iws>, <mws>, <T1>, <N2> OK	-
Test command	AT+CRLP=?	+CRLP: (<iws> value list), (<mws>value list), (<T1>value list), (<N2>value list) (<ver>value list), (<T4>value list) OK	-
Command routine	AT+CRLP	OK	-
	AT+CRLP?	+CRLP: 61, 61, 48, 6, 0 +CRLP: 61, 61, 48, 6, 1 +CRLP: 240, 240, 52, 6, 2 OK	-
	AT+CRLP=?	+CRLP: (0-61), (0-61), (38-255), (1-255), 0 +CRLP: (0-61), (0-61), (38-255), (1-255), 1 +CRLP: (0-488), (0-488),	-

		(42-255), (1-255), 2 OK	

Table 32: Detailed description of AT+CRLP parameter

Parameter	Value	Description	
<iws>	0 ~ [61]	Size of interacting window(from IWF to MS)	
<mws>	0 ~ [61]	Size of moving window(from MS to IWF)	
<T1>	38~[48]-255	Confirm timer	
<N2>	1~[6]-255	Resent times N2	
<ver>	-	RLP version	Note: no value range
<T4>	-	Re-sequencing period	Note: no value

2. 3. 7. Service report control: AT+CR

Setting command is used to control whether intermediate result code +CR: <serv> returns to TE from TA. If yes, the intermediate result code will be transmitted at some point of connecting process. Meanwhile, TA has decided required service's rate and quality during the connecting transmission before controlling transmission error or reporting data compression, and before transferring intermediate result code CONNECT.

Table 33: AT+CR operation commands

Type	Command	Possible return results	Description
Set command	AT+CR=[<mode>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CR?	+CR: <mode> OK	-
Test command	AT+CR=?	+CR: (<mode>value list) OK	-
Command routine	AT+CR=0	OK	-
	AT+CR?	+CR: 0 OK	-
	AT+CR=?	+CR: (0, 1) OK	-

Table 34: Detailed description of AT+CR parameter

Parameter	Value	Description
<mode>	[0]	Disable reporting
	1	Enable reporting

The command replaced control command +MR of modulation report from V. 25ter [14]; the latter is not suitable for GSM network;

Using of error control reporting command +ER and data compression reporting command +DR of V. 25ter can enable error control reporting(not wireless link protocol) and data compression reporting.

2. 3. 8. Expanded error report: AT+CEER

Execute the command and TA returns to information text<report> of one or more line. The number of lines is up to ME manufacture.

ME manufacture provides extended report for TA users for the following reasons:

The last call is failed (initiate or reply) or the call is modified;

The last call is released;

The last GPRS attaches or PDP context fails to activate;

The last GPRS detaches or PDP context deactivates.

Table 35: AT+CEER operation command

Type	Command	Possible return results	Description
Execution command	AT+CEER	+CEER: <report> OK	-
Test command	AT+CEER=?	OK	-
Command routine	AT+CEER	+CEER: Client ended call OK	Note: +CEER: Normal call clearing OK
	AT+CEER=?	OK	-

Table 36: Detailed description of AT+CEER parameter

Parameter	Value
<report>	Includes line terminator; information text includes at most 2041 characters and sequences O<CR> or OK<CR> are not included.

2. 3. 9. Cellular results code: AT+CRC

Setting command is used to control commands or to activate PDP context request or VBS/VGCS GPRS network to notice whether the use of extended format. If the use of the format, you will use the +CRING: <type> to unsolicited result code commands to call TE, instead of using general RING reported.

Table 37: AT+CRC operation command

Type	Command	Possible return results	Description
Set command	AT+CRC=[<mode>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CRC?	+CRC: <mode> OK	-
Test command	AT+CRC=?	+CRC: (<mode>value list) OK	-
Command routine	AT+CRC=1	OK +CRING: VOICE NORMAL END	Incoming report is +CRING: VOICE after setting as expanded format Note: actual return result has no report NORMAL END
	AT+CRC?	+CRC: 0 OK	-
	AT+CRC=?	+CRC: (0, 1)	-

		OK	

Table 38: Detailed description of AT+CRC parameter

Parameter	Value	Description
<mode>	[0]	Disable expanded format
	1	Enable expanded format
<type>	ASYNC	asynchronous transparent transmission
	SYNC	synchronous transparent transmission
	REL ASYNC	asynchronous non-transparent transmission
	REL SYNC	synchronous non-transparent transmission
	FAX	FAX
	VOICE	VOICE
	VOICE/XXX	Data follow VOICE
	ALT VOICE/XXX	Alternative voice/data; voice preferred
	ALT XXX/VOICE	Alternative data/voice; data preferred
	ALT VOICE/FAX	Alternative voice/fax; voice preferred
	ALT FAX/VOICE	Alternative fax/voice; fax preferred
	GPRS	Network request to activate PDP context by GPRS
	VGC	Voice group call
	VBC	Voice broadcast call

2. 3. 10. HSCSD non-transparent call configuration: AT+CHSN

Set command and control parameter initiated by non-transparent HSCSD call; parameter value can be used to establish data call by cellphone. Changing of <topRx> or <codings> value has no influence on current call under GERAN; changing of <wAiur> or <wRx> has an influence on current value only when <topRx> is non-zero.

Table 39: AT+CHSN operation command

Type	Command	Possible return results	Description
Set command	AT+CHSN=[<wAiur>[, <wRx>[, <topRx>[, <codings>]]]]		
Query command	AT+CHSN?	+CHSN: <wAiur>, <wRx>, <topRx>, <codings>	
Test command	AT+CHSN=?	+CHSN: (list of supported <wAiur>s), (list of supported <wRx>s), (list of supported <topRx>s), (list of supported <codings>s)	-
Command routine	AT+CHSN=0, 0, 0, 0	OK	-
	AT+CHSN?	+CHSN: 0, 0, 0, 0 OK	-
	AT+CHSN=?	+CHSN: (0-2, 4, 7), (0), (0), (0) OK	-

Table 40: Detailed description of AT+CHSN parameter

Parameter	Value	Description
<wAiur>	[0]	Integer type; required user rate using air-interface. Default value 0 indicates TA should calculate a appropriate value according to current fixed network user rate(From <speed> subparameter of the +CBST command)and +CHSD command <codings> or <wRx> (or<maxRx> if <wRx> = 0)
	1	9600bps
	2	1400bps
	3	19200bps
	4	28800bps
	5	38400bps
	6	43200bps
	7	57600bps
<wRx>	[0]	Integer type; receive number of slots whenever needed.

		Default value 0 indicates TA should calculate a appropriate value according to current <wAiur> and <codings>. The parameter is not suitable for UTRAN or UE from E-UTRAN.
<topRx>	[0]	Integer type; the maximum value of <wRx> and a request when user establishes the next non-transparent HSCSD call. Default value 0 indicates user will not change <wAiur>/<wRx> in the next use. The parameter is not suiTable for UTRAN or UE from E-UTRAN.
<codings>	[0]	Total sum of channel coding integer called by non-transparent HSCSD. Default value 0 indicates receiving all supported codes(see +other value CHSD command). The parameter is not suitable for UTRAN or UE from E-UTRAN.

2. 3. 11. Voice hang up control: AT+CVHU

Set command; choose whether to hang up voice link using ATH or "drop DTR". Linking by voice means current voice mode is alternative mode.

Table 41: AT+CVHU operation command

Type	Command	Possible return results	Description
Set command	AT+CVHU=[<mode>]		-
Query command	AT+CVHU?	+CVHU: <mode>	
Test command	AT+CVHU=?	+CVHU: (list of supported <mode>s)	-
Command routine	AT+CVHU=0	OK	-
	AT+CVHU?	+CVHU: 0 OK	-
	AT+CVHU=?	+CVHU: (0-1) OK	-

Table 42: Detailed description of AT+CRC parameters

Parameters	Value	Description
<mode>	[0]	Ignore "drop DTR" but give OK response, ATH to hand up
	1	Ignore "drop DTR" and ATH, but give AT response
	2	Decide "drop DTR" acts according to &D settings, ATH to hand up

2. 3. 12. Rate adaption protocol: AT+CV120

Set command; set parameter value for V. 120 protocol(CCITT V. 120 [36]).

Table 43: AT+CV120 operation command

Type	Command	Possible return results	Description
Set command	AT+CV120=[<rah>[, <mfm>[, <mode>[, <llineg>[, <assign>[, <negtype>]]]]]]		
Query command	AT+CV120?	+CV120: <rah>, <mfm>, <mode>, <llineg>, <assign>, <negtype>	
Test command	AT+CV120=?	+CV120: (list of supported <rah>s), (list of supported <mfm>s), (list of supported <mode>s), (list of supported <llineg>s), (list of supported<assign>s), (list of supported <negtype>s)	-
Command routine	AT+CV120=1, 1, 1, 0, 0, 0	OK	-
	AT+CV120?	+CV120: 1, 1, 1, 0, 0, 0 OK	-
	AT+CV120=?	+CV120: (1), (0-1), (1), (0), (0), (0) OK	-

Table 44: Detailed description of AT+CV120 parameter

Parameter	Value	Description
<rah>	0	Not include rate adaption head
	[1]	include rate adaption head (sensitive mode in forcing protocol)
<mfm>	0	Not allow multi-frames to be established; allow UI frame only
	[1]	Allow multi-frames to be established; allow I and UI frame
<mode>	0	Bit transparent mode operation
	[1]	Protocol sensitive mode operation
<llineg>	[0]	No negotiation, LLI=256
	1	Allow negotiation
<assign>	[0]	Message initiator is default assignee
	1	Message initiator assign only
<negtype>	[0]	Use logical link, no negotiation
	1	By connecting user temporary signaling information

Note: GSM/UMTS do not support all possible mode operation of V. 120. To adapt future potential increase, the command includes a group of complete parameters. Allowed value: 1, 1 or 0, 1, 0, 0, 0. Recommended setting for default value: 1, 1, 1, 0, 0, 0.

2. 3. 13. Print IP address format: AT+CGPIAF

Set command to decide the format of printing IPV6 address parameters. Refer to RFC4291[88]for detailed IPV6 address format.

Table 45: AT+CGPIAF operation command

Type	Command	Possible return results	Description
set command	AT+CGPIAF=[<IPv6_AddressFormat>[,<IPv6_SubnetworkNotation>[,		

	<IPv6_LeadingZeros>, <IPv6_CompressZeros>]]]]		
Query command	AT+CGPIAF?	+CGPIAF: <IPv6_AddressFormat>, <IPv6_SubnetworkNotation>, <IPv6_LeadingZeros>, <IPv6_CompressZeros>	
Test command	AT+CGPIAF=?	+CGPIAF: (list of supported <IPv6_AddressFormat>s), (list of supported <IPv6_SubnetworkNotation>s), (list of supported <IPv6_LeadingZeros>s), (list of supported <IPv6_CompressZeros>s)	-
Command routine	AT+CGPIAF=0, 0, 0, 0	OK	-
	AT+CGPIAF?	AT+CGPIAF? +CGPIAF: 0, 0, 0, 0	-
	AT+CGPIAF=?	+CGPIAF: (0-1), (0-1), (0-1), (0-1) OK	-

Table 46: Detailed description of AT+CGPIAF parameter

Parameter	Value	Description
<IPv6_Address Format>	[0]	Use IPv4 point tagged format. Use solid circles to split IP address and subnetwork mask. eg: <remote address and subnetwork mask>: "32. 1. 13. 184. 0. 0. 205. 48. 0. 0. 0. 0. 0. 0. 0. 0. 255. 255. 255. 255. 255. 255. 255. 255. 240. 0. 0. 0. 0. 0. 0. 0. 0" For other IP address parameters: "32. 1. 13. 184. 0. 0. 205. 48. 0. 0. 0. 0. 0. 0. 0. 0"
	1	Use IPv6 colon tagged format. Use space to split IP address and subnetwork mask. For <remote address and subnetwork mask>:

		"2001: 0DB8: 0000: CD30: 0000: 0000: 0000: 0000 FFFF: FFFF: FFFF: FFF0: 0000: 0000: 0000: 0000" For other IP address parameters: "2001: 0DB8: 0000: CD30: 0000: 0000: 0000: 0000"
<IPv6_Subnetwork Notation>	[0]	IP address and subnetwork mask are explicitly given and are split by space. eg: "2001: 0DB8: 0000: CD30: 0000: 0000: 0000: 0000 FFFF: FFFF: FFFF: FFF0: 0000: 0000: 0000: 0000"
	1	Print and output format use/identify CIDR subnetwork prefixes eg: "2001: 0DB8: 0000: CD30: 0000: 0000: 0000: 0000/60"
<IPv6_LeadingZeros>	[0]	Ignore leading zeros eg: "2001: DB8: 0: CD30: 0: 0: 0: 0"
	1	Include leading zeros eg: "2001: 0DB8: 0000: CD30: 0000: 0000: 0000: 0000"
<IPv6_CompressZeros>	[0]	No Compress Zeros eg: "2001: DB8: 0: CD30: 0: 0: 0: 0"
	1	Use Compress Zeros eg: "2001: DB8: 0: CD30:: "

2. 3. 14. Emergency telephone numbers: AT+CEN

The command allow read emergency numbers of dynamic report from network. Emergency numbers do have to be registered to same <mcc> and <mnc>.

Read command and return to intermediate results code + CEN1: <reporting> , <mcc> and <reporting> setting and mobile national code<mcc> in one line. Follow zero or

more emergency numbers and intermediate results code + CEN2: <cat>, <number>.

Setting commands can report new emergency numbers from network side.

Table 47: AT+CEN operation command

Type	Command	Possible return results	Description
Set command	AT+CEN=[<reporting>]		
Query command	AT+CEN?	+CEN1: <reporting>[, <mcc>, <mnc>] <CR><LF>[+CEN2: <cat>, <number> [<CR><LF>+CEN2: <cat>, <number> [. . .]]]	
Test command	AT+CEN=?	+CEN: (list of supported <reporting>s)	-
Command routine	AT+CEN=0	OK	-
	AT+CEN?	+CEN1: 0, 460, 1 OK	-
	AT+CEN=?	+CEN: (0-1) OK	-

Table 48: Detailed description of AT+CEN parameters

parameter	Value	Description
<reporting>	[0]	No Reporting
	1	Reporting
<mcc>		A three digit number indicates mobile national code
<mnc>		A three digit number indicates mobile network code
<cat>		Bitmap indicates emergent service type, (3GPP TS 24. 008 [8] Table 10. 5. 135d)
<number>		Emergency number

2. 3. 15. Voice call mode: AT+CVMOD

Set command and select voice call mode. Voice call mode can be CS_ONLY、VOIP_ONLY、CS_PREFERRED or VOIP_PREFERRED.

Note1:

If call mode is CS_ONLY, ATD command will dial in the CS mode;

If call mode is VOIP_ONLY, ATD command will dial using VoIP;

If call mode is CS_PREFERRED, ATD command is prior to voice call based on CS;

If call mode is VOIP_PREFERRED, ATD command is prior to voice call based on VoIP;

Priority setting is not suitable for emergency call;

Priority setting is not suitable if the operator has set UE to initiate a call/dialogue.

Table 49: AT+CVMOD operation command

Type	Command	Possible return results	Description
set command	AT+CVMOD=[<voice_ mode>]		
Query command	AT+CVMOD?	+CVMOD: <voice_mode>	
Test command	AT+CVMOD=?	+CVMOD: (list of supported <voice_mode>s)	-
Command routine	AT+CVMOD=2	OK	-
	AT+CVMOD?	+CVMOD: 2 OK	-
	AT+CVMOD=?	+CVMOD: (0-3) OK	-

Table 50: Detailed description of AT+CVMOD parameter

Parameter	Value	Description
<voice_mode>	0	CS_ONLY
	1	VOIP_ONLY
	[2]	CS_PREFERRED
	3	VOIP_PREFERRED

2. 4. Network service command

2. 4. 1. User number: AT+CNUM

Execution command returns to user-related MSISDN(Mobile Station International ISDN Number); the information can be stored in SIM card and ME. If user has various MSISDN to meet different service requirements, each MSISDN takes a line and returns.

Table 51: AT+CNUM operation command

Type	Command	Possible return results	Description
Execution command	AT+CNUM	+CNUM: [<alpha1>], <number1>, <type1>[, <speed>, <service> [, <itc>]][<CR><LF> +CNUM: [<alpha2>], <number2>, <type2>[, <speed>, <service> [, <itc>]][. . .]] OK	Success
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CNUM =?	OK	
Command routine	AT+CNUM	+CNUM: "abc", "13601896411", 129 OK	-note: no number returns, only returns to: OK
	AT+CNUM =?	OK	-

Table 52: Detailed description of AT+CNUM parameters

Parameter	Value	Description
<alphax>	-	Relates to <numberx>; optional; mixed alpha-numeric character string. "select TE character set" command and character set selected by+CSCS
<numberx	-	Character type telephone number specified by <typex>

>		
<typex>	-	8 bit address type of integer(refer to GSM 04. 08 [8]Chapter 10. 5. 4. 7)
<speed>	-	Refer to AT+CBST
<service> service relates to telephone number	0	Asynchronous modem
	1	Synchronous modem
	2	PAD access(synchronous)
	3	Packet access(asynchronous)
	4	Voice
	5	Fax
<itc> Information transmission capability	0	3. 1kHz
	1	UDI

2. 4. 2. Network register information: AT+CREG

Set command to control +CREG active reporting.

If <n>=1 and network register status changes, report +CREG: <stat>

If <n>=2 and cell information changes, report +CREG: <stat>[, <lac>, <ci>]

Read command and return to current register status<stat>, position information<lac>, <ci> only when <n>=2 reports.

Table 53: AT+CREG operation command

Type	Command	Possible return results	Description
Set command	AT+CREG =[<n>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CREG ?	+CREG: <n>, <stat>[, [<lac>], [<ci>], [<AcT>][, <cause_type>, <reject_cause>]]	-

Test command	AT+CREG=?	+CREG: (<n>value list) OK	-
Command routine	AT+CREG=2	OK	
	AT+CREG?	+CREG: 2, 1, 9191, 2E50 OK	ID with location area and ID cell
		+CREG: 0, 1 OK	Set inquiry result "disable network-registered and non-required result code
		+CREG: 1, 1 OK	Set inquiry result "enable network-registered and non-required result code+CREG: <stat>"
	AT+CREG=?	+CREG: (0-2) OK	-

Table 54: Detailed description of AT+CREG parameters

Parameter	Value	Description
<n>	[0]	Disable network-registered and non-required result code
	1	Enable network-registered and non-required result code+CREG: <stat>
	2	Enable network-registered and location information non-required result code+CREG: <stat>[, <lac>, <ci>]
	3	Enable network-registered and location information non-required result code+CREG: <stat>[, [<lac>], [<ci>], [<AcT>][, <cause_type>, <reject_cause>]]
<stat>	0	Not registered; ME does not search new operator who needs to register service now
	1	Registered, local network
	2	Not registered, but Me is searching new operator who needs to register service
	3	Register is refused

	4	Unknown
	5	Registered, roaming
	6	Registered as SMS only, local network, <AcT> indicates E-UTRAN
	7	Registered as SMS only, roaming, <AcT>indicates E-UTRAN
	8	Only carry emergency service, service unavailable
	9	Register "CSFB unavailable", local network, <AcT> indicates E-UTRAN
	10	Register "CSFB unavailable", roaming, <AcT> unavailable E-UTRAN
<lac>	-	Location area number
<ci>	-	Cell ID, 4 bytes hex GERAN/UTRAN/E-UTRAN network ID
<AcT>		Data access technology of service network
	0	GSM
	1	GSM Compact
	2	UTRAN
	3	GSM w/EGPRS (see NOTE 3)
	4	UTRAN w/HSDPA (see NOTE 4)
	5	UTRAN w/HSUPA (see NOTE 4)
	6	UTRAN w/HSDPA and HSUPA (see NOTE 4)
	7	E-UTRAN
<cause_type>	0	Indicate <reject_cause> including a MM cause value, refer to 3GPP TS24. 008[8]attachment G
	1	Indicate <reject_cause> including manufacture's specific cause
<reject_cause>		Integer type, includes cause of register failure. Value type is defined by <cause_type>

2. 4. 3 LTE network registration status: AT+CEREG

Set command to control display of some non-required results code about LTE register status.

If <n>=1 and MT's LTE register status changes, the command set control non-required results code ＋CEREG , report +CEREG: <stat>.

If <n>=2 and register cell changes, report +CEREG: <stat>[, <lac>, <ci>].

Query command returns to display format <n> of results code and a parameter <stat> indicates MT network register status. Only when <n>=2 and MT has registered in the network , it returns to location information elements <lac> and <ci>.

Table 55: AT+CEREG operation command

Type	Command	Possible return results	Description
Execution command	AT+CEREG?	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CEREG?	+CEREG: <n>, <stat>[, [<lac>], [<ci>], [, <cause_type>, <reject_cause>]]	-
Test command	AT+CEREG=?	+CEREG: (<n>value list) OK	-
Command routine	AT+CEREG=1	OK	
	AT+CEREG?	+CEREG: 2, 1, "91D5", "DA", "90C3301", 7 OK	-
		+CREG: 1, 1 OK	-
	AT+CEREG=?	+CREG: (0-2) OK	-

Table 56: Detailed description of AT+CEREG operation command parameters

Parameter	Value	Description
<n>	[0]	Disable network-registered and non-required result code +CEREG:
	1	Enable network-registered and non-required result code+CEREG:
	2	Enable network-registered and location information non-required result code

		+CEREG: <stat>[, <lac>, <ci>]
<stat>	0	Not registered; ME does not search new operator who needs to register service now
	1	Registered, local network
	2	Not registered, but Me is searching new operator who needs to register service
	3	Register is refused
	4	Unknown
	5	Registered, roaming
<lac>	-	Character type; 2 bytes hex location area code (eg. 00C3 equals 195 in decimal)
<ci>	-	Character type; 2 bytes hex cell number
<cause_type>	0	Indicate <reject_cause> including a MM cause value, refer to 3GPP TS24. 008[8]attachment G
	1	Indicate <reject_cause> including manufacture's specific cause
<reject_cause>		Integer type, includes cause of register failure. Value type is defined by <cause_type>

2. 4. 4 Select operator: AT+COPS

Set command to select forcefully and register GSM/UTSM network operator. In <mode> setting ME select operator automatically or forcefully. If operator is unavailable, no other operators can be selected; but there is an exception if <mode>=4. <mode>=2 indicates logging off from the network forcefully. register mode influences all later register. eg. if <mode>=2, ME is not registered until <mode>=0 or 1.

Table 57: AT+COPS operation command

Type	Command	Possible return results	Description
Execution command	AT+COPS=[<mode> [, <format>[,	OK	-

	<oper> [, <AcT>]]]]		
		ERROR/+CME ERROR: <err>	Error relates to ME functionally
Query command	AT+COPS?	+COPS: <mode>[, <format>, <oper>[, <AcT>]] OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionally
Test command	AT+COPS=?	+COPS: [supporting list(<stat>, long character <oper> , short character <oper>, numeric<oper>[, < AcT>])s][, , (supporting list<mode>s), (supporting list<format>s)] OK	-
		ERROR/+CME ERROR: <err>	Auto mode is not supported, or relates to ME functionally
Command routine	AT+COPS=0, 0	OK	
	AT+COPS? corresponding <oper> after setting different	+COPS: 0, 0, "CHINA MOBILE", 0 OK	Use long character to indicate current network operator
		+COPS: 0, 1, "移动", 0 OK	Use short character to indicate current network operator
		+COPS: 0, 2, "46000", 0 OK	Use number to indicate current network operator
	AT+COPS=?	+COPS:	List all current

		(2, "CHINA MOBILE", "移动", "46000", 0), (3, "CHN-CUGSM", "CU-GSM", "46001", 2), (3, "CHN-CUGSM", "CU-GSM", "46001", 0), , (0, 1, 2, 3, 4), (0, 1, 2) OK	network operator

Table 58: Detailed description of AT+COPS parameters

Parameter	Value	Description
<mode>	[0]	Automatic (<oper> character can be ignored)
	1	Manual (<oper> character can not be ignored)
	2	Log off from registered network
	3	Only set <format>(used for Query command +COPS?); not attempting to register or log off(<oper>character can be ignored); the value is not suitable for return results of Query command
	4	Auto/manual(<oper>character can not be ignored); if manual selection fails, enter auto mode(<mode>=0)
<format>	[0]	Long character(use alphanumeric format), 16 characters at most
	1	Short character(use alphanumeric format), 8 characters at most
	2	Numerical type<oper>
<oper>	-	Character; <format> indicates the character string is alphanumeric or numerical; numeric indicates GSM location area identification number(refer to GSM 04. 08 [8]chapter 10. 5. 1. 3), the number includes a 3 bytes BCD national cod(meet ITU-T E. 212 Annex A [10]standard) and a 2 bytes BCD network code; the later relates to management.
<stat>	0	Unknown
	1	Available
	2	Now
	3	Unavailable

<Act>	0	GSM
	1	GSM compact
	2	UTRAN
	3	GSM w/EGPRS (see NOTE1)
	4	UTRAN w/HSDPA (see NOTE2)
	5	UTRAN w/HSUPA (see NOTE2)
	6	UTRAN w/HSDPA and HSUPA (see NOTE2)
	7	E-UTRAN
	8	CDMA
	9	CDMA&EVDO
	10	EVDO

2. 4. 5. Device locking: AT+CLCK

Execute command to lock, unlock, inquire ME or network devices <fac>. Passcode is required. When inquiring network service (<mode>=2), the command returns to not-activated status (<status>=0) result line if the network service is inactive to any Parameter<class>. The command will be terminated when setting or inquiring network devices.

Table 59: AT+CLCK operation command

Type	Command	Possible return results	Description
Execution command	AT+CLCK=<fac>, <mode> [, <passwd>[, <class>]]	OK	-
		+CLCK: <status>[, <class1> CR><LF> +CLCK: <status>, <class2>[. . .]] OK	<mode>=2 and the command executed successfully
		ERROR/+CME ERROR: <err>	Failure
Test	AT+CLCK=?	+CLCK:	-

command		(<fac>value list) OK	
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+CLCK="SC", 1, "1234"	OK	Lock SIM card PIN code
	AT+CLCK="SC", 0, "1234"	OK	Unlock SIM card PIN code
	AT+CLCK=?	+CLCK: ("AB", "AC", "AG", "AI", "AO", "IR", "OI", "OX", "SC", "FD", "PN", "PU", "PP", "PC", "PF") OK	

Table 60: Detailed description of AT+CLCK Parameter

Parameter	Value	Description
<fac>Reserved Value of the manual	"AO"	Barring of all outgoing call
	"OI"	Barring of all international outgoing call
	"OX"	Barring of all international outgoing call, except for home country
	"AI"	Barring of all incoming call
	"IR"	Barring of all incoming call when roaming in non-home country
	"PS"	PH - SIM(lock the cellphone on SIM card)(ME prompts inputting password if other SIM card is inserted; ME can be set to be able to recognize used SIM cards and no prompts shows when inserting these cards
	"PN"	Personalized network (Refer to GSM 02. 22 [33])
	"PP"	Personalized service supplier (Refer to GSM 02. 22 [33])
	"PU"	Personalized network subsets(Refer to GSM 02. 22 [33])
	"PC"	Personalized company (Refer to GSM 02. 22 [33])
	"PF"	Lock the cellphone in the first inserted SIM card(PH-FSIM in this manual)(ME prompts inputting password if another card is inserted)
	"SC"	SIM

	"FD"	SIM card fixed dial feature
	"AB"	Barring of all service, only available when mode=0
	"AG"	Barring of all outgoing call, only available mode=0
	"AC"	Barring of all incoming call, only available mode=0
<mode>	0	Unlock
	1	Lock
	2	Inquiry status
<status> <passwd>	0	Inactive
	1	Active
	-	Character type; same to equipment password used by ME user access, revised password st by command +CPWD
<classx>	1	Voice (telephone service)
	2	Data (all bearer service; when <mode>=2, if TA does not support Value of 16、32、64、128 , the Parameter indicates part of bearer service)
	4	Fax (fax service)
	8	Short message
	16	Synchronous data circuit
	32	Asynchronous data circuit
	64	Private packet access
	128	Private PAD access

2. 4. 6. Revise password: AT+CPWD

The Command can revise equipment locking password defined by equipment locking command +CLCK.

Table 61: AT+CPWD operation Command

Type	Command	Possible return results	Description
Execution command	AT+CPWD=<fac>, <oldpwd>, <newpwd>	OK	Success

		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CPWD=?	+CPWD: (<fac>, <pwdlength>)value list OK	Success
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+CPWD="SC", "1234", "4321"	OK	Set new PIN code as 4321, take effect after restarting or reactivating SIM card
	AT+CPWD=?	+CPWD: ("AB", 4), ("AC", 4), ("AG", 4), ("AI", 4), ("AO", 4), ("IR", 4), ("OI", 4), ("OX", 4), ("SC", 8), ("P2", 8) OK	-

Table 62: Detailed description of AT+CPWD Parameter

Parameter	Value	Description
<fac> Reserved Value of the manual	"AO"	Barring of all outgoing call
	"OI"	Barring of all international outgoing call
	"OX"	Barring of all international outgoing call, except for home country
	"AI"	Barring of all incoming call
	"IR"	Barring of all incoming call when roaming in non-home country
	"PS"	PH - SIM(lock the cellphone on SIM card)(ME prompts inputting password if other SIM card is inserted; ME can be set to be able to recognize used SIM cards and no prompts shows when inserting these cards
	"PN"	Personalized network (Refer to GSM 02. 22 [33])
	"PP"	Personalized service supplier (Refer to GSM 02. 22 [33])
	"PU"	Personalized network subsets(Refer to GSM 02. 22 [33])

	"PC"	Personalized company (Refer to GSM 02. 22 [33])
	"PF"	Lock the cellphone in the first inserted SIM card(PH-FSIM in this manual)(ME prompts inputting password if another card is inserted)
	"P2"	SIM PIN 2
	"SC"	SIM
	"AB"	Barring of all service
	"AG"	Barring of all outgoing service
	"AC"	Barring of all incoming service
<oldpwd>, <newpwd>	-	Character type; same to equipment password used by ME user access, revised password st by command +CPWD
<pwdlength>	-	Integer type, maximum password length supported by device

2. 4. 7. Present call line identification: AT+CLIP

The Command is actually caller identification service. It relates to supplementary service CLIP(Calling Line Identification Presentation) of GSM/UTMS. The called subscriber can receive mobile terminating call and meanwhile receive CLI(Calling Line Identification).

Set Command can enable or disable CLI to present in TE. No influence on network execution of supplementary service CLIP. Return to command results +CLIP: <number>, <type>[, <subaddr>, <satype>[, [<alATpha>][, <CLI validity>]]] before all return results RING or +CRING: <type>; sent from TA to TE, when CLI presents in TE and allowed by the caller. use the command results when referring to normal receiving voice service; and the results depends on manufacture.

Query command define status of <n>, and inquire CLIO service's configuration state triggered by GSM 02. 81 [3].

Table 63: AT+CLIP operation Command

Type	Command	Possible return results	Description
Execution	AT+CLIP=	OK	-

command	<n>		
Query command	AT+CLIP?	+CLIP: <n>, <m> OK	-
Test command	AT+CLIP=?	+CLIP: (<n>value list) OK	-
Command routine	AT+CLIP=1	OK	
	AT+CLIP?	+CLIP: 0, 1 OK RING	No caller identification
		+CLIP: 1, 1 OK +CLIP: "13761928888", 128, , , "TEST", 0 RING	13761928888 is the caller number, TEST is the name stored int the phonebook
	AT+CLIP=?	+CLIP: (0-1) OK	

Table 64: Detailed description of AT+CLIP Parameter

Parameter	Value	Description
Current states of <n> set or present in TA	[0]	Disable
	1	Enable
<m> presents network user service state of CLIP	0	CLIP service is not provided
	1	CLIP service is provided
	2	Unknown(eg. No network)
<number>	-	Character; telephone number format prescribed by <type>
<type>	-	Integral 8 bit address Type(Refer to GSM 04. 08 [8] chapter 10. 5. 4. 7); dial character string includes international access code, default value is 145; else, default value is 129
<subaddr>	-	Character sub-address format prescribed by <satype>

<satype>	-	Integral 8 bit address Type
<alpha>	-	Optional character type(alphanumerical); presents corresponding item in phonebook; character set in use should be the same as AT+CSCS command in TE character set
<CLI validity>	0	Available
	1	Caller disables CLI
	2	CLI is unavailable for network interworking or restriction of originating network.

2. 4. 8. Caller identification restriction: AT+CLIR

The Command relates to CLIR service of GSM 02. 81 [3] standard. the Command may enable or disable presentation of CLI in the called if the caller initiate a call. Query command is used to define state of <n> and trigger query for CLIR service's configuration state according to GSM 02. 81 [3] (given in <m>).

Table 65: AT+CLIR operation Command

Type	Command	Possible return results	Description
Set Command	AT+CLIR=[<n>]	OK	-
Query command	AT+CLIR?	+CLIR: <n>, <m> OK	-
Test command	AT+CLIR=?	+CLIR: (<n>value list) OK	-
Command routine	AT+CLIR=0	OK	
	AT+CLIR? AT+CLIP? ATD13761928888;	+CLIR: 0, 1 OK +CLIP: 1, 1 OK OK RING +CLIP: "", 128, , , , 1	Query about whether the caller unlock number hiding Query about whether the called unlock number presenting The called can't see the

			calling number for the caller unlocked number hiding
	AT+CLIR=?	+CLIR: (0-2) OK	Note: actual query returns to: +CLIP: (0-1)

Table 66: Detailed description of AT+CLIR Parameter

Parameter	Value	Description
<n>sets adjusted state of outgoing call	[0]	Apply prompts according to CLIR service's opening state
	1	CLIR call
	2	CLIR prohibition
<m>presents caller's CLIR service state in the network	0	CLIR service is not provided
	1	CLIR service provided permanently
	2	Unknown(eg. no network)
	3	CLIR service is limited in temporary mode
	4	CLIR service is not limited in temporary mode

2. 4. 9. Present the called identification: AT+COLP

The Command is used for call forwarding and relates to CLIR service of GSM 02. 81 [3] standard. the Command may enable or disable presentation of CLI in the called if the caller initiate a call. Query command is used to define state of <n> and trigger query for CLIR service's configuration state according to GSM 02. 81 [3] (given in <m>).

Refer to 2. 4. 7 caller identification restriction: AT+CLIR for Detailed description of Parameters.

Table 67: AT+COLP operation Command

Type	Command	Possible return results	Description
Set	AT+COLP=[<	OK	-

Command	n>]		
Query command	AT+COLP?	+COLP: <n>, <m> OK	-
Test command	AT+COLP=?	+COLP: (<n>value list) OK	-
Command routine	AT+COLP =1	OK	Open called identification
	AT+COLP? ATD13761928888;	+COLP: 1, 1 OK +COLP: "13761928888", 161	The called set call transfer, transferred called number is presented after getting through
	AT+COLP =?	+COLP: (0-1) OK	-

Table 68: Detailed description of AT+COLP Parameter

Parameter	Value	Description
<n> set Parameter, present result code indication in TA	[0]	Close
	1	Activate
<m> set Parameter, present user COLP service state in network	0	COLP not provide
	1	COLP provide
	2	Unknown(eg. No network)

2. 4. 10. Closed user group: AT+CCUG

Use the Command to control supplementary service CUG(Closed User Group)(Refer to GSM 02. 85 [21])). Using set Command user may select CUG index to inhibit OA(Outgoing Access) and prioritize CUG.

Table 69: AT+CCUG operation Command

Type	Command	Possible return results	Description
set Command	AT+CCUG=[<n>[, <index>[, <info>]]]	OK	-

Query command	AT+CCUG?	+CCUG: <n>, <index>, <info> OK	-
Test command	AT+CCUG=?	(0-1),(0-9,10),(0-3) OK	-
Command routine	AT+CCUG=1, 2, 3	OK	-
	AT+CCUG?	+CCUG: 1, 2, 3 OK	-
	AT+CCUG=?	(0-1),(0-9,10),(0-3) OK	-

Table 70: Detailed description AT+CCUG Parameter

Parameter	Value	Description
<n>	[0]	Disable CUG service in temporary mode
	1	Enable CUG service in temporary mode
<index>	[0] ~ 9	CUG index
	10	No index(prioritize CUG from user data)
<info>	[0]	No information
	1	Inhibit OA
	2	inhibit and prioritize CUG
	3	Inhibit OA and prioritize CUG

2. 4. 11. Call forwarding number and condition: AT+CCFC

The Command controls supplementary service Call forwarding according to GSM 02. 82 [4], and supports register, deleting, activation, deactivation and state query.

Table 71: AT+CCFC operation Command

Type	Command	Possible return results	Description
Set Command	AT+CCFC= <reason>, <mode>[,	OK	-
		+CCFC: <status>,	<mode>=2

	<number> [, <type>[, <class>[, <subaddr> [, <atype>[, <time>]]]]]]	<class1> [, <number>, <type> [, <subaddr>, <satype> [, <time>]]][<CR><LF> +CCFC: <status>, <class2> [, <number>, <type> [, <subaddr>, <satype> [, <time>]]][. . .]] OK	and Command executed Successfully. If <mode>=2, <reason> equals not to 4 or 5
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CCFC=?	+CCFC: (<reason>value list) OK	-
Command routine	AT+CCFC=0, 3, "13761928888"	OK	Set transfer to 13761928888 unconditionally
	AT+CCFC=0, 2	+CCFC: 1, 1, "+8613761928888", 145, , , OK	query transfer setting , set Successfully
	AT+CCFC=0, 4	OK	Delete unconditional transfer setting
	AT+CCFC=0, 2	+CCFC: 0, 255 OK	Query again, indicates deleting Successfully
	AT+CCFC=?	+CCFC: (0, 1, 2, 3, 4, 5) OK	-

Table 72: Detailed description AT+CCFC Parameter

Parameter	Value	Description

<reason>	0	Unconditionally
	1	equipment busy
	2	No reply
	3	Unreachable
	4	All calls forwards(Refer to GSM 02. 30 [19])
	5	All conditional calls forwards(Refer to GSM 02. 30 [19])
<mode>	0	Disable
	1	Enable
	2	Inquire state
	3	Register
	4	Delete
<number>	-	Character type; phone number of call forwarding address and its format confirms <type>
<type>	-	Integral 8 bit address Type(Refer to GSM 04. 08 [8]Chapter 10. 5. 4. 7); dial character string includes international access code, default value is 145; else, default value is 129
<subaddr>	-	Character type; character type subaddress format prescribed by<satype>
<satype>	-	Integral 8 bit subaddress Type(Refer to chapter 10. 5. 4. 8, GSM04. 08 [8]), default value 128
<classx> Service Type	1	Voice (telephone service)
	2	Data (all bearer service; when <mode>=2 , if TA does not support 16, 32, 64and 128, the Parameter indicates part of bearer service)
	4	Fax
	8	Short message
	16	Synchronous data circuit
	32	Asynchronous data circuit
	64	Private packet access
	128	Private PAD access

<time>	1 ~ 30	If "no reply"in enabling or query, there are several seconds of waiting time before call transfer(in seconds), default value 20.
<status>	0	Activated
	1	Deactivated

2. 4. 12. Call waiting: AT+CCWA

The Command controls supplementary service call waiting according to GSM 02. 83 [5].

Table 73: AT+CCWA operation Command

Type	Command	Possible return results	Description
Set Command	AT+CCWA=[<n>[, <mode> [, <class>]]]	OK	-
		+CCWA: <status>, <class1> [<CR><LF> +CCWA: <status>, <class2>[. . .]] OK	<mode>=2 and Command executed Successfully
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CCWA?	+CCWA: <n> OK	-
Test command	AT+CCWA=?	+CCWA: (<n>value list) OK	-
Command routine	AT+CCWA=1, 1 ATD10086;	OK +CCWA: "13601748187", 128, 1	Open call waiting Establish call with 10086 Prompt user there is another incoming call

	AT+CCWA=1, 2	+CCWA: 1, 1 OK	Inquire call waiting state
	AT+CCWA?	+CCWA: 1	Inquire whether call waiting is opened

Table 74: Detailed description of AT+CCWA Parameter

Parameter	Value	Description
<n> sets or presents status of result code in TA	[0]	Disable
	1	Enable
If <mode> does not provide the Parameter, inquiring network fails	0	Disable
	1	Enable
	2	Inquire status
<classx> indicates the sum of integers of every information type	1	Voice(phone service)
	2	Data
	4	Fax
	8	Short message
	16	Synchronous data circuit
	32	Asynchronous data circuit
	64	Private packet access
	128	Private PAD access
<status>	0	Activated

	1	Deactivated

2. 4. 13. Call hold and multiparty call: AT+CHLD

Use the Command to release the current call from ME temporarily; but network and multiparty call remains connecting. User on two in-calls(one remains, another is in use or prompts) can connect other parties' call and release his own connection.

Table 75: AT+CHLD operation Command

Type	Command	Possible return results	Description
Set Command	AT+CHLD=[<n>]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CHLD=?	[+CHLD: (<n>value list)] OK	-
Command routine	AT+CCWA=1,1	OK	Open call waiting
	ATD13601748187;	OK +CCWA: "13601748187", 128, 1 OK +CLCC: 1, 0, 1, 0, 0, "13601748187", 129 +CLCC: 2, 1, 0, 0, 0, "13601748187", 128, "TEST"	Establish call with user 13601748187 At this time, user 13601748187's call holds the first line, and connects the second line. CLCC presents two lines' call
	AT+CHLD=2		
	AT+CLCC		
	AT+CHLD=21	OK	Return to the first line
	AT+CHLD=11	OK	Release the call in the first line
	AT+CHLD=?	+CHLD: (0, 1, 1x, 2, 2x, 3, 4) OK	

Table 76: Detailed description of AT+CHLD Parameter

Parameter	Value	Description
<n>integer; corresponds to numbers before SEND button in chapter GSM02. 30 [19], 4. 5. 5. 1	0	Release all on-hold call or set condition of user-determined user busy(UDUB) for waiting calls.
	1	If there is a current call, release all current calls and pick up another on-hold or waiting call.
	1X	Release a current specific call X .
	2	If there is a current call, hold all current calls and pick up another on-hold or waiting call.
	2X	Hold on all current calls except the call X that is definitely supported by communication.
	3	Add a on-hold call for conversation. （not supported ）
	4	Link the two calls and release user from the two calls(ECT). （not supported ）

2. 4. 14. Unstructured supplementary service: AT+CUSD

The Command controls USSD(Unstructured Supplementary Service Data) according to GSM 02. 90 [23]. The Command supports operation initiated by network and mobile. <n> is used to enable or disable non-required results code(USSD returned results from network or operation initiated by network) +CUSD: <m>[, <str>, <dcs>] to present on TE.

If <str> specifies, USSD character string initiated by mobile or returned results code USSD character string of operation initiated by network will be sent to network. Return to results code USSD character string in the network through non-required results code +CUSD.

Table 77: AT+CUSD operation Command

Type	Command	Possible return results	Description
Set Command	AT+CUSD=[<n> [, <str>[, <dcs>]]]	OK	-
		ERROR/+CME ERROR: <err>	Failure

Query command	AT+CUSD?	+CUSD: <n> OK	-
Test command	AT+CUSD=?	+CUSD: (<n>value list) OK	-
Command routine	AT+CUSD=1	OK	AT+CUSD=1, "str", 15
	AT+CUSD?	+CUSD: 0 OK	-
	AT+CUSD=?	+CUSD: (0-2) OK	-

Table 78: Detailed description of AT+CUSD Parameter

Parameter	Value	Description
<n>	[0]	Disable result code to present on TA
	1	Enable result code to present on TA
	2	Conversation canceled (not applied for return results of Query command)
<str>	-	Character type: USSD character string(if <str>is not given, no query to network): if <dcs> indicates using default symbol value in GSM03. 38[25], ME/TA will convert character set in GSM to current character set of TE according to GSM07. 05[24] Annex A.
<dcs>	-	Cell broadcast data encoding plan using integer in GSM 03. 38 [25](default value is 0)
<m>	0	User operation is not required(no information is required after network initiating USSD notice or mobile initiating operation)
	1	User operation is required(information is required after network initiating USSD notice or mobile initiating operation)
	2	Network terminates USSD
	3	Other local terminators respond
	4	Operator not supported
	5	Network timeout

2. 4. 15 Inform charging: AT+CAOC

The Command relates to supplementary service charge informing in GSM 02. 24 [26] and GSM 02. 86 [27]. User can learn about call charges information through the command.

