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AT Command Manual

V1.15

Shanghai YUGE Information Technology co., LTD

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Update records

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Chapter 1. Summary

AT command interface, as shown in Figure 1-1:

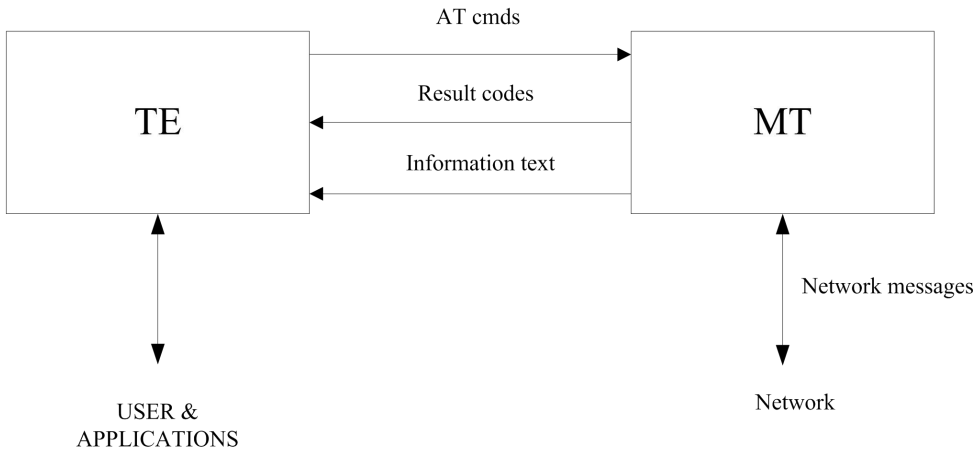

Figure 1-1 AT command interface

1.1 AT Command Syntax

1. Optional parameter and required parameters must be arranged in accordance with the provisions of the order , the parameters must be separated by a comma . An example of this "AT+CPWD=<fac>,<oldpwd>,<newpwd>" ,which is used to set a new password for facility lock .

2. If the parameter is a string (such as <number>), the string must be placed in double quotes . For example , the string "1234" or "cmnet" . On the contrary, the symbols in double quotes can be seen as a string .

3. Optional parameters or the optional part of the results return from TA should be in the square brackets .

4. When you don't use double quotes, the spaces between the characters in the string are negligible .

5. In actual use, do not need to enter < >, [].

6. All AT commands are not case sensitive , "AT" or "at" is OK。

1.2 AT Command Interface

Each interface requires functional cohesion .

Because of the AT command transmit the data packets through communication port , so the size of the package is limited . For sending AT commands , in addition to the characters "AT", MT can receiving 1600 characters in length at most , including the null character at the

end of the commands . MT active reported response messages or URC , the maximum length is also limited to 1600 characters .

Each command line can contain only one AT command . For the URC or response which MT initiative report to TE,Each line also allows only one AT command.AT command end with a carriage return,and response and reporting end with linefeed.

In order to increase the readability and normative of the command and response format,In addition to the original standard protocol interface,all the other new interface parameters cannot contain spaces.

If TE want to execute the second AT command ,it must be first wait for the response of the AT command from MT. Or the second AT command will not be executed.

In order to ensure the other affairs without interference, it suggest that report response results in asynchronous mode for the AT command which need long time to response.If MT takes a long time to respond to the TE, there may be a result of the response is interrupted by a URC.This interrupt contains two cases,one is that the URC report during the response process after the AT command executed,the response result will be report after the URC report. Another is that the URC report during the response process after the AT command executed , the AT command still to be executed and the response will be report with the URC report lead to two kinds of reports confusion.For the special URC such as RING will use as a command terminator in some special cases, for example, the hang up command will be aborted if it has RING report in the process of hang up command .

The definition of string: up by double quotes, without quotes or comma byte stream.

AT command string con not appear the combination of comma and quotes.The current version, does not support the escape character.For the UCS2 encoding format of the data, the encoding value reported in character format.

The possible response from MT to TE consist of information text and result code,of which the information text is optional and the result code is Compulsory.Possible response format control by ATV command.

1.3 AT Command Interface Standards

1. The standard of add new interface

Parameters can added directly behind the original parameters of AT command , so in the late stage of product development if it is found that the interface can not adapt to the new demand , it is only allowed add new parameters behind the original interface . Additional parameters should not affect the original function.

2. The design principle of this product does not support function

If the AT command from MT con not recognize the current interface , the result of command not support will be reported. If the parameters more than the original parameters , two report may be reported,the one is result code of too many parameters , another approach is fault-tolerant processing which not to judge the extra parameter.

Chapter 2. Terms and Abbreviations

Abbreviations	Full name
AAA	Authentication Authorization Accounting
WCDMA	Wide band Code Division Multiple Access
ESN	Electronic Serial Number
FTP	File Transfer Protocol
GIS	Geographic Information System
GPS	Global Positioning System
IMSI	International Mobile Subscriber Identity
MDN	Mobile Directory Number
PDSN	Packet Data Serving Node
PPP	Point to Point Protocol
SGIP	Short Message Gateway Interface Protocol
SI	System Integrate
SMG	Short Message Gateway
SMPP	Short Message Peer to Peer
TCP	Transmission Control Protocol
UDP	User Data gram Protocol
SIM	User Identity Model
EDGE	Enhanced Data GSM Environment
EGPRS	Enhanced General Packet Radio Service
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
PDU	Protocol Data Unit

Chapter 3. General Commands

3.1 ATE Set Command Echo Mode

Description

The command controls if the module echoes characters received from TE during AT command state . Attention: dial-up network or the automatic processing software will automatically send the ATE0 to close the echoes.

Syntax

Command	Response
ATE[<value>]	OK or ERROR

Defined values

Parameter	values	Explain
<value>	0	Echo mode off
	1	Echo mode on

NOTE

The default value of <value> is 1

Examples

```
ATE
OK
```

3.2 ATV Set Result Code Format Mode

Description

This parameter setting determines the contents of the header and trailer transmitted with result codes and information responses.

In case of using the command without parameter <value> will be set to 1.

Syntax

Command	Response
ATV[<value>]	0 If<value>=0 or OK If<value>=1

Defined value

Parameter	values	Explain
<value>	0	Information response: <text><CR><LF> Short result code format: <numeric code><CR>
	1	Information response: <CR><LF><text><CR><LF> Long result code format: <CR><LF><verbose code><CR><LF>

Example

ATV0

0

ATV1

OK

3.3 ATI Display Product Identification Information

Description

The command requests the product information, which consists of manufacturer identification,model identification, revision identification, International Mobile station Equipment Identity (IMEI) and overall capabilities of the product.

Syntax

Command	Response
ATI	Manufacturer: <manufacturer> Model: <model> Revision: <revision> IMEI: <sn> +GCAP: list of <name>s EFS_SVN: <efs version> OK

Defined values

Parameter	values	Explain
<manufacturer>		The identification of manufacturer.
<model>		The identification of model.
<revision>		The revision identification of firmware.

<sn>		Serial number identification, which consists of a single line containing IMEI (International Mobile station Equipment Identity) number.
<name>	+CGSM	GSM function is supported
	+FCLASS	FAX function is supported
	+DS	Data compression is supported
	+ES	Synchronous data mode is supported.
<efs version>		efs version

Examples

ATI

Manufacturer: Yuga Co.,Ltd.

Model: CLM920_NC5

Revision: CLM920_NC5-V1 [Mar 23 2017 11:48:00]

IMEI: 123456789012347

+GCAP: +CGSM

EFS_SVN: cn_efs_20170323_2k

OK

3.4 AT+CGMI Request Manufacturer Identification

Description

Execution command returns a manufacturer identification text.

Syntax

Command	Response
AT+CGMI	<manufacturer> OK
AT+CGMI=?	OK
AT+CGMI=<manufacturer>	OK

Defined values

Parameter	values	Explain
<manufacturer>		The identification of manufacturer.

Examples

AT+CGMI

Yuga Co.,Ltd.

OK

AT+CGMI=?

OK

3.5 AT+CGMM Request Model Identification

Description

Execution command returns a product model identification text.

Syntax

Command	Response
AT+CGMM	<name> OK
AT+CGMM=?	OK
AT+CGMM=<name>	OK

Defined values

Parameter	values	Explain
<name>		The identification of model.

Examples

AT+CGMM

CLM920_NC5

OK

AT+CGMM=?

OK

3.6 AT+CGMR Request Revision Identification

Description

Execution command delivers a product firmware version identification.

Syntax

Command	Response
AT+CGMR	<software version> OK

AT+CGMR=?	OK
AT+CGMR=<software version>	OK

Defined values

Parameter	values	Explain
<software version>		The revision identification of firmware.

Examples

```
AT+CGMR
CLM920_NC5-V1 [Mar 23 2017 11:48:00]

OK
```

3.7 AT+CIMI Request International Mobile Subscriber Identity

Description

Execution command requests the International Mobile Subscriber Identity (IMSI) which is intended to permit the TE to identify the individual SIM card or active application in the UICC (GSM or USIM) that is attached to MT.

Syntax

Command	Response
AT+CIMI	<IMSI> OK
AT+CIMI=?	OK

Defined values

Parameter	values	Explain
<IMSI>		International Mobile Subscriber Identity (string, without double quotes).

Examples

```
AT+CIMI
460016261510461

OK
```

3.8 AT^IMEI Set module IMEI

Description

The command is used to set module IMEI value.

Syntax

Command	Response
AT^IMEI=?	OK
AT^IMEI?	^IMEI: <IMEI> OK
AT^IMEI=<IMEI>	OK

Defined values

Parameter	values	Explain
<IMEI>		Serial number identification

Examples

AT^IMEI?

^IMEI: 868323024895648

OK

AT^IMEI=357941053041368

OK

AT^IMEI=?

OK

3.9 AT+CGSN Request Product Serial Number Identification

Description

Execution command returns International Mobile Equipment Identity (IMEI).

Syntax

Command	Response
AT+CGSN	<IMEI> OK
AT+CGSN=?	OK

Defined values

Parameter	values	Explain
<IMEI>		Serial number identification

Examples

AT+CGSN

357941053041368

OK

3.10 AT+CHTPSERV Set HTP server info

Description

The command is used to add or delete HTP server information. There are maximum 16 HTP servers.

Syntax

Command	Response
AT+CHTPSERV="<cmd>","<host_or_idx>"[,<port>,<http_version>[,"<proxy>",<proxy_port>]]	OK
AT+CHTPSERV?	OK
AT+CHTPSERV=?	+CHTPSERV:"ADD","HOST",(1-65535),(0-1)[,"PROXY",(1-65535)] +CHTPSERV: "DEL",(0-15) OK

Defined values

Parameter	values	Explain
<cmd>	ADD	add a HTP server item to the list
	DEL	delete a HTP server item from the list
<host_or_idx>		If the <cmd> is “ADD”, this field is the same as <host>, needs quotation marks; If the <cmd> is“DEL”, this field is the index of the HTP server item to be deleted from the list, does not need quotation marks.
<host>		The HTP server address.
<port>		The HTP server port.
<http_version>	0-1	The HTTP version of the HTP server: 0 --- HTTP 1.0 1 --- HTTP 1.1
<proxy>		The proxy address

<proxy_port>		The port of the proxy
<index>		The HTP server index.

Example

```
AT+CHTPSERV="ADD","time.windows.com",80,1
OK
```

3.11 AT+CHTPUPDATE Updating date time using HTP protocol

Description

The command is used to updating date time using HTP protocol.

Syntax

Command	Response
AT+CHTPUPDATE	OK +CHTPUPDATE: <err>
AT+CHTPUPDATE?	+CHTPUPDATE:<status> OK
AT+CHTPUPDATE=?	OK

Defined values

Parameter	values	Explain
<err>		The result of the HTP updating 0 indicates that the operation succeeded Please refer to chapter 15.18 <err> Codes
<status>		The status of HTP module: Updating: HTP module is synchronizing date time NULL: HTP module is idle now

Example

```
AT+CHTPUPDATE
OK


+CHTPUPDATE: 0
```

3.12 AT+CCLK Real Time Clock

Description

The command is used to manage Real Time Clock of the module.

Syntax

Command	Response
AT+CCLK=<time>	OK or ERROR
AT+CCLK?	+CCLK: <time> OK
AT+CCLK=?	OK

Defined value

Parameter	values	Explain
<time>		String type value; format is "yy/MM/dd,hh:mm:ss", where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; If the MT does not support the time zone, the last three characters of the <time> will not return
yy	1980-2100	Year
MM	01-12	Month
dd	01-31	Day
hh	01-24	Hour
mm	00-59	Minute
ss	00-59	Second

Example

```
AT+CCLK?
+CCLK: "16/02/22,08:09:28"

OK
AT+CCLK="16/02/14,17:30:51"
OK

AT+CCLK?          //Not getting the right time
+CCLK: "80/01/06,00:29:34"
```

```
OK
AT+CHTPSERV="ADD","time.windows.com",80,1
OK
AT+CHTPUPDATE
OK

+CHTPUPDATE: 0
AT+CCLK?
+CCLK: "17/03/23,06:58:06"

OK
```

3.13 AT+CSCS Select TE Character Set

Description

Write command informs TA which character set <chset> is used by the TE. TA is then able to convert character strings correctly between TE and MT character sets.

Read command shows current setting and test command displays conversion schemes implemented in the TA.

Syntax

Command	Response
AT+CSCS=?	+CSCS: (list of supported <chset>s) OK
AT+CSCS?	+CSCS: <chset> OK
AT+CSCS=<chset>	OK or ERROR
AT+CSCS	OK

Defined values

Parameter	values	Explain
<chset>	“IRA”	International reference alphabet.
	“GSM”	GSM default alphabet.
	“UCS2”	UCS2 alphabet

Examples

```
AT+CSCS=?
+CSCS: ("IRA","GSM","UCS2")

OK
AT+CSCS="IRA"
OK
AT+CSCS?
+CSCS: "IRA"

OK
```

3.14 AT+GCAP Request Overall Capabilities

Description

Execution command causes the TA reports a list of additional capabilities.

Syntax

Command	Response
AT+GCAP	+GCAP:(list of <name>s) OK
AT+GCAP=?	OK

Defined values

Parameter	values	Explain
<name>	+CGSM	GSM function is supported
	+FCLASS	FAX function is supported
	+DS	Data compression is supported
	+ES	Synchronous data mode is supported.

Examples

```
AT+GCAP
+GCAP: +CGSM,+DS

OK
AT+GCAP=?
OK
```

3.15 AT+IPREX Set Local Baud Rate permanently

Description

This command sets the baud rate of module's serial interface permanently, after reboot the baud rate is also valid.The default value is 115200.

Syntax

Command	Response
AT+IPREX=<rate>	OK Or ERROR
AT+IPREX?	+IPREX: <rate> OK
AT+IPREX=?	+IPREX(<rate>list) OK

Defined values

Parameter	values	Explain
<rate>		0,300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800,921600,3000000,3200000,3686400,4000000

Examples

```
AT+IPREX?
+IPREX: 115200

OK
AT+IPREX=?
+IPREX:
(0,300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400,460800,921600,3000000,3200000,3686400,4000000)

OK
AT+IPREX=115200
OK
```

3.16 AT+IFC Set Local Data Flow Control

Description

The command sets the flow control of the module.

Syntax

Command	Response
AT+IFC=<txfc>,<rxfc>	OK Or ERROR
AT+IFC?	+IFC: <txfc><rxfc> OK
AT+IFC=?	+IFC: (<txfc>list),(<rxfc>list) OK

Defined values

Parameter	values	Explain
<txfc>	0	none
	2	RTS/CTS
<rxfc>	0	None
	2	RTS/CTS

Examples

```
AT+IFC?
+IFC: 2,2

OK
AT+IFC=?
+IFC: (0,2),(0-2)

OK
AT+IFC=2,2
OK
```

3.17 AT+ICF Set Control Character Framing

Description

The command sets character framing which contain data bit, stop bit and parity bit.

Syntax

Command	Response
AT+ICF=<format>,<parity>	OK Or ERROR

AT+ICF?	+ICF:<format>,<parity> OK
AT+ICF=?	+ICF:(<format>list),(<parity>list) OK

Defined values

Parameter	values	Explain
< format >	1	data bit 8, check bit 0 , stop bit 2
	2	data bit 8, check bit 1 , stop bit 1
	3	data bit 8, check bit 0 , stop bit 1
	4	data bit 7, check bit 0 , stop bit 2
	5	data bit 7, check bit 1 , stop bit 1
	6	data bit 7, check bit 0 , stop bit 1
< parity >	0	odd
	1	even
	3	none

Examples

```
AT+ICF?
+ICF: 3,3

OK
AT+ICF=?
+ICF: (1-6),(0-3)

OK
AT+ICF=3,3
OK
```

3.18 AT+CSQ Signal Quality Report

Description

Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the ME. Test command returns values supported by the TA as compound values.

Syntax

Command	Response
AT+CSQ	+CSQ:<rssi>,<ber> OK
AT+CSQ=?	+CSQ:(<rssi>list),(<ber>list) OK

Defined values

Parameter	values	Explain
<rssi>	0	- 113 dBm or less
	1	- 111 dBm
	2-30	- 109... - 53 dBm
	31	-51 dBm
	99	not known or not detectable
<ber>	0	<0.01%
	1	0.01% --- 0.1%
	2	0.1% --- 0.5%
	3	0.5% --- 1.0%
	4	1.0% --- 2.0%
	5	2.0% --- 4.0%
	6	4.0% --- 8.0%
	7	>=8.0%
	99	not known or not detectable

Examples

```
AT+CSQ
+CSQ: 19,99

OK
AT+CSQ=?
+CSQ: (0-31,99),(0-7,99)

OK
```

3.19 AT+CFUN Set Phone Functionality

Description

The command controls the functionality level. It can also be used to reset the UE.

Syntax

Command	Response
AT+CFUN=[<fun>[,<rst>]]	OK
AT+CFUN?	+CFUN:<fun> OK
AT+CFUN=?	+CFUN:(<fun>list),(<rst>list) OK

Defined values

Parameter	values	Explain
<fun>	0	Minimum functionality
	1	Full functionality, online mode
	4	Disable phone both transmit and receive RF circuits
	5	Factory Test Mode
	6	Reset
	7	Offline Mode
<rst>	0	Do not reset the ME before setting it to <fun> power level
	1	Reset the ME before setting it to <fun> power level. This value only takes effect when <fun> equals 1.

Examples

```
AT+CFUN?
+CFUN: 1

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

OK
AT+CFUN=1,1

OK
```

3.20 AT^SAVECFUN Save Flight Mode

Description

The command is used to save flight mode when module restart.

Syntax

Command	Response
AT^SAVECFUN=<ON/OFF>	OK
AT^SAVECFUN?	^SAVECFUN: <ON/OFF> OK
AT^SAVECFUN=?	^SAVECFUN: <ON/OFF> OK

Defined values

Parameter	values	Explain
<ON/OFF>	0-1	0 --- off 1 --- on

Example

```
AT^SAVECFUN?
^SAVECFUN: 0

OK
AT+CFUN?
+CFUN: 1

OK
AT^SAVECFUN=1
OK
AT+CFUN=4
OK
AT+CFUN=1,1
OK
AT+CFUN?
+CFUN: 0

OK
```

3.21 AT+ICCID Read ICCID in SIM Card

Description

The command is used to Read the ICCID in SIM card

Syntax

Command	Response
AT+ICCID	+ICCID: <ICCID> OK
AT+ICCID=?	OK

Defined values

Parameter	values	Explain
<ICCID>		Integrate circuit card identity

Examples

AT+ICCID

+ICCID: 89860115831004984192

OK

AT+ICCID=?

OK

3.22 AT+CPAS Mobile Equipment Activity Status

Description

Execution command returns the activity status <cpas> of the ME.

Syntax

Command	Response
AT+CPAS	+CPAS: <cpas> OK
AT+CPAS=?	+CPAS: (<cpas>list) OK

Defined values

Parameter	values	Explain
<cpas>	0	Ready (ME allows commands from TA/TE)
	3	Ringing
	4	Call in progress or call hold

Examples

```
AT+CPAS
+CPAS: 0

OK
AT+CPAS=?
+CPAS: (0,3,4)

OK
```

3.23 Read PA's temperature AT+TEMP

Description

The command is used to read PA's temperature.

Syntax

Command	Response
AT+TEMP	OK
AT+TEMP?	temp:<temperature> OK

Defined value

Parameter	values	Explain
<temperature>		PA's temperature

Example

```
AT+TEMP
OK
AT+TEMP?
temp:41
OK
```

3.24 AT$QCPWRDN Module shutdown

Description

This command is used to shut down. It is only available for the 9X07 SMT module.

Syntax

Command	Response
AT$QCPWRDN	

Example

```
AT$QCPWRDN
OK
```

Chapter 4. Call Related Commands

4.1 AT+VTYPE Set type of speech

Description

The command is used to set the type of voice. The default value is 2,which indicated the type of speech is PCM.

Syntax

Command	Response
AT+VTYPE=<type>	OK
AT+VTYPE?	+VTYPE: <type> OK
AT+VTYPE=?	+VTYPE: (2,3,4) OK

Defined values

Parameter	values	Explain
<type>	2,3,4	2 --- PCM speech 3 --- Analog speech 4 --- Analog speech

Example

```
AT+VTYPE?
+VTYPE: 2

OK
AT+VTYPE=?
+VTYPE: (2,3,4)

OK
AT+VTYPE=3
OK
```

4.2 ATD Dial Command

Description

The dial command can be used to set up outgoing voice and data calls.

Syntax

Command	Response
ATD[digits][I/i][;]	OK

Defined values

Parameter	values	Explain
[digits]	0-9, *, #, +	Ready (ME allows commands from TA/TE)
[I/i]	I	Activates CLIR
	i	Deactivates CLIR
[;]		The termination character ";" is mandatory to set up voice calls.

Examples

```
ATD10010;
OK

^ORIG:0,0

^CONN:0,0
```

4.3 ATA Call Answer

Description

Connects the module to an incoming voice or data call indicated by a “RING” URC.

Syntax

Command	Response
ATA	OK

Examples

```
RING

RING

ATA
OK

^CONN:3,0
```

4.4 ATH Disconnect Existing Call

Description

The command is used to disconnect existing voice call. Before using ATH command to hang up a voice call, it must set AT+CVHU=0. Otherwise, ATH command will be ignored and "*OK*" response is given only.

Syntax

Command	Response
ATH	OK

Examples

```
ATD18521XXXXXX;
OK

^ORIG:1,0

^CONN:1,0
ATH
OK
AT+CVHU?
+CVHU: 1

OK
AT+CVHU=0
OK
ATH
OK

^CEND:1,19,29
```

4.5 AT+CHUP Hang Up Call

Description

The command is used to cancel voice calls.

Syntax

Command	Response
AT+CHUP	OK

Examples

```
ATD18521XXXXXX;
OK

^ORIG:1,0

^CONN:1,0
AT+CHUP
OK

^CEND:1,25,29
```

4.6 AT+CLCC List Current Calls

Description

Return list of current calls of ME. If command succeeds but no calls are available, no information response is sent to TE.

Syntax

Command	Response
AT+CLCC	+CLCC:<idx>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>[,<priority>]]] OK
AT+CLCC=?	OK

Defined values

Parameter	values	Explain
<idx>		Integer type, call identification number, this number can be used in +CHLD command operations.
<dir>	0	Mobile originated (MO) call
	1	Mobile terminated (MT) call
<stat>	0	Active
	1	Held
	2	Dialing (MO call)
	3	Alerting (MO call)
	4	Incoming (MT call)

	5	Waiting (MT call)
<mode>	0	Voice
	1	Data
	2	Fax
<mpty>	0	Call is not one of multiparty (conference) call parties
	1	Call is one of multiparty (conference) call parties
<number>		String type phone number in format specified by <type>.
<type>	129	Unknown type
	145	International number type
	161	National type
<alpha>		String type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE Character Set AT+CSCS.
<priority>		

Example

```
ATD138XXXXXXXX;
OK

^ORIG:2,0

AT+CLCC
+CLCC: 1,0,3,0,0,"138XXXXXXXX",129

OK

^CONN:2,0

AT+CLCC
+CLCC: 1,0,0,0,0,"138XXXXXXXX",129

OK
AT+CHUP
```

OK

^CEND:2,5,29

4.7 AT+CLVL Loudspeaker volume level

Description

The command is used to select the volume of the internal loudspeaker audio output of the device.

Syntax

Command	Response
AT+CLVL=<level>	OK
AT+CLVL?	+CLVL: <level> OK
AT+CLVL=?	+CLVL: (0-5) OK

Defined value

Parameter	values	Explain
<level>	0-5	Integer type value which represents loudspeaker volume level. The range is from 0 to 5, and 0 represents the lowest loudspeaker .

Example

AT+CLVL?
+CLVL: 3

OK
AT+CLVL=4
OK

4.8 AT+CSDVC Switch voice channel device

Description

This command is used to switch voice channel device. After changing current voice channel device and if there is a connecting voice call, it will use the settings of previous device.

Syntax

Command	Response
AT+CSDVC=<device>	OK
AT+CSDVC?	+CSDVC: <device> OK
AT+CSDVC=?	+CSDVC: (2,4) OK

Defined value

Parameter	values	Explain
<device>	2,4	2 --- handset 4 --- speaker phone (default)

Example

```
AT+CSDVC?
+CSDVC: 4

OK
AT+CSDVC=?
+CSDVC: (2,4)

OK
AT+CSDVC=2
OK
```

4.9 AT+CMICGAIN Microphone gain control

Description

The command controls microphone gain. The default value is 4.

Syntax

Command	Response
AT+CMICGAIN=<level>	OK

AT+CMICGAIN?	+CMICGAIN: <level> OK
AT+CMICGAIN=?	+CMICGAIN: (0-8) OK

Defined value

Parameter	values	Explain
<level>	0-8	MIC gain level,default value is 4

Example

```
AT+CMICGAIN?
+CMICGAIN: 6

OK
AT+CMICGAIN=?
+CMICGAIN: (0-8)

OK
AT+CMICGAIN=5
OK
```

4.10 AT+COUTGAIN Speaker gain control

Description

The command controls speaker gain,the default value is 6.

Syntax

Command	Response
AT+COUTGAIN=<level>	OK
AT+COUTGAIN?	+COUTGAIN: <level> OK
AT+COUTGAIN=?	+COUTGAIN: (0-8) OK

Defined value

Parameter	values	Explain
<level>	0-8	Speaker gain level , the default value is 6.

Example

```
AT+COUTGAIN=?
+COUTGAIN: (0-8)

OK
AT+COUTGAIN?
+COUTGAIN: 6

OK
AT+COUTGAIN=5
OK
```

4.11 AT+VMUTE Speaker mute control

Description

This command is used to control the loudspeaker to mute and unmute during a voice call or a video call which is connected. If there is not a connected call, write command can't be used.

When all calls are disconnected, the Module sets the subparameter as 0 automatically.

Syntax

Command	Response
AT+VMUTE=<mode>	OK
AT+VMUTE?	+VMUTE: <mode> OK
AT+VMUTE=?	+VMUTE: (0-1) OK

Defined value

Parameter	values	Explain
<mode>	0-1	0 --- mute off 1 --- mute on

Example

```
AT+VMUTE?
+VMUTE: 0

OK
AT+VMUTE=?
```

```
+VMUTE: (0-1)

OK
AT+VMUTE=1
OK
```

4.12 AT+CMUT Microphone mute control

Description

This command is used to enable and disable the uplink voice muting during a voice call or a video call which is connected. If there is not a connected call, write command can′ t be used.

When all calls are disconnected, the Module sets the subparameter as 0 automatically.

Syntax

Command	Response
AT+CMUT=<mode>	OK
AT+CMUT?	+CMUT: <mode> OK
AT+CMUT=?	+CMUT: (0-1) OK

Description

Parameter	values	Explain
<mode>	0-1	0 --- mute off 1 --- mute on

Example

```
AT+CMUT?
+CMUT: 0

OK
AT+CMUT=?
+CMUT: (0-1)

OK
AT+CMUT=1
OK
```

4.13 RING Incoming Call Bell

Description

When the mobile terminal has called, the MT will be periodic (T=6s) to report this instruction to TE.

Syntax

Command	Response
	RING

Example

```
RING

RING

ATA
OK

^CONN:3,0
```

4.14 ^ORIG Outgoing Call Bell

Description

MT is initiating a call.

Syntax

Command	Response
	^ORIG:<call_id>,<call_type>

Defined value

Parameter	values	Explain
<call_id>		Integer type, call identification number, this number can be used in +CHLD command operations.
<call_type>	0	Voice call
	9	Emergency call

Example

```
ATD10010;
OK
```

```
^ORIG:4,0

^CONN:4,0
```

4.15 ^CONN Call Answering Indication

Description

When the call is switched on, the MT reports to the TE to indicate that the current state has changed to a call state.

Syntax

Command	Response
	^CONN:<call_id>,<call_type>

Defined value

Parameter	values	Explain
<call_id>		Integer type, call identification number, this number can be used in +CHLD command operations.
<call_type>	0	Voice call
	9	Emergency call

Example

```
ATD10010;
OK

^ORIG:4,0

^CONN:4,0
```

4.16 ^CEND Call End Indication

Description

When the call is over, MT reports this instruction to the TE, informs the TE that the reason of call end and the call duration .

Syntax

Command	Response
	^CEND:<call_id>,<duration>,<end_status>

Defined values

Parameter	values	Explain
<call_id>		Integer type, call identification number, this number can be used in +CHLD command operations.
<duration>		Call duration , in seconds
<end_status>		Call end reason

Example

```
ATD10010;
OK

^ORIG:4,0

^CONN:4,0

AT+CHUP
OK

^CEND:4,4,29
```

4.17 AT+CBST Select Bearer Service Type

Description

Write command selects the bearer service <name> with data rate <speed>, and the connection element <ce> to be used when data calls are originated.

Syntax

Command	Response
AT+CBST=[<speed>[,<name>[,<ce>]]]	OK
AT+CBST?	+CBST:<speed>,<name>,<ce> OK
AT+CBST=?	+CBST:(<speed>list),(<name>list),(<ce>list) OK

Defined values

Parameter	values	Explain
<speed>	0	Autobauding (automatic selection of the speed; this

		setting is possible in case of 3.1 kHz modem and non-transparent service)
	7	9600bps(V.32)
	12	9600bps(V.34)
	14	14400bps(V.34)
	16	28800bps(V.34)
	17	33600bps(V.34)
	39	9600bps(V.120)
	43	14400bps(V.120)
	48	28800bps(V.120)
	51	56000bps(V.120)
	71	9600bps(V.110 or X.31 flag stuffing)
	75	14400bps(V.110 or X.31 flag stuffing)
	80	28800bps(V.110 or X.31 flag stuffing)
	81	38400bps(V.110 or X.31 flag stuffing)
	83	57600bps(V.110 or X.31 flag stuffing)
	84	64000bps(X.31 flag stuffing)
	116	64000bps(bit transparent)
	134	64000bps(multimedia)
<name>	0	data circuit asynchronous (UDI or 3.1 kHz modem)
	1	data circuit synchronous (UDI or 3.1 kHz modem)
	4	data circuit asynchronous (RDI)
<ce>	0	transparent
	1	Non-transparent

Example

```
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
AT+CBST?
+CBST: 0,0,1

OK
```

AT+CBST=0,0,1

OK

4.18 AT+CR Service Reporting Control

Description

Write command controls whether or not intermediate result code "*+CR: <serv>*" is returned from the TA to the TE. If enabled, the intermediate result code is transmitted at the point during connect negotiation at which the TA has determined which speed and quality of service will be used, before any error control or data compression reports are transmitted, and before the intermediate result code CONNECT is transmitted.

Syntax

Command	Response
AT+CR=<mode>	OK
AT+CR?	+CR:<mode> OK
AT+CR=?	+CR:(<mode>list) OK

Defined values

Parameter	values	Explain
<mode>	0	Disables reporting
	1	Enables reporting
<serv>	ASYNC	Asynchronous transparent
	SYNC	Synchronous transparent
	REL ASYNC	Asynchronous non-transparent
	REL SYNC	Asynchronous non-transparent

Example

AT+CR=?

+CR: (0,1)

OK

AT+CR=1

OK

4.19 AT+CRC Cellular Result Codes

Description

This command controls whether or not to use the extended format of incoming call indication.

Syntax

Command	Response
AT+CRC=<mode>	OK
AT+CRC?	+CRC:<mode> OK
AT+CRC=?	+CRC:(<mode>list) OK

Defined values

Parameter	values	Explain
<mode>	0	Disable extended format
	1	Enable extended format
<type>	MO	When calling each other ,the other's mobile is ringing
	VOICE	Normal voice
	ASYNC	asynchronous transparent
	SYNC	Asynchronous transparent

Example

```
ATD138XXXXXXXX;
OK

^ORIG:5,0

+CRING: MO

^CONN:5,0
```

4.20 AT+CVHU Voice Hang Up Control

Description

The command controls whether ATH can be used to disconnect the voice call.

Syntax

Command	Response
AT+CVHU=<mode>	OK
AT+CVHU?	+CVHU:<mode> OK
AT+CVHU=?	+CVHU:(<mode>list) OK

Defined values

Parameter	values	Explain
<mode>	0	ATH is disconnected
	1	ATH is ignored but “OK” response is returned.