Table 79: AT+CAOC operation command

Type	Command	Possible return results	Description
Execution command	AT+CAOC[=<mode>]	[+CAOC: <ccm>] OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CAOC?	+CAOC: <mode> OK	-
Test command	AT+CAOC=?	[+CAOC: (<mode>value list] OK	-
Command routine	AT+CAOC=0	+CAOC: "000000" OK	Inquire current call charges
	AT+CAOC?	+CAOC: 1 OK	
	AT+CAOC=?	+CAOC: (0-2) OK	

Table 80: Detailed description of AT+CAOC Parameter

Parameter	Value	Description
<mode>	0	Inquire CCM value
	[1]	Deactivate non-required report of CCM value
	2	Activate non-required report of CCM value
<ccm>	-	Character type; 3 bytes of current call meter Value(hex, eg. corresponding Value of "00001E" is 30); domestic currency units; use ACMmax to represent code of character in SIM card

2. 4. 16. Supplementary service notification: AT+CSSN

The Command indicates network notification relating to supplementary service. Use Set Command to Enable or Disable TA's results code presenting on TE.

If <n>=1, and receives supplementary service notice during a mobile call, intermediate result code +CSSI: <code1>[, <index>] will be sent to TE.

If <m>=1, and receives supplementary service notice during a mobile call or terminating a call, or receives supplementary service notice of forwarding check, non-required result code +CSSU: <code2> [, <index>[, <number>, <type> [, <subaddr>, <satype>]]] will be sent to TE.

Table 81: AT+CSSN operation command

Type	Command	Possible return results	Description
Set Command	AT+CSSN=[<n>[, <m>]]	OK	-
Query command	AT+CSSN?	+CSSN: <n>, <m> OK	-
Test command	AT+CSSN=?	+CSSN: (<n>value list), (<m>Value list) OK	-
Command routine	AT+CSSN=1	OK	-
	AT+CSSN?	+CSSN: 0, 0 OK	-
	AT+CSSN=?	+CSSN: (0-1), (0-1) OK	-

Table 82: Detailed description of AT+CSSN Parameter

Parameter	Value	Description
<n> sets or presents status of result code +CSSI inTA	[0]	Disable
	1	Enable

<m>sets or presents status of result code +CSSU inTA	[0]	Disable
	1	Enable
<index>	[0] ~ 9	CUG index
	10	No index(prioritize CUG receiving from user data)
<code1>	0	Unconditional call forwarding in use
	1	Partly conditioned call forwarding in use
	2	Call forwarding
	3	Call waiting
	4	CUG call (<index>exists)
	5	Barring of outgoing call
	6	Barring of incoming call
	7	Refuse CLIR inhibition
	8	Call deflection
<code2>	0	call forwarding(MT call establishes)
	1	CUG call (<index>exists)(MT call establishes)
	2	Call hold on(voice call)
	3	Call retrieving(voice call)
	4	Enter multiparty conversation(voice call)
	5	Release hold-on call(not belong to SS notification)(voice call)
	6	Receiving forwarding check SS message(at any time)
	7	During transfer of explicit call(voice call), is establishing call with distant conversation in ring status. (ring)
	8	During transfer of explicit call(voice call or MT call established, and number and subaddress parameter must exist), has established call with distant conversation in ring status.
	9	Deflected call(MT call establishes)

	10	Supplementary call transfer
<number>	-	character type; call forwarding address phone number; format confirms to <type>
<type>	-	Integral 8-bit address Type(Refer to GSM 04. 08 [8]chapter10. 5. 4. 7); if dial character string includes international access code character "+", default value is 145; else 129
<subaddr>	-	character ; character subaddress format defined by <satype>
<satype>	-	Integral 8-bit subaddress Type(Refer to GSM04. 08 [8]chapter 10. 5. 4. 8), default value is 128

2. 4. 17. List current calls: AT+CLCC

TA inquires current calls to TE from ME.

Table 83: AT+CLCC operation command

Type	Command	Possible return results	Description
Execution command	AT+CLCC	[+CLCC: <ccid1>, <dir>, <stat>, <mode>, <mpty>[, <number>, <type>[, <alpha>[, <priority>[, <CLI validity>]]]] [<CR><LF>+CLCC: <ccid2>, <dir>, <stat>, <mode>, <mpty>[, <number>, <type>[, <alpha>[, <priority>[, <CLI validity>]]]] [. . .]]] +CME ERROR: <err>	-
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CLCC =?	OK	-
Command routine	AT+CLCC	RING +CLCC: 1, 1, 4, 0, 0, "13601745236", 129, "TEST"	Present call information if there is an incoming call

		OK	
	AT+CLCC =?	OK	-

Table 84: Detailed description of AT+CLCC Parameter

Parameter	Value	Description
<ccid1>	-	Integer type; call identification number described in GSM 02. 30 [19]chapter 4. 5. 5. 1
<dir>	0	Call initiated by mobile
	1	Call terminated by mobile
<stat> Cal status	0	Activate
	1	Hold on
	2	Dialing (MO call)
	3	Prompting(MO call)
	4	Incoming call(MT call)
	5	Waiting (MT call)
<mode>(bearer/ telecommunication service)	0	Voice
	1	Data
	2	Fax
	3	Data follow voice, voice mode
	4	Voice data alternately, voice mode
	5	Voice ax alternately, voice mode
	6	Data follow voice, data mode
	7	Voice data alternately, data mode
	8	Voice fax alternately, fax mode
	9	Unknown
<mpty>	0	Call is not part of multiparty conversation (eg.: conversation)
	1	Call is part of multiparty conversation(eg. conversation)
<number>	-	Character type; phone number format defined by <type>

<type>	-	Integral 8-bit address Type(Refer to GSM 04. 08 [8]chapter10. 5. 4. 7); if dial character string includes international access code character "+", default value is 145; else 129
<alpha>	-	character type and <number>'s character in corresponding phonebook
<priority>		Prompt eMLPP call priority
<CLI validity>	0	CLI is valid
	1	CLI is refused by initiator
	2	CLI is invalid or restricted due to network problem
	3	CLI is invalid due to group call from payphone
	4	CLI is invalid due to other problems

2. 4. 18. Preferred operator list: AT+CPOL

The Command used to edit Preferred operator list in SIM card. Use Execution command to write new items in the list (EFPLMNsel). If <index> is given but <oper> is vacated, the item will be deleted. If <oper> is given but <index> is vacated, <oper> will be placed in the next free location. If <format> is given, format of <oper> in Query command will be modified.

Table 85: AT+CPOL operation command

Type	Command	Possible return results	Description
Set Command	+CPOL=[<index>][, <format>[, <oper>[, <GSM_AcT>, <GSM_Compact_AcT>, <UTRAN_AcT>, <E-UTRAN_AcT>]]]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CPOL?	+CPOL: <index1>, <format>, <oper1>[, <GSM_AcT1>, <GSM_Compact_AcT1>, <UTRAN_AcT1>,	-

		<E-UTRAN_AcT1>] [<CR><LF>+CPOL: <index2>, <format>, <oper2>[, <GSM_AcT2>, <GSM_Compact_AcT2>, <UTRAN_AcT2>, <E-UTRAN_AcT2>] [. . .]]	
		ERROR/+CME ERROR: <err>	-
Test command	AT+CPOL=?	+CPOL: (<index>value list), (<format>value list) OK	-
		ERROR/+CME ERROR: <err>	-
Command routine	AT+CPOL=, 0	OK	<format> set as long character string type
	AT+CPOL?	+CPOL: 1, 2, "46000" +CPOL: 2, 2, "46002" +CPOL: 3, 2, "41004" +CPOL: 4, 2, "310170" +CPOL: 5, 2, "310150" +CPOL: 6, 2, "310410" +CPOL: 7, 2, "310380" +CPOL: 8, 2, "45008" +CPOL: 9, 2, "45002" +CPOL: 10, 2, "45501" +CPOL: 11, 2, "52001" +CPOL: 12, 2, "40410" +CPOL: 13, 2, "40497"	Numerical type

		+CPOL: 14, 2, "40496" +CPOL: 15, 2, "40490" +CPOL: 16, 2, "40498" +CPOL: 17, 2, "40492" +CPOL: 18, 2, "40493" +CPOL: 19, 2, "40494" +CPOL: 20, 2, "40495" +CPOL: 21, 2, "40402" +CPOL: 22, 2, "40449" +CPOL: 23, 2, "40445" +CPOL: 24, 2, "40403" +CPOL: 25, 2, "40440" +CPOL: 26, 2, "40431" +CPOL: 27, 2, "40470" +CPOL: 28, 2, "23201" +CPOL: 29, 2, "24201" +CPOL: 30, 2, "20601" +CPOL: 31, 2, "65501"	
	AT+CPOL=?	+CPOL: (1-80), (0-2) OK	

Table 86: Detailed description of AT+CPOL Parameter

Parameter	Value	Description
<indexn> <format>	-	Integer type; SIM card prioritize operator's numbers in the list
	0	<oper> in long character string type(alphanumerical format)
	1	<oper> in short character string type(alphanumerical format)
	2	Numerical type<oper>
<opern>	-	Character type; <format> indicates whether the format use alphanumeric or numeric (Refer to+COPS)
<GSM_AcTn>	0	GSM access technology selected

	1	GSM access technology not selected
<GSM_Compact_AcTn>	0	GSM compressing access technology selected
	1	GSM compressing access technology not selected
<UTRAN_AcTn>	0	UTRAN access technology selected
	1	UTRAN access technology not selected
<E-UTRAN_AcTn>	0	E-UTRAN access technology selected
	1	E-UTRAN access technology not selected

2. 4. 19. Inquire operator name: AT+COPN

Execution command is used to return to operator name from ME, including operator code <numericn>. The later has a corresponding code <alphan> in ME(alphanumerical).

Table 87: AT+COPN operation command

Type	Command	Possible return results	Description
Set Command	AT+COPN	+COPN: <numeric1>, <alpha1> [<CR><LF>+COPN: <numeric2>, <alpha2> [. . .]] +CME ERROR: <err>	
Test command	AT+COPN =?	OK	-
Command routine	AT+COPN =?	OK	

Table 88: Detailed description of AT+COPN Parameter

Parameter	Value	Description
<numericn>	-	character type; numerical format operator (Refer to+COPS)
<alphan>	-	Character type; operator with long character string format (alphanumerical format)(Refer to+COPS)

After running the AT+COPN Command, return to operator name and output "OK";

When running AT+COPN Command, the command should no be ran again before

returning to "OK", otherwise the module will be reset.

2. 4. 20. Preferred PLMN list selection: AT+CPLS

The command is used to select PLMN list activated and accessed in SIM card by using +CPOL command setting. Execute command selects list in SIM/ USIM card; read command returns to selected PLMN list from SIM/ USIM card; test command supports the list by returning SIM/USIM to the whole index range.

Table 89: AT+CPLS operation command

Type	Command	Possible return results	Description
Set Command	AT+CPLS=[<list>]	+CME ERROR: <err>	
Query command	AT+CPLS?	+CPLS: <list>	
Test command	AT+CPLS=?	+CPLS: (list of supported <list>s)	-
Command routine	AT+CPLS=?	+CPLS: 0, 1, 2 OK	-

Table 90: Detailed description of AT+CPLS Parameter

Parameter	Value	Description
<list>	[0]	If not found in SIM/UICC, use preferred PLMN list EFPLMNsel
	1	Operator controls PLMN's access technology EFOPLMNwAcT
	2	HPLMN selection and access technology EFHPLMNwAcT

2. 5. ME control and status Command

2. 5. 1. Cellphone active state: AT+CPAS

Execution command returns to MT's active state <pas>.

Table 91: AT+CPAS operation command

Type	Command	Possible return results	Description
Execution command	AT+CPAS	+CPAS: <pas> OK	Success
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Test command	AT+CPAS =?	+CPAS: (<pas>value list) OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Command routine	AT+CPAS	+CPAS: 0 OK	READY status, ME is ready
		RING +CPAS: 3 OK	Ring status
		CONNECT +CPAS: 4 OK	Busy
	AT+CPAS =?	+CPAS: (0, 3, 4) OK	-

Table 92: Detailed description of AT+CPAS Parameter

Parameter	Value	Description
<pas>	0	ME is ready
	1	ME is unavailable (TBD)
	2	Unknown, ME is not ready (TBD)
	3	Ring
	4	Calling
	5	Sleep, ME is not ready (TBD)

2. 5. 2. Set mobile phone function: AT+CFUN

Use Set Command to select function level of <fun> in ME. "all functions "indicates mobile phone's function is the most powerful; "the minimum function "indicates mobile phone has

the least function.

Table 93: AT+CFUN operation command

Type	Command	Possible return results	Description
Set Command	AT+CFUN=[<fun>[,<rst>]]	OK	Success
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Query command	AT+CFUN?	+CFUN: <fun> OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Test command	AT+CFUN=?	+CFUN: (<fun>value list),(<rst>value list) OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Command routine	AT+CFUN=0 AT+COPS? AT+CPIN?	OK +COPS: 0 OK +CME ERROR: SIM not inserted	Mobile phone has the least function; The Command logs off from the network first and then activates SIM card
	AT+CFUN=1 AT+CPIN? AT+COPS?	OK +CPIN: READY OK +COPS: 0, 0, "CHINA MOBILE", 0 OK	Current phone function includes all; the command activates SIM card first and then search the network automatically

	AT+CFUN?	+CFUN: 1 OK	-
	AT+CFUN=?	+CFUN: (0-1, 4-7), (0-1) OK	-

Table 94: Detailed description of AT+CFUN Parameter

Parameter	Value	Description
<fun>	0	The least function, set as LPM (Low Power Mode) mode (previous setting must be non-Offline mode)
	[1]	All function, Online mode (previous setting must be non-Offline mode)
	4	Disable mobile phone sending and receiving RF circuit; Offline mode (previous setting must be non-Offline mode) FTM = Factory Test Mode
	5	FMT (Factory Test Mode) (previous setting must be online mode)
	6	Reset and restart DCE (previous setting must be online mode)
	7	Offline Mode
<rst>	0	Default value, validate after setting ME as <fun>; no need to restart
	1	Set ME as <fun>, validate after restarting

The effect of the Command on network registration depends on the specific manufacturer. "AT+COPS" or "AT%NRG" Command is used for forced registration or forced cancellation.

2. 5. 3. Enter PIN: AT+CPIN

Use Set Command to send passcode required by operation to ME. Returned character string of Query command use alphanumeric mode to indicate whether passcode is required.

Table 95: AT+CPIN operation command

Type	Command	Possible return results	Description

Set Command	AT+CPIN=<pin>[,<newpin>]	OK	Success
		ERROR/+CME ERROR: <err>	-
Query command	AT+CPIN?	+CPIN: <code> OK	-
		ERROR/+CME ERROR: <err>	-
Test command	AT+CPIN=?	OK	-
Command routine	AT+CPIN="1234"	OK	Enter PIN code
	AT+CPIN?	+CPIN: READY NOTE: PIN code is canceled OK	PIN code is not required
		+CPIN: SIM PIN OK	PIN code is required
		+CPIN: SIM PUK NOTE: query PUK code id locked OK	PIN code is locked, PUK code id required
	AT+CPIN=?	OK	Version support the Command

Table 96: Detailed description of AT+CPIN Parameter

Parameter	Value	Description
<pin>	-	Original password (character), eg. SIM card's PIN code or unblocking passcode, eg. SIM-PUK or PH-SIM PUK
<new pin>	-	New password (character)
<code>	READY	ME provides no passcode
	SIM PIN	ME waits to provide SIM card's PIN code
	SIM PUK	ME waits to provide SIM card's PUK code
	PH-SIM	ME waits to provide code from mobile phone to SIM card

	PIN	
	PH-FSIM PIN	ME waits to provide code from mobile phone to original SIM card
	PH-FSIM PUK	ME waits to provide unblocking code from mobile phone to original SIM card
	SIM PIN2	ME waits to provide SIM card (PIN2) (PIN2 Failure proposed <code> authentication only in a recent use of the Command (eg. +CME ERROR: 17) after the return; after Failure authentication, if again enter the wrong PIN2, suggested that ME do not block the operation)
	SIM PUK2	ME SIM card (PUK2 for providing advice <code> PUK2 authentication Failure only in a recent use of the Command (eg. +CME ERROR: 18) after the return; the authentication Failure, if again input error is PUK2 and the new PIN2, ME do not block the operation. proposal
	PH-NETWORK PIN	ME waits to provide network personalized passcode
	PH-NETWORK PUK	ME waits to provide network personalized unblocking passcode
	PH-NETWORKSUB PIN	ME waits to provide network subset personalized passcode
	PH-NETWORKSUB PUK	Network waits to provide personalized unblocking passcode
	PH-SP PIN	ME waits to provide service supplier personalized passcode
	PH-SP PUK	ME is waiting for service supplier's personalized unblocking passcode
	PH-CORP PIN	ME is waiting for company's personalized passcode
	PH-CORP	ME is waiting

	PUK	

2. 5. 4. Signal quality: AT+CSQ

Execution command returns to receiving signal strength indication <rssi> and channel error rate<ber> from MT.

Table 97: AT+CSQ operation command

Type	Command	Possible return results	Description
Execution command	AT+CSQ	+CSQ: <rssi>, <ber> OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Test command	AT+CSQ=?	+CSQ: (<rssi>value list), (<ber>value list) OK	-
Command routine	AT+CSQ	+CSQ: 27, 59 OK	-
	AT+CSQ=?	+CSQ: (0-31, 99), (0-7, 99) OK Returned results of TDSCDMA is different from others: +CSQ: (100-191, 199), (0-7, 99) OK	-

Table 98: Detailed description of AT+CSQ Parameter

Parameter	Value	Description
<rssi>	0	Less than or equal to -113dBm
	1	-111dBm
	2 ~ 30	-109 ~ -53dBm
	31	More than or equal to -51dBm

	99	Unknown or unmeasurable
<ber>	0	BER < 0, 2 %
	1	0, 2 % < BER < 0, 4 %
	2	0, 4 % < BER < 0, 8 %
	3	0, 8 % < BER < 1, 6 %
	4	1, 6 % < BER < 3, 2 %
	5	3, 2 % < BER < 6, 4 %
	6	6, 4 % < BER < 12, 8 %
	7	12, 8 % < BER
	99	Unknown or unmeasurable

2. 5. 5. Select phonebook storage unit: AT+CPBS

Use Set Command to select phonebook storage unit <storage>, <storage> can also be used in other phonebook Command. Query command is used to return current storage unit.

Table 99: AT+CPBS operation command

Type	Command	Possible return results	Description
Set Command	AT+CPBS=<storage>[,<password>]	OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Query command	AT+CPBS?	+CPBS: <storage>[, <used>, <total>] OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Test command	AT+CPBS=?	+CPBS: (<storage>value list) OK	-
Command routine	AT+CPBS="SM"	OK	Select SIM card storage unit

	AT+CPBS?	+CPBS: "SM", 1, 250 OK	
	AT+CPBS=?	+CPBS: ("SM", "DC", "FD", "LD", "MC", "ME", "RC", "EN", "ON") OK	

Table 100: Detailed description of AT+CPBS Parameter

Parameter	Value	Description
<storage>	"ON"	Number list in SIM card(or ME) (MSISDN) (use +CNUM Command read message from the memory)$(ATR97)$
	"FD"	SIM fixed dial number phonebook(open of the function and storage capacity depend on SIM card)
	"DC"	ME last dialed number phonebook(non-standard)
	"RC"	ME last answered number phonebook(non-standard)
	"MC"	ME last missed number phonebook(non-standard)
	"EN"	Emergency call number phonebook(open of the function and storage capacity depend on SIM card)
	"LD"	SIM/UICC last call phonebook
	"ME"	MT phonebook
	"SM"	SIM/USIM phonebook
	"MT"	Phonebook mixed with MT and SIM / USIM card
	"SD"	Service dial number phonebook(open of the function and storage capacity depend on SIM card)
<password>		Character string Type value, indicates Selecting the PIN2 code you need to enter the PIN2 code lock. If the combination of phonebook select "MT" and the <password> will correspond to USIM card phonebook hidden.
<used>	-	Integer Type Value, indicates Location number used in selected memory
<total>	-	Integer Type Value, indicates all Location numbers used in selected memory

2. 5. 6. Research phonebook record: AT+CPBR

Use Execution command to return to the position number range of <index1> ~ <index2> phonebook records, the position number range is selected by using the +CPBS from the current phonebook storage. If the <index2> is empty, just return to <index1>.

Table 101: AT+CPBR operation command

Type	Command	Possible return results	Description
Set Command	AT+CPBR=<index1>[,<index2>]	[+CPBR: <index1>, <number>, <type>, <text> [. . .]<CR><LF> +CPBR: <index2>, <number>, <type>, <text>]] OK	-
		ERROR/+CME ERROR: <err>	-
Test command	AT+CPBR=?	+CPBR: (<index>value list), [<nlength>], [<tlength>] OK	-
Command routine	AT+CPBR=1, 6	+CPBR: 1, "13679178701", 129, "Richard Park", , "", 0, , +CPBR: 3, "10086", 129, "Richard Park", , "", 0, , +CPBR: 4, "10086", 129, "BER", , "", 0, , +CPBR: 5, "15191582361", 129, "Richard Park", , "", 0, , +CPBR: 6, "15191582361", 129, "Richard Park", , "", 0, , OK	Read phonebook memory location number 1-6 phonebook content.

	AT+CPBR=?	+CPBR: (1-500), 40, 14, 2, 14, 14 OK	-

Table 102: Detailed description of AT+CPBR Parameter

Parameter	Value and Description
<index1>	Integral Value of the location number range in phonebook memory
<index2>	Integral Value of the location number range in phonebook memory
<number>	Character type; phone number of <type>format
<type>	Integral 8-bit address Type(Refer to GSM 04. 08 [8]chapter10. 5. 4. 7)
<text>	<tlength> the maximum length of the character field; the same as the character set of TE character set Command+CSCS
<nlength>	Indicates <number> field maximum length integral Value
<tlength>	Indicates <text> field maximum length integral Value

2. 5. 7. Find phonebook record: AT+CPBF

Use execution command to return to the phonebook record from the current phonebook memory. Select the current phonebook memory by using +CPBS.

The field of alphanumeric mixed mode starts to <findtext>character string.

Table 103: AT+CPBF operation command

Type	Command	Possible return results	Description
Set Command	AT+CPBF=<find text>	[+CPBF: <index1>, <number>, <type>, <text>[[. . .]<CR><LF> +CBPF: <index2>, <number>, <type>, <text>]] OK	-
		ERROR/+CME ERROR: <err>	-
Test command	AT+CPBF=?	+CPBF: [<nlength>], [<tlength>] OK	-
		ERROR/+CME ERROR: <err>	Failure
	AT+CPBF	+CPBF: 4, "10086", 129, "BER", "", 0	-

	="BER"	OK	
	AT+CPBF=?	+CPBF: 40, 14, 2, 14, 14 OK	-

Table 104: Detailed description of AT+CPBF Parameter

Parameter	Value
<index1>	Integral number of Value in the location number of phonebook memory
<index2>	Integral number of Value in the location number of phonebook memory
<number>	Character type; phone number of <type> format
<type>	Integral eight-byte address Type(Refer to GSM 04. 08 [8]chapter10. 5. 4. 7)
<text>, <findtext>	<tlength> the maximum length of the character field; the same as the character set of TE character set Command+CSCS
<nlength>	Indicates <number> field maximum length integral Value
<tlength>	Indicates <text> field maximum length integral Value

The Command supports only MT phonebook and does not support DC, RC, MC, ON, and FD phonebook.

2. 5. 8. Write phonebook record: AT+CPBW

Use Execution command to write the phonebook records in the current phonebook memory location number <index>. Use +CPBS to select the current phonebook memory. The written record field is related to the number and telephone number <number> (<type> format) and <text>. If these fields are omitted, the phonebook record will be deleted. If <index> is empty, given the <number>, the record will be written to the first idle position in the phone book.

Table 105: AT+CPBW operation command

Type	Command	Possible return results	Description
Set Command	AT+CPBW=[<index>][, <number> [, <type>[, <text>]]]	OK	-

		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CPBW=?	+CPBW: (<index>value list), [<nlength>], (<type>value list), [<tlength>] OK	-
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+CPBW=2, "13761928888", 129, "TEST"	OK	-
	AT+CPBW=?	+CPBW: (1-500), 40, (128-255), 14, 2, 14, 14 OK	-

Table 106: Detailed description of AT+CPBW Parameter

Parameter	Value
<index>	Integral number of Value in the location number of phonebook memory
<number>	Character type; phonebook of <type>format
<type>	Eight-byte address Type integral (Refer to GSM 4. 08 [8] 10. 5. 4. 7); when the number character string includes the international access code character "+", default value is was 145; in other cases, the default value is 129
<text>	Character type; <tlength> the maximum length of the character field; the same as the character set of TE character set Command+CSCS
<nlength>	Indicates <number> field maximum length integral Value
<tlength>	Indicates <text> field maximum length integral Value

<number> does not allow set to be empty; <number> is not empty and <text> can be set when it is empty, but the <text> will automatically set as "Unknown Name".

2. 5. 9. Restrict SIM card access: AT+CRSM

Use Set Command to send SIM<command> and required Parameter to ME.

Table 107: AT+CRSM operation command

Type	Command	Possible return results	Description
Set Command	AT+CRSM=<command> [, <fileid>[, <P1>, <P2>, <P3>[, <data>]]]	+CRSM: <sw1>, <sw2> [, <response>] OK	-
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CRSM=?	OK	-
Command routine	AT+CRSM=242	+CRSM: 103, 0, "" OK	242 Command code for SIM card status query (Refer to GSM 11. 11)
	AT+CRSM=?	OK	-

Table 108: AT+CRSM Parameter Detailed description

Parameter	Value	Description
<command> command transmitted to SIM from ME; Refer to GSM11. 11 [28]	176	Binary readout
	178	Record readout
	192	Get return result
	214	Binary update
	220	Record update
	242	Status
	203	Search data
	219	Set data

<fileid>	-	Integral type; Used to identify the underlying data file in SIM card
<P1>	-	Integral type; ME is transmitted to SIM Parameter, Refer to GSM 11. 11 [28]
<P2>	-	Refer to<P1>
<P3>	-	Refer to<P1>
<data>	-	Information to be written to SIM card (sixteen; Refer to+CSCS)
<sw1>, <sw2>	-	Integral type; Information related to the actual operation of the card Command SIM
<response>	-	The result of the previous command after the successful completion of the execution (sixteen hex; refer to +CSCS)

2. 5. 10. Accumulated call meter: AT+CACM

Use the set command to reset SIM card EFacm file with the "charging inform" related to ACM (Accumulated Call Meter). ACM contains all current and previous call charging; the value is calculated in accordance with the monetworkary unit of the country.

Table 109: AT+CACM operation command

Type	Command	Possible return results	Description
Set Command	AT+CACM=[<passwd>]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CACM?	+CACM: <acm> OK	-
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CACM=?	OK	-
Command	AT+CACM="9208	OK	-

routine	"		
	AT+CACM?	+CACM: "000000" OK	-
	AT+CACM=?	OK	-

Table 110: Detailed description of AT+CACM Parameter

Parameter	Value
<passwd>	Character type; SIM card PIN2
<acm>	Character type; Accumulated call meter value, similar to the +CAOC encoding

2. 5. 11. Accumulated maximum call meter: AT+CAMM

Use set command to set the maximum value of the ACM related to “charging inform” in the SIM card EFACMmax file. ACMmax contains the maximum value that allows the user to consume, which is calculated in accordance with the monetworkary unit of the country.

Table 111: AT+CAMM operation command

Type	Command	Possible return results	Description
Set Command	AT+CAMM=[<acmmax>[, <passwd>]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CAMM?	+CAMM: <acmmax> OK	-
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CAMM=?	OK	-
Command routine	AT+CAMM=0, "9208"	OK	-
	AT+CAMM?	+CAMM: "000000" OK	-
	AT+CAMM=?	OK	-

Table 112: AT+CAMM Parameter Detailed description

Parameter	Value
<acmmax>	Character type; Cumulative call meter maximum; 0 indicates disable ACM Maximum feature
<passwd>	Character type; SIM card PIN2

2. 5. 12. Unit price and currency list: AT+CPUC

Use the set command to set the unit price and currency table in the SIM card EFpuct file, which is related to the charging inform. PUCT information can be converted into other currency units (such as +CAOC, +CACM, +CAMM).

Table 113: AT+CPUC operation command

Type	Command	Possible return results	Description
Set Command	AT+CPUC=<currency>, <ppu>[, <passwd>]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CPUC?	+CPUC: <currency>, <ppu> OK	-
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CPUC=?	OK	-
Command routine	AT+CPUC="GBF", "2. 49", "9208"	OK	-
	AT+CPUC?	+CPUC: GBF, 2. 49 OK	-
	AT+CPUC=?	OK	-

Table 114: Detailed description of AT+CPUC Parameter

Parameter	Value
<currency>	Character type; three character currency code (such as "GBP",

	"DEM"); the same as the character set specified in TE character set command +CSCS
<ppu>	Character type; unit price; "" "means decimal separator (e. g. 2. 49)
<passwd>	Character type; SIM card PIN2

2. 5. 13. Inquire all available AT Command: AT+CLAC

This command is used to query one or more AT commands in the ME.

Table 115: AT+CLAC operation command

Type	Command	Possible return results	Description
Execution command	AT+CLAC	<AT Command1> [<CR><LF><AT Command2>[]]OK	-
		ERROR/+CME ERROR: <err>	Failure

Table 116: Detailed description of AT+CLAC Parameter

Parameter	Value
<AT Command >	Defines the AT Command including the AT prefix

2. 5. 14. Real clock: AT+CCLK

TA returns the current time of the module.

Table 117: AT+CCLK operation command

Type	Command	Possible return results	Description
Set Command	AT+CCLK=<time>	OK	If the setting is successful, the module time is set
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CCLK?	+ CCLK: YY/MM/DD, hh: mm: ss<+zz> OK	If the time zone is set, the time zone is displayed when the query is displayed or the

			time zone is not displayed. The default time zone is 00
Command routine	AT+CCLK ="13/08/01, 16: 20: 30"	OK	Set time is 30 seconds at 16: 20 on August 1, 2013
	AT+CCLK ="13/08/01, 16: 20: 30+08"	OK	Set time is 30 seconds at 16: 20 on August 1, 2013, time zone for the area of 08
	AT+CCLK?	+CCLK: "13/08/11, 16: 14: 16" OK	Query current time
	AT+CCLK=?	OK	

Table 118: Detailed description of AT+CCLK Parameter

Parameter	Value	Description
<time>	YY/MM/DD, hh: mm: ss<+zz >	Character type
yy	1980-2100	Numeric type
mm	01-12	Numeric type
dd	01-31	Numeric type
hh	01-24	Numeric type
mm	00-60	Numeric type
ss	00-60	Numeric type
zz	47~+48	Numeric type

2. 5. 15. Time zone updated automatically: AT+CTZU

Use the set command to choose whether to start the NITZ (Network Identity and Time Zone) to automatically update the function of the time zone in ME.

Table 119: AT+CTZU operation command

Type	Command	Possible return results	Description
Set	AT+CTZU=<	OK	Success

command	fun>		
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Query command	AT+CTZU?	+CTZU: <fun> OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Test command	AT+CTZU=?	+CTZU: (<fun>value list) OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Command routine	AT+CTZU=0	OK	Disable automatic time zone updates
	AT+CTZU=1	OK	enable automatic time zone updates
	AT+CTZU?	+CTZU: 1 OK	At this time, TErminal automatically opens the time zone
	AT+CTZU=?	+CTZU: (0-1) OK	-

Table 120: Detailed description of AT+CTZU Parameter

Parameter	Value	Description
<fun>	[0]	Disable automatic time zone updates, default values
	1	Enable automatic time zone updates

The default value is 0 when leaving factory and the function is turned off; if you want to open, you need to set 1, this parameter is stored in the non-volatile memory;

When you open the time zone automatic update function, if the time taken from the network and the local time AT+CCLK does not match, the local time will be updated automatically according to the network time.

2. 5. 16. Time zone report: AT+CTZR

Use the set command, you can choose whether to start time reporting function in ME. If this function is turned on, the command is used to indicate the time zone changes; it must be emphasized that when enable or disable the function, you need to restart the device, otherwise set is invalid. The function is not affected by AT+CTZU, when enable this function, as long as the current time zone changes, the changed tome zone will be reported though the results code +CTZV: <tz> actively.

Table 121: AT+CTZR operation command

Type	Command	Possible return results	Description
Set command	AT+CTZR=<fun>	OK	Success
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Query command	AT+CTZR?	+CTZU: <fun> OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Test command	AT+CTZR=?	+CTZR: (<fun>value list) OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Command routine	AT+CTZR=0	OK	Disabled timezone reporting function
	AT+CTZR=1	OK +CTZV: <tz>	Open Time zone reporting function
	AT+CTZR?	+CTZR: 1 OK	open the time zone reporting function at TErminal
	AT+CTZR=?	+CTZR: (0-1) OK	-

Table 122: Detailed description of AT+CTZR Parameter

Parameter	Value	Description

<fun>	[0]	Disable time zone reporting function, default value
	1	Open Time zone reporting function
<tz>	Shaping prompts	-

2. 6. ME error report Command

2. 6. 1. Report mobile equipment error+CMEE: AT+CMEE

Use the set command to enable or disable the +CME ERROR: <err> result code. This code is used to indicate errors associated with the ME function.

Table 123: AT+CMEE operation command

Type	Command	Possible return results	Description
Set Command	AT+CMEE=[<n>]	OK	-
Query command	AT+CMEE?	+CMEE: <n> OK	-
Test command	AT+CMEE=?	+CMEE: (<n>value list) OK	-
Command routine	AT+CMEE=0 AT+CPIN?	OK ERROR	set"Disable Result code+ CME ERROR: <err>, use ERROR"
	AT+CMEE=1 AT+CPIN?	OK +CME ERROR: 10	set"Enable Result code+ CME ERROR: <err>, use numerical <err>Value" Error reporting is"+CME ERROR: 10"
	AT+CMEE=2 AT+CPIN?	OK +CME ERROR: SIM not inserted	set"Enable Result code + CME ERROR: <err>, use <err> value in a verbose manner" Error reporting is "+CME

			ERROR: SIM not inserted"
	AT+CMEE?	+CMEE: 2 OK	-
	AT+CMEE=?	+CMEE: (0, 1, 2) OK	-

Table 124: Detailed description of AT+CMEE Parameter

Parameter	Value	Description
<n>	0	Disable Result code+ CME ERROR: <err>, use ERROR
	1	Enable Result code+ CME ERROR: <err>, use numerical <err>Value
	[2]	Enable Result code+ CME ERROR: <err>, use verbose <err>Value

2. 6. 2. Mobile equipment error result code: +CME ERROR

Table 125: common errors

Error code	Error Description
0	Mobile fault
1	Not connected to phone
2	Reserved Mobile phone adapted link
3	Operation not allowed
4	Operation not supported
5	Need PH-SIM card PIN
6	Need PH-FSIM PIN
7	Need PH-FSIM PUK
10	No SIM card inserted
11	Need SIM card PIN
12	Need SIM card PUK
13	SIM card fault
14	SIM card is busy
15	SIM error
16	Invalid password

17	Need SIM card PIN2
18	Need SIM card PUK2
20	Memory full
21	Index invalid
22	Not found
23	Memory fault
24	Text string too long
25	Invalid character in text string
26	Dial character string too long
27	Invalid character in dial character string
30	No network service
31	Network Timeout
32	Network is not allowed - only for emergency call
40	Need network personalized PIN
41	Need network personalized PUK
42	Need network subset personalized PIN
43	Need network subset personalized PUK
44	Service supplier need personalized PIN
45	Service supplier need personalized PUK
46	Need personalized company PIN
47	Need personalized company PUK
48	Hide password requirements (Note: need to provide access to hidden phonebook)
100	Unknown

Table 126: errors relates to GPRS (errors associated with attachment failures)

Error code	Error Description
103	Illegal MS (#3)
106	Illegal ME (#6)
107	GPRS service is not allowed(#7)
111	PLMN is not allowed (#11)
112	Location not allowed(#12)

113	Roaming is not allowed in this location(#13)

Table 127: errors relates to GPRS (Error associated with activation context failure)

Error code	Error Description
132	Service selection is not supported(#32)
133	Service selection request not described(#33)
134	Service selection is not connected(#34)
149	PDP Authentication failure(#49)

Table 128: errors relates to GPRS (Other GPRS errors)

Error code	Error Description
150	Invalid mobile class
148	GPRS error not specified

2. 7. Command sent by TIA IS-101

2. 7. 1. Select mode: AT+FCLASS

Using this command, you can set TA to a specific operating mode, such as: data, fax, voice and other. TA uses an appropriate way to deal with a given mode of operation information.

Table 129: AT+FCLASS operation command

Type	Command	Possible return results	Description
Set Command	AT+FCLASS=<n>	OK	-
Query command	AT+FCLASS?	<n> OK	-
Test command	AT+FCLASS=?	+FCLASS: (<n>value list) OK	-
Command routine	AT+FCLASS=1	OK	-
	AT+FCLASS?	0 OK	-
	AT+FCLASS=	+FCLASS: (0-1)	-

	?	OK	

Table 130: AT+FCLASS Parameter Detailed description

Parameter	Value	Description
<n>	[0]	data
	1	Fax class1(Refer to TIA-578-A)

2. 7. 2. DTMF and voice tone level: AT+VTS

Use the set command you can send one or more ASCII characters; these characters are used to enable the MSC (Mobile Switching Center) to send dual tone multi frequency DTMF (Dual Tone Multi Frequency) tone for remote users. The command allows the user to send a sequence of DTMF tones over a period of time and it allows the user to send a single DTMF tone. In this case, the time can be decided individually during a call.

Table 131: AT+VTS operation command

Type	Command	Possible return results	Description
Set Command	AT+VTS=<dtmf-string> AT+VTS=<dtmf>[, <duration>]	OK	-
		ERROR/+CME ERROR: <err>	-
Test command	AT+VTS=?	+VTS: <dtmf>value list) [, (<duration>value list)] OK	-
Command routine	AT+VTS=?	+VTS: (0-9, A-D, *, #) OK	

Table 132: Detailed description of AT+VTS Parameter

Parameter	Value
<dtmf-string>	ASCII character string in 0-9, #, *, A, B, C, D character set; Maximum length is 29, character string must be placed in double quotes
<dtmf>	ASCII character string in 0-9, #, *, A, B, C, D character set

<duration>	Tone duration in 1/10 seconds, Value range: 1 ~ 255

The Set Command is only applied for current voice call.

3. ITU-T Rec. V25ter AT Command

3. 1. Overview

This chapter will introduce AT Command prescribed in ITU-T Rec. V25ter from the following aspects. GSM Rec. 07. 07 also referred to these Command.

General TA control Command

Call control Command

Data compress Command

3. 2. General TA control Command

3. 2. 1. Repeat last Command: A/

Repeat last Command line. The command line does not end with a terminator.

Table 133: A/operation command

Type	Command	Possible return results	Description
Execution command	A/	-	-
Command routine	AT+COPS? A/	+COPS: 0, 0, "CHINA MOBILE", 0 OK +COPS: 0, 0, "CHINA MOBILE", 0 OK	Query the current operator Repeat the last AT command

3. 2. 2. Save user configuration parameter: AT&W （TBD）

This command saves some of the user's AT command parameters (Table 3-4) to EFS, which can be read out using ATZ. 2 sets of user parameters can be saved to a different file based on the <value> value. The command is given in AT&F.

Table 134: AT&W operation command

Type	Command	Possible return results	Description
Execution	AT&W	OK	Success

command			

Table 135: Commands and Parameters can be saved in AT&W

AT Command	Reserved Command Parameter
ATE	<value>
ATQ	<value>
ATS0	<n>
ATS3	<n>
ATS4	<n>
ATS5	<n>
ATS6	<n>
ATS7	<n>
ATS8	<n>
ATS10	<n>
ATV	<value>
ATX	<value>
AT&C	<value>
AT&D	<value>
AT+FCLASS	<n>
AT+CBST	<speed>, <name>, <ce>
AT+CMEE	<n>
AT+COPS	<mode>, <format>, <oper>
AT+CR	<mode>
AT+CRC	<mode>
AT+CRLP	<iws>, <mws>, <T1>, <N2>
AT+CMGF	<mode>
AT+CNMI	<mode>, <mt>, <bm>, <ds>, <bfr>
AT+CSDH	<show>
AT+CSMS	<service>
AT+CGREG	<n>
AT+CLIP	<n>
AT+CLIR	<n>

AT+COLP	<n>
AT+CREG	<n>

3. 2. 3. Reset to default configuration: ATZ (TBD)

Command examples see AT&F.

Table 136: ATZ operation command

Type	Command	Possible return results	Description
Execution command	ATZ	OK	Success

Table 137: Command parameters saved by AT&W command can be restored by ATZ command

AT Command	Restored Command Parameters
ATE	<value>
ATQ	<value>
ATS0	<n>
ATS3	<n>
ATS4	<n>
ATS5	<n>
ATS6	<n>
ATS7	<n>
ATS8	<n>
ATS10	<n>
ATV	<value>
ATX	<value>
AT&C	<value>
AT&D	<value>
AT+FCLASS	<n>
AT+CBST	<speed>, <name>, <ce>
AT+CMEE	<n>
AT+COPS	<mode>, <format>, <oper>
AT+CR	<mode>

T+CRC	<mode>
AT+CRLP	<iws>, <mws>, <T1>, <N2>
AT+CMGF	<mode>
AT+CNMI	<mode>, <mt>, <bm>, <ds>, <bfr>
AT+CSDH	<show>
AT+CSMS	<service>
AT+CGREG	<n>
AT+CLIP	<n>
AT+CLIR	<n>
AT+COLP	<n>
AT+CREG	<n>

3. 2. 4. Restore all TA parameters to factory configuration: AT&F

Table 138: AT&F operation command

Type	Command	Possible return results	Description
Execution command	AT&F	OK	-
Command routine	AT+CMEE ?	+CMEE: 0 OK	Current use of ERROR to return error results Use verbose <err> to return error results
	AT+CMEE =2	OK	Save return result Type
	AT&W	OK	Query current error return result Type
	AT+CMEE ?	+CMEE: 2 OK	Reset the result type to the default value
	ATZ	OK	Query default
	AT+CMEE ?	+CMEE: 0 OK	Use the numeric <err> to return the wrong result
	AT+CMEE ?	OK	Return error return result type to the factory configuration
	AT+CMEE	+CMEE: 0	Query error return result type of factory configuration

	=1 AT&F AT+CMEE ?	OK	

Table 139: Commands and Parameters can be restored to factory setting by AT&F

Command(AT&F)	Factory setting parameters
ATS0	0
ATS1	0
ATS3	13
ATS4	10
ATS5	8
ATS6	2
ATS7	60
ATS8	2
ATS10	1
ATS30	1
ATS99	1
AT+CMEE	<n=0>
AT+COLP	<n=0>
AT+CCWA	<n=0>
ATV	<value=1>
ATE	<value=1>
ATQ	<value=0>
ATX	<value=0>
AT+CR	<mode=0>
AT+CRC	<mode=0>
AT+CLIP	<n=0>
AT+DR	<mode=0>
AT+CSDH	<show=1>
AT+CSSN	<n=0, m=0>
AT+CUSD	<n=0>

AT+CCWE	<mode=0>
AT+CAOC	<mode=1>
AT+CGREG	<n=0>

3. 2. 5. TA manufacturer information: ATI

Table 140: ATI operation command

Type	Command	Possible return results	Description
Execution command	ATI	OK	Corresponding product information returned from TA to ME
Command routine	ATI	Manufacturer: MEIG INCORPORATED Model: SLM730 Revision: SLM730_2. 0. 2_EQ004 ESN: +GSN: 0x80809B4E +GCAP: +CGSM IMEI: 869635010008467 MEID: A1000010FE8056 OK	-

3. 2. 6. TA manufacturer ID: AT+GMI

Table 141: AT+GMI operation command

Type	Command	Possible return results	Description
Execution command	AT+GMI	+GMI: MEIG INCORPORATED OK	TA returns to manufacturer information
Test command	AT+GMI=?	OK	-

3. 2. 7. TA model identification: AT+GMM

Table 142: AT+GMM operation command

Type	Command	Possible return results	Description
Execution command	AT+GMM	+GMM: SLM730 OK	TA returns product model; 'X' is a character in {A, B, C, and I}
Test command	AT+GMM =?	OK	-

3. 2. 8. TA revision number: AT+GMR

Table 143: AT+GMR operation command

Type	Command	Possible return results	Description
Execution command	AT+GMR	Revision number OK	-
Test command	AT+GMR=?	OK	-
Command routine	AT+GMR	+GMR: SLM730_2. 0. 2_EQ001 OK	-
	AT+GMR = ?	OK	-

3. 2. 9. Request TA serial number: AT+GSN

Table 144: AT+GSN operation command

Type	Command	Possible return results	Description
Execution command	AT+GSN	<sn> OK	TA returns one or more lines of text information, indicating device serial number
Test command	AT+GSN=?	OK	-
Command	AT+GSN	869635010008467	-

routine		OK	
	AT+GSN =?	OK	-

Refer to AT+CGSN

3. 2. 10. TA function list query: AT+GCAP

Table 145: AT+GCAP operation command

Type	Command	Possible return results	Description
Execution command	AT+GCAP	+GCAP: <name> OK	TA returns a list of additional functions
Test command	AT+GCAP=?	OK	-
Command routine	AT+GCAP	+GCAP: +CGSM OK	-
	AT+GCAP =?	OK	-

Table 146: Detailed description of AT+GCAP Parameter

Parameter	Value
<name>	e.g. "+CGSM, +FCLASS, +DS" or "+FCLASS"

3. 2. 11. Set command line terminator: ATS3

Using this command, you can set terminator for the AT command line, which can be recognized by TA.

Table 147: ATS3 operation command

Type	Command	Possible return results	Description
Set Command	ATS3=<n>	OK	-
Query command	ATS3?	<n> OK	-
Test command	ATS3=?	S3: (<n>value list) OK	-TBD

Command routine	ATS3?	013 OK	The current AT command end character is 013, corresponding hex is 0X0D, that is carriage return
	ATS3=32	OK	At this point the end of the AT command line has become a space, corresponding hex is 0x20

Table 148: Detailed description of ATS3 Parameter

Parameter	Value	Description
<n>	0 ~ 127	default value: 13(Corresponding ASCII character CR carriage return)Note: changing this value may affect the execution of the AT Command

3. 2. 12. Set response format character: ATS4

Using this command, you can set the character that is used to get the result code and the message text, which is generated by TA.

Table 149: ATS4 operation command

Type	Command	Possible return results	Description
Set Command	ATS4=<n>	OK	-
Query command	ATS4?	<n> OK	-
Test command	ATS4=?	S4: (<n>value list) OK	-TBD
Command routine	ATS4?	010 OK	The corresponding ASCII LF newline character
	ATS4=32	OK	Set the character of the result code to a space

Table 150: Detailed description of ATS4 Parameter

Parameter	Value	Description
<n>	0 ~ 127	default value is: 10(The corresponding ASCII LF newline character)

3. 2. 13. Set command line editing character: ATS5

Use this command to set the character used to delete characters in the command line, which is generated by TA.

Table 151: ATS5 operation command

Type	Command	Possible return results	Description
Set Command	ATS5=<n>	OK	-
Query command	ATS5?	<n> OK	-
Test command	ATS5=?	S5: (<n>value list) OK	-
Command routine	ATS5?	008 OK	ASCII character corresponding to the BS character
	ATS5=32	OK	Sets character of the character in the delete command line to a space

Table 152: Detailed description of ATS5 Parameter

Parameter	Value	Description
<n>	0 ~ 127	default value is: 8(ASCII character corresponding to the BS character)

3. 2. 14. Command echo mode: ATE

Using this command, you can set whether TA in the command state returns to the character received from TE.

Table 153: ATE operation command

Type	Command	Possible return results	Description

Set Command	ATE<value>	OK	-
Command routine	ATE0 AT+COPS?	ATE0 OK +COPS: 0, 0, "CHINA MOBILE", 7 OK	At this point, input AT+COPS? TA does not echo to the character received from TE, the results of the direct return of the command, AT command to be executed can not be seen.
	ATE1 AT+COPS?	ATE1 OK SIGNALIND: 4 AT+COPS? +COPS: 0, 0, "CHINA MOBILE", 7 OK	At this point, input AT+COPS? TA echoes the character received from TE, and returns the execution result of the command, and AT command to be executed can be seen.

Table 154: Detailed description of ATE Parameter

Parameter	Value	Description
<value>	0	Echo mode off
	[1]	Echo mode open

3. 2. 15. Result code suppression: ATQ

Use this command to set whether TA sends the result code to TE.

Table 155: ATQ operation command

Type	Command	Possible return results	Description
Set Command	ATQ<value>	OK	<value> = 0
		(none)	<value> = 1
Command routine	ATQ0 AT+CME	OK +CMEE: 2	Set return result code, TA will report to TE returned results of the set command CMEE

	E?	OK	

Table 156: Detailed description of ATQ Parameter

Parameter	Value	Description
<value>	[0]	Send result code to TE
	1	Result code is suppressed, not send

3. 2. 16. Return result format: ATV

Use the command to set whether transmitting format of result code is a digital or letter format, and set the head and tail content; these contents are sent together with return results and the information return result.

ATV command determines whether returned result code is digital format or character format; ATV0 back into a digital format; including 0 OK, 1 CONNECT, 2 RING, 3 NO CARRIER, 4 ERROR); specific reference to the 27007 protocol.

Table 157: ATV operation command

Type	Command	Possible return results	Description
Set Command	ATV<value>	0	<value>= 0
		OK	<value>= 1
Command routine	ATV0 AT+CMEE? 	0 +CMEE: 2 0	After setting up ATV0, information +CMEE: no newline before 2 and result code OK becomes number 0
	ATV1 AT+CMEE? 	OK +CMEE: 2 OK	-

Table 158: Detailed description of ATV Parameter

Parameter	Value	Description
<value>	[0]	Message Return result: <text><CR><LF> Short character type result code: <numeric code><CR>

	1	Message Return result: <CR><LF><text><CR><LF> Short character type result code: <CR><LF><verbose code><CR><LF>

3. 2. 17. Connection result: ATX

Use this command to set whether TA send a specific result code to TE.

Table 159: ATX operation command

Type	Command	Possible return results	Description
Set Command	ATX<value>	OK	-

Table 160: Detailed description of ATX Parameter

Parameter	Value	Description
<value>	[0]	Give connection code when entering online data state. Dial tone and busy detection are disabled.
	1	Give connection <text> code when entering online data state. Dial tone and busy detection are disabled.
	2	Give connection <text> code when entering online data state. Disable busy detection but enable Dial tone.
	3	Give connection <text> code when entering online data state. Disable Dial tone but enable busy detection.
	4	Give connection <text> code when entering online data state. Dial tone and busy detection are enabled.

3. 2. 18. DCD usage status: AT&C

Using this command, you can set the relationship between the DCD circuit state and the detection of the signal at the far end.

Table 161: AT&C operation command

Type	Command	Possible return results	Description
Set Command	AT&C<value>	OK	-
		ERROR/+CME ERROR: <err>	Driver does not support

			DCD

Table 162: Detailed description of AT&C Parameter

Parameter	Value	Description
<value>	[0]	DCD line open
	1	The DCD line is open only when the data carrier exists

3. 2. 19. DTR usage status: AT&D

Use this command to set TA1 ‘s return result in the data state when DTR circuit changes from being open to being closed.

Table 163: AT&D operation command

Type	Command	Possible return results	Description
Set Command	AT&D<value>	OK	-
		ERROR/+CME ERROR: <err>	Driver does not support DTR

Table 164: Detailed description of AT&D Parameter

Parameter	Value	Description
<value>	[0]	TA ignores DTR status
	1	Convert to the command mode when hold on current call
	2	Release data call and convert to the command mode. When DTR=OFF, turn off the automatic response

3. 2. 20. Fixed TE-TA data rate: AT+IPR

Use this command to set the baud rate of DTE-DCE; after successfully setting the command parameters will be saved in the file system automatically. If it is set to a fixed baud rate, baud rate of TE and TA must be the same.

Table 165: AT+IPR operation command

Type	Command	Possible return results	Description
Set Command	AT+IPR=<rate>	OK	-

		ERROR/ +CME ERROR <err>	Error relates to ME functionality
Query command	AT+IPR?	+IPR: <rate> OK	-
Test command	AT+IPR=?	+IPR: (ratevalue list) OK	-
Command routine	AT+IPR?	+IPR: 115200 OK	Current baud rate is115200
	AT+IPR=9600	OK	Set baud rate to 9600
	AT+IPR=?	+IPR: (), (300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 921600, 2000000, 2900000, 3000000, 3200000, 3686400, 4000000) OK	-

Table 166: Detailed description of AT+IPR Parameter

Parameter	Value	Description
<rate>	300 600 1200 2400 4800 9600 19200 38400 57600 [115200] 230400	-

3. 2. 21. TE-TA frame format: AT+ICF

Use this command to set up the local serial port start / stop (asynchronous) frame format. Use the format when the DCE receives DTE command and sends message text and the result code.

Table 167: AT+ICF operation command

Type	Command	Possible return results	Description
Set Command	AT+ICF=[<format> [, <parity>]]	OK	-
		ERROR/ +CME ERROR <err>	Error relates to ME functionality
Query command	AT+ICF?	+ICF: < format >[, <parity >] OK	-
Test command	AT+ICF=?	+ICF: (format value list), (parity value list) OK	-
Command routine	AT+ICF?	+ICF: 3, 3 OK	-
	AT+ICF=3,	OK	-
	AT+ICF=?	+ICF: (3), (0-3) OK	The current <format> can only take 3

Table 168: Detailed description of AT+ICF Parameter

Parameter	Value	Description
format	1	8 data bits; 2 stop bits
	2	8 data bits; 1 parity bit; 1 stop bit
	[3]	8 data bits; 1 stop bits
	4	7 data bits; 2 stop bits
	5	7 data bits; 1 parity bit; 1 stop bit
	6	7 data bits; 1 stop bits
parity	0	Odd parity

	1	Even parity
	2	Mark
	[3]	Blank

3. 2. 22. TE-TA local flow control: AT+IFC

In the use of V. 42 error control, use the command to control local flow control operations of DTE and DCE in the data state.

Table 169: AT+IFC operation command

Type	Command	Possible return results	Description
Set Command	AT+IFC=[<DCE_by_DTE>[,<DTE_by_DCE>]]	OK	-
		ERROR/ +CME ERROR <err>	Error relates to ME functionality
Query command	AT+IFC?	+IFC: <DCE_by_DTE>, <DTE_by_DCE> OK	-
Test command	AT+IFC=?	+IFC: (<DCE_by_DTE>value list), (<DTE_by_DC E>value list) OK	-
Command routine	AT+IFC?	+IFC: 2, 2 OK	-
	AT+IFC=3, 1	OK	-
	AT+IFC=?	+IFC: (0-3), (0-2) OK	-

Table 170: Detailed description of AT+IFC Parameter

Parameter	Value	Description
<DCE_by_DTE>	0	-
	1	TXD DC1/DC3; DC1/DC3 character is not transmitted to remote DCE
	[2]	RTS is ready to receive)
<DTE_by_DCE>	0	-
	1	RXD DC1/DC3
	[2]	CTS sends disconnectedly /is ready to send out)

3. 3 Call control Command

3. 3. 1. Audio dialing: ATT

Table 171: ATT operation command

Type	Command	Possible return results	Description
Execution command	ATT	OK	Set to DTMF audio dialing

3. 3. 2. Pulse dialing: ATP

Table 172: ATP operation command

Type	Command	Possible return results	Description
Execution command	ATP	OK	Set to Pulse dialing

3. 3. 3. Call answering: ATA

Using this command, you can set the DCE to the line connection, and start the DCE specified response process.

Table 173: ATA operation command

Type	Command	Possible return results	Description
Execution command	ATA	CONNECT	Return the data call and establish the connection successfully

		CONNECT<text>	Return the data call and establish the connection successfully; <text> can be rate, error control, etc.
		OK	-
		NO CARRIER	Cannot establish connection;
		ERROR/+CME ERROR: <err>	Return to the error in data online command mode
Command routine	RING ATA	OK +DSCI: 1, 0, 0, 16, "+8613761928888", 145	Return to voice calls; connections established and the call ends

Ignore additional commands behind A in the same command line;

The command may be terminated when receiving a character during execution. But the command will not be terminated in some state of the connection (eg. signal exchange)

3. 3. 4. On-hook control: ATH

Use this command to terminate all current data calls. But in the establishment of some of the state of the connection (for example, signal exchange), the command does not terminate the current voice call. Refer to AT+CHUP for hanging up voice call.

Table 174: ATH operation command

Type	Command	Possible return results	Description
Execution command	ATH[<n>]	OK	-
		ERROR/+CME ERROR: <err>	<n> is not confirmed or not supported

Table 175: Detailed description of ATH Parameter

Parameter	Value	Description
<n>	0	Call termination

3. 3. 5. Return to data status: ATO

Using this command, you can set the DCE to return to the online data /PPP status, and send

CONNECT or CONNECT<text> result code.

Table 176: ATO operation command

Type	Command	Possible return results	Description
Execution command	ATO[<value>]	CONNECT/CONNECT <text>	Connect successfully(<text> can be rate, error control, etc.)
		NO CARRIER	connection failed
		ERROR/+CME ERROR: <err>	<value> is not confirmed or not supported

Table 177: Detailed description of ATO Parameter

Parameter	Value	Description
<value>	0	Change the command mode to data mode

3. 3. 6. Data mode switch to command mode: +++

Use this command to switch from data mode to AT command mode.

Table 178: AT+++CLIP operation command

Type	Command	Possible return results	Description
Execution command	+++	OK	Success
		ERROR/+CME ERROR: <err>	<value> is not confirmed or not supported
Command routine			

3. 3. 7. Set number of rings before answering automatically: ATS0

Set the number of rings before answering.

Table 179: ATS0operation command

Type	Command	Possible return results	Description
Set Command	ATS0=<n>	OK	Success
		ERROR/+CME ERROR: <err>	Failure

Query command	ATS0?	<n> OK	-
Test command	ATS0=?	S0: <n>value list OK	-TBD
Command routine			

Table 180: Detailed description of ATS0 Parameter

Parameter	Value	Description
<n>	000	Disable automatic response (default)
	001 ~ 255	enable automatic response when reaching specified number of rings

If the value set by <n> is too large, the caller may hang up before answering;

The relationship between ATS7 and ATS0 is important, such as when ATS7=30 and ATS0=20, call establishment may fail;

ATS0 also serves as PDP context activation request of GPRS command automatic response network side, so when using ATS0=<n>, n>0, if ME is not GPRS attached (when the ME configuration GPRS is attached), it will make the GPRS attachment, if GPRS attachment fails, (such as network rejects attachment request), ATSO set command will return to error, but the new settings value <n> has come into effect.

3. 3. 8. Blind dialing pause control: ATS6

Table 181: ATS6 operation command

Type	Command	Possible return results	Description
Set Command	ATS6=<n>	OK	-
Query command	ATS6?	<n> OK	-
Test command	ATS6=?	S6: <n>value list OK	-TBD

Table 182: Detailed description of ATS6 Parameter

Parameter	Value	Description

<n>	2 ~ 10	Delay before dialing, 2 is the default value, in seconds

3. 3. 9. Wait for call establishment: ATS7

Use this command to set the number of seconds to wait for the call to be established when TA is responding to a data call.

Table 183: ATS7operation command

Type	Command	Possible return results	Description
Set Command	ATS7=<n>	OK	-
Query command	ATS7?	<n> OK	-
Test command	ATS7=?	S7: <n>value list OK	-TBD

Table 184: Detailed description of ATS7 parameter

Parameter	Value	Description
<n>	0 ~ 255	The number of seconds to establish a connection or to release a call

3. 3. 10 Pause dial: ATS8

When you have a comma dial modifier in the dial string, use this command to set the number of seconds TA pauses when it is set up to the dial-up network.

Table 185: ATS8 operation command

Type	Command	Possible return results	Description
Set Command	ATS8=<n>	OK	-
Query command	ATS8?	<n> OK	-
Test command	ATS8=?	S8: <n>value list OK	-TBD

Table 186: Detailed description of ATS8 Parameter

Parameter	Value	Description
<n>	2	default value
	0	When a comma appears in the string, the DCE is disabled
	1 ~ 255	Pause seconds

3. 3. 11 On-hook delay: ATS10

Use this command to set the remaining time for the DCE to connect to the line after the DCE indicates that the received line signal not exists.

Table 187: ATS10 operation command

Type	Command	Possible return results	Description
Set Command	ATS10=<n>	OK	-
Query command	ATS10?	<n> OK	-
Test command	ATS10=?	S10: <n>value list OK	-TBD

Table 188: Detailed description of ATS10 Parameter

Parameter	Value	Description
<n>	1 ~ 255	100 ms delay

3. 4. Data compression Command

3. 4. 1. V. 42 bit data compression: AT+DS

Using this command, you can set whether to provide V. 42 bit data compression function for DCE.

Table 189: AT+DS operation command

Type	Command	Possible return results	Description
Set Command	AT+DS=[<direction> [, <compression_ne	OK	-

	goti ation>[,<max_dict>[, < max_string>]]]]		
		ERROR	Parameters not supported
Query command	AT+DS?	+DS: direction, compression_negotiati on, max_dict, ma x_string OK	-
Test command	AT+DS=?	+DS: (directionvalue list), (compression_negotiationvalue list), (max_dictvalue list), (max_stringvalue list) OK	-

Table 190: Detailed description of AT+DS Parameter

Parameter	Value	Description
<direction>	[0]	Negotiation; uncompressed (V. 42 bit P0 = 0)
	1	Send only
	2	Receive only
	3	Bidirectional; allow any direction (V. 42 bit P0 =11)
<compression_negotiation>	[0]	If the remote DCE does not carry out the ITU-T Rec. V. 42 bit negotiation in accordance with the specified parameters in that direction, it is not released
	1	If the remote DCE is not in accordance with the specified parameters in the direction of the ITU-T Rec. V. 42 bit negotiation, then release
<max_dict>	512 ~ 65535	-

<max_string>	[6] ~ 250	-

3. 4. 2. V. 42 Data compression Report: AT+DR

Use this command, you can set whether send intermediate results code +DR: <type> from TA to TE. if this function is enabled, the intermediate results in error control codes will be sent after the consultation, it is decided to send what kind of data compression method and direction of operation in TA.

Table 191: AT+DR operation command

Type	Command	Possible return results	Description
Set Command	AT+DR=<value>	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+DR?	DR: value OK	-
Test command	AT+DR=?	DR: (<value>value list) OK	-
Command routine	AT+DR=?	+DR: (0-1) OK	-

Table 192: Detailed description of AT+DR Parameter

Parameter	Value	Description
<value>	[0]	Disable data compression report
	1	Enable data compression report

The intermediate results reported in the data compression process are as follows:

+DR: NONE //Data compression not used
+DR: V42B //Using ITU-T Rec. V. 42 bit compression in two directions
+DR: V42B RD //Use ITU-T Rec. V. 42 bit compression only in the receive direction
+DR: V42B TD //Use ITU-T Rec. V. 42 bit compression only in the transmit direction
+DR: V44 //Using ITU-T Rec. V. 44 bit compression in two directions
+DR: V44 RD //Use ITU-T Rec. V. 44 bit compression only in the receive direction
+DR: V44 TD //Use ITU-T Rec. V. 44 bit compression only in the transmit direction

4. Standard GPRS AT Command

4. 1 Overview

In order to use AT command in the data link, such as the Internetwork, this chapter will introduce the standard 3GPP TS 27. 007 AT: 4. 2 3GPP TS 27. 007 command from the following aspects.

4. 2 3 GPP TS 27. 007 command

4. 2. 1. Define PDP context: AT+CGDCONT

Use the set command to define parameters for the PDP context; the PDP context is identified by a local context identification parameter <cid>. The special form of the set command +CGDCONT=<cid> will make the value of context number <cid> become undefined value. Test command returns a composite value. If the MT PDP supports several types of <PDP_type>, each <PDP_type> parameter value range returns on a single line.

Table 193: AT+CGDCONT operation command

Type	Command	Possible return results	Description
Set Command	AT+CGDCONT=[<cid>[,<PDP_type>[,<APN>[,<PDP_addr> [,<d_comp>[,<h_comp>]]]]]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query	AT+CGDC	+CGDCONT: <cid>, <PDP_type>, <APN>,	-

command	ONT?	<PDP_addr>, <d_comp>, <h_comp>[<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_ comp>, <h_comp>] OK	
Test command	AT+CGDC ONT=?	+CGDCONT: (range of supported <cid>s), <PDP_ty pe>, , , (<d_comp>value list), (<h_comp>value list) OK	-
Command routine	AT+CGDC ONT?	+CGDCONT: 1, "IPV4V6", "", "0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0", 0, 0, 0, 0 +CGDCONT: 2, "IPV4V6", "cmnetwork", "0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0", 0, 0, 0, 0 OK	-
	AT+CGDC ONT = 1	OK	Delete <cid>
	AT+CGDC ONT?	+CGDCONT: 1, "IPV4V6", "", "0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0", 0, 0, 0, 0 OK	
	AT+CGDC ONT=1, "IP", "CMNETW ORK"	OK	APN is CMNETW ORK, PDP Type is IP
	AT+CGDC ONT=?	+CGDCONT: (1-16, 100-179), "IP", , , (0-2), (0-4), (0-1), (0-1) +CGDCONT: (1-16, 100-179), "PPP", , , (0-2), (0-4), (0-1), (0-1) +CGDCONT: (1-16, 100-179), "IPV6", , , (0-2), (0-4), (0-1), (0-1) +CGDCONT: (1-16, 100-179), "IPV4V6", , ,	

		(0-2), (0-4), (0-1), (0-1) OK	

Table 194: Detailed description of AT+CGDCONT Parameter

Parameter	Value	Description
<cid>	(1-16)	Numerical parameter; used to specify the PDP context identifier. This parameter is a local parameter for TE-MT interface and can be used for other PDP context dependent Command.
<PDP_type>	["IP"]	(Packet data protocol type)character parameter; used to specify the type of packet data protocol. Default support "IP" Internetwork Protocol IP(Internetwork Protocol)(IETF STD5)
	X. 25	ITU-T/CCITT X. 25 layer 3 (Obsolete)
	IPV6	Internetwork Protocol, version 6 (IETF RFC 2460)
	OSPIH	Internetwork Hosted Octect Stream Protocol (Obsolete)
	PPP	Point to Point Protocol (IETF STD 51)
<APN>	-	The name of the access point; a string parameter is used to select the logical name of the GGSN or external packet data network. If the Parameter value is null or omitted, the subscription value is required.
<PDP_address>	-	Character parameter; used to identify specific PDP context, MT address space allocation. If this parameter is null or omitted, TE provides other values in the PDP startup process; if it can not provide other values, you need to request the dynamic address. Even in the PDP startup process the address has been assigned, the read form of the command continues to return empty. Use the +CGPADDR command read the address assignment.
<d_comp>	0	Close (if the value is omitted, the parameter is default value) numerical parameters; used to control PDP data compression
	1	Open (manufacture preferred PDP data compression)

	2	V. 42
	3	V. 44
		Other values reserved
<h_comp>	0	Close (if the value is omitted, the parameter is default value) numerical parameters; used to control PDP data compression
	1	Open (manufacture preferred PDP data compression)
	2	RFC114(only applied for SNDCP)
	3	RFC2507
	4	RFC3095 (applicable for PDCP only)
		Other values reserved

The defined <cid> cannot be duplicated with the <cid> defined in +CGDSCONT.

4. 2. 2. Define the two PDP activation context: AT+CGDSCONT

Use the set command to define parameters for the two PDP context; the PDP context is identified by a local context identification parameter <cid>. The special form of the set command +CGDSCONT= <cid> will make the value of context number <cid> become undefined value, that is to cancel the current set. Test command returns a composite value. If MT PDP supports several types of <PDP_type>, each <PDP_type> parameter values returns on a separate line.

Table 195: AT+CGDSCONT operation command

Type	Command	Possible return results	Description
Set Command	AT+CGDSCONT=[<cid>, <p_cid>[, <d_comp> [, <h_comp>]]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGDSCONT?	+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp>[<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [. . .]]	-
Test	AT+CGDSCONT=	+CGDSCONT:	-

command	?	(<cid>的value list), (<p_cid>的value list), <PDP_type>, , , (<d_comp>的value list), (<h_comp>的value list)[<CR><LF>+CGDCONT: (<cid>的value list), (<p_cid>的value list), <PDP_type>, , , (<d_comp>的value list), (<h_comp>的value list) [. . .]]	
Command routine	AT+CGDSCONT=3, 1, 0, 0	OK	-
	AT+CGDSCONT?	+CGDSCONT: 3, 1, 0, 0 OK	
	AT+CGDSCONT=3	OK	Delete corresponding setting if <cid> is 3
	AT+CGDSCONT?	+CGDSCONT: OK	Delete Successfully
	AT+CGDCONT=?	(1-16), (2), "IP", (0-2), (0-4) +CGDSCONT: (1-16), (2), "PPP", (0-2), (0-4) +CGDSCONT: (1-16), (2), "IPV6", (0-2), (0-4) +CGDSCONT: (1-16), (2), "IPV4V6", (0-2), (0-4) OK	(1, 2) indicates <cid>is1 and 2 defined in +CGDCONT

Table 196: Detailed description of AT+CGDSCONT Parameter

Parameter	Value	Description
<cid>	(1-16)	Numeric parameter; used to specify the PDP context identifier. This parameter is a local parameter for TE-MT interface and can be used for other PDP context dependent

		commands
<p_cid>	<cid> defined in +CGDCONT	Numeric parameter; used to indicate the +CGDCONT defined in <cid>, which is located in TE-MT interface, and the range of values may be returned by test command
<PDP_type>	["IP"]	(packet data protocol type) character parameter; used to specify the type of packet data protocol. Default supports the "IP" Internetwork Protocol IP(Internetwork Protocol)(IETF STD5)
	X. 25	ITU-T/CCITT X. 25 layer 3 (Obsolete)
	IPV6	Internetwork Protocol, version 6 (IETF RFC 2460)
	OSPIH	Internetwork Hosted Octect Stream Protocol (Obsolete)
	PPP	Point to Point Protocol (IETF STD 51)
<d_comp>	0	Close (if the value is omitted, the parameter is the default value) numerical parameters; used to control PDP data compression
	1	Open (manufacture preferred PDP data compression)
	2	V. 42
	3	V. 44
		Other values reserve
<h_comp>	0	Close (if the value is omitted, the parameter is the default value) numerical parameters; used to control PDP data compression
	1	Open (manufacture preferred PDP data compression)
	2	RFC114(only applied for SNDCP)
	3	RFC2507
	4	RFC3095 (applicable for PDCP only)
		Other values reserve

The defined <cid> cannot be duplicated with the <cid> defined in +CGDSCONT;

The value defined by <p_cid> must be +CGDCONT of <cid>;

When set is command, the <cid> cannot be equal to <p_cid>.

4. 2. 3. Required service quality briefing: AT+CGQREQ

When this command allows MT to send a PDP context activation request message to the network, TE specifies a service quality. Using the set command, you can specify a briefing for the context that is identified by the (local) context ID parameter <cid>. The command set specifies an application for the context identified by the local context identifier <cid>. This is the same as the + CGDCONT command, so the + CGQREQ command is actually an extension of the + CDDCONT command. The QoS application consists of many parameters, each of which can be set to a separate value. The special form of the command, that is, + CGQREQ = <cid>, removes the defined <cid> quality of service. The query command returns the current setting of each defined context. Test command returns a composite value. If MT supports several PDP types, the value range for each PDP type returns on a separate line.

Table 197: AT+CGQREQ operation command

Type	Command	Possible return results	Description
Set Command	AT+CGQREQ=[<cid> [, <precedence > [, <delay>[, <reliability> , <peak> , <mean>]]]]]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGQREQ?	+CGQREQ: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean>[<CR><LF>+CGQREQ: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean>[…]] OK	-
Test command	AT+CGQREQ=?	+CGQREQ: <PDP_type>, (<precedence>value list), (<delay>value list), (<reliability>value	-

		list), (<peak>value list), (<mean>value list) OK	
Command routine	AT+CGQREQ=1, 1, 0, 2, 5, 0	OK	-
	AT+CGQREQ?	+CGQREQ: 1, 1, 0, 2, 5, 0 OK	-
	AT+CGQREQ =?	+CGQREQ: "IP", (0-3), (0-4), (0-5), (0-9), (0-18, 31) +CGQREQ: "PPP", (0-3), (0-4), (0-5), (0-9), (0-18, 31) +CGQREQ: "IPV6", (0-3), (0-4), (0-5), (0-9), (0-18, 31) +CGQREQ: "IPV4V6", (0-3), (0-4), (0-5), (0-9), (0-18, 31) OK	-

Table 198: Detailed description of AT+CGQREQ Parameter

Parameter	Value	Description
<cid>	0	Default parameter; the parameter is used when PDP is activated, if the corresponding CID does not specify the quality of service; CID =0 does not support the query command.
	(1-16)	Numerical parameter; used to specify some the PDP context which is defined as a local parameter for TE-MT interface, and can be used for other PDP context dependent commands.
<precedence> Numeric parameter; used to specify a priority level	0	Network customization parameters
	1	Implementation of high priority service commitment before priority 2 and priority 3
	2	Implementation of general priority service commitment before priority 3

	3	Implementation of low priority service commitment
<delay> Numeric parameter; used to specify delay level	0	Network customization parameters
	1	-
	2	-
	3	-
	4	-
<reliability> Numeric parameter; used to specify the level of reliability for handling unusual data loss	0	Network customization parameters
	1	Unable to handle non real time services and error sensitive applications when data is lost
	2	Able to handle non real time services and error sensitive applications when data is lost
	3	Able to handle GMM/SM and SMS for non real time services and error sensitive applications when data is lost
	4	Able to handle Real time service and error sensitive applications when data is lost
	5	Able to handle non real time services and error sensitive applications when data is lost
<peak> Numeric parameter; used to specify peak throughput level	0	Network customization parameters
	1	Maximum 1 000 (8 kbit/s)
	2	Maximum 2 000 (16 kbit/s)
	3	Maximum 4 000 (32 kbit/s)
	4	Maximum 8 000 (64 kbit/s)
	5	Maximum 16 000 (128 kbit/s)
	6	Maximum 32 000 (256 kbit/s)
	7	Maximum 64 000 (512 kbit/s)
	8	Maximum 128 000 (1 024 kbit/s)
	9	Maximum 256 000 (2 048 kbit/s)
String parameters for <PDP_type> packet data	"IP"	-

protocol type		
<mean> defines the numerical parameters of the average throughput level	0	Network customization parameters
	1	100 (~ 0. 22 bit/s)
	2	200 (~ 0. 44 bit/s)
	3	500 (~ 1. 11 bit/s)
	4	1 000 (~ 2. 2 bit/s)
	5	2 000 (~ 4. 4 bit/s)
	6	5 000 (~ 11. 1 bit/s)
	7	10 000 (~ 22 bit/s)
	8	20 000 (~ 44 bit/s)
	9	50 000 (~ 111 bit/s)
	10	100 000 (~ 0. 22 kbit/s)
	11	200 000 (~ 0. 44 kbit/s)
	12	500 000 (~ 1. 11 kbit/s)
	13	1 000 000 (~ 2. 2 kbit/s)
	14	2 000 000 (~ 4. 4 kbit/s)
	15	5 000 000 (~ 11. 1 kbit/s)
	16	10 000 000 (~ 22 kbit/s)
	17	20 000 000 (~ 44 kbit/s)
	18	50 000 000 (~ 111 kbit/s)
	31	Minimum

AT+CGQREQ=<cid> can be used to cancel the set parameters, CID is 1 or 2;

All service quality options are 0, such as: AT+CGQREQ=1, 0, 0, 0, 0, 0 will cancel the default parameters, rather than the corresponding CID parameters to cancel.

4. 2. 4. Required service quality briefing: AT+CGEQREQ

When this command allows the MT to send a PDP context activation Request message to the network, TE specifies a service quality. Using the set command, you can specify a briefing for the context that is identified by the (local) context ID parameter <cid>. The command set specifies an application for the context identified by the local context identifier <cid>. This is the same as the + CGDCONT command, so the + CGQREQ command is actually an extension of the + CDDCONT command. The QoS application consists of many parameters, each of which can be set to a

separate value. The special form of the command, that is, + CGQREQ = <cid>, removes the defined <cid> quality of service. The query command returns the current setting of each defined context. test command returns a composite value. If MT supports several PDP types, the value range for each PDP type returns on a separate line.

Table 199: AT+CGEQREQ operation command

Type	Command	Possible return results	Description
Set Command	AT+CGEQREQ=[<cid>[, <Traffic class>[, <Maximum bitrate UL> [, <Maximum bitrate DL>[, <Guaranteed bitrate UL>[, <Guaranteed bitrate DL> [, <Delivery order>[, <MaximumSDU size>[, <SDU error ratio> [, <Residual bit error ratio>[, <Delivery of erroneous SDUs>[, <Transfer delay>[, <Traffic handling priority>[, <Source statistics descriptor>[, <Signalling indication>]]]]]]]]]]]]] <peak>, <mean>]]]]]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGEQREQ?	+CGEQREQ: <cid>, <Traffic class>, <Maximum bitrate UL>, <Maximum bitrate DL>, <Guaranteed bitrate UL>, Guaranteed bitrate DL>, <Delivery	-

		order>, <Maximum SDU size>, <SDU error ratio>, <Residual bit error ratio>, <Delivery of erroneous SDUs>, <Transfer delay>, <Traffic handling priority>, <Source statistics descriptor>, <Signalling indication>[<CR><LF>+CGEQREQ: - OK	
Test command	AT+CGEQREQ=?	+CGEQREQ: <PDP_type>, (<Traffic class> value list), (<Maximum bitrate UL>value list), (<Maximum bitrate DL>value list), (<Guaranteed bitrate UL>value list), <Guaranteed bitrate DL>value list), (<Delivery order>value list), (<Maximum SDU size>value list), (<SDU error ratio>value list), (<Residual bit error ratio>value list), (<Delivery of erroneous SDUs>value list), (<Transfer delay>value list), (<Traffic handling priority>value list) , (<Source statistics descriptor>value list), (<Signalling indication>value list) [<CR><LF>+CGEQREQ: -	-

		OK	
Command routine	AT+CGEQREQ=1, 2, 64, 1600, 0, 0, 0, 0, "0E0", "0E0", , 0, 0	OK	-
	AT+CGEQREQ?	+CGEQREQ: 1, 2, 64, 1600, 0, 0, 0, 0, "0E0", "0E0", 0, 0, 0 OK	-
	AT+CGEQREQ=?	+CGEQREQ: "IP", (0-4), (0-5760), (0-42200), (0-5760), (0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1), (0, 1) +CGEQREQ: "PPP", (0-4), (0-5760), (0-42200), (0-5760), (0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1), (0, 1) +CGEQREQ: "IPV6", (0-4), (0-5760), (0-42200), (0-5760), (0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1),	-

		(0, 1) +CGEQREQ: "IPV4V6", (0-4), (0-5760), (0-42200), (0-5760), (0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1), (0, 1) OK	

Table 200: Detailed description of AT+CGEQREQ Parameter

Parameter	Value	Description
<cid>	0	Default parameter, the parameter is used when the PDP is activated, if the corresponding CID does not specify the quality of service, and cid=0 does not support the query command
	(1-16)	Numerical parameter; used to specify that the PDP context is defined as a local parameter for TE-MT interface, and can be used for other PDP context dependent commands
<Traffic class> application Type of UMTS Bearer service, Refer to UMTS QOS type	0	Conversational type
	1	Character string
	2	Interactive type
	3	Background
	4	User customization
<Maximum bitrate UL>, <Maximum bitrate DL>up and down	0	User customized up and down parameter
	65535	0kpbs
	1-63	in 1 kbps increment
	64-568	in 8 kbps increment
	576-8640	in 64 kbps increment

Maximum bitrate	8641-16000	in 100 kbps increment
<Guaranteed bitrate UL> <Guaranteed bitrate DL>	Parameter Value and <Maximum bitrate UL>, <Maximum bitrate DL>	
<Delivery order> Used to indicate whether the UMTS load send to SDU string in order	0	No
	1	Yes
	2	User specified
<Maximum SDU size>Maximum range of SDU strings	0	User customization
	10-1500	in 10 octets increments
	1502	-
	1520	-
<SDU error ratio> SDU string error rate "mEe" form, indicates m*10-3	0E0	Network customized Parameter
	1E1	
	1E2	100 (~ 0. 22 bit/s)
	7E3	200 (~ 0. 44 bit/s)
	1E3	500 (~ 1. 11 bit/s)
	1E 4	1000 (~ 2. 2 bit/s)
	1E 5	2 000 (~ 4. 4 bit/s)
	1E 6	5000 (~ 11. 1 bit/s)
<Delivery of erroneous	0	No
	1	Yes

SDUs> Used to indicate whether the error detected in the SDU string is sent	2	Not detected
	3	User specified
<Residual bit error ratio>	Parameter and <SDU error ratio>	
<Transfer delay>	0	User specified
	10-150	Increased by 10ms
	200-950	Increased by 50ms
	1000-4000	Increased by 100ms
<Traffic handling priority>	0	User specified transmission delay
	1	Priority 1
	2	Priority 2
	3	Priority 3
<Source statistics descriptor>	0	Characteristics of SDUs is unknown (default value)
	1	Characteristics of SDUs corresponds to a speech source
<Signalling indication>	0	PDP context is not optimized for signalling (default value)
	1	PDP context is optimized for signalling <PDP_type>: (see CGDCONT command)

AT+CGEQREQ=<cid> can be used to cancel the set parameters;

All service quality options are 0, e.g. AT+CGEQREQ=1, 0, 0, 0, 0, 0 cancel the default parameters, rather than cancel the corresponding CID parameters.

4. 2. 5. Minimum acceptable service quality briefing: AT+CGQMIN

This command allows TE to specify a minimum acceptable service quality. The briefing is tested by MT is compared with negotiating briefing returned by " PDP context activation" message. The command set specifies an application for context identified by local context identification

parameters <cid>. This is the same as the parameters used in the +CGDCONT command, so the +CGQMIN command is actually the extension of +CDDCONT command. QoS application consists of many parameters, each of which is set to a single value. Use set command to specify a briefing identified by context (local) identification parameters <cid >. The special form of the command +CGQMIN=<cid> cancels the defined <cid> quality of service. In this case, negotiated application will not be checked. The query command returns the current settings for each defined context. Testing command returns to a composite value. If MT supports several PDP types, the value range for each PDP type is returned on a separate line.

Table 201: AT+CGQMIN operation command

Type	Command	Possible return results	Description
Set Command	AT+CGQMIN=[<cid> [, <precedence> [, <delay>[, <reliability> [, <peak>, <mean>]]]]]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGQMIN?	+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>[<CR><LF> +CGQMIN: <cid>, <precedence>, <delay>, <reliability>, <peak>, <mean>[…]] OK	-
Test command	AT+CGQMIN=?	+CGQMIN: <PDP_type>, (<precedence>value list), (<delay>Value list), (<reliability> value list) , (<peak>value list), (<mean>value list) OK	-

Command routine	AT+CGQMIN=1, 1, 0, 2, 5, 0	OK	-
	AT+CGQMIN?	+CGQMIN: 1, 1, 0, 2, 5, 0 OK	-
	AT+CGQMIN=?	+CGQMIN: "IP", (0-3), (0-4), (0-5), (0-9), (0-18, 31) +CGQMIN: "PPP", (0-3), (0-4), (0-5), (0-9), (0-18, 31) +CGQMIN: "IPV6", (0-3), (0-4), (0-5), (0-9), (0-18, 31) +CGQMIN: "IPV4V6", (0-3), (0-4), (0-5), (0-9), (0-18, 31) OK	-

4. 2. 6. 3G minimum acceptable service quality: AT+CGEQMIN

This command allows TE to specify a 3G minimum acceptable service quality. The briefing is tested by MT is compared with negotiating briefing returned by " PDP context activation" message. The command set specifies an application for context identified by local context identification parameters <cid>. This is the same as the parameters used in the +CGDCONT command, so the +CGQMIN command is actually the extension of +CDDCONT command. QoS application consists of many parameters, each of which is set to a single value. Use set command to specify a briefing identified by context (local) identification parameters <cid >. The special form of the command +CGQMIN=<cid> cancels the defined <cid> quality of service. In this case, negotiated application will not be checked. The query command returns the current settings for each defined context. Testing command returns to a composite value. If MT supports several PDP types, the value range for each PDP type is returned on a separate line.

Table 202: AT+CGEQMIN operation command

Type	Command	Possible return results	Description
Set Command	AT+CGEQMIN==[<cid> [, <Traffic class>	OK	-

	[, <Maximum bitrate UL> [, <Maximum bitrate DL> [, <Guaranteed bitrate UL> [, <Guaranteed bitrate DL> [, <Deliveryorder> [, <MaximumSDU size> [, <SDU error ratio> [, <Residual bit error ratio> [, <Delivery of erroneous SDUs> [, <Transfer delay> [, <Traffic handling priority> [, <Source statistics descriptor> [, <Signalling indication>]]]]]]]]]]]]] <peak>, <mean>]]]]]] [, <peak>, <mean>]]]]]]		
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGEQMIN?	+CGQMIN: <cid>, <Traffic class>, <Maximum bitrate UL>, <Maximum bitrate DL>, <Guaranteed bitrate UL>, Guaranteed bitrate DL>,	-

		<Delivery order>, <Maximum SDU size>, <SDU error ratio>, <Residual bit error ratio> , <Delivery of erroneous SDUs>, <Transfer delay>, <Traffic handling priority>, <Source statistics descriptor>, <Signalling indication>[<CR><LF> +CGQMIN: - OK	
Test command	AT+CGEQMIN=?	+CGEQMIN: <PDP_type>, (<Traffic class>value list), (<Maximum bitrate UL>value list), (<Maximum bitrate DL>value list), (<Guaranteed bitrate UL>value list), <Guaranteed bitrate DL>value list), (<Delivery order>value list), (<Maximum SDU size>value list), (<SDU error ratio>value list), (<Residual bit error ratio>value list), (<Delivery of erroneous SDUs>value list), (<Transfer delay>value list), (<Traffic handling priority>value list), (<Source statistics descriptor>value list), (<Signalling indication>value list)[<CR><LF> +CGEQMIN: - OK	-
Command	AT+CGEQMIN=1, 2,	OK	-

routine	64, 1600, 0, 0, 0, 0, "0E0", "0E0", , 0, 0		
	AT+CGEQMIN?	+CGEQMIN: 1, 2, 64, 1600, 0, 0, 0, 0, "0E0", "0E0", 3, 0, 0, 0, 0 OK	-
	AT+CGEQMIN=?	+CGEQMIN: "IP", (0-4), (0-5760), (0-42200), (0-5760), (0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1), (0, 1) +CGEQMIN: "PPP", (0-4), (0-5760), (0-42200), (0-5760), (0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1), (0, 1) +CGEQMIN: "IPV6", (0-4), (0-5760), (0-42200), (0-5760), (0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1), (0, 1) +CGEQMIN: "IPV4V6", (0-4), (0-5760), (0-42200), (0-5760),	-

		(0-42200), (0-2), (0-1520), ("0E0", "1E1", "1E2", "7E3", "1E3", "1E4", "1E5", "1E6"), ("0E0", "5E2", "1E2", "5E3", "4E3", "1E3", "1E4", "1E5", "1E6", "6E8"), (0-3), (0, 100-4000), (0-3), (0, 1), (0, 1) OK	

4. 2. 7. GPRS attachment and separation: AT+CGATT

Execute command is used to attach MT to the GPRS service, or separate MT from the GPRS service. After the command is executed successfully, the MT maintains the V. 250ter command status. If the MT is in the requested state, ignore the command and return to OK. If the requested state is not completed, return to a ERROR or +CME ERROR response. Use the +CMEE command to enable an extended error response When the MT is changed from the ATTACH state to the DETTACH state, any active PDP context will automatically expire and will automatically activate all PDP contexts.

Read command returns the current GPRS service state.

Test command is used to require information about the state of supported GPRS service.

Table 203: AT+CGATT operation command

Type	Command	Possible return results	Description
Set Command	AT+CGATT=[<state>]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGATT?	+CGATT: <state> OK	-
Test command	AT+CGATT=?	+CGATT: (<state>value list) OK	-
Command routine	AT+CGATT?	+CGATT: 1 OK	Query GPRS attach state
	AT+CGATT=0	OK	-

	AT+CGATT=?	+CGATT: (0, 1) OK	-

Table 204: Detailed description of AT+CGATT Parameter

Parameter	Value	Description
<state> GPRS Attachment state	[0]	Separation
	1	Attachment

If the argument <state> is omitted, the attachment state of the GPRS is changed.

4. 2. 8. PDP context activation and deactivation: AT+CGACT

The PDP context can be activated or deactivated by using an execution command. After the command is successfully executed, MT maintains the V. 250ter command state. If the PDP context is already in the requested state, the state remains unchanged. A ERROR or +CME ERROR response is returned if the specified context state cannot be entered. An error response can be extended by using the +CMEE command. When executing the active form of the command, if MT is not attached to the GPRS, MT is attached to the GPRS first, and then attempts to activate the specified context. If the attachment fails, the MT responses to ERROR; or, if enable the expanded error response, then reasonable connection failure of MT is a failed message response. If no <cid> is specified, then the activated form of command activate all defined context. If no <cid> is specified, then the failure form of the command fails all activate context.

The query command returns to the current activation state of all defined PDP contexts.

Test command is used to request information about the active state of the PDP context supported.