Example

```
ATD18521XXXXXX;
OK

^ORIG:1,0

^CONN:1,0
ATH
OK
AT+CVHU?
+CVHU: 1

OK
AT+CVHU=0
OK
ATH
OK

^CEND:1,19,29
```

4.21 ATS0 Automatic Answer

Description

The S-parameter command controls the automatic answering feature of the Module. If set to 000, automatic answering is disabled, otherwise it causes the Module to answer when the incoming call indication (RING) has occurred the number of times indicated by the specified value; and the setting will not be stored upon power-off, i.e. the default value will be restored after restart.

Syntax

Command	Response
ATS0=<n>	OK
ATS0?	<n> OK

Defined values

Parameter	values	Explain
<n>	0	Automatic answering mode is disable.
	1~255	Enable automatic answering on the ring number specified.

Example

```
ATS0=3
OK

RING

RING

RING

^CONN:11,0
```

4.22 AT^NVAUTO Automatic Answer

Description

The command used to set whether to automatically answer.

Syntax

Command	Response
AT^NVAUTO=<mode>	OK
AT^NVAUTO?	^NVAUTO: <mode>

	OK

Defined value

Parameter	values	Explain
<mode>	0	Automatic answering mode is disable.
	1	Automatic answering mode is enable.

Example

```
AT^NVAUTO=1
OK
RING

^CONN:11,0
```

4.23 AT^DTMF Dual Tone Multi–Frequency

Description

Call state, by signaling to send DTMF value to the network side.

Syntax

Command	Response
AT^DTMF=<number>[,<on_length>[,<off_length>]]	OK or +CME ERROR:<err>

Defined values

Parameter	values	Explain
<number>	0-9,*,#,A,B,C,D	DTMF value
<on_length>	0	Press
	1	Lift
	95,150,200,250,300,350	DTMF tone duration, in ms
<off_length>	hold	Interval time of DTMF tone

Example

```
ATD02150177336;       //Dialled the operator.
OK
^ORIG:4,0

^CONN:4,0
AT^DTMF=8                    //Dial 8006 extension
```

```
OK
AT^DTMF=0
OK
AT^DTMF=0
OK
AT^DTMF=6
OK
AT+CHUP
OK

^CEND:4,13,29
```

4.24 AT+SETVOLTE Set VOLTE

Description

The command is used to open or close VOLTE，it take effect after the restart using the command AT+CFUN=1,1.

Syntax

Command	Response
AT+SETVOLTE=<mode>	OK
AT+SETVOLTE?	+SETVOLTE: <mode> OK

Defined values

Parameter	values	Explain
<mode>	0	Close VOLTE
	1	Open VOLTE (default)

Example

```
AT+SETVOLTE?
+SETVOLTE: 1

OK
AT+SETVOLTE=0
OK
AT+CFUN=1,1
```

OK

AT+SETVOLTE?

+SETVOLTE: 0

OK

Chapter 5. Short Message Related Commands

5.1 AT+CSMS Select Message Service

Description

The command is used to select messaging service <service>.

Syntax

Command	Response
AT+CSMS=<service>	+CSMS:<mt>,<mo>,<bm> OK
AT+CSMS?	+CSMS:<sevice>,<mt>,<mo>,<bm> OK
AT+CSMS=?	+CSMS:(<service>list) OK

Defined values

Parameter	values	Explain
<service>	0	SMS at command is compatible with GSM phase 2.
	1	SMS at command is compatible with GSM phase 2+.
<mt>	0	Mobile terminated messages is not supported.
	1	Mobile terminated messages is supported.
<mo>	0	Mobile originated messages is not supported.
	1	Mobile originated messages is supported.
<bm>	0	Broadcast type messages is not supported.
	1	Broadcast type messages is supported.

Example

```
AT+CSMS=?
+CSMS: (0-1)

OK
AT+CSMS=0
+CSMS: 1,1,1

OK
AT+CSMS?
```

```
+CSMS: 0,1,1,1

OK
```

5.2 AT+CPMS Preferred Message Storage

Description

The command is used to select memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

Syntax

Command	Response
AT+CPMS=<mem1>[,<mem2>[,<mem3>]]	+CPMS:<used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK
AT+CPMS?	+CPMS:<mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>,<used3>,<total3> OK
AT+CPMS=?	+CPMS:(<mem1>list),(<mem2>list),(<mem3>list) OK

Defined values

Parameter	values	Explain
<mem1>	“SM”	SIM message storage,memory from which messages are read and deleted
	“ME”or“MT”	FLASH message storage,memory from which messages are read and deleted
	“SR”	Status report storage,memory from which messages are read and deleted
<mem2>	“SM”	SIM message storage,memory to which writing and sending operations are made
	“ME”or“MT”	FLASH message storage,memory to which writing and sending operations are made
	“SR”	Status report storage,memory to which writing and sending operations are made
<mem3>	“SM”	SIM message storage,memory to which received SMS

		is preferred to be stored
	“ME”or“MT”	FLASH message storage,memory to which received SMS is preferred to be stored
	“SR”	Status report storage,memory to which received SMS is preferred to be stored
<usedx>		Number of messages currently in <memX>.
<totalx>		Total number of message locations in <memX>.

Example

```
AT+CPMS="SM","SM","SM"
+CPMS: 20,50,20,50,20,50

OK
AT+CPMS?
+CPMS: "SM",20,50,"SM",20,50,"SM",20,50

OK
AT+CPMS=?
+CPMS: ("ME","MT","SM","SR"),("ME","MT","SM","SR"),("ME","MT","SM","SR")

OK
```

5.3 AT+CMGF Select Short Message Format

Description

The command is used to specify the input and output format of the short messages.

Syntax

Command	Response
AT+CMGF[=<mode>]	OK
AT+CMGF?	+CMGF: <mode> OK
AT+CMGF=?	+CMGF: (<mode>list) OK

Defined values

Parameter	values	Explain
<mode>	0	PDU mode
	1	Text mode

Example

```
AT+CMGF=?
+CMGF: (0-1)

OK
AT+CMGF=1
OK
AT+CMGS="138XXXXXXXX"
> 1111111111
+CMGS: 109

OK
```

5.4 AT+CSCA SMS Service Center Address

Description

This command write command updates the SMSC address when mobile originated SMS are transmitted. In text mode, the setting is used by write commands. In PDU mode, setting is used by the same commands, but only when the length of the SMSC address is coded into the <pdu> parameter which equals to zero

Syntax

Command	Response
AT+CSCA=<sca>[,<tosca>]	OK
AT+CSCA?	+CSCA:<sca>,<tosca> OK
AT+CSCA=?	OK

Defined values

Parameter	values	Explain
<sca>		Service center address.
<tosca>		Type of service center address.

Example

```
AT+CSCA="+8613010314500"
OK
AT+CSCA?
+CSCA: "+8613010314500",145

OK
```

5.5 AT+CNMI New Message Indications to TE

Description

The command is used to select the procedure how receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON.

Syntax

Command	Response
AT+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	OK
AT+CNMI?	+CNMI:<mode>,<mt>,<bm>,<ds>,<bfr> OK
AT+CNMI=?	+CNMI:(<mode>list),(<mt>list),(<bm>list),(<ds>list),(<bfr>list) OK

Defined values

Parameter	values	Explain
<mode>	0	Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.
	1	Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.
	2	Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the

		TE after reservation. Otherwise forward them directly to the TE
<mt>	0	No SMS-DELIVER indications are routed to the TE.
	1	If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem3>,<index>.
	2	SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code: +CMT:[<alpha>],<length><CR><LF><pdu> (PDU mode enabled); or +CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>] <CR> <LF><data>
	3	Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in <mt>=1.
<bm>	0	No CBM indications are routed to the TE.
	2	New CBMs are routed directly to the TE using unsolicited result code: +CBM: <length><CR><LF><pdu> (PDU mode enabled); or +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)
<ds>	0	No SMS-STATUS-REPORTs are routed to the TE.
	1	SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode enabled); or +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)

	2	If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem3>,<index>.
<bfr>	0	TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 to 3 is entered
	1	TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1 to 3 is entered.

Example

```
AT+CNMI=1,1
OK

+CMTI: "SM",20              //short message is coming
AT+CNMI=1,2
OK

+CMT: "+86138XXXXXXXX",,"16/01/13,16:22:10+32"          //short message is coming
5555555555
AT+CNMI?
+CNMI: 1,2,0,0,0

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

OK
```

5.6 AT+CMGW Write Message to Memory

Description

AT+CMGW write and execution commands store a short message from TE to memory storage <mem2>. Memory location <index> of the stored message is returned.

Syntax

Command	Response
AT+CMGW=<da>[,<toda>[,<stat>]]	+CMGW: <index>

text to send <ctrl-Z/ESC> (TEXT mode)	OK
AT+CMGW=<length>[,<stat>] PDU to send <ctrl-Z/ESC> (PDU mode)	+CMGW: <index> OK
AT+CMGW=?	OK

Defined values

Parameter	values		Explain
<da>			Destination-Address.
<toda>			TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is +(IRA 43) default is 145, otherwise default is 129).
<stat>	text	“REC UNREAD”	Received unread messages
		“REC READ”	Received read messages
		“STO UNSENT”	Stored unsent messages
		“STO SENT”	Stored sent messages
		“ALL”	All messages
	PDU	0	Received unread messages
		1	Received read messages
		2	Stored unsent messages
		3	Stored sent messages
		4	All messages

Example

```
AT+CMGW="138XXXXXXXX"
> 22222222

+CMGW: 21

OK
AT+CMSS=21
+CMSS: 110

OK
```

5.7 AT+CMSS Send Message From Storage

Description

The command is used to send message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).

Syntax

Command	Response	
AT+CMSS=<index>[,<da>[,<toda>]]	text	+CMSS:<mr>[,<scts>] OK
	PUD	+CMSS:<mr>[,<ackpdu>] OK

Defined values

Parameter	values	Explain
<index>		Value in the range of location numbers supported by the associated memory and start with zero.
<da>		Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
<toda>		Type of recipient address.
<mr>		Message reference.
<scts>		Service center time stamp.
<ackpdu>		Format is same for <pdu> in case of SMS, but without 3GPP TS 24.011 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter.

Example

```
AT+CMGW="138XXXXXXXX"
> 22222222

+CMGW: 21

OK
```

```
AT+CMSS=21
+CMSS: 110

OK
```

5.8 AT+CMGS Send Message

Description

AT+CMGS write command sends a short message from TE to network (SMS- After invoking the write command, wait for the prompt “>” and then start to write the message. Then enter <CTRL-Z> to indicate the ending of PDU and begin to send the message. Sending can be cancelled by giving <ESC> character. Abortion is acknowledged with “OK”, though the message will not be sent. The message reference <mr> is returned to the TE on successful message delivery. The value can be used to identify message upon unsolicited delivery status report result code.

Syntax

Command	Response
AT+CMGS=<da>[,<toda>] text to send <ctrl-Z/ESC> (TEXT mode)	+CMGS: <mr> OK
AT+CMGS=<length> PDU to send <ctrl-Z/ESC> (PDU mode)	+CMGS: <mr> OK

Defined values

Parameter	values	Explain
<da>		Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
<toda>		TP-Destination-Address, Type-of-Address octet in integer format. (when first character of <da> is +(IRA 43) default is 145, otherwise default is 129).
<length>		Message length.
<mr>		Message reference.

Example

```
AT+CMGF=1                                   //text mode
OK
AT+CMGS=”138XXXXXXXX”<CR>
>ABCD123456<Ctrl+Z>
+CMGS : 97

OK
AT+CMGF=0                                   //PDU mode
OK
AT+CMGS=19
>0031000D91683158714209F80000A704D4F29C0E<Ctrl+Z>
+CMGS: 98

OK
```

5.9 AT+CMGL List Messages

Description

This command write command returns messages with status value <stat> from preferred message storage <mem1> to the TE. If the status of the message is “REC UNREAD”, the status in the storage changes to “REC READ” . When executing command AT+CMGL without status value <stat>, it will report the list of SMS with “REC UNREAD” status.

Syntax

Command		Response	
AT+CMGL[=<stat>]	PDU	Mobile and Unicom	+CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><PDU> OK
		Telecom	+CMGL:,<index>,<stat>,<length><CR><LF><PDU> OK
	text	+CMGL: <index>,<stat>,<da>/<oa>,[<alpha>],[<scts>][,<tooa>/<toda>,<length>]<CR><LF><data>[...]] OK	

AT+CMGL=?	+CMGL: (<stat>list) OK

Defined values

Parameter	values		Explain
<index>			Value in the range of location numbers supported by the associated memory and start with zero.
<stat>	text	"REC UNREAD"	Received unread messages
		"REC READ"	Received read messages
		"STO UNSENT"	Stored unsent messages
		"STO SENT"	Stored sent messages
		"ALL"	All messages
	PDU	0	Received unread messages
		1	Received read messages
		2	Stored unsent messages
		3	Stored sent messages
		4	All messages
<alpha>			String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS.
<length>			Message length.
<da>			Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
<oa>			Originating-Address, Address-Value field in

		string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tooa>.
<scts>		Service center time stamp.
<tooa>		Type of originating address.
<toda>		Type of recipient address.

Example

```
AT+CMGF=1
OK
AT+CMGL= "ALL"
+CMGL: 0,"REC READ","+8615021877106","","17/03/03,11:52:40+32"
HelloKitty1
+CMGL: 1,"REC READ","+8615021877106","","17/03/03,11:52:45+32"
HelloKitty2

OK
AT+CMGF=0
OK
AT+CMGL=4      //Telecom
+CMGL:,0,0,27
0891683110300605F0040B813118268701F70008713001317331080854C8997F4E865C31

OK
AT+CMGL=4      // Mobile and Unicom
+CMGL: 0,1,"",30
0891683110304105F0240D91685120817701F60000713030312111230BC8329BFD5EA6E9
F47C0C

OK
```

NOTE:

Use the command AT+ATVER to make the return value of the AT+CMGL in Telecom mode consistent with the China mobile and China Unicom

5.10 AT+CMGR Read Message

Description

The command returns message with location value <index> from message storage <mem1> to the TE.

Syntax

Command		Response
AT+CMGR=<index>	text	+CMGR:<stat>,<number>,[<reserved>],<time> <data> OK
	PDU	+CMGR:<stat>,[<alpha>],<length> <pdu> OK
AT+CMGR=?		OK

Defined value

Parameter	values		Explain
<index>			Value in the range of location numbers supported by the associated memory and start with zero.
<stat>	text	“REC UNREAD”	Received unread messages
		“REC READ”	Received read messages
		“STO UNSENT”	Stored unsent messages
		“STO SENT”	Stored sent messages
		“ALL”	All messages
	PDU	0	Received unread messages
		1	Received read messages
		2	Stored unsent messages
		3	Stored sent messages
		4	All messages

<number>		Sender number
<reserved>		null
<time>		TP-Discharge-Time in time-string format :"yy/MM/dd , hh:mm:ss+zz",where characters indicate year (two last digits),month,day,hour,minutes,seconds and time zone.
<alpha>		String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS.
<length>		Message length.

Example

```
AT+CNMI=1,1
OK

+CMTI: "SM",22
AT+CMGR=22
+CMGR: 0,,27
0891683110304105F0240D916831X8XXXXXXFX000061103161231123 07B55AAD56ABD500

OK
+CMTI: "SM",23
AT+CMGR=23
+CMGR: "REC UNREAD","+86138XXXXXXXX",,"16/01/13,16:34:08+32"
55555

OK
```

5.11 AT+CMGD Delete Message

Description

The command is used to delete message from preferred message storage <mem1> location <index>.

Syntax

Command	Response
AT+CMGD=<index>[,<delflag>]	OK
AT+CMGD=?	OK

Defined value

Parameter	values	Explain
<index>	0-255	Value in the range of location numbers supported by the associated memory and start with zero.
<delflag>	0	Delete the message specified in <index>.(or omitted)
	1	Delete all read messages from preferred message storage.
	2	Delete all read messages from preferred message storage and sent mobile originated messages.
	3	Delete all read messages from preferred message storage, sent and unsent mobile originated messages
	4	Delete all messages from preferred message storage including unread messages.

Example

```
AT+CMGD=0,4          //Delete all messages
OK
AT+CMGL
OK
AT+CMGL="ALL"

OK
```

Chapter 6. Supplementary Service Commands

6.1 AT+CLIP Calling Line Identification Presentation

Description

The command refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call.

Write command enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network.

When the presentation of the CLI at the TE is enabled (and calling subscriber allows), +CLIP: <number>,<type> ,,[,[<alpha>][,<CLI validity>]] response is returned after every RING (or +CRING: <type>; refer sub clause "Cellular result codes +CRC") result code sent from TA to TE. It is manufacturer specific if this response is used when normal voice call is answered.