Table 205: AT+CGACT operation command

Type	Command	Possible return results	Description
Set Command	AT+CGACT=<state>, <cid>[, <cid>[, …]]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query	AT+CGACT?	+CGACT: <cid>,	-

command		<state>[<CR><LF> +CGACT: <cid>, <state>[. . .]] OK	
Test command	AT+CGACT=?	+CGACT: (<state>value list) OK	-
Command routine	AT+CGDCONT=1, "IP", "CMNETWORK" AT+CGACT=1, 1 AT+CGACT=0, 1	OK(set PDP context) OK(PDP activation) OK(PDP去activate)	-
	AT+CGACT?	+CGACT: 1, 0 OK	-
	AT+CGACT=?	+CGACT: (0, 1) (before activating context, MT must connect to the GPRS network by completing the automatic GPRS connection) OK	-
	AT+CGACT = 0	OK(deactivate all context)	-
	AT+CGACT = 1	OK(activate the first possible context)	-

Table 206: Detailed description of AT+CGACT Parameter

Parameter	Value	Description
<state>activation state of PDP context	[0]	Deactivate
	1	activate
<cid>	-	Refer toAT+CGDCONT

4. 2. 9. Enter data mode: AT+CGDATA

Execution command make MT use one or more packet domain of PDP type, execute corresponding operation, and establish communication between TE and network. This includes implementation of PS domain attachment and one or more PDP context activation. If the command is executed successfully, CONNECT presents and enters the V. 250ter online state; if failed, such as the L2P parameter cannot be accepted by MT, then MT returns to ERROR or +CME ERROR(if enabled) to respond.

MT can not deal with AT command entered after the command is successfully executed and entered into the online data state.

After the data transmission is completed, and the second layer protocol termination process completed successfully, reenter the V. 25ter command, MT returns to the final result code OK. If the error termination occurs or start fails, reenter the V. 25ter command, MT returns to the final results NO CARRIER or +CME ERROR code (if enabled). The link, activation and other error indication can be reported.
Test command is used to require information about the supported layer 2 protocol, which can be used in normal mode and modem compatible mode.

Table 207: AT+CGDATA operation command

Type	Command	Possible return results	Description
Set Command	AT+CGDATA=[<L2P>, [<cid> [, <cid> [, …]]]]	CONNECT	If the communication is successful, MT returns CONNECT and enters the V. 250ter online data status
		OK	At the end of the data transfer and the layer 2 protocol termination process is completed, re-enter the V. 250ter command state, MT returns the final result code

			OK.
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CGDATA=?	+CGDATA: (<L2P>value list) OK	-
Command routine	AT+CGDATA=?	+CGDATA: ("PPP") OK	The layer 2 protocol used between TE and MT is "PPP"
	AT+CGDATA=1	CONNECT	-

Table 208: Detailed description of AT+CGDATA Parameter

Parameter	Value	Description
<L2P>	"PPP"	Character type parameter; used to indicate layer 2 protocol used between TE and MT
<cid>	-	Mandatory, see AT+CGDCONT

If the value of CID is undefined for MT, then MT returns a ERROR or +CME ERROR response. Otherwise, MT sends an intermediate result code CONNECT and enters the V. 25ter connection data status;

If you do not use +CGATT and +CGACT command to perform GPRS attachment and PDP context activation, these two processes can be preceded or performed in the PDP startup process;

Specify one or more <cid> if context activates during PDP start-up process to require needed information for context activation. MT can get the following some or all of the information: the prior knowledge, such as it can only achieve a type of PDP. In the PDP startup process TE can provide a type of PDP and / or PDP address for MT;

If there is any information conflict, this command fails. Any PDP type and PDP address in the above information will compare with which defined by aby context specified by the command according to their <cid> sequence. To match a context definition PDP type must match exactly.

If PDP address is the same or one or two of them is not specified, then PDP address matches. For example, if PPP NCP requires to determine PDP type as IP with no PDP address, then MT will search a definition of PDP type without PDP address in specified

context definition. Activate the context by using available match value of PDP type and static PDP address value, together with other information in PDP context definition. If a static PDP address is not available, a dynamic address is requested;

If you do not have a <cid> or matching context definition, MT will attempt to activate the context with any information available. Other context parameters will be set to the default value.

4. 2. 10. Display PDP address: AT+CGPADDR

Use this command to return to PDP addresses list specified by context identifier.

When test command is executed, return to the value list of the <cid>.

Table 209: AT+CGPADDR operation command

Type	Command	Possible return results	Description
Set Command	AT+CGPADDR =[<cid> [, <cid>[, …]]]	+CGPADDR: <cid>, <PDP_addr>[<CR><LF> +CGPADDR: <cid>, <PDP_addr>[. . .]] OK	-
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CGPADDR =?	+CGPADDR: (<cid>value list) OK	-
Command routine	AT+CGPADDR	+CGPADDR: 1,10.186.149.149 OK	Display current IP address
	AT+CGPADDR =?	+CGPADDR: (1) OK	-

Table 210: Detailed description of AT+CGPADDR Parameter

Parameter	Value	Description
<cid>	-	Numerical Parameter; used to specify the definition of a particular PDP context (see AT+CGDCONT). If you omit <cid>, return to the address of all defined contexts.
<PDP_address>	-	Character parameter; used to identify address of specific PDP context received by MT. The address can be static or

		dynamic. The static address is set by +CGDCONT command; dynamic address is the address assigned when the context definition is referenced by the <cid> in the last PDP context activation process. when the address is not available, omit the <PDP_address>.

4. 2. 11. GPRS mobile station category: AT+CGCLASS

Use the set command to enable MT to operate under the specified class. If required type is not supported, return to ERROR or +CME ERROR response.

The query command returns the current GPRS mobile class.

Test command is used to obtain a list of information for all supported GPRS mobile classes.

Table 211: AT+CGCLASS operation command

Type	Command	Possible return results	Description
Set Command	AT+CGCLASS=<class>	OK	-
		ERROR/+CME ERROR: <err>	Do not support Parameter<class>
Query command	AT+CGCLASS?	+CGCLASS: <class> OK	-
Test command	AT+CGCLASS=?	+CGCLASS: (<class>value list) OK	-
Command routine	AT+CGCLASS="A"	OK	-
	AT+CGCLASS?	+CGCLASS: "A" OK	GPRS mobile class query
	AT+CGCLASS=?	+CGCLASS: ("A") OK	All mobile classes supported by mobile station

Table 212: Detailed description of AT+CGCLASS Parameter

Parameter	Value	Description

<class> character parameter; indicates GPRS mobile station class(according to the function of descending order); the default value is "A", and the value range is only "A"	"A"	A mobile phone has the ability to provide GPRS and circuit switched bearer service at the same time, which means performing general GSM voice service and meanwhile receiving GPRS packets. After launching GPRS service, user can wear integrated microphone headset based on the Bluetooth technology, use human characteristics PDA (such as HiTravel, Palm, WinCE, etc.), make a call and surf on the Internetwork at one time.
	"B"	If MS can listen to the two paging information system simultaneously(eg. paging channel through GPRS) can attache the GSM. system and GPRS system, but in a moment it can either use circuit switching or packet switching service.
	"C"	Only in the GPRS mode is the class C, MS attaches in the GSM network, or GPRS network. It can only be switched manually; there is no way to do two kinds of operations at the same time.

4. 2. 12. GPRS event reporting: AT+CGEREP

Use set command to enable or disable the processing of non-request result code +CGEV: from MT to TE when certain events occur on the GPRS MT or network side. <mode> controls processing of the non required result code.

The query command returns the current mode and buffer settings.

Test command returns the current mode and buffer settings supported by MT.

Table 213: AT+CGEREP operation command

Type	Command	Possible return results	Description
Set Command	AT+CGEREP=[<mode>[, <bfr>]]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGEREP?	+CGEREP: <mode>, <bfr> OK	-

Test command	AT+CGEREP=?	+CGEREP: (<mode>value list), (<bfr>value list) OK	-
Command routine	AT+CGEREP=2 AT+CGATT=0	OK OK +CGEV: ME DEACT IP, 10. 191. 143. 135, 1 +CGEV: ME DETACH	PDP context deactivate network forcing GPRS to separate
	AT+CGEREP?	+CGEREP: 2, 0 OK	-
	AT+CGEREP=?	+CGEREP: (0-2), (0-1) OK	-

Table 214: Detailed description of AT+CGEREP Parameter

Parameter	Value	Description
<mode>	[0]	Non-request result code of buffer MT; if the MT result code buffer is full, discard the oldest result code. Do not forward the result code to TE.
	1	When the MT-TE link is in a reserved state (such as in an online data state), the non-request result code is discarded; otherwise, the MT directly forwards the non-request result code to TE.
	2	When the MT-TE link is in the reserved state (for example, in the online data state), buffer MT non-request result code; when the ME-TE link is available, write all the results of the code in TE; otherwise, directly forwarded to TE.
<bfr>	[0]	When the input <mode> parameter value is 1 or 2, clear buffer of MT's non-request result code defined by the command MT that is defined by the command is cleared of the for the.
	1	When the input <mode> parameter value is 1 or 2, the MT buffer of the non-request result code defined by the command will be written to TE (OK) before writing the result code.

Table 215: Currently defined active result codes and related events

Active result code	Corresponding events	Description
+CGEV: REJECT <PDP_type>, <PDP_addr>	MT reject network PDP context activation	MT rejects network PDP context activation request message, and unable to use the +CRING of the request on time, report the situation by using the unsolicited result code.
+CGEV: NWREACT <PDP_type>, <PDP_addr>, [<cid>]	Network request context reactivation	If MT knows the <cid> used to activate the context, then provide <cid>
+CGEV: NWDEACT <PDP_type>, <PDP_addr>, [<cid>]	Network forced context deactivation	If MT knows the <cid> used to activate the context, then provide <cid>
+CGEV: MEDEACT <PDP_type>, <PDP_addr>, [<cid>]	ME mobile device forced context deactivation	If MT knows the <cid> used to activate the context, then provide <cid>
+CGEV: NW DETACH	Network forced GPRS separation	This means that all active contexts are invalid and will no longer activate the message
+CGEV: ME DETACH	Mobile device forced GPRS separation	This means that all active contexts are invalid and will no longer activate the message
+CGEV: NW CLASS <class>	Network forced MS category changes	Report the highest available priority class
+CGEV: ME CLASS <class>	Network device forced changes in	Report the highest available priority class

	MS category	

If the parameter <mode> is omitted, the parameter value can be assumed to be the value of the last command executed or use default value [0];

If the parameter <bfr> is omitted, the parameter value can be assumed to be the use value of the last command executed or use the default value [0].

4. 2. 13. GPRS network registration status: AT+CGREG

Set command to control +CGREG active reporting events.

When the <n>=1 and MT GPRS registration status has changed, this command set controls the non-request result code + CGREG, namely there will be a +CGREG: <stat> report.

When <n>=2 and registered cell changes, there will be: +CGREG: <stat>[, <lac>, <ci>] report.

The query command returns the display form of the result code and a parameter that indicates the state of the MT network registration <stat>. only when <n>=2 and MT are registered in the network, return to the location information element <lac> and <ci>.

Table 216: AT+CGREG operation command

Type	Command	Possible return results	Description
Set Command	AT+CGREG=[<n>]	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CGREG?	+CGREG: <n>, <stat>[, <lac>, <ci>[, <ACT>, <rac>]] OK	-
Test command	AT+CGREG=?	+CGREG: (<n>value list) OK	-
Command routine	AT+CGREG=1	OK	-
	AT+CGREG?	+CGREG: 1, 1 OK	-
	AT+CGREG=?	+CGREG: (0-2) OK	-

Table 217: Detailed description of AT+CGREG Parameter

Parameter	Value	Description
<n>	[0]	Disable network registration for non-request result code +CGREG:
	1	Enable network registration request result code
	2	Enable network registration and location information non-request result code+CGREG: <stat>[, <lac>, <ci>]
<stat>	0	Not registered; ME currently does not have a new operator to register the service
	1	Registered, local network
	2	Not registered, but ME is searching for new operators to register the service
	3	Registration rejected
	4	Unknown
	5	Registered, roaming
<lac>	-	Character type; 2 bytes decimal location code (e.g. 00C3 equivalent to the decimal 195)
<ci>	-	Character type; 2 bytes decimal cell number

4. 2. 14. Select service for MO SMS: AT+CGSMS

Set Command is used to send a MO SMS message in MT when specifying a service or service priority.

Query command returns the currently selected service or service priority.

Test command is used to query information about the currently available service and service preferences.

Table 218: AT+CGSMS operation command

Type	Command	Possible return results	Description
Set Command	AT+CGSMS=<service>	OK	-
		ERROR/+CME ERROR: <err>	Failure

Query command	AT+CGSMS?	+CGSMS: <service> OK	-
Test command	AT+CGSMS=?	+CGSMS: (<service>value list) OK	-
Command routine	AT+CGSMS=1	OK	-
	AT+CGSMS?	+CGSMS: 1 OK	-
	AT+CGSMS=?	+CGSMS: (0-3) OK	-

Table 219: Detailed description of AT+CGSMS Parameter

Parameter	Value	Description
<service> service or service priority level	0	GPRS
	1	Circuit switching
	2	Preferred GPRS (if GPRS is not available, use circuit switching)
	3	Preferred circuit switching (if circuit switching is not available, use GPRS)

4. 2. 15. Request GPRS server: ATD*99#

This command will enable MT to initiate a series of operations necessary to establish a TE and PDN (Public Data Network) communication link between V. 25ter. The 'D' (DIAL) command, MT enters into the V. 25ter online data state, together with TE start the specified layer 2 protocol. The command line is followed by the other AT commands will not be executed. Detailed behavior after entering the online data state depends on the PDP (Packet Data Protocol). If you do not use the AT+CGATT and AT+CGACT command for GPRS attachment and PDP context activation, the two types of operation may occur before or during PDP start-up. If <cid> is supported, its usage is the same as in +CGDATA Command. +CGDCONT, +CGQREQ and other commands can be used to initialize the AT command string to set the value of the PDP type, APN, QoS and other values. If <cid> is not supported, or support is ignored, MT will try to use the following information to activate the context:

Any information provided by TE during the PDP boot process, namely TE can provide the PDP type and / or PDP address to the MT;

Prior knowledge that MT can only implement a PDP type;

Use the "Empty PDP type" (GSM 4. 08) (in this case, without sending the PDP address and APN, only a PDP context reservation record will be present in the HLR of the intended person).

Table 220: ATD*99# operation command

Type	Command	Possible return results	Description
Set Command	ATD*99[*[<called_address>][*[<L2P>][*[<cid>]]]]#	CONNECT	Connect successfully
		NO CARRIER	If the layer 2 protocol is terminated, either PDP or V. 25ter is turned off, the MT will enter the state and return the result
		ERROR/ +CME RROR: <err>	Command execution error
Command routine	ATD*99**1#	CONNECT 150000000	Close the serial port, exit the data state, return to NO CARRIER, and then SSCOM can be issued under the normal other AT command

Table 221: Detailed description of ATD*99# parameter

Parameter	Value	Description
<called_address>	-	Should be ignored
<L2P>	"PPP"	-
<cid>	-	See AT+CGDCONT

4. 2. 16. Manually accept network side PDP context activation request: ATA

The set command is used to accept the PDP context activation request on the network side, which is initiated by a non-request result code RING.

Table 222: ATA operation command

Type	Command	Possible return results	Description
Set Command	ATA	CONNECT	-TBD

4. 2. 17. Manually reject network side PDP context activation request: ATH

The set command is used to reject the PDP context activation request on the network side, which is initiated by a non-request result code RING.

Table 223: ATH operation command

Type	Command	Possible return results	Description
Set Command	ATH	OK	-

5. GSM Rec. 07. 05 AT Command

5. 1. Overview

This chapter will introduce the AT command in GSM Rec. 07. 05 from the following aspects:

General configuration commands

Message configuration command

Message receiving and reading command

message sending and sending command

5. 2. General configuration Command

5. 2. 1. Short message service capability: AT+CSMS

This command applies to PDU and text mode, set command is used to set short message service ability, return to short message service type supported by ME: including the short message of SMSMO<mo> launched by and SMS-MT<mt> received by mobile station, and SMS - CB cell broadcast message service: <bm>.

Table 224: AT+CSMS operation command

Type	Command	Possible return results	Description
Set Command	AT+CSMS=<service>	+CSMS: <mt>, <mo>, <bm> OK	ME returns to the message type supported by TA
		ERROR/+CME ERROR: <err>	If ME does not support but TA supports the selected message type
Query command	AT+CSMS?	+CSMS: <service>, <mt>, <mo>, <bm> OK	-
Test command	AT+CSMS=?	+CSMS: (<service>value list) OK	0, 1
Command routine	AT+CSMS=0	+CSMS: 1, 1, 1 OK	Set AT command compatible with

			Phase 2, support SMS-MO, SMS-MT, SMS-CB
	AT+CSMS?	+CSMS: 0, 1, 1, 1 OK	Set AT command compatible with Phase 2, support SMS-MO, SMS-MT, SMS-CB
	AT+CSMS=?	+CSMS: (0-1) OK	The parameter value of "+CSMS" is 0 or 1

Table 225: Detailed description of AT+CSMS Parameter

Parameter	Value	Description
<service>	0	GSM03. 40 and 3. 41 (AT command syntax of SMS is compatible with the 4. 7. 0 version of GSM07. 05 Phase 2); supports Phase 2+ features that do not require new command syntax (eg. message routing using the Phase 2+ new coding scheme)
	1	GSM03. 40 and 3. 41 (SMS AT command syntax compatible with GSM07. 05 Phase 2+ version)
<mt>	0	Type not supported
	1	Type supported
<mo>	0	Type not supported
	1	Type supported
<bm>	0	Type not supported
	1	Type supported

5. 2. 2. Select message storage area: AT+CPMS

This command is applicable to PDU and text mode, which is used to define the storage area used for short message reading and writing operations. The set command is used to read, store the memory, including <mem1>, <mem2> and <mem3>, these three memories can be set to SM and ME, SM means SIM card, ME is the SLM730 module or mobile terminal.

Table 226: AT+CPMS operation command

Type	Command	Possible return results	Description
Set Command	AT+CPMS=<mem1> [, <mem2>[, <mem3>]]	+CPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3> OK	-
		ERROR/+CME ERROR: <err>	The selected memory does not apply to ME
Query command	AT+CPMS?	+CPMS: <mem1>, <used1>, <total1>, <mem2>, <used2>, <total2>, <mem3>, <used3>, <total3>X OK	-
		ERROR/+CME ERROR: <err>	This error relates to ME functionality
Test command	AT+CPMS=?	+CPMS: (<mem1>value list), (<mem2>value list), (<mem3>value list) OK	-
Command routine	AT+CPMS?	+CPMS: "ME", 0, 23, "ME", 0, 23, "SM", 11, 50 OK	The preferred memory to read and delete messages is the default ME
	AT+CPMS="SM"	+CPMS: 20, 20, 0, 23, 20, 20 OK	Set preferred memory when reading and deleting messages to SM; 20 -- the current SIM card stored 20 short messages; 20 -- SIM can

			store 20 Short Messages; SIM card is full, if you want to continue to save, you need to delete the current short message storage.
	AT+CPMS=?	+CPMS: ("ME", "MT", "SM", "SR"), ("ME", "MT", "SM", "SR"), ("ME", "MT", "SM", "SR") OK	-

Table 227: Detailed description of AT+CPMS Parameter

Parameter	Value	Description
<mem1> the memory used to read and delete messages can be set by the following three AT commands: AT+CMGL, AT+CMGR, AT+CMGD	"SM"	SM is the SIM card storage area
	"ME"	ME is the storage area for the SLM730 module
	"SR"	SR storage area for short message status report for SLM730 module
<mem2> to write, store and send messages when used by the memory, it can be set by the following two AT commands: AT+CMSS and AT+CMGW	"SM"	SM is the SIM card storage area
	"ME"	ME is the storage area for the SLM730 module
	"SR"	SR storage area for short message status report for SLM730 module
If <mem3> does not establish a route to TE, the received message is stored in the memory	"SM"	SM is the SIM card storage area
	"ME"	ME is the storage area for the SLM730 module
	"SR"	SR storage area for short message status report for SLM730 module
<used1, 2, 3>	-	Current number of messages

		stored in <mem1, 2, 3>
<total1, 2, 3>	-	Total number of messages that can be stored in <mem1, 2, 3>

SIM card and ME support only a maximum of 100 messages;

Use AT+CPMS to see what the preferred memory is and then choose one of them according to your own needs. eg. Use AT+CPMS= "me", "SM", "SM" to select me. The preferred memory is to read and write, rather than the preferred order for the arrival of the new short message. In order to keep them consistent, it is recommended that you keep <mem1>=<mem3>as the same.

5. 2. 3. Set SMS format: AT+CMGF

The set command is used to specify the format of the input and the sending of the short message, namely, tell TA input and output message format. The current version supports short messages in two formats PDU and TEXT and the two can be switched at any time.

Table 228: AT+CMGF operation command

Type	Command	Possible return results	Description
Set Command	AT+CMGF=[<mode>]	OK	-
Query command	AT+CMGF?	+CMGF: <mode> OK	-
Test command	AT+CMGF=?	+CMGF: (<mode>value list) OK	-
Command routine	AT+CMGF?	+CMGF: 0 OK	Query the current short message format, the default is PDU format
	AT+CMGF=1	OK	Short message format set into text mode
	AT+CPMS=?	+CMGF: (0-1) OK	

Table 229: Detailed description of AT+CMGF parameter

Parameter	Value	Description

<mode> Display the active reporting format of message when sending, listing, reading and writing command and receiving messages	0	PDU mode, the default is "0"
	1	Text mode

5. 2. 4. Short message service failure result code

Short message service failure result code describes a mobile device or network error. Its effect is similar to that of the wrong result. This code often occurs when an command fails. Returns the result code: +CME ERROR: <err> and +CMS <err> ERROR: are used to indicate ME or network side errors.

Table 230: +CMS ERROR operation command

Type	Command	Possible return results	Description
-	-	+CMS ERROR: <err> Or +CME ERROR: <err>	-

Table 231: Detailed description of +CMS ERROR parameter

Parameter	Value	Description	Related AT Command
<err>	0 ~ 127	The value of GSM 4. 11 Annex E-2	+CMGS, +CMSS
	128 ~ 255	Values in chapter 9. 2. 3. 22 of GSM 3. 40	
	300	ME fault	
	301	Reserved ME SMS service	+CSMS
	302	Operation not allowed	All related AT commands with SMS
	303	Operation not supported	All related AT commands with SMS
	304	Invalid parameters in PDU mode	+CMGS, +CMGW
	305	Invalid parameter in TEXT mode	+CMGS, +CMGW, +CMSS
	310	SIM card is not inserted	All related AT commands with

			SMS
	311	Need SIM card PIN	All related AT commands with SMS
	312	Need PH-SIM card PIN	All related AT commands with SMS
	313	SIM card fault	All related AT commands with SMS
	314	SIM card is busy	All related AT commands with SMS
	315	SIM card is busy	All related AT commands with SMS
	316	Need SIM card PUK	All related AT commands with SMS
	317	Need SIM card PIN2	All related AT commands with SMS
	318	Need SIM card PUK2	All related AT commands with SMS
	320	Memory fault	-
	321	Invalid storage index	+CMGR, +CMSS, +CMGD
	322	Memory full	+CMGW
	330	SMSC address Unknown	+CSCA?, +CMSS, +CMGS
	340	Unexpected +CNMA confirmation	+CNMA
	500	Unknown error	All related AT commands with SMS
	511	Reserved 256 ~ 511 Value	-
	512	Vary according to manufacturer	+CMGS, +CMSS

5. 3. Message configuration Command

5. 3. 1. Set short message service center address: AT+CSCA

This command applies to PDU and text mode, use the set command to upgrade SMSC (Short

Message Service Center) through the address. Use the command to send mobile terminal SMS and send commands and write commands in text mode; in PDU mode, you can use the setting to send and setup commands, but the condition is that the SMSC address length should be equal to 0 after PDU encoding . It must be noted that although the user can set the short message service center address, but they can not do anything they like, otherwise short message can not be sent out. Therefore, before sending short messages, you must first make clear the short message service center address of SIM card.

Table 232: AT+CSCA operation command

Type	Command	Possible return results	Description
Set Command	AT+CSCA=<sca>[,<tosca>]	OK	
Query command	AT+CSCA?	+CSCA: <sca>, <tosca> OK	-
Test command	AT+CSCA=?	OK	The current version supports the Command
Command routine	AT+CSCA="+8613800210500", 145	OK	Set the SMS service center address and save it in the SIM card
	AT+CSCA?	+CSCA: "+8613010314500", 145 OK	The current SIM card short message service center address is +8613800210500
	AT+CSCA=?	OK	-

Table 233: Detailed description of AT+CSCA Parameter

Parameter	Value	Description

<sca>	-	GSM 4. 11 RP SC uses the character type address value field; the BCD number (or GSM default alphabetic character) needs to be converted to a character; the address type specified by <tosca>
<tosca>	-	Service center address format; GSM 4. 11 RP SC uses integer type of address of the 8 bit (default value refer to <toda>) 129 ISDN/ phone number design, country / world unknown 145 ISDN/ phone number design, world number 161 ISDN/ telephone number design, country number 128~255 other values refer to GSM 4. 08 chapter 10. 5. 4. 7

You should use the format specified by the service provider when entering the SMS Service Center Address.

5. 3. 2. Set text mode parameters: AT+CSMP

This command is only used for text mode. When the network side sends short message or store short message in memory, use setup commands to select additional parameters required. In addition, it can also be used to set the validity period from the time the SMSC receives the short message (Range of <vp>: 0 ~ 255) or define valid termination of absolute time (<vp> as string). The format of the <vp> is specified by <fo>. If TA supports enhanced validity of format EVPF, refer to GSM 3. 40). The binary coded string should be placed in double quotation marks (see figure <pdu>).

Table 234: AT+CSMP operation command

Type	Command	Possible return results	Description
Set Command	AT+CSMP=[<fo>[, <vp>[, <pid>[, <dcs>]]]]	OK	-
Query command	AT+CSMP?	+CSMP: <fo>, <vp>, <pid>, <dcs> OK	-
Test command	AT+CSMP=?	OK	Support
Command routine	AT+CSMP=17, 7, 0, 8	OK	Set the effective time of TP is 167, that is, 24 hours; SMS data

			encoding mode for UCS2
	AT+CSMP?	+CSMP: 17, 167, 0, 8 OK	
	AT+CSMP=?	OK	

Table 235: Detailed description of AT+CSMP Parameter

Parameter	Value	Description
<fo>	-	Depending on the command or result code; the top 8 bits of GSM 03. 40SMS-DELIVER; SMS-SUBMIT (default value: 17); or use an integer SMS-COMMAND (default: 2)
<vp>	-	Depending on the setting of SMS-SUBMIT<fo>; use integer type (default: 167) or time character (refer to <dt>) or enhanced (16 hexadecimal encoding string in double quotes, and support the $(EVPF) $) the validity of the GSM 3. 40 TP-
<pid>	-	Refer to GSM 3. 40; integer TP- protocol - Identification (default: 0)
<dcs>	-	Depending on the command or result code; the SMS data encoding scheme in GSM 3. 38; or an integer based broadcast data coding scheme

Default description:

1) <fo>: 17(0x11)

From MT value you can know that <fo> defines 6 domains of the SMS-SUBMIT type short message parameter (see GSM 3. 40).

b7	b6		b4	b3	b2	b1	b0
RP				-	RD	MTI	-

MTI: Message Type

b1=0&b0=0 indicates SMS-DELIVER

b1=0&b0=1 indicates SMS-SUBMIT

Refer to GSM 3. 40 for other message types

VPF: effective time format to define SMS

b4=1&b3=0: Relative format

2) <vp>: 167 Defines the valid time for a short message

If VPF is relative format, the definition is as follows:

<vp> value	Valid time

0-143(00 to 8F)	(vp + 1) x5 minutes
144-167(90 to A7)	12 hours + ((vp – 143)×30 minutes
168-196(A8 to C4)	(vp – 166) x 1 day
197-255(C5 to FF)	(vp – 192) x 1 week

3) <pid>: 0-255 Protocol identifier, Integer format. Default is 0, refer to chapter 07. 05, 9. 2. 3. 9

4) <dcs>: 0-255 Data decoding scheme. Refer to GSM 03. 38. UCS2.

In text mode, when TE message in the SMS-DELIVER is stored in the preferred memory (see “write message in memory” command +CMGW), the <vp> field can be used instead of <scts>;

For parameter <dcs> different SIM cards may have different default values, and it relates to the encoding scheme when sending text messages in text mode. For example, the DCS value of 8 represents UCS2 encoding, DCS value of 0 represents ASCII code.

5. 3. 3. Display text format parameter: AT+CSDH

This command is used only in text format. Use set command to control whether to display detailed header information in the result code in text mode to provide more information about the result code in TEXT format.

Table 236: AT+CSDH operation command

Type	Command	Possible return results	Description
Set Command	AT+CSDH=[<show>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CSDH?	+CSDH: <show> OK	-
Test command	AT+CSDH=?	+CSDH: <show>	-

		OK		
Command routine	AT+CSDH?	+CSDH: 0 OK	Query the current value and return "0" in +CMT, +CMGL, +CMGR does not display header information	
			AT+CMGF=1 AT+CMGR=15	+CMGR: "REC UNREAD", "18710929943", , "16/10/29, 14: 10: 47+32", 161, 36, 0, 0, "+8613010851500", 145, 7 6D3B3002 OK
		+CSDH: 1 OK	Query the current value and return to "1" to indicate the header information in the relevant commands.	
			AT+CMGF=1 AT+CMGR=15	+CMGR: "RECREAD", "10086", , "13/07/27, 17: 58: 47+32", 161, 100, 0, 8, " +8613800210502", 145, 2, 6D3B3002 OK
	AT+CSDH=0	OK	The header information of text is not displayed in the returned result code.	
	AT+CSDH=?	+CSDH: (0-1) OK	-	

Table 237: Detailed description of AT+CSDH Parameter

Parameter	Value	Description
<show>	0	<sca>, <tosca>, <fo>, <vp>, <pid> and <dcs> (value set +CSCA and +CSMP command in +CMT) are not displayed in+CMT,

		+CMGL, +CMGR, also <length>, <toda>, or <tooa in the result code for SMS-DELIVER and SMS-SUBMIT messages are not displayed; For +CMGR command in the code SMS-COMMAND, do not show <pid>, <mn>, <da>, <toda>, <length>, <cdata>
	1	These values are displayed in the result code.

5. 3. 4. Select cell broadcast message type: AT+CSCB

This command is used for PDU and text mode, use set command to select CBM type received by ME.

Table 238: AT+CSCB operation command

Type	Command	Possible return results	Description
Set Command	AT+CSCB=[<mode>[, <mids>[, <dcss>]]]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CSCB?	+CSCB: <mode>, <mids>, <dcss> OK	-
Test command	AT+CSCB=?	+CSCB: (<mode>value list) OK	-

Table 239: Detailed description of AT+CSCB Parameter

Parameter	Value	Description
<mode>	[0]	Accept message types specified by <mids> and <dcss>
	1	Do not accept message types specified by <mids> and <dcss>
<mids>	-	Character type (e.g. 0, 1, 5320 ~ 478922); all possible combinations of CBM message identification (see <mid>)
<dcss>	-	Character type (e. g.: 0 ~ 3, 5); all possible combinations of CBM data coding schemes (refer to <dcs>) (the default is an empty string)

Values supported by <mids> and <dcss> parameters; each parameter can declare at most 20 values.

5. 3. 5. Save settings: AT+CSAS

You can use the execution command to save the current message service settings to permanent storage. A TA may include several briefing settings. You can save the settings specified in the following commands:

Service Center Address: +CSCA

Set text mode parameters: +CSMP

Select cell broadcast message type: +CSCB (if executed)

Table 240: AT+CSAS operation command

Type	Command	Possible return results	Description
Execution command	AT+CSAS=[<profile>] Currently only support <profile>=0	OK	Success
		ERROR/+CME ERROR: <err>	This setting is not supported (for example, the SMS parameter in the SIM card)
Test command	AT+CSAS=?	+CSAS: (<profile>value list) OK	-
Command routine	AT+CSAS=0	OK	-
	AT+CSAS=?	+CSAS: 0 OK	-

Table 241: Detailed description of AT+CSAS Parameter

Parameter	Value	Description
<profile>	[0] ~ 255	Briefing numbers related to the manufacturer; used to store the settings; this range is the maximum value range related to the manufacturer.

5. 3. 6. Restore settings: AT+CRES

Using the execution command you can restore the message service settings from the permanent

memory to the current memory. A TA may include several briefing settings. Settings specified in the following commands can be restored:

Service Center Address: +CSCA

Set the parameters of text mode: +CSMP

Select cell broadcast message type: +CSCB (if executed)

Table 242: AT+CRES operation command

Type	Command	Possible return results	Description
Execution command	AT+CRES=[<profile>] Currently only support <profile>=0	OK	Success
		ERROR/+CME ERROR: <err>	This setting is not supported
Test command	AT+CRES=?	+CRES: (<profile>value list) OK	-

Table 243: Detailed description of AT+CRES Parameter

Parameter	Value	Description
<profile>	[0] ~ 255	A manufacturer's briefing number; used to store various set

5. 4. Message receiving and reading command

5. 4. 1. New message indication for TE: AT+CNMI

The command is used for PDU and text mode; when TE is in the state of using(eg. DTR signal is "ON"), use the set command to set how the latest news send to TE from the network side. If TE is in a standby state(eg. DTR signal is "OFF"), message receiving process should be in accordance with the provisions of GSM 3. 38. If the DTR signal is not available or the signal state is ignored (V. 25ter: &D0), you can use the +CNMA confirmation process to ensure reliable transmission of short message. "Select message service" command should be used to detect whether M supports receiving SM and CBM, and determines whether the message sent directly to TE requires confirmation (refer to the +CNMA command).

Table 244: AT+CNMI operation command

Type	Command	Possible return results	Description
Set Command	AT+CNMI=[<mode>[, <mt> [, <bm>[, <ds>[, <bfr>]]]]]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CNMI?	+CNMI: <mode>, <mt>, <bm>, <ds>, <bfr> OK	-
Test command	AT+CNMI=?	+CNMI: (<mode>value list), (<mt>value list), (<bm>value list), (<ds>value list), (<bfr>value list) OK	-
Command routine	AT+CNMI=2, 1	OK +CMTI: "SM", 1	Give new SMS indication after the message is stored in ME or SIM card.
	AT+CNMI=2, 2	OK +CMT: "+8613761928888", , "13/08/03, 13: 50: 19+32" Hello	Receive text messages, and directly give the message content
	AT+CNMI?	+CNMI: 2, 1, 0, 0, 0 OK	-
	AT+CNMI=?	+CNMI: (0, 1, 2), (0, 1, 2, 3), (0, 2), (0, 1, 2), (0, 1) OK	-

Table 245: Detailed description of AT+CNMI Parameter

Parameter	Value	Description
<mode> controls the processing of the specified non-request result code	[0]	The non-request result code in the buffered TA; if TA result code buffer is full, the result code indicates that the buffer can be stored in another storage space or discarded as an indication of the oldest non-request result code.
	1	When the link between TA-TE is occupied (for example, in the online data mode), the result code is discarded, and the non-request result code of the newly received message is rejected. Otherwise, it is forwarded directly to TE.
	2	When the link between TA-TE is occupied (for example: in the online data mode), buffer TA in the non-request result code; when the link is released, all the results of the code sent to TE. Otherwise, directly forwarded to TE.
The rules for <mt> to store the received short message depend on the data coding scheme (see GSM 3. 38 [2]); set (+CPMS) and the value of the preferred message memory device	[0]	No SMS-DELIVER commands sent to TE.
	1	If the SMS-DELIVER is stored in ME/TA, the storage location depends on a non-request result code +CMTI: <mem>, <index> to prompt TE.
	2	Non-request result code uses the following commands: +CMT([<alpha>], <length><CR><LF><pdu> (enable PDU mode) or +CMT(<oa>, [<alpha>], <scts> , <tooa>, <fo>, <pid>, <dcs>, <sca>, <tosca>, <length>]<CR><LF><data>(Enable Text mode)); The SMS-DELIVER message (message 2 of the category and the message in the message waiting indicator group (stored message) is sent directly to TE. Note: if the AT command interface is the only display device, the ME must support the category 0 message and the storage of the message in the message waiting indicator group (discard message)

	3	Through the use of <mt>=2 defined non-request result code, class 3 of the SMS-DELIVER message can be sent directly to TE. other data coding scheme under the message display results are consistent with the definition of <mt>=1.
<bm> storage receive CBM rules depend on the data encoding scheme (see GSM 3. 38 [2]); select the cell broadcast message type command +CSCB set and the value	[0]	No CBM commands sent to TE.
	2	The received CBM is sent directly to TE using the following format: +CBM(<length><CR><LF><pdu>(Enable PDU mode) or +CBM(<sn>, <mid>, <dcs>, <page>, <pages><CR><LF> <data>(Enable text mode))
<ds>	[0]	No SMS-STATUS-REPORTS sent to TE.
	1	SMS-STATUS-REPORT messages are sent directly to TE using the following format: +CDS(<length><CR><LF><pdu>(Enable PDU mode))or +CDS(<fo>, <mr>, [<ra>], [<tora>], <scts>, <dt>, <st>(Enable text mode))
	2	If the SMS-STATUS-REPORT is stored in ME/TA, the storage location indication is sent to TE using the active result code: +CDSI: <mem>, <index>
<bfr>	[0]	When <mode> is 1 ~ 3, the result code in TA cache defined by this command is sent to TE (OK should be received before sending)
	1	When the input <mode> is from 1 to 3, TA defined in the command will clear the buffer for the non-request result code.

5. 4. 2. Query message: AT+CMGL

The message is used for PDU and text mode; use set command

can be displayed in TE in the query preference message memory <mem1>, the state value is <stat>. If the message is "received unread "status, the status will be changed to "received read".

Table 246: AT+CMGL operation command

Type	Command	Possible return results	Description
Execution command	AT+CMGL [=<stat>]	+CMGL: <index>, <stat>, [<alpha>], <length><CR><LF>< pdu><CR><LF> +CMGL: <index>, <stat>, [<alpha>], <length><CR><LF><pdu>[. . .]] OK	PDU mode (+CMGF=0) and the command is executed successfully
		+CMGL: <index>, <stat>, <oa/da>, [<alpha>], [<scts>][, <tooa/toda>, <length>]<CR><LF><data>[<CR><LF> +CMGL: <index>, <stat>, <da/oa>, [<alpha>], [<scts>][, <tooa/toda>, <length>]<CR><LF><data>[. . .]] OK	Text mode (+CMGF=1) and the command is executed successfully; SMS-SUBMIT and / or SMS-DELIVER
		+CMGL: <index>, <stat>, <fo>, <mr>, [<ra>], [<tora>], <scts>, <dt>, <st> [<CR><LF> +CMGL: <index>, <stat>, <fo>, <mr>, [<ra>], [<tora>], <scts>, <dt>, <st>[. . .]] OK	SMS-STATUS-REPORT
		+CMGL: <index>, <stat>, <fo>, <ct> [<CR><LF> +CMGL: <index>, <stat>, <fo>, <ct>[. . .]] OK	SMS-COMMAND
		+CMS ERROR: <err>	Failure

Test command	AT+CMGL=?	+CMGL: (<stat>value list) OK	-
Command routine	AT+CMGF=1 AT+CMGL="REC READ"	+CMGL: 0, "REC READ", "+8613761928888", , "13/08/02, 13: 29: 58+32" Hello +CMGL: 1, "REC READ", "+8613761928888", , "13/08/02, 13: 30: 21+32" Hello again OK	List all short messages in the current card (SIM) in text mode
	AT+CMGL=?	+CMGL: "REC UNREAD", "REC READ", "STO UNSENT", "STO SENT", "ALL" OK	Once a new short message list is read, these messages are marked as read short messages.

Table 247: Detailed description of AT+CMGL Parameter

Parameter	Value	Description
<stat>	"REC UNREAD"	Use text mode (+CMGF=1), received but unread messages
	"REC READ"	Use text mode (+CMGF=1), received and read messages
	"STO UNSENT"	Use text mode (+CMGF=1), stored and unsent messages
	"STO SENT"	Use text mode (+CMGF=1), stored and sent messages
	"ALL"	Using text mode (+CMGF=1), all messages
	0	Using the PDU mode (+CMGF=0), a message has been received but not read
	1	Use PDU mode (+CMGF=0), received and read messages
	2	Use PDU mode (+CMGF=0), stored but unsent a message
	3	Use PDU mode (+CMGF=0), stored and sent messages
	4	All messages

<alpha>	-	Character type; in the alphanumeric mixed mode, MT phonebook records show the corresponding <da> or <oa>; applications of the characteristics relate to manufacturers; the character set in use and should use the "select TE character set +CSCS select the character set of the same command (Refer to TS on the Command in definition 7. 07)
<dt>	-	Using the time format character string GSM 3. 40 TP-DSCIharge-Time: "yy/MM/dd, hh: mm: ss + ZZ", in the format of the message, the character part indicates (last 2 digits), month, day, hour, minute, second, and time zone Eg.: 6th of 1995, 22: 10: 00 GMT+2 hours is equivalent to May "95 / 05 / 06, 22: 10: 00 + 08".
<fo>	-	Depending on the Command or the Command result code: GSM 3. 40 SMS-DELIVER, SMS-SUBMIT message (default value: 17) or numeric SMS-COMMAND message (default value: 2) in the top 8
<length>	-	Integer value; text mode (+CMGF=1), with the characters that the <data> (or <deata>) the message text length; 8 real TP data unit length (i. e. , 8 characters of RP layer in the SMSC address will not calculate the length)
<ct>	-	Integer GSM 3. 40 TP-Command-Type (default value: 0)
<da>	-	The character of the GSM 3. 40 TP-Destination-Address in the address field value; the BCD value (or the default GSM letter format characters) into the currently selected TE character set (please refer to TS 7. 07 in the +CSCS command); <toda> for the given address type
<index>	-	Integer type; the number of address numbers supported by associative memory
<mr>	-	Integer type GSM 03. 40TP-Message-Reference
<oa>	-	Character type GSM 3. 40 TP-Originating-Address in the

		"address value" field; the BCD value (or the character of the default GSM format) is converted to character; <tooa> given address type
<pdu>	-	The case of SMS GSM; 3. 40 TPDU, 16 hex, follow the GSM04. 11 SC address; ME/TA to TP data conversion of each unit in the 8 character contains 2 IRA characters of 16 hexadecimal numbers (such as: integer value of 8 characters of 42 as 2 digits (2A, IRA50 and 65) sent to TE when the value of. CBS): use 16 hexadecimal format GSM 03. 41TPDU
<ra>	-	Character type GSM 3. 40 TP-Recipient-Address in the "address value" field; the BCD value (or the character of the default GSM format) is converted to character; <tora> given address type
<scts>	-	GSM 3. 40 TP- Service-Centre-Time-Stamp using the time string format
<st>	-	Integer type GSM 3. 40 TP-Status
<toda>	-	The 8 bit "type address" field in the integer GSM 4. 11 TP-Destination-Address (the default value is when the first character of the <da> is + (IRA)); otherwise, the default value is 129
<tooa>	-	The 8 bit type address field in integer GSM 4. 11 TP-Originating-Address
<tora>	-	Integer type GSM 4. 11 TP-Recipient-Address in the 8 bit "type address" lot (for the default value refer to <toda>)

5. 4. 3. Read message: AT+CMGR

Using the set command, the message in the message storage <mem1>, <index>, is returned to TE. if the message is in a state that has not been received, and the state is changed to "received read".