Syntax

Command	Response
AT+CLIP=?	+CLIP：(<n>list) OK
AT+CLIP?	+CLIP：<n>,<m> OK
AT+CLIP=<n>	OK
	+CLIP:<number>,<type> ,,[,[<alpha>][,<CLI validity>]]

Defined value

Parameter	values	Explain
<n>	0	Disable
	1	Enable
<m>	0	CLIP not provisioned
	1	CLIP provisioned
	2	Unknown (e.g. no network, etc.)
<number>		String type phone number of calling address in format specified by <type>.
<type>	128	Restricted number type includes unknown type and

		format
	145	International number type
	161	National number.The network support for this type is optional
	177	Network specific number,ISDN format
	129	Otherwise

Example

```
AT+CLIP=1
OK
+CLIP: "138XXXXXXXX",129,,,,0

RING

+CLIP: "138XXXXXXXX",129,,,,0
```

6.2 AT+CCFC Call Forwarding Number and Conditions Control

Description

The command allows control of the call forwarding supplementary service. Registration, erasure, activation, deactivation, and status query are supported.

Syntax

Command	Response	
AT+CCFC=?	OK	
AT+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<atype>[,<time>]]]]]]	mode=2	OK
	mode≠2	+CCFC:<status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] +CCFC:<status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]] […]] OK

Defined value

Parameter	values	Explain
<reason>	0	Unconditional
	1	Mobile busy

	2	No reply
	3	Not reachable
	4	All call forwarding
	5	All conditional call forwarding
<mode>	0	Disable
	1	Enable
	2	Query status
	3	Registration
	4	Erasure
<number>		String type phone number of forwarding address in format specified by <type>.
<type>	145	Dialing string <number> includes international access code character '+'
	129	Otherwise
<class>	1	Voice (telephony)
	2	Data (refers to all bearer services)
	4	Fax (facsimile services)
	16	Data circuit sync
	32	Data circuit async
	64	Dedicated packet access
	128	Dedicated PAD access
	255	The value 255 covers all classes
<subaddr>		String type sub address of format specified by <satype>.
<satype>		Type of sub address octet in integer format, default 128.
<time>	1-30	When "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded, default value 20.
<status>	0	Not active
	1	Active

NOTE:

China Telecom call transfer setting method：

Unconditional	AT+CDV*720<number>	Cancel AT+CDV*720
No reply	AT+CDV*920<number>	Cancel AT+CDV*920
Mobile busy	AT+CDV*900<number>	Cancel AT+CDV*900

Defined value

```
AT+CCFC=0,3,"138XXXXXXXX"
OK                                    // call forward to number 138XXXXXXXX
AT+CCFC=0,2
+CCFC: 1,1,"+86138XXXXXXXX",145,,,

OK
AT+CCFC=0,4
OK
AT+CCFC=0,2
+CCFC: 0,255

OK
```

6.3 AT+CCWA Call Waiting Control

Description

The AT+CCWA command allows control of the call waiting supplementary service.

Syntax

Command	Response
AT+CCWA?	+CCWA: <n> OK
AT+CCWA=?	+CCWA: (<n>list) OK
AT+CCWA=[<n>[,<mode>[,<class>]]]	OK or +CCWA:<status>,<class1>[<CR><LF> +CCWA:<status>,<class2>[…]]

Defined value

Parameter	values	Explain
<n>	0	Disable presentation of an unsolicited result code
	1	Enable presentation of an unsolicited result code

<mode>	0	Disable
	1	Enable
	2	Query status
<class>	1	Voice (telephony)
	2	Data (refers to all bearer services)
	4	Fax (facsimile services)
	8	Short message
	16	Data circuit sync
	32	Data circuit async
	64	Dedicated packet access
	128	Dedicated PAD access
	255	The value 255 covers all classes
<status>	0	Disable
	1	Enable

Example

```
ATD10010;
OK

^ORIG:0,0

^CONN:0,0

+CCWA: "138XXXXXXXX",129,1
```

6.4 AT+CHLD Call Related Supplementary Services

Description

The command allows the control of the following call related services:

1. A call can be temporarily disconnected from the ME but the connection is retained by the network.

2. Multiparty conversation (conference calls).

3. The served subscriber who has two calls (one held and the other either active or alerting) Can connect the other parties and release the served subscriber's own connection. Calls can be put on hold, recovered, released, added to conversation, and transferred.

Syntax

Command	Response
AT+CHLD=?	+CHLD: (list of supported <n>s) OK
AT+CHLD=[<n>]	OK Or ERROR/+CME ERROR:<err>

Defined value

Parameter	values	Explain
<n>	0	Terminate all held calls; or set User Determined User Busy for a waiting call
	1	Terminate all active calls and accept the other call (waiting call or held call)
	1X	Terminate a specific call X
	2	Place all active calls on hold and accept the other call (waiting call or held call) as the active call
	2X	Place all active calls except call X on hold
	3	Add the held call to the active calls
	4	Connect two calls and cut off the connection between users and them simultaneously

Example

```
ATD10010;
OK

^ORIG:0,0

^CONN:0,0

+CCWA: "138XXXXXXXX",129,1
AT+CHLD=2                    //Set 10010 for call hold, answer 138XXXXXXXX call
OK
AT+CHLD=3                    //Add the 10010 call to the active calls
OK
```

```
AT+CLCC
+CLCC: 1,0,0,0,1,"10010",129
+CLCC: 2,1,0,0,1,"138XXXXXXXX",129

OK
```

6.5 AT+CUSD Unstructured Supplementary Service Data

Description

The command allows control of the Unstructured Supplementary Service Data (USSD). Both network and mobile initiated operations are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code (USSD response from the network, or network initiated operation) +CUSD: <m>[,<str>,<dcs>] to the TE. In addition, value <n>=2 is used to cancel an ongoing USSD session.

syntax

Command	Response
AT+CUSD=?	+CUSD: (list of supported <n>s) OK
AT+CUSD?	+CUSD: <n> OK
AT+CUSD= <n>[,<str>[,<dcs>]]	OK or ERROR or +CME ERROR: <err>
AT+CUSD	Set default value (<n>=0): OK

Defined value

Parameter	values	Explain
<n>	0	Disable the result code presentation in the TA
	1	Enable the result code presentation in the TA
	2	Cancel session (not applicable to read command response)
<str>		String type USSD- string.
<dcs>		Cell Broadcast Data Coding Scheme in integer format (default 0).
<m>	0	No further user action required (network initiated USSD-

		Notify, or no further information needed after mobile initiated operation)
	1	Further user action required (network initiated USSD-Request, or further information needed after mobile initiated operation)
	2	USSD terminated by network

Chapter 7.SIM Card Related Commands

7.1 AT+CLCK Facility Lock

Description

The command is used to lock, unlock or interrogate a ME or a network facility <fac>. Password is normally needed to do such actions.

Syntax

Command	Response
AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	When <mode>=2： +CLCK:<status>[,<class>] OK When <mode>≠2： OK
AT+CLCK=?	+CLCK: (<fac>list) OK

Defined value

Parameter	values	Explain
<fac>	"AO"	Barr All Outgoing Calls
	"OI"	Barr Outgoing International Calls
	"OX"	Barr Outgoing International Calls except to Home Country
	"AI"	Barr All Incoming Calls
	"IR"	Barr Incoming Calls when roaming outside the home country
	"PN"	Network Personalization
	"PP"	Service Provider Personalization
	"PU"	Network subset Personalization
	"PC"	Corporate Personalization
	"PF"	Lock Phone to the very First inserted SIM card or USIM card
	"SC"	Lock SIM card or USIM card
	"FD"	SIM fixed dialing memory feature
<mode>	0	Unlock
	1	Lock

	2	Query status
<passwd>		Password.
<class>	1	Voice (telephony)
	2	Data (refers to all bearer services)
	4	Fax (facsimile services)
	8	Short message service
	16	Short message service
	32	Short message service
	64	Dedicated packet access
<status>	0	Not active
	1	Active

Example

```
AT+CLCK=?
+CLCK:
("AB","AC","AG","AI","AO","IR","OI","OX","SC","FD","PN","PU","PP","PC","PF")

OK
AT+CLCK="SC",2
+CLCK: 0

OK
AT+CLCK="SC",1,"1234"
OK
AT+CLCK="SC",2
+CLCK: 1

OK
```

7.2 AT+CPWD Change Password

Description

Write command sets a new password for the facility lock function defined by command Facility Lock AT+CLCK.

Test command returns a list of pairs which present the available facilities and the maximum length of their password.

Syntax

Command	Response
AT+CPWD=<fac>,<oldpwd>,<newpwd>	OK
AT+CPWD=?	+CPWD: (<fac>,<pwdlength>)list OK

Defined value

Parameter	values	Explain
<fac>	"AO"	Barr All Outgoing Calls
	"OI"	Barr Outgoing International Calls
	"OX"	Barr Outgoing International Calls except to Home Country
	"AI"	Barr All Incoming Calls
	"IR"	Barr Incoming Calls when roaming outside the home country
	"PN"	Network Personalization
	"PP"	Service Provider Personalization
	"PU"	Network subset Personalization
	"PC"	Corporate Personalization
	"PF"	Lock Phone to the very First inserted SIM card or USIM card
	"SC"	Lock SIM card or USIM card
	"FD"	SIM fixed dialing memory feature
<oldpwd>		String type, old password .
<newpwd>		String type, new password .
<pwdlength>		Integer type, max length of password

Example

```
AT+CPIN?
+CPIN: READY

OK
AT+CPWD="SC","1234","0000"          //Change SIM card password to “0000”
```

```
OK
AT+CFUN=1,1                          //Restart module
OK
AT+CPIN?
+CPIN: SIM PIN                       //PIN code is locked

OK
AT+CPIN="1234"                       //Enter the old password
+CME ERROR: incorrect password       //Password is incorrect
AT+CPIN="0000"                       //Enter the new password
OK
AT+CPIN?                             //SIM card is ready
+CPIN: READY

OK
```

7.3 AT+CPIN Enter PIN

Description

If the password request is PIN or PIN2 , please enter AT+CPIN=<PIN> to examine.

If the password request is PUK or PUK2 , please enter AT+CPIN=<PIN>,<newpin> to unlock the SIM card. The first parameter is SIM PUK or SIM PUK2 , the second parameter is new PIN or PIN2 .

Syntax

Command	Response
AT+CPIN=<pin>[,<newpin>]	OK
AT+CPIN?	+CPIN: <code> OK
AT+CPIN=?	OK

Defined value

Parameter	values	Explain
<pin>		Password (string type).
<newpin>		New password (string type)
<code>	READY	ME is not pending for any password

	SIM PIN	ME is waiting SIM PIN to be given
	SIM PUK	ME is waiting SIM PUK to be given
	SIM PIN2	ME is waiting SIM PIN2 to be given
	SIM PUK2	ME is waiting SIM PUK2 to be given

Example

AT+CPIN?

+CPIN: READY

OK

7.4 AT+CRSM Restricted SIM Access

Description

The command offers easy and limited access to the SIM database.

Syntax

Command	Response
AT+CRSM=<command>[,<fileID>[,<P1>,<P2>,<P3>[,<data>]]]	+CRSM:<sw1>,<sw2>[,<response>] OK
AT+CRSM=?	OK

Defined value

Parameter	values	Explain
<command>	176	READ BINARY
	178	READ RECORD
	192	GET RESPONSE
	214	UPDATE BINARY
	220	UPDATE RECORD
	242	STATUS
<fileID>		Identifier for an elementary data file on SIM, if used by <command>.
<P1>,<P2>,<P3>		Integer type; parameters transferred by the MT to the SIM.
<data>		Information which shall be written to the SIM
<sw1>,<sw2>		Status information from the SIM about the

		execution of the actual command.These parameters are delivered to the TE in both cases, on successful or failed execution of the command.
<response>		Response data from SIM.

Example

```
AT+CRSM=242
+CRSM:
144,0,"6224820278218302 5F3A8A01058B066F0601010001C60F9001A0950100830111830
101830181"

OK
```

7.5 AT+CIND Indicator Control

Description

The command simply controls the registration / deregistration of indicators.This command currently only supports query of LTE, WCDMA,and GSM.

Syntax

Command	Response
AT+CIND?	+CIND: <battchg>,<signal>,<service>,<call>,<roam>,<smsfull>,<GPRS coverage>,<callsetup> OK
AT+CIND=?	+CIND: ("battchg",(0-5)),("signal",(0-5)),("service",(0-1)),("call",(0-1)),("roam",(0-1)),("smsfull",(0-1)),("GPRS coverage",(0-1)),("callsetup",(0-3)) OK

Defined value

Parameter	values	Explain
<battchg>		Reserve
<signal>	0-5	Signal quality. 0 is the least field strength. 5 is the greatest field strength.
<service>	0	No available network services

	1	Available network services
<call>	0	No call connection
	1	Call connection has been established
<roam>	0	No roaming
	1	Roaming
<smsfull>	0	A short message memory locations are available
	1	A short message memory storage in the MT has become full
<GPRS coverage>	0	Data not attached
	1	Data attachment
<callsetup>	0	No calling
	1	Module called,ringing
	2	Start calling
	3	Module calling,ringing

Example

```
AT+CIND?
+CIND: 0,4,1,1,0,0,1,0

OK
AT+CIND=?
+CIND:
("battchg",(0-5)),("signal",(0-5)),("service",(0-1)),("call",(0-1)),("roam",(0-1)),("smsfull",(0-1)
),("GPRS coverage",(0-1)),("callsetup",(0-3))

OK
```

7.6 AT+CMER Mobile Termination Event Reporting

Description

The set command enables and disables the presentation of URC for event reporting.

Syntax

Command	Response
AT+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>[,<tscrn>]]]]]	OK
AT+CMER?	+CMER:

	<mode>,<keyp>,<disp>,<ind>,<bfr>,<tscrn> OK
AT+CMER=?	+CMER: (0-3),(0),(0),(0-1),(0-1) OK

Defined value

Parameter	values	Explain
<mode>	0	Close event reporting
	1,2,3	Open event reporting
<keyp>	0	No keypad event reporting
<disp>	0	No display event reporting
<ind>	0	No indicator event reporting
	1	Indicator event reporting using result code +CIEV: < ind>,<value>
<bfr>		Reserve
<tscrn>		Reserve

Chapter 8. Packet Domain Commands

8.1 AT+CGDCONT Define PDP Context

Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command. A special form of the write command (AT+CGDCONT=<cid>) causes the values for context <cid> to become undefined.

Syntax

Command	Response
AT+CGDCONT=[<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>]]]]]]	OK
AT+CGDCONT?	+CGDCONT:<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp> [+CGDCONT:<cid>,<PDP_type>,<APN>,<PDP_addr>,<data_comp>,<head_comp>] OK
AT+CGDCONT=?	+CGDCONT:(supported<cid>s),<PDP_type>,,,(<d_comp>list),(<h_comp>list) OK

Defined value

Parameter	values	Explain
<cid>	1-24,100-179	(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition.
<PDP_type>	“IP”,"PPP","IPV6","IPV4V6"	(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.
<APN>		(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.
<PDP_addr>		A string parameter that identifies the MT in the address space applicable to the PDP.
<d_comp>	0-2	A numeric parameter that controls PDP data

		compression: 0 --- off (default if value is omitted) 1 --- on 2 --- V.42bis
<h_comp>	0-4	A numeric parameter that controls PDP header compression: 0 --- off (default if value is omitted) 1 --- on 2 --- RFC1144 3 --- RFC2507 4 --- RFC3095

Example

```
AT+CGDCONT=1,"IP","3GNET"
OK
```

8.2 AT+CGATT PS Attach or Detach

Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.25ter command state. If the MT is already in the requested state, the command is ignored and the OK response is returned. Any active PDP contexts will be automatically deactivated when the attachment state changes to detached.

Syntax

Command	Response
AT+CGATT=[<state>]	OK
AT+CGATT?	+CGATT: <state> OK
AT+CGATT=?	+CGATT: (<state>list) OK

Defined value

Parameter	values	Explain
<state>	0-1	Indicates the state of Packet Domain attachment: 0 --- detached

		1 --- attached

Example

```
AT+CGATT?
+CGATT: 1

OK
AT+CGATT=0
OK
```

8.3 AT+CGACT PDP Context Activate or Deactivate

Description

The write command is used to activate or deactivate the specified PDP context (s). If the MT is not PS attached when the activation form of the command is executed, the MT first performs a PS attach and then attempts to activate the specified contexts.

Syntax

Command	Response
AT+CGACT=<state>[,<cid>[,<cid>[,...]]]	OK
AT+CGACT?	+CGACT: <cid>,<state> [+CGACT: <cid>,<state>[...]] OK
AT+CGACT=?	+CGACT: (<state>list) OK

Defined value

Parameter	values	Explain
<state>	0-1	Indicates the state of PDP context activation 0 --- Deactivated 1 --- Activated
<cid>	1-24,100-179	A numeric parameter which specifies a particular PDP context definition

Example

```
AT+CGACT?
+CGACT: 1,0
```

```
+CGACT: 100,1
+CGACT: 101,0

OK
```

8.4 ATD*99# Initiate Data Connection

Description

This command will enable the MT to initiate a series of necessary operations to establish a communication with PDN.

Syntax

Command	Response
ATD*99#[*[<called_address>][*[<L2P>][*[<cid>]]]]#	CONNECT 150000000

Defined value

Parameter	values	Explain
<called_address>		Ignore
<L2P>	“PPP”	
<cid>	1-24,100-179	A numeric parameter which specifies a particular PDP context definition

Example

```
ATD*99#
CONNECT 150000000
```

8.5 AT$QCPDPP Authentication

Description

The command is used to write authentication mode, user name and password.

Syntax

Command	Response
AT$QCPDPP=<n>,<auth_type>,<passwd>,<user>	OK
AT$QCPDPP?	$QCPDPP: 1,<auth_type>,"user" ..... $QCPDPP: 16,<auth_type>,"user"

	OK If you do not set the user name and password ,it will return: $QCPDPP: <n>,0 OK
AT$QCPDPP=?	$QCPDPP: (1-24,100-179),(0-3),, OK

Defined value

Parameter	values	Explain
<n>	1-24,100-179	Configuration file number
<auth_type>	0-3	0 --- none 1 --- PAP 2 --- CHAP 3 --- PAP or CHAP
<passwd>		Password
<user>		User name

Example

```
AT$QCPDPP?
$QCPDPP: 1,0

OK
```

8.6 AT^NVAUTH Select the location of the user name and password to read

Description

This command is used to select the location of the user name and password to read.The command take effective after restart.

Syntax

Command	Response
AT^NVAUTH=<ON/OFF>	OK
AT^NVAUTH?	^NVAUTH: <ON/OFF> OK
AT^NVAUTH=?	^NVAUTH: <ON/OFF> OK

Defined value

Parameter	values	Explain
<ON/OFF>	0-1	0 --- off Using the user name and password in the SIM card 1 --- on Using the user name and password in the module.(default)

Example

```
AT^NVAUTH?
^NVAUTH: 0

OK
AT^NVAUTH=1
OK
AT^NVAUTH?
^NVAUTH: 1

OK
AT^NVAUTH=?
^NVAUTH: <ON/OFF>

OK
```

8.7 AT^NETCFG NDIS interface settings

Description

This command used to set NDIS interface dial-up connection .

Syntax

Command	Response
AT^NETCFG=<inst>,<tech_pref>,<cdma_profile>,<umts_profile>,<ip_family_pref>,<mcast>,<call_type>,<apn,auth_type>[,<user>[,<passwd>][,<mode>]]	OK

Defined value

Parameter	values	Explain
<inst>	0-17	NDIS interface instructions, currently available 0

<tech_pref>	32774	Wireless interface indication
<cdma_profile>		Retain
<umts_profile>		Retain
<ip_family_pref>	4	Address type
<mcast>		Retain
<call_type>		Retain
<apn>		APN string
<auth_type>	0-3	0 --- No authentication 1 --- PAP certification 2 --- CHAP certification 3 --- PAP or CHAP certification
<user>		User name
<password>		password
<mode>	0-1	1 --- Update 3GPP2 (CDMA) user name and password 0 --- Update 3GPP (not CDMA) user name and password

Example

```
AT^NETCFG=0,32774,,,4,,,"",0,"CARD","CARD",1
OK
```

8.8 AT$QCRMCALL GobiNet dial-up connection

Description

This command is used to initiate the GobiNet data dialing

Syntax

Command	Response
AT$QCRMCALL=<Action>,<Instance>[,<IP Type>[,<Tech Pref>[,<umts_profile number>[,<cdma profile number>[,<APN>]]]]]	OK
AT$QCRMCALL?	OK

Defined value

Parameter	values	Explain
<Action>	0-1	0 --- break off 1 --- connect
<Instance>	1-9	Channel number

<IP Type>	1-3	1 --- IPv4 2 --- IPv6 3 --- IPv4v6
<Tech Pref>	1-2	1 --- 3GPP2 2 --- 3GPP
<umts_profile number>	1-16	
<cdma profile number>		
<APN>		

Example

```
AT$QCRMCALL=1,1,1,2,1          //for LTE/WCDMA/GSM/TDS
$QCRMCALL: 1, V4

OK
AT^NVAUTH=1
OK
AT+CFUN=1,1
OK
AT$QCRMCALL=1,1,1,1,1          //for CDMA/EVDO
$QCRMCALL: 1, V4

OK
```

Chapter 9. Phonebook Related Commands

9.1 AT+CNUM Subscriber Number

Description

The command can get the subscribers own number(s) from the SIM.

Syntax

Command	Response
AT+CNUM	+CNUM:[<alpha>],<number>,<type> OK
AT+CNUM=?	OK

Defined value

Parameter	values	Explain
<alpha>		Optional alphanumeric string associated with <number>,used character set should be the one selected with command Select TE Character Set AT+CSCS.
<number>		String type phone number of format specified by <type>.
<type>		Type of address octet in integer format

9.2 AT+CPBS Select Phonebook Memory Storage

Description

The command selects phonebook memory storage, which is used by other phonebook commands. Read command returns currently selected memory, and number of used locations and total number of locations in the memory when supported by manufacturer. Test command returns supported storages as compound value.

Syntax

Command	Response
AT+CPBS=<storage>	OK
AT+CPBS?	+CPBS:<storage>[,<used>,<total>] OK
AT+CPBS=?	+CPBS:(<storage>list) OK

Defined value

Parameter	values	Explain
<storage>	“SM”	SIM phonebook
	“DC”	ME dialed calls list
	“MC”	ME missed (unanswered) calls list
	“ME”	Mobile equipment phonebook
	“RC”	ME received calls list
	“EN”	SIM (or ME) emergency number
<used>		Integer type, indicates the total number of used locations in selected memory
<total>		Integer type, indicates the total number of locations in selected memory

Example

```
AT+CPBS?
+CPBS: "SM",6,500

OK
AT+CPBS="SM"
OK
```

9.3 AT+CPBR Read Phonebook Entries

Description

TA returns phonebook entries in location number range <index1>...<index2> from the current phonebook memory storage selected with +CPBS. If <index2> is left out, only location <index1> is returned. <index1> is returned.

Syntax

Command	Response
AT+CPBR=<index1> [,<index2>]	+CPBR:<index1>,<number>,<type>,<text> [...] +CPBR:<index2>,<number>,<type>,<text>] OK
AT+CPBR=?	+CPBR:(<index>list),[<nlength>], [<tlength>]

	OK

Defined value

Parameter	values	Explain
<index1>,<index2>		Integer type value in the range of location numbers of phonebook memory.
<number>		String type, phone number of format <type>, the maximum length is <nlength>.
<type>	129,145, 161	Type of address octet in integer format 129 --- Unknown type 145 --- International type(contains the character "+") 161 --- National type
<text>		String type field of maximum length <tlength>; often this value is set as name.
<nlength>		Integer type value indicating the maximum length of field <number>.
<tlength>		Integer type value indicating the maximum length of field <text>.

Example

```
AT+CPBW=1,"10000",129,"DX"
OK
AT+CPBR=1
+CPBR: 1,"10000",129,"DX",,"",0,,

OK
```

9.4 AT+CPBW Write Phonebook Entry

Description

Writes phonebook entry in location number <index> in the current phonebook memory storage selected with +CPBS. If <index> is left out, but <number> is given, entry is written to the first free location in the phonebook.

Syntax

Command	Response
AT+CPBW=[<index>][,<n	OK

umber>[,<type>[,<text>]]]	
AT+CPBW=?	+CPBW:(<index>list),[<nlength>],(<type>list),[<tlength>] OK

Defined value

Parameter	values	Explain
<index>		Integer type values in the range of location numbers of phonebook memory
<number>		String type, phone number of format <type>, the maximum length is <nlength>.It must be an non-empty string
<type>		Type of address octet in integer format
<text>		String type field of maximum length <tlength>
<nlength>		Integer type value indicating the maximum length of field <number>.
<tlength>		Integer type value indicating the maximum length of field <text>.

Chapter 10. Network Service Commands

10.1 AT+COPS Operator Selection

Description

Write command forces an attempt to select and register the GSM/UMTS network operator.

Read command returns the current mode and the currently selected operator.

Test command returns a list of quadruplets, each representing an operator present in the network.

Syntax

Command	Response
AT+COPS=[<mode>[,<format>[,<oper>]]]	OK
AT+COPS?	+COPS: <mode>[,<format>,<oper>,<sys>] OK
AT+COPS=?	+COPS:[(<stat>,long<oper>,short<oper>,numeric<oper>)s][,,(<mode>list),(<format>list)] OK

Defined value

Parameter	values	Explain
<mode>	0-4	0 --- Automatic mode; <oper> field is ignored 1 --- Manual operator selection. <oper> field must be present. 2 --- Force deregister 3 --- Set only <format> 4 --- Manual/automatic
<format>	0-2	0 ---Long format alphanumeric <oper> 1 --- Short format alphanumeric <oper> 2 --- Numeric <oper>
<oper>		String type; <format> indicates if the format is alphanumeric or numeric
<sys>	0,2,7,8	0 --- GSM 2 --- 3G

		7 --- LTE 8 --- CDMA/EVDO/CDMA+EVDO
<stat>	0-3	0 --- unknown 1 --- available 2 --- current 3 --- forbidden

Example

```
AT+COPS?
+COPS: 0,0,"CHN-UNICOM",7

OK
```

10.2 AT+CREG Network Registration

Description

Set command controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the MT network registration status,or code +CREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

Syntax

Command	Response
AT+CREG=[<n>]	OK
AT+CREG?	+CREG: <n>,<stat> OK
AT+CREG=?	+CREG: (<n>list) OK

Defined value

Parameter	values	Explain
<n>	0-2	0 --- Disable network registration unsolicited result code 1 --- Enable network registration unsolicited result code +CREG: <stat> 2 --- Enable network registration unsolicited result code +CREG:<stat>[,<lac>,<ci>]
<stat>	0-5	0 --- Not registered, ME is not currently searching a new operator to register to

		1 --- Registered, home network 2 --- Not registered, but ME is currently searching a new operator to register to 3 --- Registration denied 4 --- Unknown 5 --- Registered, roaming
<lac>		String type, two byte location area code in hexadecimal format
<ci>		String type, two byte cell ID in hexadecimal format

Example

```
AT+CREG?
+CREG: 0,1

OK
```

10.3 AT+CGREG GPRS Network Registration Status

Description

Set command controls the presentation of an unsolicited result code +CREG: <stat> when <n>=1 and there is a change in the MT network registration status,or code +CREG: <stat>[,<lac>,<ci>] when <n>=2 and there is a change of the network cell.

Syntax

Command	Response
AT+CGREG=[<n>]	OK
AT+CGREG?	+CGREG: <n>,<stat> OK
AT+CGREG=?	+CGREG: (<n>list) OK

Defined value

Parameter	values	Explain
<n>	0-2	0 --- Disable network registration unsolicited result code 1 --- Enable network registration unsolicited result code +CGREG: <stat> 2 --- Enable network registration unsolicited result code +CGREG:<stat>[,<lac>,<ci>]

<stat>	0-5	0 --- Not registered, ME is not currently searching a new operator to register to 1 --- Registered, home network 2 --- Not registered, but ME is currently searching a new operator to register to 3 --- Registration denied 4 --- Unknown 5 --- Registered, roaming
<lac>		String type, two byte location area code in hexadecimal format
<ci>		String type, two byte cell ID in hexadecimal format

Example

```
AT+CGREG?
+CGREG: 0,1

OK
```

10.4 AT+BSINFO Getting current master base station information

Description

This command is used to getting the current master base station information.

Syntax

Command	Response
AT +BSINFO	+BSINFO:<SID>,<NID>,<BID>,<Channel>,<PN>,<RSSI>,< long >,<lat> OK OR +CME ERROR: <err>

Defined value

Parameter	values	Explain
〈SID〉	0-32767	System ID
〈NID〉	0-65535	NetWork ID
〈BID〉		Base Station ID number
〈Channel〉		Current channel number

〈PN〉		Pilot
〈RSSI〉		signal intensity
〈long〉		latitude
〈lat〉		longitude

10.5 AT+LTEINFO LTE network information

Description

The command is used to obtain LTE network information.

Syntax

Command	Response
AT+LTEINFO	+LTEINFO: <PLMN>,<tac>,<serving_cell_id>,<pci>,<Band>,<earfcn>,<dl_bandwidth>,<ul_bandwidth>,<rsrq>,<rsrp>,<rssi>,<sinr>
Maximum Response Time	
Reference	

Defined values

Parameter	values	Explain
<PLMN>		PLMN
<tac>		String type,location area information
<serving_cell_id>		String type,cell information
<pci>		Integer, physical cell ID
<Band>		Band
<earfcn>		Integer, main frequency
<dl_bandwidth>		Downstream bandwidth
<ul_bandwidth>		Uplink bandwidth
<rsrq>		Receiving quality of reference signal.
<rsrp>		receiving power of reference signal
<rssi>		Intensity indication of reception signal
<sinr>		Signal-to-noise ratio

Example

AT+LTEINFO

+LTEINFO: 46011,0x5B1D,0x05BF8E35,277,BAND3,1825,4,4,-117,-107,-77,12

OK

10.6 AT+SERVERINFO Non LTE network information

Description

The command is used to obtain Non LTE network information.

Syntax

Command	Response
AT+SERVERINFO	+SERVERINFO: <SYS_MODE>,<PLMN>,<tac/lac>,<serving_cell_id>,<pci/psc/bsic>,<freq>,<rsrp>,<sinr>
Maximum Response Time	
Reference	

Defined values

Parameter	values	Explain
<SYS_MODE>		Network mode 3 --- GSM 5 --- WCDMA 9 --- LTE
<PLMN>		PLMN
<tac/lac>		String type, location area information, LTE for <tac>, WCDMA and GSM for <lac>.
<serving_cell_id>		String type, cell information
<pci/psc/bsic>		Integer type. For GSM, it express BSIC, and the range of value is 0~63; For WCDMA, it express PSC , and the range of value is 0~511; For LTE, it express PCI, that is, the physical cell ID
<freq>		frequency point
<rsrp>		receiving power of reference signal
<sinr>		Signal-to-noise ratio,it cannot obtain under GSM network

10.7 AT^SYSINFO Query System Information

Description

This command inquires the current system information. Such as system service status, domain, roaming, system mode, UIM card status, etc..

Syntax

Command	Response

AT^SYSINFO	^SYSINFO:<srv_status>,<srv_domain>,<roam_status>, <sys_mode>,<sim_state>[,<reg_mode>] OK

Defined value

Parameter	values	Explain
<srv_status>	0-4	0 --- No service 1 --- Limited service 2 --- Service available 3 --- Limited regional service 4 --- Power save or deep sleep
<srv_domain>	0-4	0 --- No service 1 --- CS only capable 2 --- PS only capable 3 --- CS and PS capable 4 --- Searching network
Searching network	0-1	0 --- Roaming off 1 --- Roaming on
<sys_mode>	0-10	0 --- No service 1 --- AMPS mode 2 --- CDMA mode 3 --- GSM mode 4 --- EVDO mode or TDS mode 5 --- WCDMA mode 6 --- GPS mode 7 --- GSM and WCDMA mode 8 --- CDMA Hybrid mode 9 --- LTE mode 10 --- GSM, WCDMA, and LTE mode
<sim_state>	0-1	0 --- SIM is not available 1 --- SIM is available
<reg_mode>	9	CDMA and LTE are online at the same time

NOTE:

The parameter <reg_mode> is only applicable to the automatic mode of China telecom

Example

```
AT^SYSINFO
^SYSINFO: 2,3,0,9,1          //LTE mode

OK
AT^SYSINFO
^SYSINFO:2,3,0,2,1,9         //SRLTE mode

OK
```

10.8 AT^SYSCONFIG Set System Parameter

Description

This command allows user to configure system parameter, access network mode, access network order, support roaming or not, service network domain.