Table 248: AT+CMGR operation command

Type	Command	Possible return results	Description

Set Command	AT+CMGR=<index>	+CMGR: <stat>, [<alpha>], <length><CR><LF><pdu> OK	Use the PDU mode (+CMGF=0) and the command is executed successfully
		+CMGR: <stat>, <oa>, [<alpha>], <scts> [, <tooa>, <fo>, <pid>, <dcs>, <sca>, <tosca>, <length>]<CR><LF><data> OK	Use text mode (+CMGF=1) and the command is executed successfully; SMS-DELIVER
		+CMGR: <stat>, <da>, [<alpha>][, <toda>, <fo>, <pid>, <dcs>, [<vp>], <sca>, <tosca>, <length>]<CR><LF><data> OK	Use text mode (+CMGF=1) and the command is executed successfully; SMS-SUBMIT
		+CMGR: <stat>, <fo>, <mr>, [<ra>], [<tora>], <scts>, <dt>, <st> OK	Use text mode (+CMGF=1) and the command is executed successfully SMS-STATUS-REPORT
		+CMGR: <stat>, <fo>, <ct>[, <pid>, [<mn>], [<da>], [<toda>], <length> <CR><LF><cdata>] OK	Use text mode (+CMGF=1) and the command is executed successfully; SMS-COMMAND
		+CMS ERROR: <err>	Failure
Test command	AT+CMGR=?	OK	-
Command routine	AT+CPMS="SM" AT+CMGF=1	AT+CPMS="SM" +CPMS: 11, 50, 0, 23, 11, 50 OK	Read the unread short message in text mode, which is located in the location of <index> 2

	AT+CMGR=2	AT+CMGF=1 OK AT+CMGR=2 +CMGR: "STO UNSENT", "13681737903", test OK	in the SIM card
	AT+CPMS="ME" AT+CMGF=0 AT+CMGR=2	+CMGR: 1, , 25 0891683108200105F0040D9168310 6718481F700000180203103122305 C8329BFD06 OK	Read the short message in PDU mode, which is located in the location of <index>=2 in ME
	AT+CMGR=?	OK	

Table 249: Detailed description of AT+CMGR Parameter

Parameter	Value	Description
<dcs>	-	Depending on the command or the result code of the command; the SMS data encoding scheme (default: 0) or cell broadcast data coding scheme in GSM 3. 38
<cdata>	-	Returns the GSM03. 40TP-Command-Data in the result in text mode; The ME/TA converts each 8 bit character to a binary number (including, IRA50, and 65), which is sent to TE with a character of the order of 42 (2A, and), which contains a character of about 2 IRA
<pid>	-	Use integer type (default: 0) GSM of 3. 40 TP-Protocol-Identifier
<sca>	-	The use of character GSM 4. 11 RP SC address "Value address field; Converts the value of the BCD (or the character of the default GSM letter format) to the character of the currently selected TE character set (Refer to TS 7. 07 +CSCS); <tosda> given address Type Command

<tosca>	-	Integer type GSM 4. 11 RP SC in the 8 "type - Address" lot (for the default value refer to <toda>)
<vp>	-	Depending on the setting of SMS-SUBMIT<fo>; using integer type (default: 167) or time - string format (refer to <dt>) or enhanced format (16 hexadecimal string encoding, put in double quotes and support the $(EVPF) $) the validity of the GSM 3. 40 TP-

5. 4. 4. New message confirmation: AT+CNMA

You can confirm whether the new message (SMS-DELIVER or SMS-STATUS-REPORT) is correctly received by the execution command, which is sent directly to TE by MT.

Table 250: AT+CNMA operation command

Type	Command	Possible return results	Description
Execution command	AT+CNMA	OK	Success
	AT+CNMA[=<n>[,<length>[<CR>PDU is given<ctrl-Z/ESC>]]]	ERROR/+CME ERROR: <err>	For PDU mode (+CMGF=0) and confirm the new message failed
Test command	AT+CNMA=?	(0-2)	-
Command routine	AT+CMGF=1 AT+CNMI=2, 2, 0, 0, 0 AT+CNMA	OK OK +CMT: "+8613761928888", , "13/08/03, 13: 50: 19+32" Hello OK	Set text format and set <mt> to 2, +CMT: "+8613761928888", , "13/08/03, 13: 50: 19+32" Hello Indicates short message received notification

			network side has received short messages
	AT + CNMA=?	OK	Support this function

Table 251: Detailed description of AT+CNMA Parameter

Parameter	Value	Description
<n>	0	The command is similar to the command implementation of text schema definition
	1	Send RP-ACK (or correctly received buffer result code)
	2	Send RP-ERROR (if PDU is not given, ME/TA will send GSM 3. 40 TP-FCS Value set to "FF" SMS-DELIVER-REPORT message (non-request error reason)

SMS confirmation by AT+CNMA need to meet 2 conditions: use AT+CSMS=1, <service> will be set to 1; use AT+CNMI=, 2, <mt> will be set to 2 or 1, AT+CNMI=,,1, the <ds> will be set to 1;

After meeting the above 2 conditions, if the message is not confirmed by AT+CNMA, CNMI, parameter<mt> and <ds> will be heavy to 0, while Text messaging will be affected.

5. 5. Message sending and writing Command

5. 5. 1. Send message: AT+CMGS

Use the set command, SMS (SMS-SUBMIT) will be sent from TE to the network side. After sending a successful message, <mr> will return to the reference value of TE. When receiving non-request status report result code you can use the command value to identify message.

Table 252: AT+CMGS operation command

Type	Command	Possible return results	Description	
Set Command	AT+CMGS=<da>[, <toda>]<CR> text to send <ctrl-Z/ESC>	+CMGS: <mr>[, <scts>] OK	Text mode (+CMGF=1) Send successfully	Note: the actual operation of

		ERROR/+CME ERROR: <err>	Text mode (+CMGF=1) fail in send	sending SMS can only be successful after inputting message content of Ctrl+Z
	AT+CMGS=<length><CR> PDU to send <ctrl-Z/ESC>	+CMGS: <mr>[, <ackpdu>] OK	PDU mode (+CMGF=0) Send successfully	
		ERROR/+CME ERROR: <err>	PDU mode (+CMGF=0) fail in send	
Test command	AT+CMGS=?	OK	-	
Command routine	AT+CMGF=1 AT+CSCS="IRA" AT+CMGS="13761928888" >Hello <ctrl-Z/ESC>	+CMGS: 119 OK	Send text messages "13761928888" - recipient number Hello-- short message content	
	AT+CMGF=0 AT+CSCS="UCS2" AT+CMGS=25 >0011000D91685191512863F10008000A00480065006C006C006F <ctrl-Z/ESC>	+CMGS: 120 OK	Send short messages in PDU mode （Refer to GSM 04.11 and 03. 40） 25-- short message PDU string length 0011000D91683106718481F70008000A00480065006C006C006F--PDU string, the PDU string of table message content is "Hello"	
	AT+CMGS=?	OK		

Table 253: Detailed description of AT+CMGS Parameter

Parameter	Value	Description
<da>	-	GSM 3. 40 TP-Destination-Address "address value" field, type BCD character; numerical (or default GSM letter format characters) into the currently selected TE character set (refer to TS 7. 07 in the +CSCS command); <toda> for the given address type.
<pdu>	-	The case of SMS: GSM 3. 40 TPDU, 16 hex, follow the GSM04. 11 SC address; ME/TA to TP data conversion of each unit in the 8 character contains 2 IRA characters as 16 hexadecimal numbers (2 digits such as integer value of 8 characters (2A 42, IRA50 and 65) sent to TE. CBS) case: use 16 hex GSM 3. 41 TPDU
<length>	-	Integer value; text mode (+CMGF=1), with the characters that the <data> (or <cdata>) the message text length; PDU model (+CMGF=0), 8 real TP data unit length (i. e. 8 bit characters of RP layer in the SMSC address will not calculate the length)
<mr>	-	Integer type GSM 3. 40 TP-Message-Reference
<scts>	-	GSM (3. 40 TP- Service-Centre-Time-Stamp) of time character type (see <dt>)
<dt>	-	The time character of the GSM 3. 40 TP-DSCIharge-Time: "yy/MM/dd, hh: mm: ss + ZZ", in the format of the message, said in the part of character (last 2 digits), month, day, hour, minutes, seconds and time zone. For example: 6th of May 22: 10: 00 GMT+2 hours 1995, the equivalent of "95/ 05/06, 22: 10: 00+08".
<ackpdu>	-	The GSM 3. 40 RP-User-Data element in RP-ACK PDU; in the case of SMS, the same format as <pdu>, but not the GSM 4. 11 SC address field; the argument should be placed in double quotes, the same as the normal character type
<toda>	-	The 8 bit "type address" field in the integer GSM 4. 11 TP-Destination-Address (the default value is when the first character of the <da> is + (IRA)); otherwise, the default value is 129

Table 254: Send PDU SMS format

SCA	PDU-	MR	DA	PID	DCS	VP	UDL	UD

	Type							
1-12	1	1	2-12	1	1	0, 1, 7	1	0-140
00	11	00	0D9168310671 8481F7	00	08	00	0A	00480065006C006C 006F

Table 255: Basic components of SMS PDU

Element	Name	Length	Description
SCA	Service Center Adress	1-12	Short message service center information
PDU-type	Protocol Data Unit Type	1	Protocol data unit type
MR	Message Reference	1	The number of successful SMS-SUNMIT references (0-255)
OA	Originator Adress	2-12	The sender SME address
DA	Destination Adress	2-12	Receiver SME address
PID	Protocol Identifier	1	Parameter shows how SMSC handles SM
DCS	Data Coding Scheme	1	Parameter indicates what coding scheme the user data (UD) uses
SCTS	Service Center Time Stamp	7	Parameter represents the time stamp when the SMSC receives a message
VP	Validity Period	0, 1, 7	Parameter indicates message is no longer valid in SMSC
UDL	User Data Length	1	User data segment length
UD	User Data	0-140	SM data

5. 5. 2. Write message to memory: AT+CMGW

Use the set command you can send SMS (SMS-DELIVER or SMS-SUBMIT) to the memory <mem2> from TE, and return to the stored message storage location <index> parameter. Unless <stat> specifies other parameters, the state of the message will be set to "stored but unsent".

Table 256: AT+CMGW operation command

Type	Command	Possible return results	Description
Execution command	AT+CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR> text is entered <ctrl-Z/ES C>	+CMGW: <index> OK	Text mode (+CMGF=1) Write success
		ERROR/+CME ERROR: <err>	Text mode (+CMGF=1) Write failure
	AT+CMGW=<length>[,<stat>]<CR> PDU is given <ctrl-Z/ESC>	+CMGW: <index> OK	PDU mode (+CMGF=0) Write success
		ERROR/+CME ERROR: <err>	PDU mode (+CMGF=0) Write failure
Test command	AT+CMGW=?	OK	-
Command routine	AT+CMGF=1 AT+CSCS="GSM" AT+CMGW="1376192888" >Hello <ctrl-Z/ESC>	+CMGW: 0 OK	Store a short message in Text format to the <mem2>, which will be sent to "13761928888", with a short message of Hello
	AT+CMGF=0 AT+CSCS="UCS2" AT+CMGW=25 >0011000D91683106718481F70008000A00480065006C006C006F <ctrl-Z/ESC>	+CMGW: 1 OK	To store short messages in PDU format in <mem2> 25-- short message PDU string length 0011000D91683106718481F70008000A00480065006C006C006F--PDU string, the PDU

			string of Table message content is "Hello"
	AT+CMGW=?	OK	-

Table 257: Detailed description of AT+CMGW Parameter

Parameter	Value	Description
<da>	-	Character type GSM 3. 40 TP-Destination-Address in the "address value" field; the BCD value (or the default GSM letter format characters) into the currently selected TE character set (please refer to TS 7. 07 in the +CSCS command); <toda> for the given address type
<oa>	-	Character type GSM 3. 40 TP-Originating-Address in the "address value" field; the BCD value (or the character of the default GSM format) is converted to character; <tooa> given address type
<toda>	-	The 8 bit "type address" field in the integer GSM 4. 11 TP-Destination-Address (the default value is when the first character of the <da> is + (IRA)); otherwise, the default value is 129
<tooa>	-	The 8 bit "type address" field in the integer GSM 4. 11 TP-Originating-Address (see <toda> for default values)
<stat>	"REC UNREAD"	Received unread message (+CMGF=1)
	"REC READ"	Received read message (+CMGF=1)
	"STO UNSENT"	Store unsent message (+CMGF=1)
	"STO SENT"	Store sent messages (+CMGF=1)
	0	Received unread message (+CMGF=0)
	1	Received read message (+CMGF=0)
	2	Store unsent message (+CMGF=0)
	3	Store sent messages (+CMGF=0)

5. 5. 3. Send message from memory: AT+CMSS

Use the set command message you can send message whose location value parameter is <index> in memory <mem2> to the network side (SMS-SUBMIT or SMS-COMMAND). If the new receiving address parameter <da> SMS-SUBMIT message is given, use the parameters instead of parameters stored messages. After sending successfully, reference value <mr> will return to TE. When receiving non-request status report result code you can use the command value to identify message.

Table 258: AT+CMSS operation command

Type	Command	Possible return results	Description
Set Command	AT+CMSS=<index>[, <da>[, <toda>]]	+CMSS: <mr>[, <scts>] OK	Text mode (+CMGF=1) Send success
		ERROR/+CME ERROR: <err> OK	Text mode (+CMGF=1) fail in send
		+CMSS: <mr>[, <ackpdu>] OK	PDU mode (+CMGF=0) Send success
		ERROR/+CME ERROR: <err>	PDU mode (+CMGF=0) fail in send
Test command	AT+CMSS=?	OK	-
Command routine	AT+CMSS=1	+CMSS: 122 OK	Send a previously stored number 1, the recipient's number is still 13761928888
	AT+CMSS=1, "13761928888"	+CMSS: 123 OK	Send a previously stored number 1, and change the recipient number to 13761928888

	AT+CMSS=?	OK	-

Table 259: Detailed description of AT+CMSS Parameter

Parameter	Value	Description
<ackpdu>	-	The GSM 3. 40 RP-User-Data element in RP-ACK PDU; in the case of SMS, the same format as <pdu>, but not the GSM 04. 11SC address field; the argument should be placed in double quotes, as well as the normal character type
<index>	-	Integer type; the number of address numbers supported by associative memory
<da>	-	The character of the GSM 3. 40 TP-Destination-Address in the "address value" field; the BCD value (or the default GSM letter format characters) into the currently selected TE character set (please refer to TS 7. 07 in the +CSCS command); <toda> for the given address type
<toda>	-	The 8 bit "type address" field in the integer GSM 4. 11 TP-Destination-Address (the default value is when the first character of the <da> is + (IRA)); otherwise, the default value is 129
<mr>	-	Integer type GSM 3. 40 TP-Message-Reference
<scts>	-	GSM 3. 40 TP- Service-Centre-Time-Stamp in time string format (see <dt>)

5. 5. 4. Delete message: AT+CMGD

Use the set command to delete the message in the preferred message memory <mem1>, where the location number parameter is <index>.

Table 260: AT+CMGD operation command

Type	Command	Possible return results	Description
Set Command	AT+CMGD=<index>[, <delflag>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+CMGD=?	+CMGD: (0-255), (0-4) OK	-

Command routine	AT+CPMS="SM" AT+CMGD=1	OK	Delete first short message in SIM card
	AT+CPMS="SM" AT+CMGD=1, 4	OK	Delete all short messages SIM card, including read, unread, sent and unsent messages
	AT+CMGD=?	+CMGD: (0, 1, 3), (0-4) OK	(0, 1, 3,) - a short message is stored in the 0, 1, 3

Table 261: Detailed description of AT+CMGD Parameter

Parameter	Value	Description
<index>	0 ~ 255	Integer type; the number of address numbers supported by associative memory
<delflag>	-	Delete <index> specified SMS
	0	Delete <index> specified SMS
	1	Delete all read messages in memory
	2	Delete all read and sent messages in memory
	3	Delete all read, sent and unsent messages in memory
	4	Delete all read, unread, sent and unsent messages in memory

5. 5. 5. Send SMS command: AT+CMGC

Table 262: AT+CMGC operation command

Type	Command	Possible return results	Description	Note: the actual operation of sending SMS can
Set Command	AT+CMGC=<fo>, <ct>[, <pid>[, <mn>[, <da>[, <toda>]]]]<CR>	+CMGC: <mr>[, <scts>] OK	Text mode (+CMGF=1) Send success	

	text is entered <ctrl-Z/ESC>			only be successful after inputting message content of Ctrl+Z
		ERROR/+CME ERROR: <err>	Text mode (+CMGF=1) Fail in send	
	AT+CMGC=<length> < CR>PDU is given <ctrl-Z/ESC>	+CMGC: <mr>[, <ackpdu>] OK	PDU mode (+CMGF=0) Send success	
		ERROR/+CME ERROR: <err>	PDU mode (+CMGF=0) Fail in send	
Test command	AT+CMGC=?	OK	-	
Command routine	AT+CMGF=0 AT+CMGC=25 >0011000D9168 31067184 81F70008000A0 04800650 06C006C006F <ctrl-Z/ESC>	+CMGC: 124 OK	Send a short message in PDU mode	
	AT+CMGC=?	OK		

Table 263: Detailed description of AT+CMGC Parameter

Parameter	Value	Description
<length>	-	Integer value; text mode (+CMGF=1), use characters to indicate the <data> (or <deata>) message length; 8 real TP data unit length (namely, 8 characters of RP layer in the SMSC address will not calculated in the length)
<toda>	-	The 8 bit "type address" field in the integer GSM 4. 11 TP-Destination-Address (When the first character of <da> is + (IRA 43), the default value is 145; otherwise, the default value is 129)
<pdu>	-	The case of SMS GSM; 3. 40 TPDU, 16 hex, follow the GSM 04. 11SC address; ME/TA to TP data conversion of each unit in the 8

		character contains 2 IRA characters of 16 hexadecimal numbers (such as: integer value of 8 characters of 42 as 2 digits (2A, IRA50 and 65) sent to TE when the value of. CBS): use 16 hexadecimal format GSM 3. 41 TPDU
<mr>	-	Integer type GSM 3. 40 TP-Message-Reference
<fo>	-	Depending on the command or result code; GSM 3. 40 SMS-DELIVER of the top 8; SMS-SUBMIT (default: 17); SMS-STATUS-REPORT; or using integer SMS-COMMAND (default: 2)
<ct>	-	Integer GSM 3. 40 TP-Command-Type (default: 0)
<pid>	-	Integer GSM 3. 40 TP-Protocol-Identifier (default: 0)
<da>	-	The character of the GSM 3. 40 TP-Destination-Address in the "address value" field; the BCD value (or the default GSM letter format characters) into the currently selected TE character set (please refer to TS 7. 07 in the +CSCS command); <toda> for the given address type
<scts>	-	Use the time - string format GSM 3. 40 TP-Service-Centre-Time-Stamp (please refer to <dt>

5. 5. 6. Query IC card identification command: AT+ICCID

Table 264: AT+ICCID operation *command

Type	Command	Possible return results	Description
Set Command	AT+ICCID	^SCID: XXX OK	corresponding IC card identification code of SIM card
Test command	AT+ICCID=?	OK	Indicates the version supports the command
Command routine	AT+ICCID	+ICCID: 89860111831001574065 OK	Different SIM cards have different corresponding identification code

5. 5. 7. Terminal event report command CMER

Use the set command, you can enabled or disabled non-request results code of event report from

TA to TE. Usie the query command to get the current parameters of the command set, use the test command to get the value range of command parameters.

Table 265: AT+CMER operation command

Type	Command	Possible return results	Description
Set command	AT+CMER=[<mode>[, <keyp>[, <disp>[, <ind>[, <bfr>]]]]]	OK	Success
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Query command	AT+CMER?	+CMER: <mode>, <keyp>, <disp>, <ind>, <bfr> OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Test command	AT+CMER=?	+CMER: (<mode>的 value list), (<keyp>的 value list), (<disp>的 value list), (<ind>的 value list), (<bfr>的 value list) OK	-
		ERROR/+CME ERROR: <err>	Error relates to ME functionality
Command routine	AT+CMER=2, 0, 0, 1, 1	OK	Set enable Event Report
	AT+CMER	OK	Disable Event Report

	AT+CMER?	+CMER: 2, 0, 0, 1, 1 OK	
	AT+CMER=?	+CMER: (0-3), (0), (0), (0-1), (0-1) OK	-

Table 266: Detailed description of AT+CMER Parameter

Parameter	Value	Description
<mode>	0	The non-request result code is cached in TA; if the current buf is already full, the non-request result code will be saved elsewhere or discard the oldest records stored in the buffer
	1	When there is a TA-TE link (in on_line data mode) , discard non-request result code; otherwise, send it directly to TE.
	2	When there is a TA-TE link (in on_line data mode) , the non-request result code is cached in TA and is refreshed after receiving it; otherwise, it is sent directly to TE.
	3	Send a non-request result code directly to TE
<keyp>	0	Current key event report is not supported
<disp>	0	Display event report is not currently supported
<ind>	0	No report of indicating event report
	1	By +CIEV: <ind>, <value>indicates indicating event report;
<bfr>	0	When <mode> 1...3, empty TA cache of the non-request result code defined by this command;
	1	When <mode> 1...3, refresh TA buffer of the non-request result code to TE defined by this command

6. UMTS supplier exclusive Command

6. 1. Overview

This chapter introduces the UMTS supplier exclusive AT command, the exclusive commands are shown in the following table .

Table 267: UMTS supplier exclusive Command

Command	Description	Operation
$QCCLR	Clear mobile error log	Do not accept any parameter
&V	Empty configuration parameters	Empty current operating mode AT parameter status, including single letter parameters that cannot be read. Do not accept any parameter
&C2	Circuit 109 (carrier detect) flicker	Set carrier detect pin flicker when the call ends
$QCTER=<rate>	Set the baud rate of TE-DCE, baud rate support is the same as + IPR command	Set DCE rate of TE-DCE , the rate value is default and stored in the nonvolatile RAM, which can change the default rate of +IPR. $QCTER= ? Returns supported rate. $QCTER? returns or the rate at which the $QCTER command

		is finally configured.
$QCDNSP=<address>	Set the primary DNS IP address	Set default primary IP address for the domain name service (DNS); only used for empty DNS server address received in the activation process of PDP context. This value is stored in NVRAM.
$QCDNSS=<address>	Set the standby DNS IP address	Set default primary IP address for the domain name service (DNS); only used for empty DNS server address received in the activation process of PDP context. This value is stored in NVRAM.
$QCPDPP=<cid>, <auth_type>, <password>, <username>	Set PDP-IP component data call authentication: <cid>: 1~16 <auth_type>: 0 – None 1 – PAP 2 – CHAP 3 –PAP /CHAP	Define the basic authentication parameters for each connection; the <auth_type> value determines required additional parameters : 0 - no user name and password 1 - accept user name and password

		2 - accept user name and password, authentication mode is CHAP Query command: $QCPDPP, do not show password, only display user name
$QCPWRDN	Used to set UE shutdown	Return to OK, please turn off UE
$QCDGEN=<cid>, <datalength>	Generates + CGACT data to activate the PDP context <cid>: 1~16 <datalength>: Greater than 21	Only support activating PDP context through +CGACT
$QCSIMSTAT=<n>	Disabled/Enabled SIM card status display. <n>: 0 - Disable this function 1 - Enable this function	Once enabled, SIM state is sent to the terminal as a non - request result code, includes: SIM INIT SIM ERROR UNKNOWN
$QCCNMI=<mode>, <mt>, <bm>, <ds>, <bfr>	New information indicating to TE: <mode> – 0 to 2 <mt> – 0 to 3 <bm> – 0, 2 <ds> – 0, 2 <bfr> – 0, 1	It is a special case of [S2]CNMI, except <mt>=0 parameter, all behaviors are exactly the same, which is similar to routing configuration <mt>=0 and will not change setting of NV-830
$QCPINSTAT?	Retrieve all ME pin states	Only read command

		is valid
$QCPDPLT=<n>	Enable / disable tolerant PDP call setup for long delay <n> 0 - Disable wait 1 - enable wait	
$QCSYSMODE?	Returns the current system mode of ME	Provides supporting details about LTE/ HSUPA/ HSDPA, only read commands are valid. 3GPP2 added support to MPSS NI 3 and later version
$QCPDPCFGE=<profile_id>, < APN flag>, <timer_value>< APN class><APN bearer >	Set PDN chain break time interval <profile_id>: 1~16 <enable/disable>: 0 - invalid 1 - valid <timer_value>: 0~122820 <APN class>: 0~4 <APN bearer> 0x1 – GSM Type 0x2 – UMTS Type 0x4 – LTE Type 0x8 –TDS Type FF – Full type	<APN bearer> supports MPSS NI3. 0 and later version
$ECALL=<ecall_session>, [<activation_type>, <type_of_call>]	Trigger an emergency call to the network; based on the selected configuration, it can be used to trigger a manual or automatic voice call or emergency call. <ecall_session> 1 - start emergency call session	

	0 - end emergency call session <type_of_call > 0 - test emergency call (originate voice call) 1 - emergency all (initiate emergency call) <activation_type> 0 - manual emergency call 1 - automatic emergency call	
+PACSP	Indicates whether the network selection menu enable or not for user (ENS support) Effective response is: - +PACSP0 - if the menu should be disabled - + PACSP1 - if Enabled	
+CQI=<n>	Enabled/disabled channel quality indicator report <n>: 0 – Enable 1 – Disable	
$QCBANDPREF=<pref_term >, <band_pref>	Set / get band preferences<pref_term >: 0 - this boot cycle 1 - permanent change <band_pref>: "1, 2, 3. . "	
^PREFMODE=<pref_mode>	Set/ get the preferred network mode < pref_mode >: 0, 2, 4, 8	
*CNTI=<n>	Technical capabilities list to control UE. <n>: 0, 1, 2	
^CAVE=<randu>	Send the related parameters of CAVE authentication(RANDU).	

	<randu>: 3 bytes	
^MD5=<chapid>, <chapchallengelength><CR><chapchallenge><ctrl-Z/ESC>	Request data card to do MD5 certification <chapid>: 0 ~255 <chapchallengelength>: 1~253 <chapchallenge>: Defines the first parameter in bytes	
^VPM	Generate key	
^SSDUPD=<randssd>	RANDSSD is sent to the data card and the data card calculates the report result. <randssd>: 7 bytes	
^SSDUPDCFM=<authbs>	Send updated SSD confirmation （AUTHBS）. <authbs>: 18 bytes	
^UIMAUTH=?	Check support of validation algorithm: <auth>: "CAVE", "MD5".	
^GSN	Return to MEID/ESN	
^CPIN	Same as +CPIN	
^CPBR	Same as +CPBR	
^CPBW	Same as +CPBW	
^CPBF	Same as +CPBF	
$QCDEFPROF=< family >< subs id >< profile id >	Sets the specified configuration profile number as the default configuration file for the specified technology and subscription group <profile_id>: 1~16 <Subs ID>: 1~2 For non DSDS targets the SUBS is limited to 1 ID <family>: 1~16	
$QCMRUE=<index><rat><band><channel> or<PLMN>	Command is used to edit /set MRU data base <index>: 0~11 <rat>:	

	0 – CDMA 1 – HDR 2 – GSM 3 – WCDMA 4 – LTE <band> Band CDMA/HDR: 0~19(divided 2) Band GSM: 0~8 Band UMTS: 0~9 Band LTE: 0~26 <channel>: 0~2047 <PLMN>: PLMN ID character string	
$QCMRUC	Used to clear/remove MRU from the data base <NA>: support name only	
$QCAPNE=<Profile ID><APN Class><APN Name><PDP Type><APN Bearertype><APN Flag><APN Timer>	Used to edit APN list of the value in APN <Profile ID>: 1~16 <APN class>: 0~4 <APN Name>: character string, Maximum support 100 <PDP Type>: character string, Maximum support 8 <APN Bearertype>: character string, Maximum support 3 <APN Flag> <enable/disable>: 0~1 <timer_value>: 0~122820	
$QCPDPIMSCFGE= <Profile ID>, < Address Flag>, <DHCP Flag>, <CN Flag>	Used to edit the PDP configuration file registration. <Profile id>: 1~16 < Address Flag>: 0~1	

$QCCLAC	List all supported AT commands	
^SPN	Used to display brand information from EF-SPN <NA>: support name only	
$QCRMCALL=<Action>, <Instance>[, <IP Type>[, <Tech Pref >[, <umts profilenumber>[, <cdma profilenumber >[, <APN>]]]]]	Trigger is based on <ACTION> parameters, it is a typical RmNetwork call or stopping a RmNetwork phone < Action > 0 - stop 1 - start <Instance> 1~RMNETWORK_NUM_LAPTOP_INSTANCES <IP Type> 1 – Ipv4 2 – Ipv6 3 – Ipv4v6 <Tech Pref> 1 – 3GPP2 2 – 3GPP <umts_profile> 1~16 <APN >: character string, Maximum support 100	
$QCDRX=<drx coefficient>	This command allows to set/ obtain capability of the DRX coefficient. <drx_coefficient>: 0 Not specified by MS 6 CN = 6, T = 32 7 CN = 7, T = 64 8 CN = 8, T = 128 9 CN = 9, T = 256	
^ DSCI=<dsci_val >	This command enable / disable ^	

	DSCI URC (call event) ^DSCI: <id>, <idr>, <stat>, <type>, <mpty>, <number>, <num_type>, [<bs_type>][, cause]	
^CARDMODE	Return to SIM/USIM card mode	
^SYSCONFIG=<mode>, <acqorder>, <roam>, <srvdomain>	This command sets the system configuration <mode>: system model recommendation: 2 - automatic selection 13 – GSM ONLY 14 – WCDMA only 15 – TDSCDMA only 38 - LTE only 16 – Unchanged <acqorder>: network access order reference 0 - Automatic 1 - GSM priority, UTRAN second 2 - UTRAN priority, GSM second 3 - no change <roam>: roaming support 0 - does not support 1 - roaming 2 - no change <srvdomain> - domain network access order reference 0 - CS_ONLY 1 - PS_ONLY 2 - CS_PS 3 - any 4 - no change	
^SYSINFO	The command inquires the current	

	system information, such as system service status, domain, roaming, system mode, UIM card status	
$QCSQ	The command returns to RSCP, ECIO, SIR, PATHLOSS, and RSSI, in the following format $QCSQ: <rscp>, <ecio>, <sir>, <pathloss>, <rssi>.	
$QCRPW	Report received signal power 0~75	
$QCANTE	Based on the RSSI value, the number of reported antennas 0~4.	
$QCDGEN=<Profile ID><length>	Command is used to specify the amount of PS data that has been activated over +CGACT; a main PDP-IP content sent to the IP package. The minimum length of the data packet is 21	
$QCSIMAPP=<QCSIMAPPVAL>	The Command is limited to the DSDS target <QCSIMAPPVAL> 0 – GW primary 1 – GW secondary 2 – 1X subscribe	
$QCPBMPREF=<Preference>	Command is used to select application and local or global phonebook type. <Preference> 0 – Slot 1 Global phonebook 1 – App 1 local phonebook 2 – Slot 2 Global phonebook 3 – App 2 local phonebook	
$QCRSRP	This command displays adjacent cell ID, EARFCN, RSRP.	
$QCRSRQ	This command is used to display	

	adjacent cell information Cell ID, EARFCN, RSRQ.	

7. LTE special packet domain modulation and demodulation compatible command

7. 1. Overview

This chapter introduces the LTE exclusive modulation and demodulation AT command, the exclusive commands see the table below.

Table 268: LTE special packet domain modulation and demodulation compatible command

Command	Description	Explanation
+CEREG=[<n>]	Control the state of the non-requested EPS network registration <n> – 0, 1, 2	Command supports multimode or objects of LTE function
+CGEQOS=[<cid> [, <QCI>[, <DL_GBR>, <UL_GBR>[, <DL_MBR>, <UL_MBR]]]]	Set EPS quality of service parameter set <cid> – 1 to 16 <qci> – 1 to 9 <DL_GBR>, <UL_GBR>, <DL_MBR>, <UL_MBR> --Number (kbit/sec)	Command supports multimode or objects of LTE function
+CGCONTRDP=[<p_cid>]	Return to information about the PDP context <p_cid> – 1 to 16	Command supports multimode or objects of LTE function
+CGSCONTRDP=[<cid>]	Return to information about level two PDP context <cid> – 1 to 16	Command supports multimode or objects of LTE function
+CGTFTRDP=[<cid>]	Return to information about the traffic flow template <cid> – 1 to 16	Command supports multimode or objects of LTE function
+CGEQOSRDP=[<cid>]	Return to information about the quality of service parameter <cid> – 1 to 16	Command supports multimode or objects of LTE function
+CEMODE=[<mode>]	Set ME to operate according to	Command supports

	specified mode <mode>: 0 – PS operation mode 1 - CS/PS operation mode 1 2 - CS/PS operation mode 2	multimode or objects of LTE function. CS/PS mode is supported only when CSFB function exists.

8. MeiG extended Command

8. 1 Extended general AT command

8. 1. 1 Network mode settings, query related commands: AT+MODODR

Table 269: AT+MODODR operation command

Type	Command	Possible return results	Description
Set command	AT+MODODR=<mode>	OK	Success
		ERROR	Error
Query command	AT+MODODR?	+MODODR: <mode> OK	Success
		ERROR	Error
Test command	AT+MODODR=?	+MODODR: (1-10)	-
Command routine	AT+MODODR?	+MODODR: 2 OK	Auto mode, sequence: LTE—TD-SCDMA/WCDMA/EVDO—GSM/CDMA
	AT+MODODR=?	+MODODR: (1-10) OK	
	AT+MODODR=1	AT+MODODR=1 OK	WCDMA ONLY, register only WCDMA network
	AT+MODODR=2	AT+MODODR=2 OK	Auto mode, sequence: LTE—TD-SCDMA/WCDMA/EVDO—GSM/CDMA
	AT+MODODR=3	AT+MODODR=3	GSM ONLY,

		OK	register only GSM network
	AT+MODODR=4	AT+MODODR=4 OK	3G PREFERRED
	AT+MODODR=5	AT+MODODR=5 OK	LTE ONLY, register only to LTE network
	AT+MODODR=6	AT+MODODR=6 OK	TD-SCDMA ONLY, register only TD-SCDMA network
	AT+MODODR=7	AT+MODODR=7 OK	TD-SCDMA and WCDMA
	AT+MODODR=8	AT+MODODR=8 OK	CDMA ONLY
	AT+MODODR=9	AT+MODODR=9 OK	CDMA & EVDO
	AT+MODODR=10	AT+MODODR=10 OK	EVDO ONLY

Table 270: Detailed description of AT+MODODR Parameter

Parameter	Value	Description
<mode>	1	WCDMA ONLY, register only WCDMA network
	2	Auto mode, sequence: LTE—TD-SCDMA/WCDMA/EVDO—GSM/CDMA
	3	GSM ONLY, register only GSM network
	4	GSM PREFERRED, GSM priority
	5	LTE ONLY, register only to LTE network
	6	TD-SCDMA ONLY, register only TD-SCDMA network
	7	TD-SCDMA and WCDMA
	8	CDMA ONLY
	9	CDMA & EVDO

	10	EVDO ONLY

8. 1. 2 Read and modify MEID number related Command: AT+LCTSN

Table 271: AT+LCTSN operation command

Type	Command	Possible return results	Description
Read Command	AT+LCTSN=<option>, <type>	AT+LCTSN=<option>, <type> +LCTSN: <MEID> OK	Success
Modify command	AT+LCTSN=<option>, <type>, <MEID>	AT+LCTSN=<option>, <type>, <MEID> OK	MEID must be written in 14 bits, and the calibration bit is not written
Test command	AT+LCTSN=?	+LCTSN: (0-1, 0-9) OK	-
Command routine	AT+LCTSN=0, 9	AT+LCTSN=0, 9 +LCTSN: "00A1000010B101D5" OK	Success
	AT+LCTSN=1, 9, "A1000010B101D5"	AT+LCTSN=1, 9, "A1000010B101D5" OK	Must be written in 14 bits, the calibration bit is not written

Table 272: Detailed description of AT+LCTSN Parameter

Parameter	Value	Description
<option>	0: read	
	1: Write	
<type>	(5, 7, 9)	5: SN; 7: IMEI; 9: MEID
value	character string	SN, IMEI or MEID number

8. 1. 3 Reset module Command: AT+RESET

Table 273: AT+RE Set Command

Type	Command	Possible return results	Description
Execution command	AT+RESET		Wait for a moment after delivering the AT+RESet command, module will shutdown and reset

8. 1. 4 Query network type Command: AT+PSRAT

Table 274: AT+PSRAT Command

Type	Command	Possible return results	Description
Execution command	AT+PSRAT	+PSRAT: TD-LTE +PSRAT: FDD-LTE +PSRAT: TDSCDMA +PSRAT: HSPA+ +PSRAT: HSUPA +PSRAT: HSDPA +PSRAT: WCDMA +PSRAT: EVDO +PSRAT: CDMA +PSRAT: CDMA&EVDO +PSRAT: EHRPD +PSRAT: GPRS +PSRAT: GSM +PSRAT: EDGE NONE	Return to currently registered network
Command routine	AT+PSRAT	WCDMA	WCDMA network is currently registered

8. 1. 5 Query Software version number command: AT+SGSW

Table 275: AT+SGSW operation command

Type	Command	Possible return results	Description
Execution command	AT+SGSW	Software Version: <XXX> Inner Version: <XXXXX> OK	
Command routine	AT+SGSW	Software Version: SLM730_1. 0. 1_EQXXA Inner Version: SLM730_ EQXXA _FBE. DF8B142. A21A561_YYMMDD_101_Vxx_Tx OK	-Need to add build date

8. 1. 6 Set Uart port function command: AT+FGUARTNMEA

Use this command to set the UART port function.

Table 276: AT+FGUARTNMEA operation command

Type	Command	Possible return results	Description
Set Command	AT+FGUARTNMEA=<n>	OK	-
		ERROR/+FGUARTNMEA ERROR: <err>	Failure
Query command	AT+FGUARTNMEA?	+FGUARTNMEA: <n> OK	-
		ERROR/+FGUARTNMEA ERROR: <err>	Failure
Test command	AT+FGUARTNMEA=?	+FGUARTNMEA: (<n>value list0-2) OK	-
Command routine	AT+FGUARTNMEA=0	OK	-
	AT+FGUARTNMEA?	+FGUARTNMEA: 0 OK	-
	AT+FGUART	+FGUARTNMEA: (0-2)	-

	NMEA=?	OK	

Table 277: Detailed description of AT+FGUARTNMEA Parameter

Parameter	Value	Description
<n>	0	UART port as AT and Modem
	1	UART port as NMEA
	2	UART port as Diagnostics (TBD)

8. 1. 7 Network type change indication: AT+NWTPYEIND

Table 278: AT+NWTYPEIND operation command

Type	Command	Possible return results	Description
Execution command	AT+NWTYPEIND ?	+NWTYPEIND: <n>	After using this function, as long as the current network mode changes, changed network type will be submitted.
Command routine	AT+NWTYPEIND ?	+NWTYPEIND: 1 OK	Enable network type change
	AT+NWTYPEIND =?	+NWTYPEIND: (0, 1) OK	-
	AT+NWTYPEIND =1	OK	Set report enable

Table 279: Detailed description of AT+NWTYPEIND Parameter

Parameter	Value	Description
<n>	0	Disable network type change indication
	1	Enable network type change indication If set enable, the value and its representative network type are: +NWTYPEIND: 31 //"no service", +NWTYPEIND: 32 //"network: gsm", +NWTYPEIND: 33 //"network: gprs", +NWTYPEIND: 34 //"network: edge",

		+NWTYPEIND: 35 //"network: wcdma", +NWTYPEIND: 36 //"network: hsdpa", +NWTYPEIND: 37 //"network: hsupa" +NWTYPEIND: 38 //"network (hsdpa_plus)" +NWTYPEIND: 39 //"network (td_scdma)" +NWTYPEIND: 40 //"network (lte_fdd)" +NWTYPEIND: 41 //"network (lte_tdd)" +NWTYPEIND: 42 //"network (LTE)" +NWTYPEIND: 43 //"network (CDMA)" +NWTYPEIND: 44 //"network (CDMA&EVDO)" +NWTYPEIND: 45 //"network (EVDO)"

8. 1. 8 Set initialization report indication: AT+URCIND（TBD）

Use this command to set initialization report indication.

Table 280: AT+URCIND operation command

Type	Command	Possible return results	Description
Set Command	AT+URCIND=<value>	OK	-
Query command	AT+URCIND?	+ URCIND: <value> OK	-
Test command	AT+URCIND=?	+ URCIND: (0-1) OK	-
Command routine	AT+URCIND=0	OK	-
	AT+URCIND?	+ URCIND: 0 OK	-
	AT+ URCIND =?	+ URCIND: (0-1) OK	-

Table 281: Detailed description of AT+URCIND Parameter

Parameter	Value	Description
<value>	0	Close URC Report
	1	Enable initialization report indication, if set enable, the

		reported value is:
		"+URCIND: 0"; //model start
		"+URCIND: 1"; //phone book init complete
		"+URCIND: 2"; //sms init complete
		"+URCIND: 31", //network init complete(no service)
		"+URCIND: 32", //network init complete(gsm)
		"+URCIND: 33", //network init complete(gprs)
		"+URCIND: 34", //network init complete(edge)
		"+URCIND: 35", //network init complete(wcdma)
		"+URCIND: 36", //network init complete(hsdpa)
		"+URCIND: 37", //network init complete(hsupa)
		"+URCIND: 38", //network init complete(hsdpa_plus)
		"+URCIND: 39", //network init complete(td_scdma)
		"+URCIND: 40", //network init complete(lte_fdd)
		"+URCIND: 41", //network init complete(lte_tdd)
		"+URCIND: 42", //network init complete(EVDO)
		"+URCIND: 43", //network init complete(CDMA)
		"+URCIND: 30"; //limite service
		"+URCIND: 5"; //model init complete
		"+URCIND: 3"; //model init complete(no sim!)

8. 1. 9 Network type of indicating dial: AT+PSDIALIND

Use this command to indicate the network type of dialing.

Table 282: AT+PSDIALIND operation command

Type	Command	Possible return results	Description
Set Command	AT+PSDIALIND=<value>	OK	-
Query command	AT+PSDIALIND?	+PSDIALIND: <value> OK	-
Test command	AT+PSDIALIND=?	+PSDIALIND: (0-1) OK	-
Command	AT+PSDIALIND=0	OK	-

routine	AT+PSDIALIND?	+PSDIALIND: 0 OK	-
	AT+PSDIALIND=?	+PSDIALIND: (0-1) OK	-

Table 283: Detailed description of T+ PSDIALIND Parameter

Parameter	Value	Description
<value>	0	Close network type report
	1	AT+PSDIALIND=1set enable report Enable network type dial indicator; if set enable, the report values are: +PSDIALIND: 31 //"no service", +PSDIALIND: 32 //"psnetwork: gsm", +PSDIALIND: 33 //"psnetwork: gprs", +PSDIALIND: 34 //"psnetwork: edge", +PSDIALIND: 35 //"psnetwork: wcdma", +PSDIALIND: 36 //"psnetwork: hsdpa", +PSDIALIND: 37 //"psnetwork: hsupa" +PSDIALIND: 38 //"psnetwork: hspa plus" +PSDIALIND: 39 //"psnetwork: td_scdma" +PSDIALIND: 40 //"psnetwork: lte_fdd" +PSDIALIND: 41 //"psnetwork: lte_tdd" +PSDIALIND: 42 //"psnetwork: lte +PSDIALIND: 43 //"psnetwork: CDMA" +PSDIALIND: 44 //"psnetwork: CDMA&EVDO" +PSDIALIND: 45 //"psnetwork: EVDO"

8. 1. 10 Signal strength when indicating dial: AT+SIGNALIND

Use this command to indicate signal strength of dialing.

Table 284: AT+ SIGNALIND operation command

Type	Command	Possible return results	Description
Set	AT+SIGNALIND	OK	-

Command	=<value>		
Query command	AT+SIGNALIND?	+ SIGNALIND: <value> OK	-
Test command	AT+SIGNALIND=?	+SIGNALIND: (0-5, 99) OK	-
Command routine	AT+SIGNALIND?	+SIGNALIND: 4 OK	-

Table 285: Detailed description of AT+SIGNALIND Parameter

Parameter	Description
<value>	Enable signal strength reporting of dialing; if set is enabled, report values are: "+SIGNALIND: 0 //"level: 0" "+SIGNALIND: 1 //"level: 1" "+SIGNALIND: 2 //"level: 2" "+SIGNALIND: 3 //"level: 3" "+SIGNALIND: 4 //"level: 4" "+SIGNALIND: 5 //"level: 5", "+SIGNALIND: 99 //"level: UNKNOWN"

8. 1. 11 Enable network signal change command: AT+SIGNALINDFLAG

The command controls whether module supports the change of the network type, opens the enable switch, and registers ob the network after module search network mode changes.

Table 286: AT+ SIGNALINDFLAG operation command

Type	Command	Possible return results	Description
Set Command	AT+SIGNALINDFLAG=<act>	OK	-
		ERROR	Failure
Query command	AT+SIGNALINDFLAG?	+SIGNALINDFLAG: <value> OK	-

Test command	AT+SIGNALINDFLAG=?	+ SIGNALINDFLAG: (0-1) OK	-
Command routine	AT+SIGNALINDFLAG=1	OK	Open enable
	AT+SIGNALINDFLAG?	+ SIGNALIND: 1 OK	-
	AT+SIGNALINDFLAG=?	+ SIGNALINDFLAG: (0-1) OK	-

Table 287: Detailed description of AT+SIGNALINDFAG Parameter

Parameter	Value	Description
<value>	0	Signal strength reporting when turn off dial
	1	Signal strength reporting when turn on dial

8. 1. 12 Return to current number of PIN and PUK codes: AT+SGPINPUK(TBD)

Use this command to return the current remaining number of PIN code and PUK code attempts.

Table 288: AT+ SGPINPUK operation command

Type	Command	Possible return results	Description
Query command	AT+SGPINPUK=?	+SIGNALIND: <pin>, <puk> OK	-
Command routine	AT+SGPINPUK=?	+SGPINPUK: 3, 10 OK	-

8. 1. 13 Query register C, P domain: AT+SGPAS

Use this command to query the registered C, P domain.

Table 289: AT+ SGPAS operation command

Type	Command	Possible return results	Description
Query command	AT+SGPAS	+SGPAS: "UMTS", "CS_PS"	-
Command	AT+SGPAS	+SGPAS: "UMTS", "CS_PS"	-

routine			

8. 1. 14 Query network type Command: AT+ZPAS

Use this command to query the network type.