Syntax

Command	Response
AT^SYSCONFIG=<mode_pref>,<acq_pref>,<roam_pref>,<domain_pref>	OK
AT^SYSCONFIG?	^SYSCONFIG:<mode_pref>,<acq_pref>,<roam_pref>,<domain_pref> OK

Defined value

Parameter	values	Explain
<mode_pref>	2,13,14,15,16,19,38,39,51,54,60,61,65,99	Integer type, mode preferences: 2 --- Automatic 13 --- GSM only 14 --- WCDMA only 15 --- TD-SCDMA only 16 --- No change 19 --- GSM and WCDMA 38 --- LTE only 39 --- GSM, WCDMA or LTE

		51 --- GSM and LTE 54 --- WCDMA and LTE 60 --- TD-SCDMA or GSM 61 --- TD-SCDMA, GSM or LTE 65 --- TD-SCDMA and LTE 99 --- Unknown
<acq_pref>	0-4	Integer type, indicate access network order 0 --- Automatic 1 --- GSM, WCDM 2 --- WDMA, GSM 3 --- No change 4 --- Unknown
<roam_pref>	0-3	0 --- Forbid roam 1 --- Allow roam 2 --- No change 3 --- Unknown
<domain_pref>	0-4	0 --- CS only 1 --- PS only 2 --- CS and PS 3 --- Any 4 --- No Change 5 --- Unknown

Example

```
AT^SYSCONFIG?
^SYSCONFIG: 2,2,0,2

OK
```

10.9AT^MODECONFIG Network Mode Selection

Description

The set command select system mode for MT ,don't need SIM card, and immediately available.

Read command returns the current system mode.

Syntax

Command	Response
AT^MODECONFIG=<mode>	OK
AT^MODECONFIG?	^MODECONFIG:<mode> OK

Defined value

Parameter	values	Explain
<mode>	2,9,10,13,14,15,19,22,38,39,40,41,46,51,54,60,61,65,70	2 --- Automatic 9 --- CDMA 10 --- HDR only 13 --- GSM only 14 --- WCDMA only 15 --- TD-SCDMA only 19 --- GSM and WCDMA 22 --- 1x+EVDO 38 --- LTE only 39 --- GSM, WCDMA or LTE 40 --- HDR+LTE 41 --- CDMA+HDR+LTE 46 --- CDMA+LTE 51 --- GSM and LTE 54 --- WCDMA and LTE 58 --- GSM and CDMA 60 --- TD-SCDMA or GSM 61 --- TD-SCDMA, GSM or LTE 65 --- TD-SCDMA and LTE 70 --- WCDMA+TDSCDMA

Example

```
AT^MODECONFIG=2
OK
AT^MODECONFIG?
^MODEOCNFIG: 2

OK
```

10.10 AT+CEMODE EPS Registry Settings

Description

The set command used to set the MT corresponding to the EPS registration, the command affect after reboot.

Read command returns the current EPS registration mode.

Syntax

Command	Response
AT+CEMODE?	+CEMODE: <mode> OK
AT+CEMODE=?	+CEMODE: (<mode>list) OK

Defined value

Parameter	values	Explain
<mode>	0-3	0 --- EPS attach only, UE is data centric 1 --- Combined attach, UE is voice centric 2 --- Combined attach, UE is data centric 3 --- EPS attach only, UE is voice centric

Example

```
AT+CEMODE?
+CEMODE: 2

OK
AT+CEMODE=?
+CEMODE: (0-3)

OK
```

10.11 AT+CPOL Preferred Operator List

Description

The command is used to edit the SIM preferred list of networks.

Execute command writes an entry. If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed.

Syntax

Command	Response
AT+CPOL=[<index>][,<format>[,<oper>]]	OK
AT+CPOL?	+CPOL:<index>,<format>,<oper> [...] OK
AT+CPOL=?	+CPOL: (<index>list),(<format>list) OK

Defined value

Parameter	values	Explain
<index>	1-8	Integer type, the order number of operator in the SIM preferred operator list.
<format>	0-2	0 --- Long format alphanumeric <oper> 1 --- Short format alphanumeric <oper> 2 --- Numeric <oper>
<oper>		String type; <format> indicates if the format is alphanumeric or numeric.

Example

```
AT+CPOL?
+CPOL: 1,2,"46001",0,0,0,1
+CPOL: 2,2,"46009",0,0,0,1
+CPOL: 3,2,"46001",0,0,1,0
+CPOL: 4,2,"46009",0,0,1,0


OK
```

10.12 AT+QNWINFO Query Network Information

Description

The command indicates the selected <act> of Access technology , the operator <oper> and the band <band>.

Syntax

Command	Response
AT+QNWINFO	+QNWINFO:<act>,<oper>,<band>,<channel> OK
AT+QNWINFO=?	OK

Defined value

Parameter	values	Explain
<act>	NO SERVICE	String type; Access technology selected
	GSM	
	GPRS	
	EDGE	
	CDMA	
	UMTS	
	HSDPA	
	HSUPA	
	HSPA	
	HSPA+	
	EVDO	
	TDSCDMA	
	FDD LTE	
	TDD LTE	
<oper>		String type; operator in numeric format
<band>	CDMA_BC0	String type; band selected
	GSM_85	
	GSM_EGSM_900	
	GSM_PGSM_900	
	GSM_RGSM_900	
	GSM_DCS_1800	

	GSM_PCS_1900	
	WCDMA_I_IMT_2000	
	WCDMA_III_1700	
	LTE_EUTRAN_BAND1	
	LTE_EUTRAN_BAND3	
	LTE_EUTRAN_BAND5	
	LTE_EUTRAN_BAND38	
	LTE_EUTRAN_BAND39	
	LTE_EUTRAN_BAND40	
	LTE_EUTRAN_BAND41	
	TDS_BANDA	
	TDS_BANDF	
<channel>		Integer type; channel id

Example

```
AT+QNWINFO            //China Mobile LTE
+QNWINFO: "TDD LTE",46000,"LTE_EUTRAN_BAND40",38950

OK
AT+QNWINFO            //SRLTE
+QNWINFO: "CDMA",46003,"CDMA_BC0",201
          "FDD LTE",46011,"LTE_EUTRAN_BAND3",1825

OK
```

10.13 AT+PSRAT Current network information

Description

This command is used to query the current registered network information.

Syntax

Command	Response
AT+PSRAT	+ PSRAT: <psrat> OK Or

	+CME ERROR: <err>

Defined value

Parameter	values	Explain
<psrat>	NO SERVICE	
	GSM	
	GPRS	
	EDGE	
	CDMA	
	UMTS	
	HSDPA	
	HSUPA	
	HSPA	
	HSPA+	
	EVDO	
	TDSCDMA	
	FDD LTE	
	TDD LTE	

Example

```
AT+PSRAT
+PSRAT: "TDD LTE"

OK
AT+PSRAT                    //SRLTE
+PSRAT: "CDMA"
        "FDD LTE"

OK
```

10.14 AT+BANDCFG BAND selection

Description

The command is used to select the band.

Set command is used to lock the LTE, GSM, WCDMA, and TDSCDMA bands, and it take effect after reboot.

The query command returns all the current selected bands.

Syntax

Command	Response
AT+BANDCFG=<hi_band>,<lo_band>,<mode>	OK
AT+BANDCFG?	+BANDCFGG:<mode>,<hi_band>,<lo_band> [+BANDCFGG:<mode>,<hi_band>,<lo_band>] ..... OK
Maximum Response Time	
Reference	

Defined values

Parameter	values	Explain
<hi_band>	0-FFFFFFFF	0-FFFFFFFF ,32 bit,BAND33 --- BAND64,the lowest position corresponds to BAND33.
<lo_band>	0-FFFFFFFF	0-FFFFFFFF ,32 bit,BAND1 --- BAND32,the lowest position corresponds to BAND1.
<mode>	0-3	0 --- Restore the default value.Because Supported band is not fixed on the 9x07 platform，so it does not support the restore default function。 If this function is needed，before using the lock command, the band configuration must read first. 1 --- GSM,WCDMA 2 --- TDSCDMA 3 --- LTE

Example

```
AT+BANDCFG?
+BANDCFG:3,1E0,95
+BANDCFG:2,0,21
+BANDCFG:1,20000,5580383

OK
AT+BANDCFG=20,0,3          //Lock band38
OK
AT+CFUN=1,1
OK
```

```
AT+QNWINFO
+QNWINFO: "TDD LTE",46000,"LTE_EUTRAN_BAND38",37900

OK
```

10.15 AT+CELLINFO Query neighborhood cell information

Description

The first 10 arguments are information about the current service cell, followed by the nearby cell information.

This command can only query information about the LTE cell at the moment.

Syntax

Command	Response
AT+CELLINFO	+CELLINFO:<earfcn>,<pci>,<rssnr>,<mcc>,<mnc> ,<global_ci>,<tac>,<band>,<dl_bw>,<ul_bw>,[(<earfcn>,<pci>,<rsrp>,<rsrq>,<rssi>)][...] OK

Defined value

Parameter	values	Explain
<earfcn>		Earfcn of serving cell
<pci>		Physical cell ID
<rssnr>		Average RSSNR of serving cell
<mcc>		Mobile country code type
<mnc>		Mobile network code type
<global_ci>		Global cell ID
<tac>		Track area code
<band>		Band of serving cell
<dl_bw>		Bandwidth config on the downlink
<ul_bw>		Bandwidth config on the uplink
<rsrp>		In dBm x10 with range -44 ... -140
<rsrq>		In dB x10 with range -20.0 ... -3.0
<rssi>		In dBm x10 with range 120.0 ... 0

Example

AT+CELLINFO

+CELLINFO:1650,476,17,460,01,AED515,183C,3,5,5,(1650,476,-874,-36,-630),(1650,396,-1018,-124,-805),(1650,370,-1041,-146,-805),(1650,369,-1195,-200,-805),(1650,230,-1084,-187,-807),(1650,279,-1200,-200,-810),(1650,120,-1231,-200,-841)

OK

10.16 AT+CELLLOCK Locking base station

Description

This command is used to query information about locking the base station. Currently only support locked 4G base stations, 3G and 2G are not supported

Syntax

Command	Response
AT+CELLLOCK?	+CELLLOCK:<earfcn>,<pci> OK
AT+CELLLOCK=?	+CELLLOCK:(<earfcn>list),(<pci>list) OK
AT+CELLLOCK=<earfcn>,<pci>	OK

Defined value

Parameter	values	Explain
<earfcn>	0--41589	Earfcn of serving cell
<pci>	0--503	Physical cell ID

10.17 AT+CPING Ping destination address

Description

This command is used to ping destination address.

Syntax

Command	Response
AT+CPING=?	+CPING:IP address, (list of supported <dest_addr_type>s), (1-100), (4-188), (1000-10000),(10000-100000), (16-255) OK

AT+CPING=<dest_addr>,<dest_addr_type>[,<num_pings>[,<data_packet_size>[,<interval_time>[,<wait_time>[,<TTL>]]]]]	OK +CPING:<result_type>,<resolved_ip_addr>,<data_packet_size>,<rtt>,<TTL> +CPING:<result_type>,<num_pkts_sent>,<num_pkts_recvd>,<num_pkts_lost>,<min_rtt>,<max_rtt>,<avg_rtt>

Defined value

Parameter	values	Explain
<dest_addr>		The destination is to be pinged; it can be an IP address or a domain name.
<dest_addr_type>	1-2	Integer type. Address family type of the destination address 1---IPv4 2---IPv6(reserved)
<num_pings>	1-100	Integer type. The num_pings specifies the number of times the ping request (1-100) is to be sent.The default value is 4.
<data_packet_size>	4-188	Integer type. The default value is 64 bytes.
<interval_time>	1000-10000	Interval between each ping. The default value is 2000ms
<wait_time>	10000-100000	Wait time for ping response. An ping response received after the timeout shall not be processed. The default value is 10000ms.
<TTL>	16-255	Integer type. TTL(Time-To-Live) value for the IP packet over which the ping(ICMP ECHO Request message) is sent (16-255), the default value is 255.
<result_type>	1-3	1 – Ping success 2 – Ping time out 3 – Ping result
<num_pkts_sent>		Indicates the number of ping requests that were sent out.
<num_pkts_recvd>		Indicates the number of ping responses that

		were received.
<num_pkts_lost>		Indicates the number of ping responses that were received.
<min_rtt>		Indicates the minimum Round Trip Time(RTT).
<max_rtt>		Indicates the maximum RTT.
<avg_rtt>		Indicates the average RTT.
<resolved_ip_addr>		Indicates the resolved ip address.
<rtt>		Round Trip Time.

Example

```
AT+CPING=?
+CPING: IP address,(1,2),(1-100),(4-188),(1000-10000),(10000-100000),(16-255)

OK
AT+CPING="www.baidu.com",1,4,64,1000,10000,255
OK

+CPING: 1,111.13.100.92,64,79,255

+CPING: 1,111.13.100.92,64,120,255

+CPING: 1,111.13.100.92,64,61,255

+CPING: 1,111.13.100.92,64,76,255

+CPING: 3,4,4,0,61,120,83
```

10.18 AT+YGFEATURECFG=6,0 Srlte switch

Description

The command is used to enable or disable SRLTE.

Syntax

Command	Response

AT+YGFEATURECFG=6,<mode>	OK

Defined values

Parameter	values	Explain
<mode>	0,1	0 --- disable SRLTE 1 --- enable SRLTE The default value is 1.

Example

```
AT^SYSINFO
^SYSINFO: 2,3,0,2,1,9            //SRLTE

OK
AT+YGFEATURECFG=6,0      //disable SRLTE
OK
AT+CFUN=1,1       //reboot
OK

^MODE: 9

AT^SYSINFO
^SYSINFO: 2,2,0,9,1      //LTE only

OK
```

Chapter 11. CDMA Dedicated AT Command

11.1 AT+QCIMI Request International Mobile Subscriber Identity

Description

Execution command requests the International Mobile Subscriber Identity (IMSI) which is intended to permit the TE to identify the individual SIM card or active application in the UICC (GSM or USIM) that is attached to MT.

Syntax

Command	Response
AT+QCIMI=?	OK
AT+QCIMI	<IMSI> OK

Defined value

Parameter	values	Explain
<IMSI>		International Mobile Subscriber Identity (string, without double quotes).

Example

```
AT+QCIMI
460037461613931

OK
```

11.2 AT^MEID Query MEID

Description

The command is used to query the module's MEID.

Syntax

Command	Response
AT^MEID=<MEID>	OK
AT^MEID=?	OK
AT^MEID	<MEID> OK

Defined value

Parameter	values	Explain
<MEID>		Mobile Equipment Identifier

Example

```
AT^MEID
0x0357941053826453

OK
AT^MEID=12345678901234E
OK
```

11.3 AT+CCSQ Signal Quality Report

Description

Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the ME. Test command returns values supported by the TA as compound values.

Syntax

Command	Response
AT+CCSQ	+CCSQ:<rssi>,<ber> OK
AT+CCSQ=?	+CCSQ:(<rssi>list),(<ber>list) OK

Defined value

Parameter	values	Explain
<rssi> CDMA	0	- 113 dBm or less
	1	- 111 dBm
	2-30	- 109... - 53 dBm
	31	-51 dBm
	99	Not known or not detectable
<ber>	99	not known or not detectable

Example

```
AT+CCSQ
```

+CCSQ: 31, 99

OK

11.4 AT^HDRCSQ Signal Quality Under HDR Mode

Description

This command is used to query the signal strength (RSSI) in the received HDR mode.

Syntax

Command	Response
AT^HDRCSQ	^HDRCSQ: < hdr_rssi> OK
AT^HDRCSQ=?	^HDRCSQ: (< hdr_rssi>list) OK

Defined value

Parameter	values	Explain
< hdr_rssi>	0,20,40,60, 80, 99	0 --- rssi >=125 20 --- rssi >=105 40 --- 90 <= rssi< 105 60 --- 75 <= rssi< 90 80 --- 60 <= rssi< 75 99 --- rssi <60

Example

AT^HDRCSQ

^HDRCSQ: 80

OK

Chapter 12. CDMA Dedicated Call Related AT Command

12.1 AT+CDV Dial Command

Description

The dial command can be used to set up outgoing voice and data calls.

Syntax

Command	Response
AT+CDV[digits][I/i][;]	OK

Defined values

Parameter	values	Explain
[digits]	0-9, *, #, +	Ready (ME allows commands from TA/TE)
[I/i]	I,i	I --- Activates CLIR i --- Deactivates CLIR
[;]		The termination character ";" is mandatory to set up voice calls.

Example

```
AT+CDV10086;
OK

^ORIG:2,0

^CONN:2,0

^LINKED:2,0
```

12.2 AT^CLIP Calling Line Identification Presentation

Description

The command refers to the GSM/UMTS supplementary service CLIP (Calling Line Identification Presentation) that enables a called subscriber to get the calling line identity (CLI) of the calling party when receiving a mobile terminated call.

Write command enables or disables the presentation of the CLI at the TE. It has no effect on the execution of the supplementary service CLIP in the network.

When the presentation of the CLI at the TE is enabled (and calling subscriber allows), +CLIP: <number>,<type> ,,[,[<alpha>][,<CLI validity>]] response is returned after every RING (or +CRING: <type>; refer sub clause "Cellular result codes +CRC") result code sent from TA to TE. It is manufacturer specific if this response is used when normal voice call is answered.

Syntax

Command	Response
AT^CLIP=?	^CLIP：(<n>list) OK
AT^CLIP?	^CLIP：<n>,<m> OK
AT^CLIP=<n>	OK
	+CLIP:<number>,<type> ,,[,[<alpha>][,<CLI validity>]]

Defined value

Parameter	values	Explain
<n>	0	Disable
	1	Enable
<m>	0	CLIP not provisioned
	1	CLIP provisioned
	2	Unknown (e.g. no network, etc.)
<number>		String type phone number of calling address in format specified by <type>.
<type>	128	Restricted number type includes unknown type and format
	145	International number type
	161	National number.The network support for this type is optional
	177	Network specific number,ISDN format
	129	Otherwise

Example

```
AT^CLIP=1
OK
```

12.3 AT+CHV Hang Up Call

Description

The command is used to cancel voice calls.

Syntax

Command	Response
AT+CHV	OK

Chapter 13. CDMA dedicated Packet Domain Commands

13.1 ATD#777 Initiate Data Connection

Description

This command will enable the MT to initiate a series of necessary operations to establish a communication with PDN.

Syntax

Command	Response
ATD#777[*[<called_address>][*[<L2P>][*[<cid>]]]]#	CONNECT 150000000

Defined value

Parameter	values	Explain
<called_address>		Ignore
<L2P>	“PPP”	
<cid>	1-24,100-179	A numeric parameter which specifies a particular PDP context definition

Example

ATD#777

CONNECT 3100000

Chapter 14. TCP/IP Related Commands

14.1 AT+CDNSGIP Query the IP address of given domain name

Description

The command is used to query the IP address of given domain name.

Syntax

Command	Response
AT+CDNSGIP="<domain name>"	+CDNSGIP: 1,"<domain name>","<IP address>" OK
AT+CDNSGIP=?	OK
Maximum Response Time	
Reference	

Defined values

Parameter	values	Explain
<domain name>		A string parameter (string should be included in quotation marks) which indicates the domain name.
<IP address>		A string parameter (string should be included in quotation marks) which indicates the IP address corresponding to the domain name.

Example

```
AT+CDNSGIP="www.baidu.com"
+CDNSGIP: 1,"www.baidu.com","111.206.223.206"

OK
AT+CDNSGIP="test.51modem.com"
+CDNSGIP: 1,"test.51modem.com","203.156.205.55"

OK
```

14.2 AT+IPCONFIG Configure parameters of socket

Description

This command is used to configure parameters of socket.

Syntax

Command	Response
AT+IPCONFIG?	+IPCONFIG: <NmRetry>,<DelayTm>,<errMode>,<HeaderType>,<TimeoutVal> OK
AT+IPCONFIG=<NmRetry>,<DelayTm>,<errMode>,<HeaderType>,<TimeoutVal>	OK
AT+IPCONFIG=?	+IPCONFIG: (list of supported <NmRetry>s),(list of supported<DelayTm>s), (list of supported<errMode>s),(list of supported <HeaderType>s), (list of supported <TimeoutVal>s) OK

Defined value

Parameter	values	Explain
<NmRetry>	0-10	A numeric parameter which is number of retransmission to be made for an IP packet.The default value is 10
<DelayTm>	0-1000	A numeric parameter which is number of milliseconds to delay to output data of Receiving.The default value is 0
<errMode>	0-1	A numeric parameter which sets mode of reporting error result code. 0 --- error result code with numeric values 1 --- error result code with string values
<HeaderType>	0-1	A numeric parameter that select which data header of receiving data, it only takes effect in multi-client mode. 0 --- add data header, the format is "+IPDATA: <data length>" 1 --- add data header, the format is "+RECV: <link num>,<data length>
<TimeoutVal>	500-120000	A numeric parameter that set the minimum retransmission timeout value for TCP connection. The unit is millisecond. The range is 500-120000.

Example

```
AT+IPCONFIG=?
+IPCONFIG: (0-10),(0-1000),(0-1),(0-1),(500-120000)

OK
AT+IPCONFIG=10,0,1,1,500
OK
```

14.3 AT+IPSENDMODE Select sending mode

Description

This command is used to sending wait peer TCP ACK mode or sending without waiting peer TCP ACK mode. The default mode is sending without waiting peer TCP ACK mode.

Syntax

Command	Response
AT+IPSENDMODE=<mode>	OK
AT+IPSENDMODE?	+IPSENDMODE: <mode> OK
AT+IPSENDMODE=?	+IPSENDMODE: (list of supported <mode>s) OK

Defined value

Parameter	values	Explain
<mode>	0-1	0 --- Sending without waiting peer TCP ACK mode 1 --- Sending wait peer TCP ACK mode

Example

```
AT+IPSENDMODE?
+IPSENDMODE: 0

OK
AT+IPSENDMODE=?
+IPSENDMODE: (0,1)

OK
AT+IPSENDMODE=1
OK
```

14.4 AT+IPTIMEOUT Set TCP/IP timeout value

Description

This command is used to set timeout value for AT+IPNETOPEN / AT+IPOPEN / AT+IPSEND.Unit is milliseconds.

Syntax

Command	Response

AT+IPTIMEOUT=[<ipnetopen_timeout>],[<ipopen_timeout>],[<ipsend_timeout>]	OK
AT+IPTIMEOUT?	+IPTIMEOUT:<ipnetopen_timeout>,<ipopen_timeout>,<ipsend_timeout> OK
AT+IPTIMEOUT=?	+IPTIMEOUT:(list of supported <ipnetopen_timeout>s),(list of supported <ipopen_timeout>s),(list of supported <ipsend_timeout>s) OK

Defined value

Parameter	values	Explain
<ipnetopen_timeout>	3000-120000	Timeout value for AT+IPNETOPEN, default value is 120000 ms.
<ipopen_timeout>	3000-120000	Timeout value for AT+IPOPEN, default value is 120000 ms.
<ipsend_timeout>	3000-120000	Timeout value for AT+IPSEND, default value is 120000 ms.

Example

```
AT+IPTIMEOUT?
+IPTIMEOUT:120000,120000,120000

OK
AT+IPTIMEOUT=?
+IPTIMEOUT:(3000-120000),(3000-120000),(3000-120000)

OK
AT+IPTIMEOUT=3000,3000,3000
OK
AT+IPTIMEOUT=4000            //Set timeout value for AT+IPNETOPEN only
OK
AT+IPTIMEOUT?
+IPTIMEOUT:4000,3000,3000

OK
AT+IPTIMEOUT=,4000           //Set timeout value for AT+IPOPEN only
OK
```

```
AT+IPTIMEOUT?
+IPTIMEOUT:4000,4000,3000

OK
AT+IPTIMEOUT=,,5000          //Set timeout value for AT+IPSEND only
OK
AT+IPTIMEOUT?
+IPTIMEOUT:4000,4000,5000

OK
```

14.5 AT+IPHEAD Add an IP head when receiving data

Description

This command is used to add an IP head when receiving data.

Syntax

Command	Response
AT+IPHEAD=<mode>	OK
AT+IPHEAD	Set default value(<mode>=1) OK
AT+IPHEAD?	+IPHEAD: <mode> OK
AT+IPHEAD=?	+IPHEAD: (list of supported <mode>s) OK

Defined value

Parameter	values	Explain
<mode>	0-1	0 --- Not add IP header 1 --- Add IP header, the format is “+IPD(data length)”

Example

```
AT+IPHEAD?
+IPHEAD: 1

OK
AT+IPHEAD=?
+IPHEAD: (0-1)
```

```
OK
AT+IPHEAD=0
OK
AT+IPHEAD?
+IPHEAD: 0

OK
AT+IPHEAD
OK
AT+IPHEAD?
+IPHEAD: 1

OK
```

14.6 AT+IPSRIPP Show Remote IP address and Port

Description

This command is used to set whether display IP address and port of sender when receiving data.

Syntax

Command	Response
AT+IPSRIPP=<mode>	OK
AT+IPSRIPP	Set default value(<mode>=1) OK
AT+IPSRIPP?	+IPSRIPP: <mode> OK
AT+IPSRIPP=?	+IPSRIPP: (list of supported <mode>s) OK

Defined value

Parameter	values	Explain
<mode>	0-1	A numeric parameter which indicates whether show the prompt of where the data received or not before received data. 0 --- Do not show the prompt 1 --- Show the prompt,the format is as follows: ”RECV FROM:<ip address>:<port>”

Example

```
AT+IPSRIPP?
+IPSRIPP: 1

OK
AT+IPSRIPP=?
+IPSRIPP: (0-1)

OK
AT+IPSRIPP=0
OK
AT+IPSRIPP?
+IPSRIPP: 0

OK
AT+IPSRIPP
OK
AT+IPSRIPP?
+IPSRIPP: 1

OK
```

14.7 AT+IPTSPMODE Select TCP/IP application mode

Description

This command is used to select transparent mode (data mode) or non-transparent mode (command mode).The default mode is non-transparent mode

Syntax

Command	Response
AT+IPTSPMODE=<mode>	OK
AT+IPTSPMODE	Set default value(<mode>=0 OK
AT+IPTSPMODE?	+IPTSPMODE: <mode> OK
AT+IPTSPMODE=?	+IPTSPMODE: (list of supported <mode>s) OK

Defined value

Parameter	values	Explain
<mode>	0-1	0 --- Non transparent mode 1 --- Transparent mode

Example

```
AT+IPTSPMODE?
+IPTSPMODE: 0

OK
AT+IPTSPMODE=?
+IPTSPMODE: (0-1)

OK
AT+IPTSPMODE=1
OK
AT+IPTSPMODE?
+IPTSPMODE: 1

OK
AT+IPTSPMODE
OK
AT+IPTSPMODE?
+IPTSPMODE: 0

OK
```

14.8 +++ Switch from Transparent mode to command mode

Description

The +++ character sequence causes the TA to cancel the data flow over the AT interface and switch to Command Mode. This allows to enter AT commands while maintaining the data connection to the remote device.

Note: It is not allowed to add carriage return after the command.

Syntax

Command	Response

+++	OK
Maximum Response Time	
Reference V.25ter	

Example

```
AT+IPTSPMODE=1
OK
AT+IPNETOPEN
OK

+IPNETOPEN: 0
AT+IPOPEN=0,"TCP","203.156.205.55 ",2525
CONNECT 115200
                //Here to send the command +++, this command is not displayed.
OK              //The return value of the command +++
```

14.9 ATO Switch from command mode to Transparent mode

Description

ATO is the corresponding command to the +++ escape sequence. When there is a data transmission connected and the TA is in Command Mode, ATO causes the TA to resume the data and takes back to Transparent Mode.

Syntax

Command	Response
ATO	CONNECT 115200
Maximum Response Time	
Reference V.25ter	

Example

```
AT+IPTSPMODE=1
OK
AT+IPNETOPEN
OK
```

```
+IPNETOPEN: 0
AT+IPOPEN=0,"TCP","203.156.205.55 ",2525
CONNECT 115200
            //The command +++ to switch from Transparent mode to command mode
OK
ATO         //The command ATO to switch from command mode to Transparent mode
CONNECT 115200
```

14.10 AT+IPNETOPEN Open socket network

Description

This command opens packet network.

Syntax

Command	Response
AT+IPNETOPEN	OK +IPNETOPEN: <err>
	+IP ERROR: <err_info> ERROR
AT+IPNETOPEN?	+IPNETOPEN: <net_state> OK

Defined value

Parameter	values	Explain
<err>	0	The result of operation, 0 is success, other value is failure
<net_state>	0-1	A numeric parameter that indicates the state of PDP context activation 0 --- Network close (deactivated) 1 --- Network open(activated)
<err_info>		A string parameter that displays the cause of occurring error

Example

```
AT+IPNETOPEN
OK


+IPNETOPEN: 0
AT+IPNETOPEN
+IP ERROR: Network is already opened
```

```
ERROR
AT+IPNETOPEN?
+IPNETOPEN: 1

OK
```

14.11 AT+IPNETCLOSE Close socket network

Description

This command closes network. Before calling this command, all opened sockets must be closed first.

Syntax

Command	Response
AT+IPNETCLOSE	OK +IPNETCLOSE: <err>
	+IPNETCLOSE: <err> ERROR
AT+IPNETCLOSE=?	OK

Defined value

Parameter	values	Explain
<err>		The result of operation, 0 is success, other value is failure

Example

```
AT+IPNETCLOSE
OK

+IPNETCLOSE: 0
AT+IPNETCLOSE
+IPNETCLOSE: 2

ERROR
AT+IPNETCLOSE=?
OK
```

14.12 AT+IPADDR obtain socket PDP address

Description

This command inquires the IP address of current active socket PDP.

Syntax

Command	Response
AT+IPADDR	+IPADDR: < ip_address> OK
	+IP ERROR: <err_info> ERROR
AT+IPADDR=?	OK

Defined value

Parameter	values	Explain
< ip_address>		A string parameter that identifies the IP address of current active socket PDP.
<err_info>		A string parameter that displays the cause of occurring error.

Example

```
AT+IPADDR
+IP ERROR: Network not opened

ERROR
AT+IPNETOPEN
OK

+IPNETOPEN: 0
AT+IPADDR
+IPADDR: 10.53.8.159

OK
AT+IPADDR=?
OK
```

14.13 AT+IPFILTERCFG IP filter configuration

Description

This command is used to enable the IP filter feature in the multi-PDP mode. The IP filter is a feature which to support embedded TCP/IP protocol applications while the mobile device is in a PPP call.

Syntax

Command	Response
AT+IPFILTERCFG=<enabled_flag>	OK
AT+CIPFILTERSET=<link_num>,<enabled_flag>	OK
AT+CIPFILTERSET?	+IPFILTERCFG: 1 +IPFILTERCFG: 0,<enabled_flag> +IPFILTERCFG: 1,<enabled_flag> +IPFILTERCFG: 2,<enabled_flag> +IPFILTERCFG: 3,<enabled_flag> +IPFILTERCFG: 4,<enabled_flag> +IPFILTERCFG: 5,<enabled_flag> +IPFILTERCFG: 6,<enabled_flag> +IPFILTERCFG: 7,<enabled_flag> +IPFILTERCFG: 8,<enabled_flag> +IPFILTERCFG: 9,<enabled_flag> OK
AT+CIPFILTERSET=?	+IPFILTERCFG: (list of supported <link_num>s) , (list of supported <enabled_flag>s) OK

Defined value

Parameter	values	Explain
<enabled_flag>	0-1	A numeric flag parameter that show the <link_num> connection whether or not to use the IP filter feature. The default value is 0. 0 --- Disable the IP filter feature 1 --- Enable the IP filter feature.
<link_num>	0-9	A numeric parameter that identifies a connection,this parameter is used for multi clients.

NOTE:

1. The execution command must be executed before opening network.
2. If you want to use the PPP dial and socket data at the same time, set the IP filter flag enabled. In this usage, the PPP dial operation must be executed before the socket command.

Example

```
AT+IPFILTERCFG=1
OK
AT+IPFILTERCFG=1,1
OK
AT+IPFILTERCFG?
+IPFILTERCFG: 1
+IPFILTERCFG: 0,0
+IPFILTERCFG: 1,1
+IPFILTERCFG: 2,0
+IPFILTERCFG: 3,0
+IPFILTERCFG: 4,0
+IPFILTERCFG: 5,0
+IPFILTERCFG: 6,0
+IPFILTERCFG: 7,0
+IPFILTERCFG: 8,0
+IPFILTERCFG: 9,0

OK
```

14.14 AT+IPLISTENSTART Startup TCP server listen

Description

This command starts up TCP server, and the server can receive the request of TCP client. After the command executes successfully, an unsolicited result code is returned when a client tries to connect with module and module accepts request. The unsolicited result code is +CLIENT: <link_num >,<server_index>,<client_IP>:<client_port>.

Syntax

Command	Response
AT+IPLISTENSTART=<server_index>,<local_port>	OK
	+IPERROR: <err> ERROR
AT+IPLISTENSTART?	+IPLISTENSTART: <server_index>,<local_port> OK

AT+IPLISTENSTART=?	+IPLISTENSTART: (list of supported <server_index >) , (list of supported <local_port>) OK

Defined value

Parameter	values	Explain
<local_port>	0-65535	Local port
<server_index>	0-3	The TCP server index
link_num	0-9	A numeric parameter that identifies a connection,this parameter is used for multi clients.
<client_IP>		Client IP address
<client_port>		Client port
<err>		The result of operation, 0 is success, other value is failure

Example

```
AT+IPNETOPEN
OK

+IPNETOPEN: 0
AT+IPADDR
+IPADDR: 114.87.32.1

OK
AT+IPLISTENSTART=1,1234
OK

+CLIENT: 0,1,114.80.207.49:4038              //client connected ip 114.87.32.1
```

14.15 AT+IPLISTENSTOP Stop TCP server listen

Description

This command stops TCP server. Before stopping a TCP server, all sockets with <server_index>equals to the closing TCP server index must be closed first.