Table 290: AT+ SGPAS operation command

Type	Command	Possible return results	Description
Query command	AT+ZPAS	<CS/PS/CS_PS/ANY/ERROR>	-
Command routine	AT+ZPAS	+ZPAS: CS_PS OK	-

8. 1. 15 Set SMS Command wake-up mode: AT+SGWPS (TBD)

Using this command, you can set up a specific SMS command wake-up mode to open and close.

Table 291: AT+ SGWPS operation command

Type	Command	Possible return results	Description
Set Command	AT+SGWPS=<value>	OK	-
Query command	AT+SGWPS?	+SGWPS: <value> OK	-
Test command	AT+SGWPS=?	+SGWPS: (0-1) OK	-
Command routine	AT+SGWPS=0	OK	-
	AT+SGWPS?	+SGWPS: 0 OK	-
	AT+SGWPS=?	+SGWPS: (0-1) OK	-

Table 292: Detailed description of AT+ SGWPS Parameter

Parameter	Value	Description
<value>	0	Close SMS command wake-up mode

	1	Open SMS command wake-up mode

8. 1. 16 Set SMS command wake-up content: AT+SGWAKEUPSMS (TBD)

Use this command you can set command content of a specific SMS command wake-up mode.

Table 293: AT+ SGWAKEUPSMS operation command

Type	Command	Possible return results	Description
Set Command	AT+SGWAKEUPSMS =<content>, <CR>	OK	-
Query command	AT+SGWAKEUPSMS?	+SGWAKEUPSMS: < content > OK	-
Command routine	AT+SGWAKEUPSMS ="abcdefghij" Enter	OK	-
	AT+SGWAKEUPSMS?	+SGWAKEUPSMS: abcdefghij OK	-

Table 294: Detailed description of AT+ SGWPS Parameter

Parameter	Value	Description
<content>		Specific messages remote wake-up. SMS remote wake-up steps are as follows: 1. Enter remote wake-up information by using AT+SGWAKEUPSMS, the input must be between "!" and small "z", less than 10 characters, if more than 10 characters, only the first ten characters are valid; 2. When delivering AT command, write the corresponding wake-up content in NV, which ensures that in the next boot remote SMS wake-up content remain unchanged; 3. Send text messages with head(the first part of the content) is wake up information you can call the corresponding BSP wake-up function to achieve a specific SMS remote wake-up.

		Note: you need to set the SMS wake-up mode to a specific message wake up, and then use the above mentioned AT+SGWAKEUPSMS to set message head. In default case, SMS and voice wake up mode is base on the original setting. Users can use the AT+ SGWPS command (provided that BP side version of the user supports the AT command) to modify wake up mode.

8. 1. 17 Lock operator SIM card configuration: AT+SIMLOCKCFG

Use the command, you can set the device to use only the specified PLMN operator SIM card.

Table 295: AT+ SIMLOCKCFG operation command

Type	Command	Possible return results	Description
Set Command	AT+SIMLOCKCFG =<action>, "plmn1, plmn2, ... "	OK	Maximum Plmn number 15
Query command	AT+SIMLOCKCFG?	+ SIMLOCKCFG: <action> ; [<plmnlist>] OK	-
Command routine	AT+SIMLOCKCFG=1, "46000, 46001, 46002" Enter	OK	-
	AT+SIMLOCKCFG?	+SIMLOCKCFG: 1; 46000; 46001; 46002; OK	-

Table 296: Detailed description of AT+ SIMLOCKCFG Parameter

Parameter	Value	Description
<action>	0	No locked
	1	Locked
<plmnlist>	-	Set PLMN value

8. 1. 18 Lock operator SIM card locking state query: AT+SIMLOCKSTATE

Use this command to check whether the SIM card is locked.

Table 297: AT+ SIMLOCKSTATE operation command

Type	Command	Possible return results	Description
Query command	AT+SIMLOCKSTATE?	+ SIMLOCKSTATE: STATE OK	-
Command routine	AT+SIMLOCKSTATE?	+ SIMLOCKSTATE: UNLOCK OK + SIMLOCKSTATE: VALID SIM OK + SIMLOCKSTATE: INVALID SIM OK	- -

8. 1. 19 Configure and lock PLMN of operator SIM card: AT+SIMLOCKOPR（TBD）

Use the command to modify PLMN list that locks SIM card.

Table 298AT+ SIMLOCKOPR operation command

Type	Command	Possible return results	Description
Set Command	AT+SIMLOCKOPR=<action>, <plmn>, <num>	+SIMLOCKOPR OK	
Command routine	AT+SIMLOCKOPR=0, 46011, 10	+SIMLOCKOPR: OK	-
	AT+SIMLOCKOPR=1, 46011, 10	+SIMLOCKOPR: OK	-
	AT+SIMLOCKOPR=2, 46011, 10	+SIMLOCKOPR: OK	

Table 299: Detailed description of AT+ SIMLOCKOPR Parameter

Parameter	Value	Description

<action>	0	Add a new PLMN to the list
	1	Edit PLMN whose serial number is <num>
	2	Delete PLMN whose serial number is <num>
<plmnlist>	-	PLMN value requires setting
<num>	-	PLMN number in list

8. 1. 20 Set boot network searching sequence AT+RATORDER

Set boot network searching sequence.

Table 300: AT+RATORDER operation command

Type	Command	Possible return results	Description
Set Command	AT+RATORDER=<index>, <index>, <index>, <index>, <index>	OK	Success
		ERROR	Failure
Query command	AT+RATORDER?	+RATORDER: 0, 1, 2, 3, 4, 5 OK	-
Test command	AT+RATORDER=?	+RATORDER: 0-5, 0-5, 0-5, 0-5, 0-5, 0-5 OK	-
Command routine	AT+RATORDER=0, 1, 2, 3, 4, 5	OK	

Table 301 Detailed description of <index>Parameter

Parameter	Value	Description
Index	0	EUTRAN
	1	UTRAN
	2	GERAN
	3	TDSCDMA
	4	CDMA1X
	5	HRPD

8. 1. 21 Lock FDD or TDD AT command: AT+LTEMODELOCK

Table 302AT+LTEMODELOCK operation command

Type	Command	Possible return results	Description
Set Command	AT+LTEMODELOCK=mode	OK	-
		ERROR	Failure
Query command	AT+LTEMODELOCK?	+ LTEMODELOCK: 0/1/2	-
Test command	AT+LTEMODELOCK =?	+ LTEMODELOCK: (0-2)	-
Command routine	AT+LTEMODELOCK=0	OK	

Table 303: Detailed description of Mode Parameter

Parameter	Value	Description
mode	0	Lock to LTE full spectrum
	1	Lock to FDD
	2	Lock to TDD

Note: When switching to the automatic mode, perform other settings after locking the command to the full frequency band of LTE.

8. 1. 22 Set the device to the standard, locking the device to the band command: AT+BNDLOCK(TBD)

Table 304: AT+BNDLOCK operation command

Type	Command	Possible return results	Description
Set Command	AT+BNDLOCK=<mode_pref>[,<band_Pref>]	OK	Success
		ERROR	Failure
Query command	AT+BNDLOCK?	+MODEPREF: （Currently set mode） +BANDPREF: （Currently set band） OK	-
Test	AT+BNDLOCK=?	+ BNDLOCK: (mode_prefvalue list),	-

command		(band_prefvalue list)	
Command routine	AT+BNDLOCK=5,0	OK	-
	AT+BNDLOCK?	+FGMODEPREF: 5 +BANDPREF: 0 OK	-

Table 305: Value of mode_pref

Value	Description	Support or not
1	UMTS ONLY	Support
2	AUTO	Support
3	GSM ONLY	Support
4	GSM PREFERRED	Not Support
5	LTE ONLY	Support
6	TDSCDMA	Support
7	TDSCDMA_AND_WCDMA	Support

Table 306: mode_pref Value and band_pref Value:

Mode_pref	Band_pref	Description
1	0/null	Open all WCDMA frequencies for the current device
	1	WCDMA_I_IMT_2000
	2	WCDMA_II_PCS_1900
	3	WCDMA_III_1700 (TBD)
	4	WCDMA_IV_1700 (TBD)
	5	WCDMA_V_850
	6	WCDMA_VI_800 (TBD)
	7	WCDMA_VII_2600 (TBD)
	8	WCDMA_VIII_900 (TBD)
	9	WCDMA_IX_1700 (TBD)
2	0/null	Open all frequencies supported by the current device
3	0/null	Open all GSM frequencies for the current device
	1	EGSM 900
	2	DCS 1800

	3	PCS 1900
	4	GSM 850
4	0/null	Open all GSM frequencies for the current device
	1	EGSM 900(BAND8)
	2	DCS 1800(BAND3)
	3	PCS 1900(BAND2)
	4	GSM 850(BAND5)
5	0/null	Open all LTE frequencies for the current device
	1	EUTRAN_BAND7
	2	EUTRAN_BAND38
	3	EUTRAN_BAND39
	4	EUTRAN_BAND40
	5	EUTRAN_BAND1
	6	EUTRAN_BAND3
	7	EUTRAN_BAND41
6	0/null	Open all TDSCDMA frequencies for the current device
	1	TDS_BAND A (BAND34)
	2	TDS_BAND F(BAND39)
7	0/null	Open all TDSCDMA and WCDMA frequencies for the current device
	1	TDS_BAND A(BAND34)
	2	TDS_BAND F(BAND39)
	3	WCDMA_I_IMT_2000
	4	WCDMA_II_PCS_1900
	5	WCDMA_III_1700 (TBD)
	6	WCDMA_IV_1700 (TBD)
	7	WCDMA_V_850
	8	WCDMA_VI_800 (TBD)
	9	WCDMA_VII_2600 (TBD)
	10	WCDMA_VIII_900 (TBD)
	11	WCDMA_IX_1700 (TBD)

8. 1. 23 Enable APN auto match function command: AT+APNAMATCH

At present, the mobile network supports using the wrong APN module, the network side issued the correct APN, the device can be achieved through the LTE APN network registration.

Table 307: AT+APNAMATCH command

Type	Command	Possible return results	Description
Set Command	AT+APNAMATCH=<act>	OK	Success
		ERROR	Failure
Query command	AT+APNAMATCH?	+APNAMATCH: <act> OK	-
Test command	AT+APNAMATCH=?	+APNAMATCH: (0, 1) OK	-
Command routine	AT+APNAMATCH=1	OK	-
	AT+APNAMATCH?	+APNAMATCH: 1	-
	AT+APNAMATCH=?	+APNAMATCH: (0, 1) OK	-

Table 308: Detailed description of <act>Parameter

Parameter	Value	Description
<act>	0	Close APN auto match
	1	Open APN auto match

8. 1. 24 Restore factory NV settings: AT+RESCFG(TBD)

According to the contents of the file /default_factory_nv. txt, the default value of the NV setting is required. If /default_factory_nv. txt does not exist, then the recovery fails, return to ERROR.

Table 309: AT+RESCFG operation command

Type	Command	Possible return results	Description
Execution command	AT+RESCFG	OK	Success
		ERROR	Failure
Command routine	AT+RESCFG	OK	-

/default_factory_nv. txt file description

The format of the file is as follows:

<NV_ID>, <NV_TYPE>, <NV_PATH>, <CONTENT>;

…

Table 310: Description of AT+RESCFG Parameter

Parameter	Description
NV_ID	ID value of NV
NV_TYPE	Type of NV, if it is a lower order NV, set to 0, if it is a higher order NV (EFS file), then set to 1
NV_PATH	High order NV file path, if it is a low order NV,vacate the field
CONTENT	Restored contents of NV, write in 16 hexadecimal format

Sample file:

10, 0, , 0004;

441, 0, , 008301;

65633, 1, /nv/item_files/modem/mmode/lte_bandpref, 45000000E0010000;

8. 1. 25 Dial status report enable command: AT^DSCI

This command can turn on or off the dial status report.

Table 311: AT^DSCI operation command

Type	Command	Possible return results	Description
Set Command	AT^DSCI=<act>	OK	Success
		ERROR	Failure
Query command	AT^DSCI?	^DSCI: <act>	-
Test	AT^DSCI=?	^DSCI: (0-1)	-

command			
Command routine	AT^DSCI=1	OK	-
	AT^DSCI?	^DSCI: 1	-

Table 312: Description of AT^DSCI Parameter

Parameter	Value	Description
<act>	0	Turn off dial status report
	1	Turn on dial status report

8. 1. 26 Query cell information: AT+SGCELLINFO

Table 313: AT+SGCELLINFO operation command

Type	Command	Possible return results	Description
Execution command	AT+SGCELLINFO	Mobile 4G: +SGCELLINFO: CURR_MODE: CELL_ID: f6 LAC_ID: 91d5 RSSI: 67 RSRP: -92 RSRQ: -5 SINR: 248 BAND: 159 CHANNEL: 39148 UE_category: 3 PATHLOSS: 255 SNR: 29. 0 DUPLEX MODE: TDD LTE CGI: 46000 OK Mobile 3G +SGCELLINFO:	-

		MCC: 460, MNC: 00 CELL_ID: fcbafa3 LAC_ID: ffff ACTIVE_BAND: 168 CHANNEL: 10055 RSSI: 67 RSCP: -72 OK Mobile 2G +SGCELLINFO: MCC: 460, MNC: 00 CELL_ID: 8c2e LAC_ID: 91d5 ACTIVE_BAND: 47 CHANNEL: 588 RSSI: 67 RSCP: -125 OK Unicom 4G +SGCELLINFO: CURR_MODE: 9 CELL_ID: 1d0 LAC_ID: 910f RSSI: 56 RSRP: -79 RSRQ: -5 SINR: 208 BAND: 122 CHANNEL: 1650 UE_category: 3 PATHLOSS: 255	

		SNR: 21. 0 DUPLEX MODE: FDD LTE CGI: 46001 OK Unicom 3G +SGCELLINFO: MCC: 460, MNC: 01 CELL_ID: c11402f LAC_ID: bb11 ACTIVE_BAND: 80 CHANNEL: 10713 UL_CHANNEL: 9763 RSSI: 60 RSCP: -68 ECIO: -4 OK Unicom 2G: +SGCELLINFO: MCC: 460, MNC: 01 CELL_ID: 41e9 LAC_ID: 20e6 ACTIVE_BAND: 47 CHANNEL: 679 RSSI: 82 RSCP: -125 OK Telecom 4G: +SGCELLINFO:	

		CURR_MODE: 9 CELL_ID: 5b LAC_ID: 2541 RSSI: 84 RSRP: -118 RSRQ: -16 SINR: 95 BAND: 122 CHANNEL: 1825 UE_category: 3 PATHLOSS: 255 SNR: -1. 0 DUPLEX MODE: FDD LTE CGI: 46011 OK Telecom 3G: +SGCELLINFO: MCC: 460, MNC: 03 Channel: 37 ECIO: 5 SINR:: 8 RSSI: 81 OK Telecom 2G: +SGCELLINFO: MCC: 460, MNC: 03 System id: 13938 16 Network id: 36 base id: 8689 16 Cell: 44 Channel: 283	

		latitude: 0 longitude: 0 RSSI: 88 OK	
Test command	AT+SGCELLINFO=?	Support return: OK	-
		No return: COMMAND NOT SUPPORT	Failure

Table 314: Description of AT+SGCELLINFO Parameter

Parameter	Value	Description
CURR_MODE		Current registration mode
CELL_ID	0~65535	Cell Identity, Base station number is a 16 bit data.
LAC_ID		Location Area Code
RSSI	120. 0dBm~0dBm	Received signal strength indicator
RSRP	-44dBm~-140dBm	Refer to Signal receiving power
RSRQ	-20. 0dB~-3. 0dB	Indicates LTE Reference signal receiving quality
SINR		Pseudo SINR, negligible
BAND		Band
CHANNEL		Channel
UE_category	1~5	UE power rating
PATHLOSS		Receiving end line loss
SNR		Actual signal to noise ratio
DUPLEX MODE		Duplex mode
CGI		Network type
ACTIVE_BAND		Effective bandwidth
MCC		The mobile country number, consisting of 3 digits,

		uniquely identifies the country in which the mobile user belongs (China is 460);
MNC		Mobile network number (China Mobile 00, China Unicom is 01)
ECIO		Effective signal and invalid signal occupancy
latitude		Latitude
longitude		Longitude
System id		System ID (16)
Network id		Network ID (16)
base id		Base station ID (16 binary)

8. 1. 27 Disable RPLMN function: AT+FGDISRPLMN

After disabling RPLMN function, the search order will not be saved, but the search order of the /sd/rat_acq_order will be used:

Table 315: AT+FGDISRPLMN operation command

Type	Command	Possible return results	Description
Set Command	AT+FGDISRPLMN=<Mode>	OK	Success
		ERROR	Failure
Query command	AT+FGDISRPLMN?	+FGDISRPLMN: 1 OK	-
Test command	AT+FGDISRPLMN=?	+FGDISRPLMN: (0, 1) OK	-
Command routine	AT+FGDISRPLMN=1	OK	-
	AT+FGDISRPLMN?	+FGDISRPLMN: 1 OK	-

Table 316: Description of AT+FGDISRPLMN Parameter

Parameter	Value	Description
<Mode>	0	Disable RPLMN
	[1]	Enable RPLMN

8. 1. 28 Extended AT command of signal query: AT+FGCSQ

Table 317: AT +FGCSQ operation command

Type	Command	Possible return results	Description
Execution command	AT+FGCSQ		-
Command routine	AT+FGCSQ	+FGCSQ: <signalStrength>, <bitErrorRate>, <cdma dbm>, <cdma ecio>, <evdo dbm>, <evdo ecio>, <evdo signalNoiseRatio>, <lte signalStrength>, <rsrp>, <rsrq>, <rssnr>	-

Table 318: Description of AT +FGCSQ Parameter

Parameter	Value	Description
Signal Strength		GSM/WCDMA/TDSCDMA signal parameter
Bit Error Rate		GSM/WCDMA/TDSCDMA signal parameter
cdma dbm		CDMA signal parameter
cdma ecio		CDMA signal parameter
evdo dbm		EVDO signal parameter
evdo ecio		EVDO signal parameter
evdo signal Noise Ratio		EVDO signal parameter
lte signal Strength		LTE signal parameter
rsrp		LTE signal parameter
rsrq		LTE signal parameter
rssnr		LTE signal parameter

8. 1. 29 Terminal device event reporting: +CMER

Use set command to enabled or disabled non-request results code of event report from TA to TE . Use query command to get parameter setting of the current command, use test command to get value range of the command parameter.

Table 319: AT+CMER operation command

Type	Command	Possible return results	Description
Set command	AT+CMER=[<mode>[, <keyp>[, <disp>[, <ind>[, <bfr>]]]]]	OK	-
		ERROR/+CME ERROR: <err>	-
Query command	AT+CMER?	+CMER: <mode>, <keyp>, <disp>, <ind>, <bfr> OK	-
		ERROR/+CME ERROR: <err>	
Text command	AT+CMER=?	+CMER: (<mode>value list), (<keyp>value list), (<disp>value list), (<ind>value list), (<bfr>value list) OK	-
		ERROR/+CME ERROR: <err>	
Command routine	AT+CMER=2, 0, 0, 1, 1	OK	-
	AT+CMER	OK	-
	AT+CMER?	+CMER: 2, 0, 0, 1, 1 OK	-
	AT+CMER=?	+CMER: (0-3), (0), (0), (0-1), (0-1) OK	-

Table 320: Detailed description of AT+CMER Parameter

Parameter	Value	Description
<mode>	0	Cache non-request result code in TA; if the current buf is already full, the non-request result code will be saved elsewhere or discarded the oldest records stored in the buf.
	1	When there is a TA-TE link(in on_line data mode) , discard non-request result code; else, send it directly to TE
	2	When there is a TA-TE link (in on_line data mode) , cache non-request result code in TA and then refresh it to TE; else, send it directly to TE.
	3	Send a non-request result code directly to TE
<keyp>	0	Current key event report is not supported
<disp>	0	Display event report is not currently supported
<ind>	0	Non reporting event report
	1	+CIEV: <ind>, <value> indicates Indication Event Report;
<bfr>	0	When <mode> 1 - 3, empty TA cache for the non-request result code defined by this command;
	1	When <mode> 1 - 3, TA cache of the non-request result code defined by this command is refreshed to TE

8. 1. 30 SIM type query AT+SIMTEST

Table 321: AT+SIMTEST operation command

Type	Command	Possible return results	Description
Query command	AT+SIMTEST?	+SIMTEST: <app_type>; <insert_app_type> OK	Success
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+SIMTEST?	+SIMTEST: 0; OK	-
	AT+SIMTEST?	+SIMTEST: 3; 4 3 5 5	Card, current

		OK	SIM card type is USIM
	AT+SIMTEST?	+SIMTEST: 1; 1 2 OK	Card, current SIM card type is SIM

Table 322: Detailed description of AT+SIMTEST parameter

Parameter	Value	Description
<app_type>	0-5	After SIM card is initialized, current SIM card type is SIM 0: MMGSDI_APP_NONE //In the absence of SIM card 1: MMGSDI_APP_SIM //GSM type, currently Telecom will report this Type 2: MMGSDI_APP_RUIM // Telecom 3G card 3: MMGSDI_APP_USIM //Mobile and Unicom will report 4: MMGSDI_APP_CSIM //Telecom 4G card will report 5: MMGSDI_APP_UNKNOWN //Currently only Telecom 4G card will report
<insert_app_type>	0-5	After the module detects that SIM card is inserted, the AID information obtained by the SIM card type is different from the number of SIM cards acquired by the AID 0: MMGSDI_APP_NONE 1: MMGSDI_APP_SIM 2: MMGSDI_APP_RUIM 3: MMGSDI_APP_USIM 4: MMGSDI_APP_CSIM 5: MMGSDI_APP_UNKNOWN

8. 1. 31 Enable active reporting: AT+NWMINDEN

Enable this command to turn on / off reporting information of NWTYPEIND, PSDIALIND, DSCI, SIGNALIND.

Table 323: AT+NWMINDEN operation command

Type	Command	Possible return results	Description

Set command	AT+NWMINDEN=<val>	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+NWMINDEN?	+NWMINDEN: <val> OK	-
		ERROR/+CME ERROR: <err>	
Test command	AT+NWMINDEN =?	+NWMINDEN: (0-1) OK	-
		ERROR/+CME ERROR: <err>	-
Command routine	AT+NWMINDEN =?	+NWMINDEN: (0-1) OK	-
	AT+NWMINDEN?	+NWMINDEN: 1 OK	-
	AT+NWMINDEN=1	OK	NWTYPEIND 、PSDIALIND 、DSCI、SIGNALIND will report
	AT+NWMINDEN=0	OK	NWTYPEIND 、PSDIALIND 、DSCI、SIGNALIND will not report

Table 324: Description of AT+NWMINDEN Parameter

Parameter	Value	Description
<mode>	0	Not report
	1	Report

8. 1. 32 Enable query LTE adjacent cell information: AT+LTENCELL

This command is a debugging command used to query the LTE adjacent information to determine the current wireless network environment.

Table 325: AT+LTENCELL operation command

Type	Command	Possible return results	Description
Query command	AT+LTENCELL	CURR_MODE: LTE CURR_MODE: NOT LTE	-
Command routine	AT+LTENCELL	CURR_MODE: LTE INTRA_CELL_ID: 262 INTRA_EARFCN: 1650 NUM_LTE_CELLS: 3 cell_resel_priority: 7, s_intra_search: 60, s_non_intra_search: 6, thresh_serving_low: 4 num_cell: 0 LTE_INTRA PCI: 262, RSRP: -1004, RSRQ: -84, RSSI: -721 srxlev: 21 num_cell: 1 LTE_INTRA PCI: 325, RSRP: -1054, RSRQ: -113, RSSI: -851 srxlev: 16 num_cell: 2 LTE_INTRA PCI: 66, RSRP: -1136, RSRQ: -200, RSSI: -835 srxlev: 8 OK	Registered cell CELL_ID Register cell frequency The number of co-frequency adjacent cells Co-frequency Adjacent cell reselection parameters Co-frequency adjacent cell parameters

8. 1. 33 User name reading configuration in Telecom 3G PPP dial-up: AT+CRM

Table 326: AT+CRM operation command

Type	Command	Possible return results	Description
Set command	AT+CRM=<parameter>	OK	-
		ERROR/+CME ERROR: <err>	-
Query command	AT+CRM?	+CRM: < parameter > OK	-
		ERROR/+CME ERROR: <err>	
Test command	AT+CRM=?	+CRM: (0-2) OK	-
		ERROR/+CME ERROR: <err>	-
Command routine	AT+CRM=2	OK	-

Table 327: Description of AT+CRM Parameter

Parameter	Value	Description
<parameter>	0	DUN dial the user name and password are imported from the client to the module
	1	Temporary retention
	2	DUN dial-up user name and password are read from NV910 and NV906

8. 1. 34 Set OMH SIM card attributes: AT+FGOMHDIS (TBD)

Table 328: AT+FGOMHDIS operation command

Type	Command	Possible return results	Description
Set command	AT+FGOMHDIS =<parameter>	OK	-
		ERROR/+CME ERROR:	-

		<err>	
Query command	AT+FGOMHDIS?	+ FGOMHDIS: < parameter > OK	-
		ERROR/+CME ERROR: <err>	
Test command	AT+FGOMHDIS=?	+ FGOMHDIS: (0-1) OK	-
		ERROR/+CME ERROR: <err>	-
Command routine	AT+FGOMHDIS=0	OK	-

Table 329: Description of AT+FGOMHDIS Parameter

Parameter	Value	Description
<parameter>	0	Enable omh feature, read user name and password from the SIM card, place them in NV5454 and NV5455; the module settings do not work
	1	Disable omh feature, user name and password are determined by CRM or NV67291

8. 1. 35 Data dial connection report command: ^DATACONNECT

This command is used to indicate the success of a data service dial connection.

Table 330: ^DATACONNECT operation command

Type	Command	Possible return results	Description
Report Command		^DATACONNECT	Dial up connection successfully Note: please refer to the ATD entry for parameter Description
Command routine			Examples see the ATD entry

8. 1. 36 Data dial disconnection report command: ^DATADISCONN

This command indicates disconnection of data service dial.

Table 331: ^DATADISCONN operation command

Type	Command	Possible return results	Description
Report command		^DATADISCONN	Disconnect dialing data Note: Refer to ATD item for parameters descriptions
Command routine			Examples see the ATD item

8. 1. 37 NDIS dial command: AT$QCRMCALL

The command is based on the RMNETWORK dial-up command, the command can be used to connect and disconnect data.

Table 332: AT$QCRMCALL operation command

Type	Command	Possible return results	Description
Set command	AT$QCRMCALL=<Action>, <Instance> [, <IP Type> [, <Tech Pref > [, <umts profile number> [, <cdma profile number > [, <APN>]]]]]	OK	Dial success
		NO CARRIER	Dial failure
Query command	AT$QCRMCALL?	OK	-
Test command	AT+$QCRMCALL=?	$QCRMCALL: (0-1), (1, 2, 3, 4, 5, 6, 7, 8), (1-3), (1-2), (1-16), , OK	-
Command	AT$QCRMCALL=1, 1, 3,	$QCRMCALL: 1, V4	-

routine	1, , 1		

Table 333: Description of AT$QCRMCALL Parameter

Parameter	Value	Description
< Action >	0	Stop
	1	Start
<Instance>		1 to RMNETWORK_ NUM_LAPTOP_ INSTANCES
<IP Type>	1	Ipv4
	2	Ipv6
	3	Ipv4v6
<Tech Pref>	1	3GPP2
	2	3GPP
<umts_profile>	1 to 16	-
<APN >	1	String type, maximum length is 100

8. 1. 38 System mode changing indication: ^MODE

This command is a non-request command that is displayed when the system mode changes.

Table 334: ^MODE operation command

Type	Command	Possible return results	Description
Execution command		^MODE: <sys_mode, cell_service>	Non-request command display only, cannot enter
Command routine	at+mododr=8	OK +NWTYPEIND: 43 SIGNALIND: 3 ^MODE: 2, 12 SIGNALIND: 1	-

		SIGNALIND: 2	

Table 335: Description of ^MODE parameter

sys_mode		CELL_SERVICE	
-1	FOR INTERNAL USE ONLY	-1	ERR
0	No service	0	NONE
1	Analog Mobile Phone System (AMPS)	1	GSM
2	CDMA	2	GPRS
3	GSM	3	EDGE
4	HDR	4	WCDMA
5	WCDMA	5	HSDPA
6	GPS	6	HSUPA
7	GSM and WCDMA	7	HSUPA_HSDPA
8	1XEVDO	8	TDSCDMA
9	LTE	9	LTE
10	GSM, WCDMA, and LTE	10	TDD_LTE
11	TDSCDMA	11	FDD_LTE
-		12	CDMA
-		13	CDMA_HDR
-		14	HDR

8. 1. 39 Query adjacent cells information: AT+CELLINFO

Use this command to query the current neighborhood information.

Table 336: AT+CELLINFO operation command

Type	Command	Possible return results	Description
Execution command	AT+CELLINFO	Return in Unicom LTE network: +CELLINFO: CURR_MODE: CELL_ID: LAC_ID:	-

		RSSI: RSRP: RSRQ: SINR: BAND: CHANNEL: UE_category: PATHLOSS: SNR: DUPLEX MODE: CGI: CPI: Return in WCDMA network: +CELLINFO: MCC: , MNC: CELL_ID: LAC_ID: ACTIVE_BAND: CHANNEL: UL_CHANNEL: RSSI: RSCP: ECIO: CPI: CURR_MODE: OK Return in Unicom GSM network: +CELLINFO: MCC: 460, MNC: 01 CELL_ID: LAC_ID: ACTIVE_BAND: CHANNEL:	

		RSSI: RSCP: CPI: CURR_MODE: OK Return in Telecom LTE network: +CELLINFO: CURR_MODE: CELL_ID: LAC_ID: RSSI: RSRP: RSRQ: SINR: BAND: CHANNEL: UE_category: PATHLOSS: SNR: DUPLEX MODE: CGI: CPI: OK Return in Telecom EVDO network: +CELLINFO: MCC: , MNC: Channel: ECIO: SINR: RSSI: Return in Telecom CDMA network: +CELLINFO: MCC: , MNC:	

		System id: Network id: base id: Cell: Channel: latitude: longitude: RSSI: OK Return in Mobile LTE network: +CELLINFO: CURR_MODE: CELL_ID: LAC_ID: RSSI: RSRP: RSRQ: SINR: BAND: CHANNEL: UE_category: PATHLOSS: SNR: DUPLEX MODE: CGI: CPI: OK Return in Mobile TDSCDMA network: +CELLINFO: MCC: , MNC: CELL_ID: LAC_ID: ACTIVE_BAND:	

		CHANNEL: RSSI: RSCP: CPI: CURR_MODE: OK Return in Mobile GSM network: +CELLINFO: MCC: , MNC: CELL_ID: LAC_ID: ACTIVE_BAND: CHANNEL: RSSI: RSCP: CPI: CURR_MODE: OK	

Table 337: Description of AT+CELLINFO Parameter

Parameter	Value	Description
CURR_MODE		Current registration mode
CELL_ID	0~65535	Cell Identity, Base station number is a 16 bit data.
LAC_ID		Location Area Code
RSSI	120. 0dBm~0dBm	Received signal strength indication
RSRP	-44dBm~-140dBm	Refer to Signal receiving power
RSRQ	-20. 0dB~-3. 0dB	Indicates LTE reference signal receiving quality
SINR		Pseudo SINR, negligible
BAND		Band
CHANNEL		Signal channel

UE_category	1~5	UE power rating
PATHLOSS		Receiving end line loss
SNR		Actual signal to noise ratio
DUPLEX MODE		Duplex mode
CGI		Network Type
ACTIVE_BAND		Effective bandwidth
MCC		The mobile country number, consisting of 3 digits, uniquely identifies the country in which the mobile user belongs (China is 460);
MNC		Mobile network number (China Mobile 00, China Unicom is 01)
ECIO		Valid signal and invalid signal occupation ratio
latitude		Latitude
longitude		Longitude
System id		System ID (hex 16)
Network id		Network ID (hex 16)
Base id		Base station ID (hex 16)
CPI		Integer type When cell type is GSM cell, indicates BSIC, value range 0-63; When cell Type is TD cell, indicates cell parameter id, Value range 0-127; When cell Type is WCDMA cell, indicates PSC, Value range 0-511; When the cell Type is LTE, indicates PCI, Physical cell ID.

8. 1. 40 Get network registration information: AT+REGANALYZE (TBD)

Using this command, you can get the current module registration information, and the reasons why the registration fails.

Table 338: AT+REGANALYZE operation command

Type	Command	Possible return results	Description
Execution command	AT+REGANALYZE	Return when registration is successful: +REGANALYZE: servcie available PSRAT: OK Returns when registration fails: IMSI: HPLMN: PREF_MODE: sys_mode: srv_status: BAND: RSSI: PLMN: REG_REJECT_CASUE: OK	-

Table 339: Description of AT+REGANALYZE Parameter

Parameter	Parameter description
IMSI	International Mobile Subscriber Identification Number
HPLMN	Home public land mobile network
PREF_MODE	Preference mode selection
sys_mode	System mode
srv_status	Network service status
BAND	Register band
RSSI	Received signal strength indicator
PLMN	Public land mobile network
REG_REJECT_CASUE	Cause of register rejection

8. 1. 41 Query register band: AT+BANDQRY

Using this command, you can query the current registered network band.

Table 340: AT+BANDQRY operation command

Type	Command	Possible return results	Description
Query command	AT+BANDQRY?	+BANDQRY: <vlue> OK	-

Table 341: Description of AT+BANDQRY Parameter

Parameter	Parameter Description
-1	BAND_CLASS_NONE
0	BAND_BC0
43	BAND_GSM_850
44	BAND_GSM_EGSM_900
45	BAND_GSM_PGSM_900
47	BAND_GSM_DCS_1800
48	BAND_GSM_PCS_1900
80	BAND_WCDMA_I_IMT_2000
81	BAND_WCDMA_II_PCS_1900
84	BAND_WCDMA_V_850
120	LTE_EUTRAN_BAND1
122	LTE_EUTRAN_BAND3
126	LTE_EUTRAN_BAND7
157	BAND_LTE_EUTRAN_BAND38
156	BAND_LTE_EUTRAN_BAND39
159	BAND_LTE_EUTRAN_BAND40
160	BAND_LTE_EUTRAN_BAND41
163	BAND_TDS_BANDA
168	BAND_TDS_BANDF

8. 1. 42 Enable sleep function: AT+SLEEPEN（TBD）

Use this command to turn on or off sleep function of the module.

Table 342: AT+SLEEPEN operation command

Type	Command	Possible return results	Description
Set	AT+SLEEPE	OK	-

Command	N=<n>		
Query command	AT+SLEEPEN?	+SLEEPEN: 0 OK	-
Test command	AT+SLEEPEN =?	+SLEEPEN: (0-1) OK	-
Command routine	AT+SLEEPEN =1	OK	Open sleep function

Table 343: Description of AT+SLEEPEN Parameter

Parameter	Value	Description
<n>	0	Close sleep function
	1	Open sleep function

8. 1. 43 Hardware RF pin enable turn on/off: AT+WDISABLEEN

Use this command to turn on/off the hardware pin function. When AT+WDISABLEEN=1, the hardware pin can be operated (whether enter the flight mode); when AT+WDISABLEEN =0, the hardware pin operation is invalid.

Table 344: AT+WSIDABLEEN operation command

Type	Command	Possible return results	Description
Set Command	AT+WDISABLEEN=<n>	OK	-
Query command	AT+WDISABLEEN?	+ WDISABLEEN: 0 OK	-
Test command	AT+WDISABLEEN=?	+ WDISABLEEN: (0-1) OK	-
Command routine	AT+WDISABLEEN=1	OK	Valid hardware pin operation

Table 345: AT+WDISABLEEN Parameter Description

Parameter	Value	Description
<n>	0	Valid hardware pin operation
	1	Invalid hardware pin operation

8. 1. 44 ADC read: AT+ADCREAD

Table 346: AT+ADCREAD operation command

Set Command	AT+ADCREAD=<n>	OK	-
Query command	AT+ADCREAD?	+ chanel: 1-2 OK	-
Test command	AT+ADCREAD=?	+ chanel: 1-2 OK	-
Command routine	AT+ADCREAD=1	OK	Read Channel1 value

Table 347: Description of AT+ADCREAD Parameter

Parameter	Value	Description
<n>	1	Read the value of Channel 1, unit uV
	2	Read the value of channel 2, unit uV

8. 1. 45 NV backup: AT+NVBURS

Type	Command	Possible return results	Description
Set Command	AT+NVBURS=<n>	OK	-
Test command	AT+NVBURS=?	+NVBURS: (0-2) OK	-
Command routine	AT+NVBURS=0	OK	NV auto backup

Table 348: AT+NVBURS Description of Parameter

Parameter	Value	Description
<n>	0	Perform a NV backup, the return value is as follows: Success: +NVBURS: 0 OK Failure: +NVBURS: -1 OK
	1	Execute NV recovery and return values as follows:

		Success: +NVBURS: 0 OK Failure: +NVBURS: -1 OK
	2	Execute the NV backup status query, the return value is as follows: Backup data: Software Version: xxx Inner Version: xxx Build_date: [xxx] +NVBURS: 0 OK No backup data: +NVBURS: -2 或+NVBURS: -1 OK

8. 1. 46 ECM dial command: AT+ECMDUP

The command is based on the ECM dial-up command, use the command you can connect and disconnect data.

Table 349: AT+ECMDUP operation command

Type	Command	Possible return results	Description
Set command	AT+ECMDUP=<mobilea p_en>, <Action>, <IP Type>	OK	Command execution success
		ERROR	Command execute Failure
Query command	AT+ECMDUP?	OK	-
Test command	AT+ECMDUP=?	+ECMDUP: (0-1), (0-1), (1-2) OK	-
Command routine	AT+ECMDUP=1, 1, 1,	^DATACONNECT	-

Table 350: Description of AT$QCRMCALL Parameter

Parameter	Value	Description
<mobileap_en>	0	Disable ECM function
	1	Enable ECM function
< Action >	0	Stop
	1	Start
<IP Type>	1	Ipv4
	2	Ipv6

8.1.47 Inquire hardware version number: AT+SFHW

Table 351：AT+SFHW operation command

Type	Command	Possible return results	Description
Execute command	AT+SFHW	HardwareVersion: <XXXXX> OK	-Return to hardware version number
Command routine	AT+SFHW	HardwareVersion: IE801_MB_V1.00 OK	-Take Tower Project for example

8.1.48 Lock SIM card ICCID：AT+LOCKICCID

Table 352：AT+LOCKICCID operation command

Type	Command	Possible return results	Description
Set command	AT+LOCKICCID=<value>	OK	-
Query command	AT+LOCKICCID?	+LOCKICCID: <value> OK	-
Test command	AT+LOCKICCID=?	+SGWPS: (0-1) OK	-
Command	AT+LOCKICCID=0	OK	Unlock iccid

routine	AT+LOCKICCID?	+LOCKICCID: 0 OK	Inquire current iccid locking state
	AT+LOCKICCID=?	+LOCKICCID: (0-1) OK	-

Table 353：Description of AT+LOCKICCID parameter

Parameter	Value	Description
<value>	0	Unlock iccid
	1	Lock current iccid

8. 2 GPS command

This chapter introduces the GPS related AT Commands.

8. 2. 1 Initialize GPS Command: AT+FGGPSINIT

Table 354: AT+FGGPSINIT operation command

Type	Command	Possible return results	Description
Initialize Command	AT+FGGPSINIT	OK/ERROR	This command must be called first, or the following command will fail
Command routine	AT+FGGPSINIT	OK	-

8. 2. 2 GPS port configuration command: AT+FGGPSPORT

Note:
1. For the first time you need not set up the command PORT; the default NMEA port data reporting, no data reporting in UART port.
2. If you need to reset the port, you need to call AT+FGFGPSSTOP to stop GPS, and then reset the port command, and then perform the AT+FGGPSRUN to start GPS.
The premise is that GPS has initialized.

Table 355: AT+FGGPSPORT operation command

Type	Command	Possible return results	Description

Set command	AT+FGGPSPORT=<act>, <act>	OK	Parameter 1: set whether the NMEA port reports data Parameter 2: set whether the UART port reports to NMEA data
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+FGGPSPORT?	+FGGPSPORT: <act>, <act>	-
Test command	AT+FGGPSPORT =?	+FGGPSPORT: (0, 1), (0, 1)	-
Command routine	AT+FGGPSPORT=1, 0	OK	NMEA data will be reported to the NMEA port, will not report on the UART port Data reporting on NMEA port , No data reporting on UART port
	AT+FGGPSPORT?	+FGGPSPORT: 0, 1	-
	AT+FGGPSPORT=?	+FGGPSPORT: (0, 1), (0, 1)	-

8. 2. 3 Set GPS start position mode function command: AT+FGGPSMODE

The default position mode of GPS is AT+FGGPSMODE=0, 0, 25, 6, 0, the first start need not execute the command; if you need to switch to AGPS or modify location parameters, you need to debug AT+FGFGPSSTOP to stop GPS, and then re-execute

AT+FGGPSMODE command to set positioning mode, execute AT+FGGPSRUN to start GPS again.

The best set for AGPS is AT+FGGPSMODE=1, 0, 25, 6, 0, AGPS currently only supports China Mobile and China Unicom network, Telecom is debugging.

The premise is that GPS has already initialized.

Table 356: AT+FGGPSMODE operation command

Type	Command	Possible return results	Description
Set command	AT+FGGPSMODE =<act>, <act>, <act>, <act>, <act>	OK	Parameter description: Parameter 1 consists of five integers separated by commas : 0 STANDALONE, GPS mode; 1 MS_BASED AGPS mode Parameter 2: if requiring loop mode set to 0, otherwise NMEA data will not continue to report Parameter 3: NMEA data reporting interval (in milliseconds) Parameter 4: position

			accuracy, in meters Parameter 5: first positioning time
		ERROR	Failure
Query command	AT+ FGGPSMODE?	+FGGPSMODE: <act>, <act>, <act>, <act>, <act>	-TBD
Test command	AT+ FGGPSMODE =?	+FGGPSMODE: (0 - 2), (0 - 1), (0 - 10000), (0 - 10), (0 - 10000)	-TBD
Command routine	AT+FGGPSMODE =0, 0, 25, 6, 0	OK	NMEA data will be reported to the NMEA port, will not report on the UART port Data reporting on NMEA port , No data reporting on UART port
	AT+ FGGPSMODE?	+FGGPSMODE: 0, 0, 25, 6, 0	-
	AT+ FGGPSMODE=?	+FGGPSMODE: (0 - 2), (0 - 1), (0 - 10000), (0 - 10), (0 - 10000)	-

8. 2. 4 Run GPS command: AT+FGGPSRUN

Note: The premise is that GPS has already initialized.

Table 357: AT+FGGPSRUN operation command

Type	Command	Possible return results	Description

Set command	AT+FGGPSRUN	OK	Run GPS and start reporting data to port
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+FGGPSRUN	RING	-

8. 2. 5 Stop GPS Command: AT+FGGPSSTOP

Table 358: AT+ FGGPSSTOP operation command

Type	Command	Possible return results	Description
Set command	AT+FGGPSSTOP	OK	Stop GPS, close port reporting data
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+FGGPSSTOP	OK	-

8. 3 Flow related commands

This chapter introduces AT Command of setting and reporting of flow query.

8. 3. 1 Flow query AT command: AT+DSFLOWQRY

Table 359: AT+DSFLOWQRY operation command

Type	Command	Possible return results	Description
Execution command	AT+DSFLOWQRY	+DSFLOWQRY(byte): <total_rx>, <total_tx>, <rx>, <tx>	Function: inquire flow total_rx: total received flow after power on total_tx: total sent flow after

			power on rx: received flow in this connection tx: sent flow in this connection The unit is byte
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+DSFLOWQRY	+DSFLOWQRY(byte): 11520, 1483, 4563, 5412	-

8. 3. 2 Set the flow report flag AT command: AT+DSFLOWRPT

Table 360: AT+DSFLOWRPT operation command

Type	Command	Possible return results	Description
Set command	AT+DSFLOWRPT=<flag>	OK	Success
		ERROR	Failure
Query command	AT+DSFLOWRPT?	+DSFLOWRPT: <flag>	Flag; (0, 1)
Test command	AT+DSFLOWRPT=?	+DSFLOWRPT: (0, 1)	-
Command routine	AT+DSFLOWRPT=1	OK	-
	AT+DSFLOWRPT?	+DSFLOWRPT: 1	-

Table 361: Description of AT+DSFLOWRPT Parameter

Parameter	Value	Description
flag	0	No report
	1	Report

8. 3. 3 Set the AT command for reporting flow period: AT+DSFLOWPRD

Table 362: AT+DSFLOWPRD operation command

Type	Command	Possible return results	Description
Set command	AT+DSFLOWPRD=<time>	OK	Success
		ERROR	Failure
Query command	AT+DSFLOWPRD?	+ DSFLOWPRD: < time >	Time: (1-30)
Test command	AT+DSFLOWPRD=?	+ DSFLOWPRD: (1-30)	-
Command routine	AT+DSFLOWPRD =5	OK	-
	AT+DSFLOWPRD?	+DSFLOWRPT: 5	-

Table 363: Description of AT+DSFLOWPRD Parameter:

Parameter	Value	Description
time	(1-30)	In seconds

8. 4 NDIS dial command

This chapter describes the NDIS dial command.

8. 4. 1 NDIS Data dial AT command: AT^NDISDUP

Table 364: AT^NDISDUP operation command

Type	Command	Possible return results	Description
Execution command	AT^NDISDUP=<id>, <status>, [<apn>, <user>, <pwd>, <auth_type>]	OK	Success
		NO CARRIER	Failure
Test command	AT^NDISDUP=?	^NDISDUP: 1, (0-1), , , , (0-3) OK	-
Command routine	AT^NDISDUP=1, 1, "", "", "", 0	OK	Data dial

	AT^ NDISDUP=1, 0	Ok	Disconnect data dial

Table 365: Description of AT^NDISDUP Parameter:

Parameter	Value	Description
status	(0, 1)	1: dial; 0: disconnect
apn	character string	eg.: "cmnetwork", "3gnetwork", "ctnetwork"
user	character string	Authenticating user name
pwd	character string	Authenticating password of user name
auth_type	(0, 1, 2, 3)	0: No authentication; 1: PAP; 2: CHAP; 3: PAP and CHAP

8. 4. 2 NDIS Data dial status query AT command: AT^NDISSTATQRY

Table 366: AT^NDISSTATQRY operation command

Type	Command	Possible return results	Description
Execution command	AT^NDISSTATQRY?	OK	Success
		NO CARRIER	Failure
Command routine	AT^NDISSTATQRY?	^NDISSTATQRY: Idle	Not connected
		^NDISSTATQRY: Conversation	Connected

8. 5 TCP/IP related commands

This chapter introduces the TCP/IP configuration related AT command.

8. 5. 1 APN used to dial-up for prestored TCP/IP command: AT+CSTT

SOCKET commands stored in advance of the APN and the corresponding user name, password.

Table 367: AT+CSTT operation command

Type	Command	Possible return results	Description
Set command	AT+CSTT=<apn>[, <username>, <password>]	OK	Success
		ERROR	Failure
Query command	AT+CSTT?	+CSTT: <apn>, <username>, <password>	time: (1-30)
Test command	AT+CSTT=?	OK	-
Command routine	AT+CSTT="cmnetwork", "", ""	OK	-
	AT+CSTT="cmnetwork"	OK	-
	AT+CSTT?	+CSTT: "cmnetwork", "", "" OK	-

Table 368: Description of AT+CSTT Parameter:

Parameter	Value	Description
apn	-	Depends on the operator network
username	-	Depends on the operator network
password	-	Depends on the operator network

8. 5. 2 TCP/IP related PDP file definition: AT+MIPPROFILE

Table 369: AT+MIPPROFILE operation command

Type	Command	Possible return results	Description
Set Command	AT+MIPPROFILE=<cid>, <APN>[, <username>, <password>]	OK	If you want to establish a socket call connection with the network side, you need to call this command to set the APN
Query	AT+MIPPROFILE?	+MIPPROFILE: "", "", ""	-

command		OK	
Test command	AT+MIPPROFILE=?	+MIPPROFILE: (1-16), "apn", <"username">, <"password"> OK	-
Command routine	AT+MIPPROFILE=1, "CMNETWORK"	OK	Set China Mobile APN

Table 370: Description of AT+MIPPROFILE Parameter

Parameter	Value	Description
<cid>	1-16	Profile number
<APN>	-	Required network side gateway APN
<username>	-	User name required for network side authentication
<password>	-	Password required for network side authentication

8. 5. 3 Built-in protocol stack connection: AT+MIPCALL

This command is used to control the connection of PPP.

Table 371: AT+MIPCALL operation command

Type	Command	Possible return results	Description
Set command	AT+MIPCALL=<parameter>	+MIPCALL: <status>[, <ip>] OK	-
Query command	AT+MIPCALL?	+MIPCALL: <status>, <ip> OK	-
Test command	AT+MIPCALL=?	+MIPCALL: (0-1) OK	-
Command routine	AT+MIPCALL = 1	+MIPCALL: 1, 10. 199. 117. 99 OK	IP address assigned by network side
	AT+MIPCALL=0	OK	-

Table 372: Description of AT+MIPCALL Parameter:

Parameter	Value	Description
<parameter>	0	Disconnect PPP
	1	Establish PPP connection
<status>	0	In disconnected state
	1	In connection state
<ip>	-	IP address assigned by network side

8. 5. 4 Initialize a new SOCKET that connects to a remote host: AT+MIPOPEN

Table 373: AT+MIPOPEN operation command

Type	Command	Possible return results	Description
Set command	AT+MIPOPEN=<Socket_ID>, <Source_Port>, <Remote_IP>, <Remote_Port>, <Protocol_Type>, [UserName], [Password]	+MIPOPEN: <Socket_ID>, <status> OK	-
Query command	AT+MIPOPEN?	+MIPOPEN: 1, 2, 3 OK	-
Test command	AT+MIPOPEN=?	+MIPOPEN: (1-4), (0-65535), "ipaddress", (1-65535), (0-3) OK	-
Command routine	AT+MIPOPEN =4, 0, "116. 247. 69. 94", 10010, 0	+MIPOPEN: 4, 1 OK	TCP protocol
	AT+MIPOPEN?	+MIPOPEN: 1, 2, 3 OK	
	AT+MIPOPEN=1, 0, "116. 247. 69. 94", 21, 2, "FTP_1", "123456"	OK ^IPSRVST: 2, 2, 230	FTP protocol
	AT+MIPOPEN=2, 0, "116. 247. 69. 94", 10059, 3	OK	HTTP protocol

Note: HTTP protocol uses a short link; MIPOPEN only functions as the domain name resolution;

the real establishment of the Socket link is in the upload or download.

Table 374: Description of AT+MIPOPEN Parameter:

Parameter	Value	Description
<Socket_ID>	1-4	Integer value
<Source_Port>	0-65535	Integer value
<Remote_IP>	-	IP address
<Remote_Port>	-	Remote host port number
<Protocol_Type>	0	TCP protocol (Max 1500 bytes)
	1	UDP protocol (Client to server: send maximum 1500 bytes each time; server to client: send maximum 1024 bytes each time)
	2	FTP protocol
	3	HTTP protocol
<status>	0	Indicates initializing failed
	1	Indicates initializing succeed
[UserName]	-	User name(FTP)
[Password]	-	Password(FTP)

8. 5. 5 Close SOCKET connection: AT+MIPCLOSE

This command is used to close the SOCKET connection.

Table 375: AT+MIPCLOSE operation command

Type	Command	Possible return results	Description
Set command	AT+MIPCLOSE=<Socket_ID>	+MIPCLOSE: <Socket_ID>, <send data>, <receive data>, <close type> OK	-
Query command	AT+MIPCLOSE?	+MIPCLOSE: <active socket id> OK	Get active socket ID list
Test command	AT+MIPCLOSE=?	+MIPCLOSE: (1, 4) OK	-

Command routine	AT+MIPCLOSE?	+MIPCLOSE: 2, 3 OK	Indicates connection of the two socket ID2 and ID3 is active
	AT+MIPCLOSE=2	OK +MIPCLOSE: 2, 0, 0, 0	Asynchronous command, first return to OK, and then report the results

Table 376: Description of AT+MIPCLOSE Parameter:

Parameter	Value	Description
<Socket_ID>	1-4	Integer value
<send data>	-	Integer value indicating how much data is sent after establishing the socket
<receive data>	-	Integer value indicating how much data is received after establishing the socket
<close type>	0	Socket connection is properly closed
	1	Socket connection closed failed
<Protocol>	0	TCP protocol
	1	UDP protocol

8. 5. 6 Send data to SOCKET cache: AT+MIPSEND

Table 377: AT+MIPSEND operation command

Type	Command	Possible return results	Description
Set command	AT+MIPSEND=<Socket_ID>, <Data>	+MIPSEND: <Socket_ID>, <free_size> OK	-
Query command	AT+MIPSEND?	+MIPSEND: <Socket_ID>, <free_size> OK	-
Test command	AT+MIPSEND=?	+MIPSEND: <Socket_ID>, "data"	-

		OK	
Command routine	AT+MIPSEND=?	+MIPSEND: (1-4), "data" OK	-
	AT+MIPSEND?	+MIPSEND: 3, 1493 +MIPSEND: 4, 1490 OK	The cache size of Socket ID3 is 1493, and the buffer size of Socket ID4 is 1490
	AT+MIPSEND =4, "0123456789"	+MIPSEND: 4, 1490 OK	After sending 10 characters to Socket ID4, remaining cache size is 1490

Table 378: Description of AT+MIPSEND Parameter:

Parameter	Value	Description
<Socket_ID>	1-4	Integer value
<free_size>	-	Integer value, remaining cache size of corresponding socket ID

If you receive a data from a remote host, if it is TCP SOCKET, "+MIPRTCP=sock_num, " "data" will be reported to the AT port; if it is UDP SOCKET, "+MIPRUDP=sock_num, " "data" will be reported to the AT port.

8. 5. 7 Send data to remote host: AT+MIPPUSH

Table 379: AT+MIPPUSH operation command

Type	Command	Possible return results	Description
Set command	AT+MIPPUSH=<Socket_ID>	OK	-
Query command	AT+MIPPUSH?	+MIPPUSH: List active <Socket_ID> OK	-
Test command	AT+MIPPUSH =?	+MIPPUSH: (1-4) OK	-

Command routine	AT+MIPPUSH?	+MIPPUSH: 3, 4 OK	Currently active socket ID are 3 and 4
	AT+MIPPUSH=4	OK	Send Socket ID 4 to the remote cache data

Table 380: Description of AT+MIPPUSH Parameter:

Parameter	Value	Description
<Socket_ID>	1-4	Integer value

8. 5. 8 Clear all data in the SOCKET cache: AT+MIPFLUSH

Table 381: AT+MIPFLUSH operation command

Type	Command	Possible return results	Description
Set command	AT+MIPFLUSH=<Socket_ID>	OK	-
Query command	AT+MIPFLUSH?	+MIPFLUSH: List active <Socket_ID> OK	-
Test command	AT+MIPFLUSH =?	+MIPFLUSH: (1-4) OK	-
Command routine	AT+MIPFLUSH?	+MIPFLUSH: 3, 4 OK	Currently active socket ID are 3 and 4
	AT+MIPFLUSH=4	OK	Clear cache in Socket ID 4

Table 382: Description of AT+MIPFLUSH Parameter:

Parameter	Value	Description
<Socket_ID>	1-4	Integer value

8. 5. 9 Query corresponding IP address of domain name: AT+MIPDNSR

Table 383: AT+MIPDNSR operation command

Type	Command	Possible return results	Description
Set command	AT+MIPDNSR=<address>	AT+MIPDNSR: <ip address> OK	-
Query command	AT+MIPDNSR?	OK	-
Test command	AT+MIPDNSR=?	OK	-
Command routine	AT+MIPDNSR=?	OK	-
	AT+MIPDNSR="www. baidu. com"	+MIPDNSR: 111. 13. 100. 91 OK	-

Note: IP can only be used if IP is received after activating PDP.

Table 384: v of AT+MIPDNSR Parameter:

Parameter	Value	Description
<address>	-	Domain address
<ip address>	-	IP address

8. 5. 10 Transparent transmission mode: AT+MIPTPS

Table 385: AT+MIPTPS operation command

Type	Command	Possible return results	Description
Set command	AT+MIPTPS=<Mode>, <Socket_id>, <timeout>, <Max_len>	> OK	When > appears, input data, if the <mode>=1 (namely confirmation mode), enter + + + and end input and send
Query command	AT+MIPTPS?	OK	-
Test command	AT+MIPTPS=?	OK	-
Command	AT+MIPTPS=?	OK	-

routine	AT+MIPTPS=1, 1, 600, 20	> OK	-

Table 386: Description of AT+MIPTPS Parameter:

Parameter	Value	Description
<Mode>	1	Confirm mode, enter + + + and end input and send
	2	Timeout mode (temporarily unsupported)
	3	Buff full mode, if the input exceeds the maximum length, cut off and sent; if the input does not exceed the maximum length, enter + + + and end input and send
	4	Auto mode (not supported)
<socket_id>	-	Select sent socket_id
<timeout>	-	Timeout
<Max_len>	-	The maximum number of bytes sent (Buff full mode only)

8. 5. 11 TCP receive data report: +MIPRTCP

Table 387: +MIPRTCP Report Command

Type	Command	Possible return results	Description
Report command		+MIPRTCP= <socket_id>, <number>, <data> OK	Report when TCP receiving data

Table 388: Detailed description of AT+MIPRTCP Parameter

Parameter	Value	Description
<socket_id>	1~4	Connecting ID
<number>	0~1500	Number of characters received this time
<data>		Data content received this time, character type, length <number>

8. 5. 12 UDP receive data report: +MIPRUDP

Table 389: AT+MIPRUDP operation command

Type	Command	Possible return results	Description

Report command		+MIPRUDP=<socket_id>, <ip>, <port>, <data> OK	Report when UDP receiving data

Table 390: Detailed description of AT+MIPRUDP Parameter

Parameter	Value	Description
<socket_id>	0	Connect ID
<ip>		The IP address assigned by the network side to the client
<port>	0~65535	Port number
<data>		The data content received, character type

8. 5. 13 Hex conversion control command: AT+MIPHEX

Table 391: AT+MIPHEX operation command

Type	Command	Possible return results	Description
Set Command	at+miphex=<value>	+MIPHEX: <value> OK	-
Query command	at+miphex?	+MIPHEX: 0 OK	-
Test command	at+miphex=?	+MIPHEX: [0, 1] OK	-

Table 392: Detailed description of AT+MIPHEX Parameter

Parameter	Value	Description
<value>	0	Close hex mode
	1	Open hex mode

8. 5. 14 FTP Data acquisition command: AT+FTPCMD

Table 393: AT+FTPCMD operation command

Type	Command	Possible return results	Description
Set command	AT+FTPCMD =<socket_id>, <ftp_cmd>,	OK ^IPDATA: <socket_id>, <data_len>,	

	[<filename>], [<data_offset>]	<data> … ^IPSRVST: <socket_id>, <protocol_type>, <state_code>	
Test command	AT+FTPCMD=?	+FTPCMD: (1-4), ("GET", "SIZE", "PORT", "PASV", "STOP") OK	-
Command routine	AT+FTPCMD=1, "GET", "test. c"	OK ^IPDATA: 1, 1024, … … ^IPSRVST: 1, 2, 1	Download test. c file
	AT+FTPCMD=1, "SIZE", "test. c"	OK +FTPCMD: "SIZE" 1026	Query test. c file size

Table 394: Description of AT+FTPCMD Parameter:

Parameter	Value	Description
<socket_id>	1-4	Integer value
<ftp_cmd>	GET	Download File
	SIZE	Query file size
	PORT	Set active mode (not supported), return OK
	PASV	Set passive mode (default)
	STOP	Terminate the current file download (must be executed during file download)
<filename>	-	File name
<data_offset>	Smaller than file size	Broken transfer file offset

8. 5. 15 HTTP Data acquisition command: AT+HTTPCMD

Table 395: AT+HTTPCMD operation command

Type	Command	Possible return results	Description

Set command	AT+HTTPCMD=<socket_id>, <http_cmd>, <http_data_path>, [<http_data_length>], [<http_data_type>]	OK ^IPDATA: <socket_id>, <data_len>, <data> … ^IPSRVST: <socket_id>, <protocol_type>, <state_code>	-
Test command	AT+HTTPCMD=?	+HTTPCMD: (1-4), ("GET", "POST") OK	-
Command routine	AT+MIPOPEN=2, 0, "116. 247. 69. 94", 10059, 3 AT+HTTPCMD=2, "GET", "http://116. 247. 69. 94: 10059/www. meigchina"	OK ^IPDATA: 2, 1024, … … ^IPSRVST: 2, 3, 200	Send GET request
	AT+HTTPCMD=2, "POST", "116. 247. 69. 94/www. meigchina", 1024, "text/plain"	> <User enter 1024 characters> <Server Response> OK ^IPDATA: 2, 1024, . . . … ^IPSRVST: 2, 3, 200	Send POST request

Table 396: Description of AT+HTTPCMD Parameter:

Parameter	Value	Description
<socket_id>	1-4	Integer value
<ftp_cmd>	GET	Send GET request
	POST	Send POST request (Note: send POST request if the

		request data is too large, it is possible to return to ERROR)
<http_data_path>	-	URL address(<potocol>: //<host>: <port>/<path>)
<http_data_length>	Less than 5K	HTTP POST request data length
<http_data_type>	-	HTTP POST request text Type

8. 5. 16 HTTP/FTP data Report command: ^IPDATA

This command is used to report received HTTP/FTP data.

Table 397: ^IPDATA operation command

Type	Command	Possible return results	Description
Report Command	^IPDATA: <socket_id>, <data_len>, <data>	^IPDATA: 1, 1024, . . .	
Command routine			

Table 398: Description of ^IPDATA Parameter:

Parameter	Value	Description
<socket_id>	1-4	Integer value
<data_len>	-	Receive data size
<data>	-	Receive data content

8. 5. 17 HTTP/FTP service status report command: ^IPSRVST

This command is used to report the HTTP/FTP service status.

Table 399: ^IPSRVST operation command

Type	Command	Possible return results	Description

Report command	^IPSRVST: <socket_id>, <protocol_type>, <state_code>		
Command routine	AT+MIPOPEN=1, 0, "116. 247. 69. 94", 21, 2, "FTP_1", "123456"	OK ^IPSRVST: 1, 2, 230	

Table 400: Description of ^IPSRVST Parameter:

Parameter	Value	Description
<socket_id>	1-4	Integer value
<protocol_type>	2	FTP protocol
	3	HTTP protocol
<state_code>	-	Status return code

Table 401: <state_code>Value Description

<protocol_type>	<state_code>	Description
2	0	Data transmission is interrupted
	1	Data transfer completed
	110	Restart flag reply
	120	How long is the service ready
	125	Data link port open, ready to transfer data
	150	File status is normal, open the data connection port
	200	Command execution success
	202	Command execution failed
	211	System state or system response
	212	Catelogue status
	213	File status
	214	Help message
	215	System Type name
	220	New connection service preparation
	221	The service control port is closed and can be canceled
	225	Data link open, but no transfer action
	226	Close the data link port, request file operation successfully

	227	Enter Passive mode
	230	User login
	250	Requested file operation completed
	257	Display current path name
	331	The user name is correct and requires a password
	332	Login account information
	350	The requested operation requires a command
	421	Unable to provide service, close control link
	425	Unable to open the data link
	426	Close link, terminate transmission
	450	Requested action not performed
	451	Command terminated: local error
	452	Invalid command: insufficient disk space
	500	Format error, unrecognized command
	501	Parameter syntax error
	502	Command execution failed
	503	Command sequence error
	504	Command received by Parameter is incorrect
	530	Not logged in
	532	Saving file needs account login
	550	Required operation is not executed
	551	Request file terminated, unknown type
	552	Requested file terminated, storage overflow
	553	Required command is not executed, invalid name
3	0	Data transmission is interrupted
	1	Data transfer completed
	200	Request operation is successful
	301	The requested resource has been assigned a new URI
	302	Temporary files requiring sources through different URI requests
	400	Incorrect syntax causes the server to resolve the request message

	401	User name and password is required
	403	The server accepts the request, but is rejected
	404	URI resource not found
	405	The method of requesting a row request is not allowed by the specified URI
	406	Request not accepted
	408	request timeout
	410	The requested source server is no longer available
	500	Network service error
	501	The server does not have the appropriate action to complete the current request
	505	Server version not supported

8. 5. 18 TCP/IP static parameter configuration AT+IPCFL

Configure TCP/IP related static parameters, the supported parameters are as follows:

Table 402: AT+IPCFL operation command

Type	Command	Possible return results	Description
Set command	AT+IPCFL =<parameter_id> , <value>	OK	-
		ERROR	
Query command	AT+IPCFL?	+HTTPCMD: 1, 1 OK	
Test command	AT+IPCFL=?	+HTTPCMD: 1, (1-2) OK	-
Command routine	AT+IPCFL=1, 2	OK	Configure HTTP to work in cache

			transfer mode
	AT+IPCFL=1, 1	Ok	Configure the HTTP to work in the recommended transfer mode

Table 403: Description of ^IPSRVST Parameter:

Parameter	Value	Description
<parameter_id>	1	http protocol
<value>	1	http commend transmission mode(Default mode)
	2	http buffer transmission mode

8. 5. 19 HTTP cache mode data acquisition command AT+IPRCV

When HTTP is working in the cache mode, the data command is obtained and the parameters that are supported are shown in the following Table:

Table 404: AT+IPRCV operation command

Type	Command	Possible return results	Description
Set command	AT+IPRCV=<link_id>, <reqReceiveLength>	OK	-
		ERROR	
Test command	AT+IPCFL=?	OK	-
Command routine	1. AT+IPCFL=1, 2		1. Configure HTTP to

	2. AT+IPRCV=1, 1500	OK +IPRCV: 1, 1500 Message is here ok	work in cache transfer mode 2. Get cached data
	AT+IPCFL=1, 1	Ok ^IPDATA: 2, 1024, . . . … ^IPSRVST: 2, 3, 200	1. Configure the HTTP to work in the recommended transfer mode

Table 405: Description of ^IPSRVST Parameter:

Parameter	Value	Description
<link_id>	1-4	Link id
<reqReceivedLength>	0	Query the currently cached data
	1-1500	Require data length

8. 5. 20 Receive data active report in HTTP cache mode ^IPRCVST

When HTTP is in the cache mode, the state of the cache is reported, and the supported parameters are as follows:

Table 406: AT+IPRCV operation command

Type	Command	Possible return results	Description
Report command	^IPRCVST: <link_id>, <urcCauseid>	OK	-

Command routine	AT+MIPCALL=1 AT+MIPOPEN =1, 0, "116. 247. 69. 94", 10059, 3 AT+IPCFL=1, 2 AT+HTTPCMD=2 , "GET", "http: //116. 247. 69. 94: 10059/www. meigchina"	+MIPCALL: 1, 10. 199. 117. 99 OK +MIPOPEN: 1, 1 OK OK OK ^IPRCVST: 1, 1	1. Configure HTTP to work in cache transfer mode 2. Get cached data

Table 407: Description of ^IPSRVST Parameter

Parameter	Value	Description
<link_id>	1-4	Link id
<urcCauseid >	1	Data in cache

8. 6 EHRPD network related configuration

This chapter introduces the relevant configuration in the EHRPD network.

8. 6. 1 Set up APN, authentication, user name and password information when using EHRPD dial

Table 408: AT+ EHRPDINFO operation command

Type	Command	Possible return results	Description
Execution command	AT+EHRPDINF O=0, file_index	OK	Set file_index dialing information to be blank
		ERROR	Failure
	AT+EHRPDINF O=1, file_index,	OK	Set EHRPD dial up information

	"APN_String: xxx; PDN_Lable: xxx; PDN_IP_Version: xxx; RAN_Type: xxx; PDN_Level_Auth_Protocol: xxx; PDN_Level_Auth_User_ID: xxx; PDN_Level_Auth_Password: xxx; "		where XXX is specific
		ERROR	
	AT+EHRPDINFO=2, file_index	AT+ehrpdinfo=2, 000 +EHRPDINFO: APN_String: ; PDN_Label: ; PDN_IP_Version: ; RAN_Type: ; PDN_Level_Auth_Protocol: ; PDN_Level_Auth_User_ID: ; nPDN_Level_Auth_Password: ; OK	Read file_index dial information
Query command	AT+EHRPDINFO?	OK	
Request Command	AT+EHRPDINFO=?	+EHRPDINFO: 0-2, file_index, "APN_String: xxx; PDN_Lable: xxx; PDN_IP_Version: xxx; RAN_Type: xxx; PDN_Level_Auth_Protocol: xxx; PDN_Level_Auth_User_ID: xxx;	Set command format

		PDN_Level_Auth_Password: xxx; "	

Table 409: Description of AT+ EHRPDINFO Parameter

Parameter	Value	Description
APN_String		APN information
PDN_Label	Internetwork	Internetwork
PDN_IP_Version	V4_V6	IP type
RAN_Type	HRPD_eHRPD	HRPD_eHRPD
PDN_Level_Auth_Protocol	-	Authentication protocol
PDN_Level_Auth_User_ID	--	User name
nPDN_Level_Auth_Password	-	Authentication password

Table 410: Auth_info Meaning Description:

Parameter	Default Value	Description
APN_String	CTLTE	Specify the APN used for dialing
PDN_Label	internetwork	PDN Tags
PDN_IP_Version	IPV4	Support IPV4
	IPV6	Support IPV6
	IPV4V6	Support IPV4 and IPV6
RAN_Type	HRPD_EHPRD	Access network technology
PDN_Level_Auth_Protocol	PAP	Support PAP authentication
	CHAP	Support CHAP authentication
	PAP_CHAP	Support PAP and CHAP authentication
PDN_Level_Auth_User_ID	ctnetwork@mycdma.cn	User name
PDN_Level_Auth_Password	vnetwork. mobi	Password

Note: in the private network, usually it only needs to replace the authentication type, APN, user name, password, PDN IP type information; if there is no other special requirements for parameter, use the above default.

8. 6. 2 Enable EHRPD network command: AT+EHRPDEN

The command controls whether module supports EHRPD network registration, open enable switch, in the 3GPP2 network, if not better than EHRPD network, module will be registered into the EHRPD network, close the enable switch, in 3GPP2 network, module will not be registered to the EHRPD network in any situation.

Table 411: AT+ EHRPDEN operation command

Type	Command	Possible return results	Description
Set command	AT+EHRPDEN=<act>	> OK	When > appears, input data; if the <mode>=1 (namely confirmation mode), enter +++ to end data input and send it out
Query command	AT+EHRPDEN?	OK	-
Test command	AT+EHRPDEN=?	OK	-
Command routine	AT+EHRPDEN=1	OK	-
	AT+EHRPDEN?	+ehrpden: 1	-
	AT+EHRPDEN=?	+ehrpden: (0-1)	-

Table 412: Description of AT+ EHRPDEN Parameter

Parameter	Value	Description
<act>	0	EHRPD network is not supported
	1	EHRPD network is supported

8. 7 Audio debugging related extended AT

Current audio supports PCM and analog voice, MASTER mode, CLK 1024KHZ, SYNC 8KHZ, 16-bit linear.

8. 7. 1 Start PCM without loading acdb

Use at+syscmd=start_pcm start

Start PCM but do not load acdb, fast, about 5S later there is PCM clock output, sound quality is not optimized.

8. 7. 2 Stop PCM but not load acdb

Use at+syscmd=start_pcm stop

Stop PCM but not load the acdb, stop the PCM clock output.

8. 7. 3 Start PCM and load acdb

Use at+syscmd=start_pcm acdb_start

Start PCM and load acdb, slow speed, after 18S there is PCM clock output, sound optimization.

8. 7. 4 Stop PCM and load acdb

Use at+syscmd=start_pcm acdb_stop

Stop PCM but load acdb and stop the PCM clock output.

8. 7. 5 Start PCM loopback test

Use at+syscmd=start_pcm loopback_start command to start the PCM loopback test.

8. 7. 6 Stop PCM loopback test

Use at+syscmd=start_pcm loopback_stop command to stop PCM loopback test.

8. 7. 7 Enable / disable codec command: AT+CODEC

The command can turn on or off codec to switch PCM voice or analog voice. When switched to PCM voice, codec digital pins will become high resistance state to prevent interference to PCM signal.

Table 413: AT+CODEC operation command

Type	Command	Possible return results	Description
Set Command	AT+CODEC=<enable>	OK	-

		ERROR	Failure
Query command	AT+CODEC?	+CODEC: 1 OK	Failure
Test command	AT+CODEC=?	+CODEC: (0-1) OK	-
Command routine	AT+CODEC=1	OK	-
	AT+CODEC?	+CODEC: 1 OK	-

Table 414: Detailed description of AT+CODEC Parameter

Parameter	Value	Description
<enable>	0	Close codec, use PCM voice
	1	Enable codec, use analog voice

8. 7. 8 Mute control: AT+CMUT

Use this command to set analog speech mute. Valid to MIC.

Table 415: AT+CMUT operation command

Type	Command	Possible return results	Description
Set Command	AT+CMUT=<n>	OK	-
		ERROR	Failure
Query command	AT+CMUT?	+CMUT: <n> OK	-
		ERROR	Failure
Test command	AT+CMUT=?	+CMUT: (<n>value list) OK	-
Command routine	AT+CMUT=?	+CMUT:(0-1) OK	-
	AT+CMUT=0	OK	-
	AT+CMUT?	+CMUT: 0	-

		OK	

Table 416: Detailed description of AT+CMUT Parameter

Parameter	Value	Description
<n>	0	Mute off
	1	Mute open

8. 7. 9 Speaker volume command: AT+CLVL

Use AT+CLVL to set the volume level of Speaker, total eight levels (0-7), 0 indicates silence, and the maximum is 7. The default value is 3.

Table 417: AT+CLVL operation command

Type	Command	Possible return results	Description
Set Command	AT+CLVL=<level>	OK	-
		ERROR	Failure
Query command	AT+CLVL?	+CLVL: 3 OK	Failure
Test command	AT+CLVL=?	+CLVL: (0-7) OK	-
Command routine	AT+CLVL=1	OK	-

Table 418: Detailed description of AT+CLVL Parameter

Parameter	Value	Description
<level>	0-7	Set different volume levels

8. 7. 10 Mic volume command: AT+CMIC

Use AT+CMIC to set the volume level of Mic, total eight levels(0-7). 0 indicates silence, and the maximum is 7. The default value is 3.

Table 419: AT+CMIC operation command

Type	Command	Possible return results	Description

Set Command	AT+CMIC =<level>	OK	-
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+CMIC ?	+CMIC: 3 OK	-
Test command	AT+CMIC =?	+CMIC: (0-7) OK	-
Command routine	AT+CMIC =1	OK	-
	AT+CMIC ?	+CMIC: 3 OK	-

Table 420: Detailed description of AT+CMIC Parameter

Parameter	Value	Description
<level>	0-7	Set different volume levels

9. CDMA mode AT command

9. 1 Overview

This chapter introduces AT command in Telecom CDMA mode.

9. 1. 1 Query product number ESN: AT+GSN

Table 421:: AT+GSN operation command

Type	Command	Possible return results	Description
Execution command	AT+GSN	<sn> OK	Return to ESN number
Test command	AT+GSN=?	OK	-
Command routine	AT+GSN	0x800C1D79 OK	-
	AT+GSN=?	OK	The current version supports the Command

9. 1. 2 MEID query: AT^MEID

Query module MEID.

Table 422: AT^MEID operation command

Type	Command	Possible return results	Description
Execution command	AT^MEID	<meid> OK	Return to meid number
		ERROR/+CME ERROR: <err>	Failure
Test command	AT^MEID=?	OK	-
Command routine	AT^MEID	0x0086862102003325 OK	-
	AT^MEID=?	OK	The current version supports the Command

Note: When the MEID number is not written, the module returns the ESN number.

9. 1. 3 International mobile device identifier IMSI number request: AT+QCIMI

Use IMSI to require execution command, DCE returns <IMSI>, DCE reads the IMSI number of the UUIM/UIM on mobile device.

Table 423: AT+ QCIMI operation command

Type	Command	Possible return results	Description
Execution command	AT+QCIMI	<IMSI> OK	<IMSI> is the inquired IMSI number
		ERROR/+CME ERROR: <err>	Failed. UUIM/UIM card is not in place, not initialized or UIM is locked, you need to enter the PIN code or PUK code to unlock
Test command	AT+QCIMI =?	OK	When the UUIM/UIM card is initialized
		ERROR/+CME ERROR: <err>	Failed. UUIM/UIM card is not in place, not initialized or UIM is locked, you need to enter the PIN code or PUK code to unlock
Command routine	AT+QCIMI	460036190776736 OK	Return to current IMSI
	AT+QCIMI =?	OK	The current version supports the Command
	AT+QCIMI	ERROR/+CME ERROR: <err>	Failed. UUIM/UIM card is not in place, not initialized or UIM is locked, you need to enter the PIN code or PUK code to unlock
	AT+QCIMI	ERROR/+CME ERROR:	Failed. UUIM/UIM card is not

	=?	<err>	in place, not initialized or UIM is locked, you need to enter the PIN code or PUK code to unlock

9. 1. 4 Data dial call initiating command: ATD#777

Execution command is used to initiate data services.

Table 424: ATD<dial_string>operation command

Type	Command	Possible return results	Description
Execution command	ATD<dial_string>	ERROR/+CME ERROR: <err>	Error relates to ME functionality
		NO CARRIER	Unable to establish connection
		CONNECT <n>	Indicate connecting success, enter data mode
Command routine	ATD#777	CONNECT 3100000	CONNECT means that the data service connection is successful, 3100000 indicates the maximum downlink rate

9. 1. 5 Data connection downlink rate indication: CONNECT

This command is used to report the maximum downlink rate when the data service dial is connected successfully.

Table 425: CONNECT operation command

Type	Command	Possible return results	Description
Report command		CONNECT <n>	Successful connection Note: please refer to the ATD entry for parameter Description

9. 1. 6 Dial hang-up Command: ATH

This command is used to hang up all data service connections of PPP dial.

Table 426: ATH operation command

Type	Command	Possible return results	Description
Execution command	ATH	ERROR/+CME ERROR: <err>	Error
		OK	Successfully disconnected
Command routine	ATH	OK	

9. 1. 7 PPP user name & password configuration: AT^PPPCFG

This command configures the user name and password for the PPP connection.

Table 427: AT^PPPCFG

Type	Command	Possible return results	Description
Set Command	AT^PPPCFG= <user_name>, <password>	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT^PPPCFG ?/AT^PPPCFG	^PPPCFG: " card ", "card " OK	
Command routine	AT^PPPCFG="ctnetwork@mycdma. cn", "vnetwork. mobi"	^PPPCFG: "ctnetwork@mycdma. cn", "vnetwork. mobi" OK	Set user name = ctnetwork@mycdma; cn, password= vnetwork. mobi
	AT^PPPCFG?	^PPPCFG: "ctnetwork@mycdma.	-

		cn", "vnetwork. mobi " OK	

Table 428: Detailed description of AT^PPPCFG Parameter

Parameter	Description
< user_name >	User name
< password >	Password

9. 1. 8 Device lock: AT+QCLCK

Execution command locks, unlocks, queries ME or network device <fac>. Password is often needed. When inquiring network service (<mode>=2) status, only when the service is inactive for any parameter <class>, return to return results line of the "inactive" status (<status>=0). When set or inquire network device, the command will be terminated.

Table 429: AT+QCLCK operation command

Type	Command	Possible return results	Description
Execution command	AT+QCLCK=<fac>, <mode>[, <passwd>[, <class>]]	OK	<mode>±2 and Command is executed successfully
		+QCLCK: <status> OK	<mode>=2 and Command is executed successfully
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+QCLCK=?	+QCLCK: (<fac>value list) OK	Success
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+QCLCK="SC", 1, "1234"	OK	Set UIM card PIN code lock

	AT+QCLCK="SC", 0, "1234"	OK	Remove UIM card PIN code lock
	AT+QCLCK=?	+QCLCK: ("SC", "FD") OK	

Table 430: Detailed description of AT+QCLCK Parameter

Parameter	Value	Description
<fac>	"SC"	UIM
<mode>	0	Unlock
	1	Locking
	2	Query state
<status>	0	Non activation
	1	Activation
<passwd>	-	Character type; the same as device password used by DCE user interface and password set by modify password command +CPWD
<classx>	1	Voice (Telephone service)
	2	Data
	4	Fax (fax service)
	8	Short message

9. 1. 9 Change password: AT+QCPWD

The command can change the device lock command +QCLCK to define the device lock password.

Table 431: AT+QCPWD operation command

Type	Command	Possible return results	Description
Execution command	AT+QCPWD=<fac>, <oldpwd>, <newpwd>	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Test command	AT+QCPWD=?	+QCPWD: (<fac>, <pwdlength>)value list	Success

		OK	
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+QCPWD="SC", "1234", "4321"	OK	Set the new PIN code to 4321, valid after restarting or re activating the UIM card
	AT+QCPWD=?	+QCPWD: ("SC", 8), ("P2", 8) OK	

Table 432: Detailed description of AT+QCPWD Parameter

Parameter	Value	Description
<fac>	"SC"	UIM
<oldpwd>, <newpwd>	-	The old password, the new password, the string type, the maximum length is given by the <pwdlength> parameter, the character in the string can only be taken in '0' - '9', otherwise return to error directly
<pwdlength>	-	Integer type, maximum password length supported by device

9. 1. 10 Input CPIN: AT+QCPIN

Use the set command to send the required password of operation to DCE.

Query command returns to the alphanumeric mixed mode, indicating whether you need to enter a password.

Table 433: AT+QCPIN operation command

Type	Command	Possible return results	Description
Set	AT+QCPIN=<pin>[,	OK	Success

Command	<newpin>]		
		ERROR/+CME ERROR: <err>	-
Query command	AT+QCPIN?	+QCPIN: <code> OK	-
		ERROR/+CME ERROR: <err>	-
Test command	AT+QCPIN=?	OK	-
Command routine	AT+QCPIN?	+QCPIN: READY OK	View current UIM status, no PIN code lock
	AT+QCLCK="SC", 1, "1234"	OK	Set UIM PIN valid Module is set to flight mode
	AT+CFUN=4	OK	Restart module
	AT+CFUN=6	+QCPIN: SIM PIN	Note: before restarting the module, you must enter the flight mode
	AT+QCPIN?	OK OK	View the current UIM status, need to enter the PIN code
	AT+QCPIN ="1234"	+QCPIN: READY	Enter PIN code "1234"
	AT+QCPIN?	OK	View the current UIM status, UIM status is READY
	AT+QCPIN?	+QCPIN: UIM PIN	Need to enter PIN code

		OK	
		+QCPIN: UIM PUK OK	PIN code has been locked, PUK code is required
	AT+QCPIN =?	OK	Version supports the Command

Table 434: Detailed description of AT+QCPIN Parameter

Parameter	Value	Description
<pin>	-	The original password (character type), eg. PIN code or unblocking password of UIM card, eg. UIM-PUK or PH-UIM PUK, need to add “”
<new pin>	-	New password (character type), need to add ""
<code>	READY	DCE no longer need to provide password
	UIM PIN	DCE waits to provide PIN code for UIM card
	UIM PUK	DCE waits to provide PUK code for UIM card
	UIM PIN2	DCE waits to provide UIM card, PIN2 (it is recommended for code to return only after a recent use of the command failing to authenticating PIN2 (eg. +CME ERROR: 17); if authentication fails, and if again enter the wrong PIN2, suggest that ME do not block the operation)
	UIM PUK2	DCE waits to provide UIM card, PUK2 (it is recommended for code to return only after a recent use of the command failing to authenticating PUK2 (eg. +CME ERROR: 18); if authentication fails, and if again enter the wrong PUK2 and new PIN2, suggest that DCE do not block the operation)

9. 1. 11 Extended PIN management command: AT^CPIN

Use the set command to send the required password to ME.

Query command returns to the alphanumeric mixed mode, indicating whether you need to enter a password.

Table 435: AT^CPIN operation command

Type	Command	Possible return results	Description
Set Command	AT^CPIN=<pin>[, <newpin>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT^CPIN?	^CPIN: <code>, [<times>], <puk_times>, <pin_times>, <puk2_times>, <pin2_times> OK	
		ERROR/+CME ERROR: <err>	-
Test command	AT^CPIN=?	OK	-
Command routine	AT^CPIN?	^CPIN: READY, , 10, 3, 10, 3	View the current UIM status, no PIN code lock
	AT+QCLCK="SC", 1, "1234"	OK OK	Set UIM PIN valid
	AT+CFUN=4	OK	Module set to flight mode
	AT+CFUN=6	OK	Restart module Note: before restarting the module, you must enter the flight mode
	AT^CPIN?	^CPIN: SIM PIN, 3, 10, 3, 10, 3	
	AT^CPIN ="1234"	OK	View the current UIM status, need to enter the PIN code

	AT+QCPIN? AT^CPIN?	OK +CPIN: READY OK ^CPIN: READY, , 10, 3, 10, 3 OK	Enter PIN code "1234" View current UIM status, UIM status is READY
	AT^CPIN?	^CPIN: READY, , 10, 3, 10, 3 OK	<times> is a blank character, indicates no need of PIN code
		+CPIN: UIM PIN OK	Need to enter PIN code
		+CPIN: UIM PUK OK	PIN code is locked, need PUK code
	AT^CPIN =?	OK	Version supports the Command

Table 436: Detailed description of AT^CPIN Parameter

Parameter	Value	Description
<pin>	-	The original password (character), eg. PIN code or unblocking password of UIM card, eg. UIM-PUK or PH-UIM PUK, need to add double quote“”.
<new pin>	-	New password (character), need to add "" number
<code>	READY	DCE no longer need to provide password
	UIM PIN	DCE wait to provide PIN code for UIM card
	UIM PUK	DCE wait to provide UIM card PUK code, used to unlock

		the block is UIM PIN
	UIM PIN2	DCE wait for UIM card 2 PIN (TBD)
	UIM PUK2	DCE waits to provide the PUK2 code for the UIM card, which is used to unlock the UIM PIN2 (TBD) being block
<times>		The remaining number of inputs, for PIN and PIN2, the maximum number of inputs is 3 times, for PUK And the maximum number of PUK2 input is 10. If there is no password input request, the field is blank
<puk_times>	0~10	The number of remaining PUK inputs, the maximum number of inputs is 10
<pin_times>	0~3	The number of remaining PIN inputs, the maximum number of inputs is 3
<puk2_times>	0~10	The number of remaining PUK2 inputs, the maximum number of inputs is 10
<pin2_times>	0~3	The number of remaining PIN2 inputs, the maximum number of inputs is 3

9. 1. 12 Restart command: AT^RESET

Table 437: AT^RESET

Type	Command	Possible return results	Description
Execution command	AT^RESET	OK	Module restart

9. 1. 13 Voice call initiation Command: AT+CDV

Execute the command to initiate a voice call.

Table 438: AT+CDV<dial_string> operation command

Type	Command	Possible return results	Description
Execution command	AT+CDV<dial_string>	OK	Success
		ERROR/+CME ERROR: <err>	Failure

Command routine	AT+CDV10000	OK ^ORIG: 7, 0 ^DSCI: 1, 0, 2, 0, 10000, 0 ^CONN: 7, 0 CONNECT ^DSCI: 1, 0, 3, 0, 10000, 0	Module call10000 number ^ORIG: 7, 0 voice call initiated by module ^CONN: 7, 0 voice call initiated by module has put through

Table 439: Detailed description of AT+CDV<dial_string> Parameter

Parameter	Value	Description
<dial_string >	-	The called telephone number, ASCII characters, legal characters include: 0~9, *, # +. "+" must be placed before numbers; numbers can not be more than 24 bits (excluding "+")

9. 1. 14 Hang up: AT+CHV

This command is used to hang up voice call.

Table 440: AT+CHV operation command

Type	Command	Possible return results	Description
Execution command	AT+CHV	OK	-
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT+CDV10000	OK ^ORIG: 7, 0 ^DSCI: 1, 0, 2, 0, 10000, 0 ^CONN: 7, 0	- CONNECT //voice call initiated by module is put through

		CONNECT ^DSCI: 1, 0, 3, 0, 10000, 0	Module hook ^CEND is a prompt after hanging up
	AT+CHV	OK ^DSCI: 1, 0, 6, 0, 10000, 0 NO CARRIER ^CEND: 8, 4, 29	

9. 1. 15 Signal quality query: AT+CCSQ

Execution command returns to the received signal strength indication from the <rssi> and the channel bit error rate <ber> from ME.

Test command returns to <rssi> and <ber> value list supported by ME.

Table 441: AT+CCSQ operation command

Type	Command	Possible return results	Description
Execution command	AT+CCSQ	+CCSQ: <rssi>, <ber> OK	-
		ERROR/+CME ERROR: <err>	-
Test command	AT+CCSQ =?	+CCSQ: (<rssi>value list), (<ber>value list) OK	-
Command routine	AT+CCSQ	+CCSQ: 31, 99 OK	-
	AT+CCSQ =?	+CCSQ: (0-31, 99), (99) OK	-

Table 442: Detailed description of AT+CCSQ Parameter

Parameter	Value	Description
<rssi>	0	Less than or equal to -125dBm
	1~30	Integer (31×(125-|rssi|)/50) dBm
	31	Greater than or equal to -75dBm
	99	Unknown or not measurable
<ber>	99	BER query is not supported for now; regardless the query or test command, the return value is 99

9. 1. 16 Signal number query command in HDR mode: AT^HDRCSQ

Executive command returns to the received signal strength indication from ME in HDR mode <rssi>.

Test command returns to <rssi> value list in the HDR mode supported by ME.

Table 443: AT^HDRCSQ operation command

Type	Command	Possible return results	Description
Execution command	AT^HDRCSQ	^HDRCSQ: <hdr_rssi> OK	-
		ERROR/+CME ERROR: <err>	The error relates to ME functionality
Test command	AT^HDRCSQ=?	^HDRCSQ: (<hdr_rssi>value list) OK	-
Command routine	AT^HDRCSQ	^HDRCSQ: 60 OK	-
	AT^HDRCSQ=?	^HDRCSQ: (0, 20, 40, 60, 80, 99,) OK	-

Table 444: Detailed description of AT^HDRCSQ Parameter

Parameter	Value	Description
<hdr_rssi>	0	No HDR signal
	20	rssi>=105
	40	90<= rssi<105
	60	75<= rssi<90
	80	60<= rssi<75
	99	rssi<60

9. 1. 17 System information query indicator: AT^SYSINFO

Execute command queries ME system information, including service status, service domain, system mode, roaming state, UIM state.

Note: At present, cell_service is only used in the non Telecom state.

Table 445: AT^SYSINFO operation command

Type	Command	Possible return results	Description
Execution command	AT^SYSINFO	^SYSINFO: <srv_status>, <srv_domain>, <roam_status>, <sys_mode>, <sim_state>, , <cell_service> OK	Success
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT^SYSINFO	^SYSINFO: 2, 3, 0, 9, 1, , 10 OK	2 — Valid service 3 —PS+CS service 0 —Non-roaming state 9 —LTE 1 —Valid UIM card status 10 —TDD_LTE

Table 446: Detailed description of AT^SYSINFO Parameter

Parameter	Value	Description
<srv_status>	0	No service
	1	Restricted service
	2	Valid service
	3	Restricted area service
	4	POWER save state
<srv_domain>	0	No service
	1	Only CS service
	2	Only PS service
	3	PS+CS service
	4	Find the appropriate network, but not yet completed registration
<roam_status>	0	Non-roaming state
	1	Roaming state
<sys_mode>	0	No service
	1	APMS
	2	CDMA mode
	3	GSM mode
	4	HDR mode
	5	WCDMA mode
	6	GPS Mode
	7	GSM & WCDMA mode
	8	WLAN
	9	LTE
	10	GSM, WCDMA, LTE
	11	TDSCDMA
<sim_state>	1	Valid UIM card status
	240	ROM SIM
	255	UIM card does not exist
<cell_service>	0	No service
	1	GSM

	2	GPRS
	3	EDGE
	4	WCDMA
	5	HSDPA
	6	HSUPA
	7	HSDPA
	8	TDSCDMA
	9	LTE
	10	TDD_LTE
	11	FDD_LTE
	12	CDMA
	13	CDMA_HDR
	14	HDR
	15	EHRPD

9. 1. 18 System information query indicator: AT^PREFMODE

Execution command forces ME to enter the desired network state.

Query command can query the current network state of ME.

Test command lists a list of all supported network state values <pref_mode>.

Table 447: AT^PREFMODE operation command

Type	Command	Possible return results	Description
Execution command	AT^PREFMODE=<pref_mode>	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT^PREFMODE?	^PREFMODE: 8 OK	Success
		ERROR/+CME ERROR: <err>	Failure
Test command	AT^PREFMODE=?	^PREFMODE: (0, 2, 4, 8)	Success

		OK	
		ERROR/+CME ERROR: <err>	Failure
Command routine	AT^PREFMODE=4 AT^PREFMODE?	^PREFMODE: 4 OK	-

Table 448: Detailed description of <pref_mode>Parameter

Value	Description
0	Register to CDMA or EVDO or EHRPD network in AUTO mode
2	CDMA mode
4	HDR mode
8	CDMA/HDR hybrid mode

9. 1. 19 Call initiating indication: ^ORIG

The non-request command is used to indicate that the module is initiating a voice call.

Table 449: ^ORIG: <call_id>, <call_type> Command

Type	Command	Possible return results	Description
Execution command		^ORIG: <call_id>, <call_type>	This command is non-request command
Command routine	AT+CDV02150809688	OK ^ORIG: 1, 0 ^CONN: 1, 0	Module dial fixed call 02150809688 ^ORIG: 1, 0 //Module initiated voice call ^CONN: 1, 0 //Module initiated voice call has been switched on

Table 450: Detailed description of ^ORIG: <call_id>, <call_type> Command Parameter

Parameter	Value	Description
<call_id>	0~17	Call ID number
<call_type>	0	Voice call
	7	OTA call (Standard OTASP number)
	8	OTA call (non-standard OTASP number)
	9	Emergency call

9. 1. 20 Call put-through indication: ^CONN

When the call is switched on, MT reports to TE that the current state has become a state of call.

Table 451: ^CONN: <call_id>, <call_type> Command

Type	Command	Possible return results	Description
Execution command		^CONN: <call_id>, <call_type>	This command is non-request command
Command routine	AT+CDV02150809688	OK ^ORIG: 0, 0 ^CONN: 0, 0	Module dials fixed call 02150809688 ^ORIG: 0, 0 voice call originated by module ^CONN: 0, 0 voice call originated by module is switched on

Table 452: Detailed description of ^CONN: <call_id>, <call_type> Command Parameter

Parameter	Value	Description
<call_id>	0~17	Call ID

<call_type>	0	Voice call
	7	OTA call (Standard OTASP number)
	8	OTA call (non-standard OTASP number)
	9	Emergency call

9. 1. 21 Call end indicator: ^CEND

When the call is over, MT reports this indication to TE to inform TE cause of ending the call and the talk time.

Table 453: ^CEND

Type	Command	Possible return results	Description
Execution command		^CEND: <call_x>, <duration>, <end_status>[, <cc_cause>]	This command is a non-request command
Command routine	AT+CDV50809688 AT+CHV	OK ^ORIG: 2, 0 ^CONN: 2, 0 ^CEND: 2, 7, 0	Module dial fixed call 50809688 ^ORIG: 2, 0 voice call originated by module ^CONN: 2, 0 voice call originated by module is switched on Module hook ^CEND is a reminder after hanging up

Table 454: Detailed description of ^CEND Parameter

Parameter	Value	Description
<call_x>	0~17	Call ID
<duration>		Call duration, unit is seconds
<end_status>		Hang up causes refer to the following Table

Table 455: Detailed descriptions of <end_status>Parameter

Value	Description
0	CM_CALL_END_OFFLINE, Single board in OFFLINE state
21	CM_CALL_END_NO_SRV, Single board service
22	CM_CALL_END_FADE , Normal end
23	CM_CALL_END_INTERCEPT , Call was interrupted by BS
24	CM_CALL_END_REORDER , BS records received during call
25	CM_CALL_END_REL_NORMAL , BS released call
26	CM_CALL_END_REL_SO_REJ , BS denied current SO service
27	CM_CALL_END_INCOM_CALL , Received an incoming call from BS
28	CM_CALL_END_ALERT_STOP, received signaling of alert stop when there is a Incoming call
29	CM_CALL_END_CLIENT_END, Client ends normally
30	CM_CALL_END_ACTIVATION, activation ends during OTASP call
31	CM_CALL_END_MC_ABORT, MC stop call or conversation
34	CM_CALL_END_RUIM_NOT_PRESENT, RUIM does not exist
99	CM_CALL_END_NDSS_FAIL, NDSS error
100	CM_CALL_END_LL_CAUSE, Release from the bottom, further inquire cc_cause
101	CM_CALL_END_CONF_FAILED, Network response failed after calling
102	CM_CALL_END_INCOM_REJ, When called, the party refuses
103	CM_CALL_END_SETUP_REJ, reject when establishing a call
104	CM_CALL_END_NETWORK_END, Release reason from the network, further inquire cc_cause
105	CM_CALL_END_NO_FUNDS, no funds
106	CM_CALL_END_NO_GW_SRV, Not in the service area

Table 456: Detailed description of <cc_cause>（Call control information）

Value	Description
1	UNASSIGNED_CAUSE
3	NO_ROUTE_TO_DEST
6	CHANNEL_UNACCEPTable
8	OPERATOR_DETERMINED_BARRING
16	NORMAL_CALL_CLEARING

17	USER_BUSY
18	NO_USER_RESPONDING
19	USER_ALERTING_NO_ANSWER
21	CALL_REJECTED
22	NUMBER_CHANGED
26	NON_SELECTED_USER_CLEARING
27	DESTINATION_OUT_OF_ORDER
28	INVALID_NUMBER_FORMAT
29	FACILITY_REJECTED
30	RESPONSE_TO_STATUS_ENQUIRY
31	NORMAL_UNSPECIFIED
34	NO_CIRCUIT_CHANNEL_AVAILABLE
38	NETWORK_OUT_OF_ORDER
41	TEMPORARY_FAILURE
42	SWITCHING_EQUIPMENT_CONGESTION
43	ACCESS_INFORMATION_DISCARDED
44	REQUESTED_CIRCUIT_CHANNEL_NOT_AVAILABLE
47	RESOURCES_UNAVAILABLE_UNSPECIFIED
49	QUALITY_OF_SERVICE_UNAVAILABLE
50	REQUESTED_FACILITY_NOT_SUBSCRIBED
55	INCOMING_CALL_BARRED_WITHIN_CUG
57	BEARER_CAPABILITY_NOT_AUTHORISED
58	BEARER_CAPABILITY_NOT_PRESENTLY_AVAILABLE
63	SERVICE_OR_OPTION_NOT_AVAILABLE
65	BEARER_SERVICE_NOT_IMPLEMENTED
68	ACM_GEQ_ACMMAX
69	REQUESTED_FACILITY_NOT_IMPLEMENTED
70	ONLY_RESTRICTED_DIGITAL_INFO_BC_AVAILABLE
79	SERVICE_OR_OPTION_NOT_IMPLEMENTED
81	INVALID_TRANSACTION_ID_VALUE
87	USER_NOT_MEMBER_OF_CUG
88	INCOMPATIBLE_DESTINATION

91	INVALID_TRANSIT_NETWORK_SELECTION
95	SEMANTICALLY_INCORRECT_MESSAGE
96	INVALID_MANDATORY_INFORMATION
97	MESSAGE_TYPE_NON_EXISTENT
98	MESSAGE_TYPE_NOT_COMPATIBLE_WITH_PROT_STATE
99	IE_NON_EXISTENT_OR_NOT_IMPLEMENTED
100	CONDITIONAL_IE_ERROR
101	MESSAGE_NOT_COMPATIBLE_WITH_PROTOCOL_STATE
102	RECOVERY_ON_TIMER_EXPIRY
111	PROTOCOL_ERROR_UNSPECIFIED
127	INTERWORKING_UNSPECIFIED
160	REJ_UNSPECIFIED
161	AS_REJ_RR_REL_IND
162	AS_REJ_RR_RANDOM_ACCESS_FAILURE
163	AS_REJ_RRC_REL_IND
164	AS_REJ_RRC_CLOSE_SESSION_IND
165	AS_REJ_RRC_OPEN_SESSION_FAILURE
166	AS_REJ_LOW_LEVEL_FAIL
167	AS_REJ_LOW_LEVEL_FAIL_REDIAL_NOT_ALLOWED
168	MM_REJ_INVALID_UIM
169	MM_REJ_NO_SERVICE
170	MM_REJ_TIMER_T3230_EXP
171	MM_REJ_NO_CELL_AVAILABLE
172	MM_REJ_WRONG_STATE
173	MM_REJ_ACCESS_CLASS_BLOCKED
174	ABORT_MSG_RECEIVED
175	OTHER_CAUSE
176	CNM_REJ_TIMER_T303_EXP
177	CNM_REJ_NO_RESOURCES
178	CNM_MM_REL_PENDING
179	CNM_INVALID_USER_DATA

Note: there will be report of the field <cc_cause> if call ends initiated by network side; there will be no report of the field <cc_cause> if it is initiated by local call and the call ends without

receiving response from network side.

9. 2 CDMA short message command

9. 2. 1 Select short message storage area: AT$QCPMS

This command is used to define the storage area used for the operation of reading and writing short messages.

Using the set command, you can choose to read, store and other operations of the memory, including <mem1>, <mem2> and <mem3>, these three memory can be set to SM and ME.

Using the query command, you can query the current use of SMS storage area.

Using test command you can display the list of values for each storage area.

Table 457: AT$QCPMS operation command

Type	Command	Possible return results	Description
Set Command	AT$QCPMS=<mem1>[, <mem2>[, <mem3>]]	$QCPMS: <used1>, <total1>, <used2>, <total2>, <used3>, <total3> OK	-
		ERROR/+CMEERROR: <err>	-
Query command	AT$QCPMS?	$QCPMS: <mem1>, <used1>, <total1>, <mem2>, <used2>, <total2>, <mem3>, <used3>, <total3> OK	-
		ERROR/+CME ERROR: <err>	-
Test command	AT$QCPMS=?	$QCPMS: (<mem1>value list), (<mem2>value list), (<mem3>value list)	-

		OK	
Command routine	AT$QCPMS?	$QCPMS: "ME", 0, 23, "ME", 0, 23, "SM", 20, 20 OK	The preferred memory to read and delete messages is the default ME
	AT$QCPMS="SM"	$QCPMS: 25, 40, 5, 99, 5, 99 OK	Set the memory of preferring used reading and writing messages to SM ; 25- current SIM card has saved 25 Short Messages; 40- SIM card is able to store 40 Short Messages
	AT$QCPMS=?	$QCPMS: ("ME", "MT", "SM"), ("ME", "MT", "SM"), ("ME", "MT", "SM") OK	-

Table 458: Detailed description of AT$QCPMS Parameter

Parameter	Value	Description
<mem1> memory used to read and delete messages, associated AT Command are: AT^CMGL, AT^CMGR, AT+CMGD	"SM"	Indicates UIM card
	"ME"	Indicates NV
<mem2> memory used to write, store and send messages, associated AT Command are: AT+CMSS and AT+CMGW	"SM"	Indicates UIM card
	"ME"	Indicates NV
If <mem3> does not establish a route to TE, the received message is stored in the memory	"SM"	Indicates UIM card
	"ME"	Indicates NV

<used1, 2, 3>	-	Current number of messages stored in <mem1, 2, 3>
<total1, 2, 3>	-	Total number of messages that can be stored in <mem1, 2, 3>

Use AT$QCPMS? to check what the preferred memory is, and then choose one according to you own needs. Eg. AT$QCPMS= "me", "SM", "SM" to select me. The preferred memory is to read and write, instead of preferred selection order for storing new Short Message. In order to make them consistent, you may set <mem1>=<mem3> or <mem1>, <mem2>, <mem3> all the same.

9. 2. 2 Set SMS format: AT$QCMGF

Set command is used to specify the format of input and sending of the short message, namely, tell TA message format of input and output. The current version supports short message in TEXT format only.

Table 459: AT$QCMGF operation command

Type	Command	Possible return results	Description
Set Command	AT$QCMGF=[<mode>]	OK	-
Query command	AT$QCMGF?	$QCMGF: <mode> OK	-
Test command	AT$QCMGF=?	$QCMGF: (<mode>value list) OK	-
Command routine	AT$QCMGF?	$QCMGF: 1 OK	Query current short message format, default format is TEXT
	AT$QCMGF=1	OK	Set short message format to text format
	AT$QCMGF=?	$QCMGF: (0-1) OK	

Table 460: Detailed description of AT$QCMGF Parameter

Parameter	Value	Description
<mode> Display format used to report actively when sending, listing, reading and writing command, and receiving message	0	PDU mode
	[1]	Text mode (default value)

9. 2. 3 New message to TE: AT$QCNMI

Set how the new message is sent from the network side to TE.

Table 461: AT$QCNMI operation command

Type	Command	Possible return results	Description
Set Command	AT$QCNMI=[<mode>[, <mt>[, <bm>[, <ds>[, <bfr>]]]]]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Query command	AT$QCNMI?	$QCNMI: <mode>, <mt>, <bm>, <ds>, <bfr> OK	-
Test command	AT$QCNMI=?	$QCNMI: (<mode>value list), (<mt>value list), (<bm>value list), (<ds>value list), (<bfr>value list) OK	-
Command routine	AT$QCNMI?	$QCNMI: 1, 1, 0	-

		OK	
	AT$QCNMI=?	$QCNMI: (0, 1, 2), (1, 2, 3), (0, 1) OK	-

Table 462: Detailed description of AT$QCNMI Parameter

Parameter	Value	Description
<mode> Set SMS notification mode	0	Cache SMS notification in ME, if ME cache is full, then use the new notification to cover the oldest notification. --TBD.
	[1]	Send SMS notification directly to TE. When it is unable to send (eg. in the online mode), then discard the notification. For now only China Telecom supports this.
	2	Send SMS notification and SMS status report directly to TE. When unable to send (eg. in the online data mode), cache SMS notification in ME, and send them to TE in one time sent when it is available. --TBD.
<mt> Set Receive SMS storage and notification rules	0	The relationship between value of the <mt> parameter and the storage and notification form of various messages is shown in the following Table (this Table is only available to EW) <table><tr><th><mt></th><th>no class or class 1</th><th>class 0 or message waiting indication group (discard)</th><th>class 2 or message waiting indication group (store)</th><th>class 3</th></tr><tr><td>0</td><td></td><td></td><td></td><td></td></tr><tr><td>1</td><td>+CMTI</td><td>[+CMTI]</td><td>+CMTI</td><td>+CMTI</td></tr><tr><td>2</td><td>^HCMT & +CNMA</td><td>^HCMT [& +CNMA]</td><td>+CMTI</td><td>^HCMT & +CNMA</td></tr><tr><td>3</td><td>+CMTI</td><td>[+CMTI]</td><td>+CMTI</td><td>^HCMT & +CNMA</td></tr></table>Description: ^HCMT & +CNMA indicates that it requires TE to send +CNMA to confirm the ^HCMT message Refer to ^HCMT for detailed information.
	[1]	
	2	
	3	

<bm>	[0]	Used to set cell broadcast information, TBD.
<ds> Used to set SMS receipt	0	Send no SMS receipt to TE
	1	Do not save SMS receipt in the MT, send it directly to TE. ^HCDS: <callerID>, <year>, <month>, <day>, <hour>, <minute>, <second>, <lang>, <format>, <length>, <prt>, <prv>, <type>, <tag><CR><LF><msg> <CTRL+Z>
	[2]	Save SMS receipt in MT, send a storage location notification to TE using +CDSI +CDSI: <mem>, <index>
<bfr> Used to set cache processing from <mode>=0 mode to <mode>=1, 2 mode	[0]	After entering the <mode>1-2 mode, send the cached unsolicited result code to TE in one time
	1	After entering the <mode>1-2 mode, clear the cached unsolicited result code

9. 2. 4 SMS arrival indication: +CMTI

The command indicates that the new message has arrived.

Table 463: +CMTI Command

Type	Command	Possible return results	Description
Set Command		+CMTI: <mem>, <index>	New SMS prompt
Command routine	AT^HSMSSS=0, 0, 1, 0 AT$QCNMI=1, 1, 0 AT^HCMGR=1	OK OK +CMTI: "ME", 1 ^HCMGR: 10001, 2011, 03, 15, 15, 24, 46, 0, 6, 110, 1, 0,	Set SMS parameters do not need SMS receipt, coding is ASCII Set a new SMS indication as +CMTI Receive a text message

		0, 0 HELLO! OK	Read the message content

Table 464: Detailed description of +CMTI Parameter

Parameter	Value	Description
<mem>	"SM"	UIM
	"ME"	NV
<index>		Location in storage, namely, index value

9. 2. 5 New SMS status report arrival indication: +CDSI

The indication is a non-request command that displays a new SMS status report and indicates the location of the storage.

Table 465: +CDSI operation command

Type	Command	Possible return results	Description
Execution command		+CDSI: <mem>, <index>	Successfully received a short message status report
Command routine	AT^HSMSSS=1, 0, 1, 0	OK	Set SMS status report is needed(SMS receipt)
	AT$QCNMI=1, 1, 0, 2, 0	OK	Set the form of new SMS indication as +CMTI, reporting mode of SMS status report is 2, that is reporting +CDSI
	AT^HCMGS="189****7363"	^HCMGS: 468 OK ^HCMGSS: 468	Send a text message to

	> GOOD[CTRL+Z]	+CMTI: "ME", 0 +CDSI: "ME", 42	yourself Send SMS successfully Received the message sent to yourself Receive a short message status report

Table 466: Detailed description of +CDSI Parameter

Parameter	Value	Description
<mem>	"SM"	UIM
	"ME"	ME
<index>		Decimal integer, indicates location of SMS status report in storage, namely, index value

9. 2. 6 New SMS direct reporting indication: ^HCMT

In some cases, new messages will report directly using ^HCMT such as when QCNMI parameter mt=2, and message class=0 or 3. Refer to 8. 3 AT$QCNMI for specific description.

Table 467: AT^HCMT operation command

Type	Command	Possible return results	Description
Set Command		^HCMT: <callerID>, <year>, <month>, <day>, <hour>, <minute>, <second> , <lang>, <format>, <length> , <prt>, <prv>, <type>, <stat><CR><LF><msg><CTRL+Z><CR><LF>	Success
Command routine	AT^HSMSSS=0, 0, 1, 0	OK	Set SMS parameters to SMS receipt is not needed, encoding ASCII

			Set a new SMS indication as ^HCMT
	AT$QCNMI=1, 2, 0, 0, 0	^HCMT: 138********, 2011, 02, 22, 17, 16, 12, 1, 1, 5, 0, 0, 0, 0\r\n hi[CTRL+Z] OK	Indicate a new message, and report content hi directly

Table 468: Detailed description of AT^HCMT Parameter

Parameter	Value	Description
<callerID>		Short message sender number
<year, month, day, hour, minute, second> Time to receive text messages		Time to receive text messages: year, month, day, hour, minute, second
<lang> language	0	UNSPECIFIED
	1	ENGLISH
	2	FRENCH
	3	SPANISH
	4	JAPANESE
	5	KOREAN
	6	CHINESE
	7	HEBREW
<format> encoding format	0	GSM 7 BIT
	1	ASCII encoding
	6	UNICODE encoding
	7	Other encoding methods
<length>		Length received short message
<prt> SMS priority	0	Normal
	1	Interactive
	2	Urgent
	3	Emergency
<prv>	0	Normal

Confidentiality level	1	Restricted
	2	Confidential
	3	Secret
<type>	0	Normal
	1	CPT
	2	Voice Mail
	3	SMS Report
<stat>	0	Received unread SMS
	1	Received read SMS
	2	Stored unsent SMS
	3	Stored sent SMS
<CR>		carriage return
<LF>		Line feed
Msg		SMS content
<ctrl-Z>		Identify the end of a short message content, encoding method for non UNICOD characters: '0x1A', encoding method for the UNICOD mode: '0x001A'.

9. 2. 7 Delete message: AT$QCMGD

Use set command to delete message that the location number parameter is <index> in preferred message memory <mem1>.

Table 469: AT$QCMGD operation command

Type	Command	Possible return results	Description
Set Command	AT$QCMGD=<index>, [<delflag>]	OK	Success
		ERROR/+CME ERROR: <err>	Failure
Test command	AT$QCMGD=?	$QCMGD: (0-255), (0-4) OK	-
Command routine	AT$QCPMS="SM" AT$QCMGD=1	OK	Delete the first short message of UIM

			card
	AT$QCPMS="SM" AT$QCMGD=1, 4	OK OK	Delete all short messages from UIM card, including read, unread, sent and unsent messages
	AT$QCMGD=?	$QCMGD: (0, 1, 2, 3, 4, 5, 6, 7, 8, 9), (0-4) OK	(0, 1, 2…)--Storage location 0, 1, 2…Short message

Table 470: Detailed description of AT$QCMGD Parameter

Parameter	Value	Description
<index>	-	Integer type; the value of the address number range supported by associative memory
<delflag>	0	Delete SMS specified by <index>
	1	Delete all read messages in memory
	2	Delete all read and sent messages in memory
	3	Delete all read, sent and unsent messages in memory
	4	Delete all read, unread, sent and unsent messages in memory

9. 2. 8 SMS parameter selection command: AT^HSMSSS

Use set command to set parameters of SMS sending, including whether SMS status report is needed, priority level, encoding method and security level.

Table 471: AT^HSMSSS operation command

Type	Command	Possible return results	Description
Execution command	AT^HSMSSS =<ack>, <prt>, <fmt>, <prv>	OK	Success
		+CMS ERROR: <err>	Failure

Query command	AT^ HSMSSS?	^HSMSSS: <ack>, <prt>, <fmt>, <prv> OK	
Test command	AT^HSMSSS=?	^HSMSSS:: (list of supported <ack>, <prt>, <fmt>, <prv>s) OK	-
Command routine	AT^ HSMSSS?	^HSMSSS: 0, 0, 1, 0 OK	
	AT^HSMSSS=0, 0, 6, 0	OK	Set to status report is not required, priority level is normal, coding method is UNICODE, security level is common
	AT^HSMSSS=?	^HSMSSS: (0, 1), (0, 1, 2, 3), (0, 1, 2, 3, 4, 5, 6, 7), (0, 1, 2, 3) OK	

Table 472: Detailed description of AT^HSMSSS Parameter

Parameter	Value	Description
<ack> Whether SMS status report is required	[0]	SMS status report is not required
	1	SMS status report is required
<prt> Priority	[0]	Normal
	1	Interactive
	2	Urgent
	3	Emergency

<fmt> Encoding format	0	GSM 7 BIT
	[1]	ASCII encoding
	6	UNICODE encoding
<prv> Confidentiality level	[0]	Normal;
	1	Restricted
	2	Confidential
	3	Secret

9. 2. 9 SMS storage medium full report command: ^SMMEMFULL

This command is a non-request command indicating that the message storage medium is full.

Table 473: ^SMMEMFULL operation command

Type	Command	Possible return results	Description
Execution command	-	^SMMEMFULL: <mem_type>	Success
Command routine	-	^SMMEMFULL: MEM	Prompt when set-card separation machine SMS is full
	-	^SMMEMFULL: SM	Prompt when set-card separation machine SMS is full

9. 2. 10 SMS list command: AT^HCMGL

Using the set command, the message with state value is <stat> can be displayed in TE in the query preference message memory <mem1>.

Table 474: AT^HCMGL operation command

Type	Command	Possible return results	Description
Execution command	AT^HCMGL[=<stat>]	^HCMGL: <index1>, <tag1> ^HCMGL: <index2>, <tag2> … … OK	Success

		+CMS ERROR: <err>	Failure
Test command	AT^HCMGL=?	+CMGL: (<stat>value list) OK	-
Command routine	AT^HCMGL=4	^HCMGL: 0, 3 ^HCMGL: 1, 3 ^HCMGL: 2, 3 ^HCMGL: 3, 3 OK	List all MEM1 messages and their indexes and tags.
	AT^HCMGR=0	^HCMGR: 10001, 2011, 03, 15, 15, 24, 46, 0, 6, 110, 1, 0, 0, 0 HELLO! OK	Read SMS content with index =0
	AT^HCMGL=4	^HCMGL: 0, 1 ^HCMGL: 1, 3 ^HCMGL: 2, 3 ^HCMGL: 3, 3 OK	List all SMS messages and find that index = 0 SMS tag has been read (tag=0)
	AT^HCMGL=?	^HCMGL: (0-4) OK	-

Table 475: Detailed description of <stat>/<tag>Parameter

Parameter	Value	Description
<stat>	0	Received but unread message
	1	Received and read message
	2	Stored but unsent message
	3	Stored and sent message
	4	All messages
<tag>	1	Read SMS
	3	Unread SMS
	5	Sent SMS
	7	Unsent SMS

9. 2. 11 Read a text message: AT^HCMGR

Use set command to read a message located in <index> in preferred message memory <mem1>. Definition of <mem1> see ^HCMGR.

Table 476: AT^HCMGR operation command

Type	Command	Possible return results	Description
Execution command	AT^HCMGR =<index>[, <mode>]	^HCMGR: <callerID>, <year>, <month>, <day>, <minute>, <second>, <lang>, <format>, <length>, <prt>, <prv>, <type>, <stat><CR><LF><msg><CTRL+Z><CR><LF> OK	Success
		+CMS ERROR: <err>	Failure
Test command	AT^HCMGR =?	OK	Whether to support the Command
Command routine	AT^HCMGL=4	^HCMGL: 0, 3 ^HCMGL: 1, 3 ^HCMGL: 2, 3 OK	List all MEM1 messages and their indexes and tags.
	AT^ HCMGR =0, 0 or AT^ HCMGR =0	^HCMGR: 10001, 2011, 03, 15, 15, 24, 46, 0, 6, 110, 1, 0, 0, 0 HELLO! OK	Read SMS content with index =0, and change the state
		^HCMGR: 10659811099, 2011, 04, 08, 15, 32, 17, 0, 3, 74, 0, 0, 0, 0 YES! OK	Read SMS content with index =2, do not

	AT^ HCMGR =2, 1 AT^HCMGL= 4	 ^HCMGL: 0, 1 ^HCMGL: 1, 3 ^HCMGL: 2, 3 OK	change the state Then list all SMS, find that index = 0 SMS tag has become read, and index=2 SMS status remains unchanged
	AT^HCMGR =?	OK	

Table 477: Detailed description AT^HCMGR Parameter

Parameter	Value	Description
<index>		Integer value, SMS location in MEM1 memory
<mode> When reading a text message, whether SMS read status is changed	0	Change SMS reading status to read
	1	Do not change the status of SMS reading
<callerID>		Short message sender number
<year, month, day, hour, minute, second> Time to receive text messages		Time to receive a message: year, month, day, hour, minute, second
<lang> language	0	UNSPECIFIED
	1	ENGLISH
	2	FRENCH
	3	SPANISH
	4	JAPANESE
	5	KOREAN

	6	CHINESE
	7	HEBREW
<format> Encoding format	0	GSM 7 BIT
	1	ASCII encoding
	6	UNICODE encoding
	7	Other encoding methods
<length>		Length of received short message
<prt> SMS priority	0	Normal
	1	Interactive
	2	Urgent
	3	Emergency
<prv> Confidentiality level	0	Normal
	1	Restricted
	2	Confidential
	3	Secret
<type>	0	Normal
	1	CPT
	2	Voice Mail
	3	SMS Report
<stat>	0	Received unread SMS
	1	Received read SMS
	2	Stored unsent SMS
	3	Stored sent SMS
	4	All SMS
Msg		SMS content
<ctrl-Z>		Identify the end of a short message content, encoding method for non UNICOD characters: '0x1A', encoding method for the UNICOD mode: '0x001A'.

9. 2. 12 SMS storage Command: AT^HCMGW

Use set command to store the message in the memory <mem2>. Definition of <mem2> see $QCPMS.

Table 478: AT^HCMGW operation command

Type	Command	Possible return results	Description
Execution command	AT^HCMGW=<oa/da>[, <tooa/toda>], <stat>, <prt>, <type>, <format>, <lang>[, <year>, <month>, <day>, <hour>, <minute>, <second>]<CR> Msg <ctrl-Z/ESC >	^HCMGW: <index> OK	Success
		+CMS ERROR: <err>	Failure
Test command	AT^HCMGW=?	OK	-
Command routine	AT^HCMGW="13162310263", 2, 0, 0, 1, 0 > hehe<ctrl-Z >	^HCMGW: 6 OK	Store a text message to MEM2, the SMS stat=2 (already stored but not sent), prt=0, type=0, format=1 (ASCII code), lang=0, after successful storage, index=6. target number of the SMS is 13162310263
	AT^HCMGL=4	^HCMGL: 0, 1 ^HCMGL: 3, 1 ^HCMGL: 1, 3 ^HCMGL: 6, 7 OK	List all SMS, you can see SMS with index = 6 has been stored successful, stat =2.
	AT^HCMGR=6	^HCMGR: 13162310263, 2000, 00, 00, 00, 00, 00,	

		1, 1, 4, 0, 0, 0, 2 hehe□ OK	Read SMS content with index =6

Table 479: Detailed description of AT^HCMGW Parameter

Parameter	Value	Description
<index>		Integer value, SMS location in MEM2 memory
<oa/da>		Number of short message sender/receiver. Value number range: 0~9, *, #, enter a maximum of 20 characters
<tooa/toda>		This Parameter does not work, the value is fixed to 0
<year, month, day, hour, minute, second> Time to receive text messages		Time to send SMS: year, month, day, hour, minute, second
<lang> language	0	UNSPECIFIED
	1	ENGLISH
	2	FRENCH
	3	SPANISH
	4	JAPANESE
	5	KOREAN
	6	CHINESE
	7	HEBREW
<format> Encoding format	0	GSM 7 BIT;
	1	ASCII encoding;
	6	UNICODE encoding;
	7	Other encoding methods;
<prt> SMS priority	0	Normal
	1	Interactive
	2	Urgent

	3	Emergency
<type>	0	Normal;
	1	CPT;
	2	Voice Mail;
	3	SMS Report
<stat>	0	Received unread SMS
	1	Received read SMS
	2	Stored unsent SMS
	3	Stored sent SMS
	4	All SMS
<CR>		Carriage return
<LF>		Line feed
Msg		SMS content
<ctrl-Z>		Identify the end of a short message content, the encoding method for non UNICOD characters: '0x1A', encoding for the UNICOD mode: '0x001A'.
<ESC>		Cancel sending TExt message, encoding method for non UNICOD characters: '0x1B', encoding method for the UNICOD mode: '0x001B'.

9. 2. 13 SMS sending Command: AT^HCMGS

You can send a text message using the set command.

Table 480: AT^HCMGS operation command

Type	Command	Possible return results	Description
Execution command	AT^HCMGS=<da>[,<toda>]<CR>Msg<ctrl-Z/ESC>>	^HCMGS: <mr> OK	Success
		+CMS ERROR: <err>	Failure
Test command	AT^HCMGS=?	OK	-
Command	AT$QCPMS="SM"	$QCPMS: 21, 40, 6, 99,	Change the reading

routine		6, 99	location of SMS to UIM
	AT$QCMGF=1	OK	
			Send in text mode
	AT^HSMSSS=0, 0, 1, 0	OK	
			Change the encoding format of sending SMS messages to ASCII
		^HCMGS: 274	
	AT^HCMGS="18964877363" > hello<ctrl-Z >	OK	Send text message "hello" to yourself; success
		^HCMGSS: 274	
		OK	
	AT^HSMSSS=0, 0, 6, 0	^HCMGS: 275	
		OK	Change the encoding format for sending SMS messages to UNICODE
	AT^HCMGS="18964877363" > 00310032001A	^HCMGSS: 275	
		OK	Send text messages to "12" to yourself, Success
	AT$QCMGF=0		Note that can not be sent in the super terminal, please use HEX to send in the SSCOM, be sure to add the contents of the 001A and then send the following procedures
	AT^HCMGS=34 > 0000021002040702c605860454d40601FC080f000320000001 08103b164cda356cc	^HCMGS: 337 OK	
			Send in PDU mode

	0		

Table 481: Detailed description of AT^HCMGS Parameter

Parameter	Value	Description
<mr>	0 ~ 65535	SMS identifier, value 0~9 decimal number
<oa/da>		Short Message sender / receiver. Value number range: 0~9, *, #, enter a maximum of 20 characters
<tooa/toda>		This Parameter does not work, the value is fixed to 0
<format> Encoding format	0	GSM 7 BIT
	1	ASCII encoding
	6	UNICODE encoding
	7	Other encoding methods
<CR>		Command Terminator, usually Enter
Msg		SMS content
<ctrl-Z>		Identify the end of a short message content, encoding method for non UNICOD character: '0x1A', encoding method for UNICOD character: '0x001A'.
<ESC>		Cancel sending text message, encoding method for non UNICOD characters: '0x1B', encoding method for the UNICOD mode: '0x001B'.

9. 2. 14 Send SMS out in storage area: AT$QCMSS

DTE sends a text message out from the storage area. PDU mode is not supported currently.

Table 482: AT$QCMSS

Type	Command	Possible return results	Description
Set Command	AT$QCMSS=<index>	$QCMSS: <mr> OK	Send a message of storage area, index in the storage area of the SMS = <index>.
		+CMS ERROR: <err>	-

Test command	AT$QCMSS=?	OK	-
Command routine	AT$QCMSS=12	$QCMSS: 2863 OK	Send a message in the storage area, the SMS in the storage area of index= 12

Table 483: AT$QCMSS Parameter Description

Parameter	Value	Description
<mr>	0 ~ 65535	TP-Message-Reference, numeric type, defined in GSM 3. 40
<index>	-	Numeric type, SMS index value in the storage area Note: type of the storage area is defined by the parameter<mem2> in $QCPMS

9. 2. 15 SMS sending success indicator: ^HCMGSS

This command is a non-request command indicating that the message has been sent successfully.

Table 484: ^HCMGSS Command

Type	Command	Possible return results	Description
Execution command	-	^HCMGSS: <mr>	Indicate SMS sending is succeed
Command routine			Detailed examples see ^HCMGS

Table 485: <mr>Parameter Detailed description

Parameter	Value	Description	Related AT Command
<mr>	0 ~ 65535	SMS identifier, Value 0~9 decimal number	0 ~ 65535

9. 2. 16 SMS sending failure indication: ^HCMGSF

This command is a non-request line command indicating that the message has failed to

send.

Table 486: ^HCMGSS Command

Type	Command	Possible return results	Description
Execution command	-	^HCMGSF: <err code>	Indicate that message sending has been failed
Command routine	AT^HCMGS="18964877363" > hello<ctrl-Z >	^HRSSILVL: 0 ^MODE: 0 ^HCMGS: 278 OK ^HCMGSF: 500	Pull out the antenna Send text messages. Although it has been sent, but did not send out

Table 487: <error code>Value Description

Value	Description
0	WMS_ADDRESS_VACANT_S;
1	WMS_ADDRESS_TRANSLATION_FAILURE_S;
2	WMS_NETWORK_RESOURCE_SHORTAGE_S;
3	WMS_NETWORK_FAILURE_S;
4	WMS_INVALID_TELESERVICE_ID_S;
5	WMS_OTHER_NETWORK_PROBLEM_S;
6	WMS_OTHER_NETWORK_PROBLEM_MORE_FIRST_S;
31	WMS_OTHER_NETWORK_PROBLEM_MORE_LAST_S;
32	WMS_NO_PAGE_RESPONSE_S;
33	WMS_DESTINATION_BUSY_S;
34	WMS_NO_ACK_S;
35	WMS_DESTINATION_RESOURCE_SHORTAGE_S;
36	WMS_SMS_DELIVERY_POSTPONED_S;
37	WMS_DESTINATION_OUT_OF_SERVICE_S;
38	WMS_DESTINATION_NO_LONGER_AT_THIS_ADDRESS_S;
39	WMS_OTHER_TERMINAL_PROBLEM_S;

40	WMS_OTHER_TERMINAL_PROBLEM_MORE_FIRST_S;
47	WMS_OTHER_TERMINAL_PROBLEM_MORE_LAST_S;
48	WMS_SMS_DELIVERY_POSTPONED_MORE_FIRST_S;
49	WMS_SMS_DELIVERY_POSTPONED_MORE_LAST_S;
64	WMS_RADIO_IF_RESOURCE_SHORTAGE_S;
65	WMS_RADIO_IF_INCOMPATIBLE_S;
66	WMS_OTHER_RADIO_IF_PROBLEM_S;
67	WMS_OTHER_RADIO_IF_PROBLEM_MORE_FIRST_S;
95	WMS_OTHER_RADIO_IF_PROBLEM_MORE_LAST_S;
96	WMS_UNEXPECTED_PARM_SIZE_S;
97	WMS_SMS_ORIGINATION_DENIED_S;
98	WMS_SMS_TERMINATION_DENIED_S;
99	WMS_SUPPL_SERVICE_NOT_SUPPORTED;
100	WMS_SMS_NOT_SUPPORTED_S;
101	WMS_RESERVED_101_S;
102	WMS_MISSING_EXPECTED_PARM_S;
103	WMS_MISSING_MANDATORY_PARM_S;
104	WMS_UNRECOGNIZED_PARM_VALUE_S;
105	WMS_UNEXPECTED_PARM_VALUE_S;
106	WMS_USER_DATA_SIZE_ERROR_S;
107	WMS_OTHER_GENERAL_PROBLEMS_S;
108	WMS_OTHER_GENERAL_PROBLEMS_MORE_FIRST_S;
109	WMS_OTHER_GENERAL_PROBLEMS_MORE_LAST_S;
300	Mobile equipment (ME) failure. Mobile equipment refers to the mobile equipment that communicates with the wireless network. Usually it is a mobile phone or GSM/GPRS modem. The UIM card is defined as a separate entity and is not part of mobile equipment.
301	SMS service of mobile equipment (ME) is reserved. See +CMS error code 300 for the meaning of mobile equipment.
302	The operation to be done by the AT command is not allowed.
303	The operation to be done by the AT command is not supported.
304	One or more parameter values assigned to the AT command are invalid. (For

	PDU mode)
305	One or more parameter values assigned to the AT command are invalid. (For Text mode)
310	There is no UIM card.
311	The UIM card requires a PIN to operate. The AT command +CPIN (command name in text: Enter PIN) can be used to send the PIN to the UIM card.
312	The UIM card requires a PH-UIM PIN to operate. The AT command +CPIN (command name in text: Enter PIN) can be used to send the PH-UIM PIN to the UIM card.
313	UIM card failure.
314	The UIM card is busy.
315	The UIM card is wrong.
316	The UIM card requires a PUK to operate. The AT command +CPIN (command name in text: Enter PIN) can be used to send the PUK to the UIM card.
320	Memory/message storage failure.
321	The memory/message storage index assigned to the AT command is invalid.
322	The memory/message storage is out of space.
330	The SMS center (SMSC) address is unknown.
331	No network service is available.
332	Network timeout occurred.
340	There is no need to send message acknowledgement by the AT command +CNMA (command name in text: New Message Acknowledgement to ME/TA).

9. 2. 17 Short message service failure result code

Short Message service failure results code describes a mobile device or network error. The function is similar to error results encoding. This code often appears when a command fails. The returned results +CME ERROR: <err> and +CMS ERROR: <err> are used to indicate ME or network error.

Table 488: +CMS ERROR operation command

Type	Command	Possible return results	Description

-	-	+CMS ERROR: <err> or +CME ERROR: <err>	-

Table 489: Detailed description of +CMS ERROR Parameter

Parameter	Value	Description	Related AT Command
<err>	0 ~ 127	Value in GSM 04. 11 Annex E-2	+CMGS, +CMSS
	128 ~ 255	Value in GSM 03. 40, chapter 9. 2. 3. 22	
	300	ME fault	
	301	Reserved ME SMS service	+CSMS
	302	Operation not allowed	All SMS related AT Command
	303	Operation not supported	All SMS related AT Command
	304	Invalid Parameter in PDU mode	+CMGS, +CMGW
	305	Invalid Parameter in TEXT mode	+CMGS, +CMGW, +CMSS
	310	UIM card is not inserted	All SMS related AT Command
	311	PIN requires UIM card	All SMS related AT Command
	312	PIN requires PH-UIM card	All SMS related AT Command
	313	UIM card fault	All SMS related AT Command
	314	UIM card busy	All SMS related AT Command
	315	UIM error	All SMS related AT Command
	316	PUK requires UIM card	All SMS related AT Command
	317	PIN2 requires UIM card	All SMS related AT Command
	318	PUK2 requires UIM card	All SMS related AT Command
	320	Memory fault	-
	321	Invalid storage index	+CMGR, +CMSS, +CMGD
	322	Memory full	+CMGW
	330	SMSC address unknown	+CSCA?, +CMSS, +CMGS
	340	Unexpected +CNMA confirmation	+CNMA

	500	Unknown error	All SMS related AT Command
	511	Reserved 256 ~ 511 Value	-
	512	Vary according to manufacturer	+CMGS, +CMSS

9. 2. 18 Set SMS reading format (Telecom Card): AT+SMSMODE

This command is used to set up a text message in which way to read and display it on TE.

Table 490: AT+SMSMODE operation command

Type	Command	Possible return results	Description
Set Command	AT+SMSMODE=<value>	OK	
		ERROR/+CME ERROR: <err>	Failure
Query command	AT+SMSMODE?	+SMSMODE: <value> OK	-
Command routine	AT+SMSMODE =1	OK	Set SMS to read in UCS2 mode
	AT+SMSMODE ?	+SMSMODE: 1 OK	-

Table 491: Detailed description of AT+SMSMODE parameter

Parameters	Values	Explanation
< value >	0	Read in plaintext mode
	[1]	Read in UCS2 mode

Note:

Use telecom card to read text messages must be the following two cases:

1). Read in plaintext mode: AT+SMSMODE=0, AT$QCMGF=1

2). Read in PDU mode: AT+SMSMODE=1, AT$QCMGF=0

All other cases return to ERROR.