Syntax

Command	Response
AT+IPLISTENSTOP=<server_index>	+LISTENSTOP: <server_index>,<err> OK

	+LISTENSTOP: <server_index>,<err> ERROR
AT+IPLISTENSTOP=?	OK

Defined value

Parameter	values	Explain
<server_index>	0-3	The TCP server index
<err>		The result of operation, 0 is success, other value is failure

Example

```
AT+IPLISTENSTOP=1
+LISTENSTOP: 1,9                    //socket opened,operation failure

ERROR
AT+IPCLOSE=0                        //close socket
OK

+IPCLOSE: 0,0
AT+IPLISTENSTOP=1
+LISTENSTOP: 1,0                    //stop TCP server succeed

OK
```

14.16 AT+IPOPEN Establish socket connection in multi-socket mode

Description

This command is used to establish a connection with TCP server and UDP server, The sum of all of connections is 10。

Syntax

Command	Response
AT+IPOPEN=<link_num>,”TCP”,”<serverIP>”,<serverPort>[,<localPort>]	OK +IPOPEN: <link_num>,<err>
	+IPOPEN: <link_num>,<err> ERROR
AT+IPOPEN=<link_num>,"UDP",,,<localPort>	+IPOPEN: <link_num>,<err> OK
	+IPOPEN: <link_num>,<err>

	ERROR
AT+IPOPEN?	+IPOPEN: <link_num>,"<type>","<serverIP>",<serverPort>,<index> +IPOPEN: <link_num>,"<type>","<serverIP>",<serverPort>,<index> ..... OK
AT+IPOPEN=?	+IPOPEN: (list of supported <link_num>), (list of supported <type>) OK

Defined value

Parameter	values	Explain
<link_num>	0-9	A numeric parameter that identifies a connection,this parameter is used for multi clients.
<type>	TCP/UDP	a string parameter that identifies the type of transmission protocol. TCP --- Transfer Control Protocol UDP --- User Datagram Protocol If AT+CIPMODE=1 is set, the <type> is restricted to be only "TCP".
<serverIP>		A string parameter that identifies the IP address of server.The IP address format consists of 4 octets,separated by decimal point : "AAA.BBB.CCC.DDD".
<serverPort>	0-65535	a numeric parameter that identifies the port of TCP server
<localPort>	0-65535	a numeric parameter that identifies the port of local socket
<index>	-1、 0-3	a numeric parameter that identifies the server index that the client linked when as a TCP server. -1---Not as a TCP server 0-3---TCP server index

Example

```
AT+IPOPEN=1,"TCP","114.80.207.49",1234,1002
OK

+IPOPEN: 1,0
AT+IPOPEN=2,"TCP","114.80.207.49",1234,1003
OK
```

```
+IPOPEN: 2,0
.....

AT+IPOPEN=9,"TCP","114.80.207.49",1234,1010
OK

+IPOPEN: 9,0
AT+IPOPEN?
+IPOPEN: 0,"TCP","114.80.207.49",1234,-1
+IPOPEN: 1,"TCP","114.80.207.49",1234,-1
+IPOPEN: 2,"TCP","114.80.207.49",1234,-1
+IPOPEN: 3,"TCP","114.80.207.49",1234,-1
+IPOPEN: 4,"TCP","114.80.207.49",1234,-1
+IPOPEN: 5,"TCP","114.80.207.49",1234,-1
+IPOPEN: 6,"TCP","114.80.207.49",1234,-1
+IPOPEN: 7,"TCP","114.80.207.49",1234,-1
+IPOPEN: 8,"TCP","114.80.207.49",1234,-1
+IPOPEN: 9,"TCP","114.80.207.49",1234,-1

OK
AT+IPOPEN=?
+IPOPEN: (0-9),("TCP","UDP")

OK
```

14.17 AT+IPSEND Send data through TCP or UDP connection

Description

This command is used to send data to remote side. The <length> field can be empty, when it is empty, Each <Ctrl+Z> character present in the data should be coded as <ETX><Ctrl+Z>. Each <ESC> character present in the data should be coded as <ETX><ESC>. Each <ETX> character will be coded as <ETX><ETX>. Single <Ctrl+Z> means end of the input data. Single <ESC> is used to cancel the sending.
<ETX> is 0x03, and <Ctrl+Z> is 0x1A, <ESC> is 0x1B

Syntax

Command	Response
TCP AT+IPSEND=<link_num>,<length>	OK +IPSEND: <link_num>,<reqSendLength>,<cnfSendLength>
UDP AT+IPSEND=<link_num>,<length>, "<serverIP>",<serverPort>	OK +IPSEND: <link_num>,<reqSendLength>,<cnfSendLength>
AT+IPSEND?	OK
AT+IPSEND=?	+IPSEND: (list of supported <link_num>), (list of supported <length>) OK

Defined value

Parameter	values	Explain
<link_num>	0-9	A numeric parameter that identifies a connection,this parameter is used for multi clients.
<length>	1-1500	A numeric parameter which indicates the length of sending data, it must be between1 and 1500.
<serverIP>		A string parameter that identifies the IP address of server. The IP address format consists of 4 octets, separated by decimal point :“AAA.BBB.CCC.DDD”.
<serverPort>		A numeric parameter that identifies the port of TCP server.
<reqSendLength>		A numeric parameter that requested number of data bytes to be transmitted.
<cnfSendLength>		A numeric parameter that confirmed number of data bytes to be transmitted. 1 the connection is disconnected. 0 own send buffer or other side’s congestion window are full. Note: If the <cnfSendLength> is not equal to the <reqSendLength>, the socket then cannot be used further.

Example

```
AT+IPOPEN=0,"TCP","114.80.207.49",1234,1000
OK

+IPOPEN: 0,0
AT+IPOPEN=1,"UDP",,,1001
```

```
+IPOPEN: 1,0

OK
AT+IPSEND=0,10
>##########
OK

+IPSEND: 0,10,10
AT+IPSEND=1,10,"114.80.207.49",1234
>&&&&&&&&&&
OK

+IPSEND: 1,10,10
```

14.18 AT+IPRXGET Get the network data manually

Description

This command is used to get the network data manually.

Syntax

Command	Response
AT+IPRXGET=?	+IPRXGET: (0-4),(0-9),(1-1500) OK or ERROR
AT+IPRXGET?	+IPRXGET: <mode> OK or ERROR
(AT+IPRXGET=1) AT+IPRXGET=<mode>,<cid>[,<len>]	1. If <mode> = 0 or 1: OK 2. If <mode> = 2 or 3: +IPRXGET: <mode>,<cid>,<read_len>,<rest_len> <data> OK 3. If<mode> = 4: +IPRXGET: 4,<cid>,<rest_len> OK If ERROR occurred +IP ERROR: <error message>

	ERROR

Defined value

Parameter	values	Explain
<mode>	0-4	0 – set the way to get the network data automatically 1 – set the way to get the network data manually 2 – read data, the max read length is 1500 3 – read data in HEX form, the max read length is 750 4 – get the rest data length
<cid>	0-9	A numeric parameter that identifies a connection. The range of permitted values is 0 to 9.
<len>		The data length to be read. Not required, the default value is 1500 when <mode>=2, and 750 when <mode>=3..
<read_len>		The length of the data that have read.
<rest_len>		The data length which not read in the buffer.
<data>		The read data.
<error message>		The list of all error message: Invalid parameter Operation not supported No data

NOTE:

1. When <mode> is set to 1 and the 2-4 mode will take effect.

2. If AT+IPRXGET=1, it will report +IPRXGET: 1,<cid> when received data and the buffer is empty.

Example

```
AT+IPNETOPEN
OK
+IPNETOPEN: 0

AT+IPOPEN=1,"TCP","114.80.207.49",1234,1002
+IPOPEN: 1,0

AT+IPRXGET=1
OK
```

+IPRXGET: 1,1 //After successfully connecting to the server and setting AT+IPRXGET=1, the module will report +IPRXGET: 1,1 when received data and the buffer is empty.

AT+IPRXGET=2,1,1500
+IPRXGET: 2,1,11,0
11111111111

OK

+IPRXGET: 1,1
AT+IPRXGET=3,1,750
+IPRXGET: 3,1,15,0
313232323232323232323232323232

OK

14.19 AT+IPCLOSE Close TCP or UDP socket

Description

This command is used to close TCP or UDP socket。

Syntax

Command	Response
TCP AT+IPCLOSE=<link_num>	OK +IPCLOSE: <link_num>,<err>
	+IPCLOSE: <link_num>,<err> ERROR
UDP AT+IPCLOSE=<link_num>	+IPCLOSE: <link_num>,<err> OK
	+IPCLOSE: <link_num>,<err> ERROR
AT+IPCLOSE?	+IPCLOSE: <link0_state>,<link1_state>,<link2_state>, <link3_state>,<link4_state>,<link5_state>,<link6_state> ,<link7_state>,<link8_state>,<link9_state>

	OK
AT+IPCLOSE=?	+IPCLOSE: (list of supported <link_num>s) OK

Defined value

Parameter	values	Explain
<link_num>	0-9	A numeric parameter that identifies a connection,this parameter is used for multi clients.
<err>		The result of operation, 0 is success, other value is failure
<linkn_state>	0-1	a numeric parameter that identifies state of <link_num>. the range of permitted values is 0 to 1. 0 disconnected 1 connected

Example

```
AT+IPCLOSE?
+IPCLOSE: 0,0,0,1,0,1,0,0,0,0

OK
AT+IPCLOSE=3
OK

+IPCLOSE: 3,0
AT+IPCLOSE=5
OK

+IPCLOSE: 5,0
AT+IPCLOSE?
+IPCLOSE: 0,0,0,0,0,0,0,0,0,0

OK
AT+IPCLOSE=?
+IPCLOSE: (0-9)

OK
```

14.20 AT+IPSTAT obtain the total size of data sent or received

Description

This command is used to inquire the total size of data sent or received for a socket in multiple socket modes (Only valid for client TCP socket mode).

Syntax

Command	Response
AT+IPSTAT=<link_num>	+IPSTAT: <sent_size>,<recv_size> OK
AT+IPSTAT=?	+IPSTAT: (list of supported <link_num>s) OK

Defined value

Parameter	values	Explain
<link_num>	0-9	A numeric parameter that identifies a connection,this parameter is used for multi clients.
<sent_size>		Total size of sent data.
<recv_size>		Total size of received data.

Example

```
AT+IPSEND=0,10
>##########
OK

+IPSEND: 0,10,10
AT+IPSTAT=0
+IPSTAT: 10,0

OK

RECV FROM:114.80.207.49:1234
+RECV: 0,29
11111111111111111111111111111
AT+IPSTAT=0
+IPSTAT: 10,29

OK
```

14.21 Information elements related to TCP/IP

The following table lists information elements which may be reported.

Information	Description
+CIPEVENT:NETWORK CLOSED UNKNOWN	Network is closed for network error(Out of service, etc). When this event happens, user's application needs to check and close all opened sockets, and then uses AT+NETCLOSE to release the network library if AT+NETOPEN? shows the network library is still opened.
+IPCLOSE: <client_index>, <close_reason>	Socket is closed passively. <client_index> is the link number. <close_reason>: 0 - Closed by local, active 1 - Closed by remote, passive 2 - Closed for sending timeout
+CLIENT:<link_num>,<server_index>,<client_IP>:<port>	TCP server accepted a new socket client, the index is <link_num>, the TCP server index is <server_index>. The peer IP address is <client_IP>, the peer port is<port>.

14.22 Unsolicited TCP/IP command <err> Codes

<err> Codes	Description
0	operation succeeded
1	Network failure
2	Network not opened
3	Wrong parameter
4	Operation not supported
5	Failed to create socket
6	Failed to bind socket
7	TCP server is already listening
8	Busy
9	Sockets opened
10	Timeout
11	DNS parse failed for AT+IPOPEN
255	Unknown error

Chapter 15. GPS Related Commands

15.1 AT+CGPS Start/Stop GPS session

Description

This command is used to start or stop GPS session.

After the module is powered on and the module port appears, please wait at least 20s and then send the command AT+CGPS=1.

Syntax

Command	Response
AT+CGPS=<on/off>	OK
AT+CGPS?	+CGPS: <on/off>,<mode> OK
AT+CGPS=?	+CGPS: (0-1),(1-3) OK

Defined value

Parameter	values	Explain
<on/off>	0-1	0 --- off stop GPS session 1 --- on start GPS session
<mode>	1-3	Ignore - standalone mode 1 – standalone mode 2 – UE-based mode 3 – UE-assisted mode

Example

```
AT+CGPS=1
OK
.....
$GNGNS,082835.00,3112.406099,N,12137.466669,E,AAN,10,1.6,-4.1,10.0,,*35
$GPVTG,0.0,T,4.6,M,0.0,N,0.0,K,A*21
$GPRMC,082835.00,A,3112.406099,N,12137.466669,E,0.0,0.0,041116,4.6,W,A*2A
$GPGSA,A,2,10,13,15,18,,,,,,,,,1.7,1.6,0.8*34
$GNGSA,A,2,10,13,15,18,,,,,,,,,1.7,1.6,0.8,1*37
$GNGSA,A,2,69,70,71,79,80,86,,,,,,,1.7,1.6,0.8,2*3C
$GNGSA,A,2,,,,,,,,,,,,,1.7,1.6,0.8,3*3B
$GPGSV,4,1,15,04,,,34.1,10,4.9,303.8,35.0,13,29.5,43.6,35.9,15,57.7,21.1,34.7*79
```

$GPGSV,4,2,15,18,34.5,313.6,35.8,02,15.5,160.3,,03,,,,06,2.8,281.3,*67

$GPGSV,4,3,15,09,46.4,182.8,,11,35.9,199.7,,19,5.6,299.5,,26,4.9,53.4,*48

$GPGSV,4,4,15,27,38.7,191.3,,28,3.5,66.1,,31,6.3,202.5,*71

$GPGGA,082836.00,3112.406238,N,12137.466672,E,1,04,1.6,-4.0,M,10.0,M,,*4B

AT+CGPS=0

OK

15.2 AT+CGPSINFO Get GPS fixed position information

Description

This command is used to get current position information.

Syntax

Command	Response
AT+CGPSINFO=<time>	If <time>≠0 OK +CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>] .....
	If <time>=0 OK
AT+CGPSINFO	+CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>] OK
AT+CGPSINFO?	+CGPSINFO: (0-255) OK
AT+CGPSINFO=?	+CGPSINFO: [<lat>],[<N/S>],[<log>],[<E/W>],[<date>],[<UTC time>],[<alt>],[<speed>],[<course>] OK

Defined value

Parameter	values	Explain
<time>	0-255	The range is 0-255, unit is second, after set <time> will report the GPS information every the seconds.
<lat>		Latitude of current position. Output format is ddmm.mmmmmm

<N/S>		N/S Indicator, N=north or S=south
<log>		Longitude of current position. Output format is dddmm.mmmmmm
<E/W>		E/W Indicator, E=east or W=west
<date>		Date. Output format is ddmmyy
<UTC time>		UTC Time. Output format is hhmmss.s
<alt>		MSL Altitude. Unit is meters.
<speed>		Speed Over Ground. Unit is knots
<course>		Course. Degrees.

15.3 AT+CGPSCOLD Cold start GPS

Description

This command is used to cold start GPS session.

NOTE: Before using this command,it must use AT+CGPS=0 to stop GPS session.

Syntax

Command	Response
AT+CGPSCOLD	OK
AT+CGPSCOLD=?	OK

Example

```
AT+CGPSCOLD
OK
AT+CGPSCOLD=?
OK
```

15.4 AT+CGPSHOT Hot start GPS

Description

This command is used to hot start GPS session.

NOTE: Before using this command,it must use AT+CGPS=0 to stop GPS session.

Syntax

Command	Response
AT+CGPSHOT	OK
AT+CGPSHOT=?	OK

Example

```
AT+CGPSHOT
```

OK

AT+CGPSHOT=?

OK

15.5 AT+CGPSNMEA Configure NMEA sentence type

Description

This command is used to configure NMEA output sentences which are generated by the gps One engine when position data is available.

NOTE: If bit 2 GPGSV doesn′ t configure, GPGSV sentence also doesn′ t output on AT/modem port even set AT+CGPSFTM=1

Syntax

Command	Response
AT+CGPSNMEA=<nmea>,<nmea1>	OK
AT+CGPSNMEA?	+CGPSNMEA: <nmea>,<nmea1> OK
AT+CGPSNMEA=?	+CGPSNMEA: (0-511),(0-3) OK

Defined value

Parameter	values	Explain
<nmea>	0-511	Each bit enables an NMEA sentence output as follows: Bit 0 --- GPGGA (global positioning system fix data) Bit 1 --- GPRMC (recommended minimum specific GPS/TRANSIT data) Bit 2 --- GPGSV (GPS satellites in view) Bit 3 --- GPGSA (GPS DOP and active satellites) Bit 4 --- GPVTG (track made good and ground speed) Bit 5 --- PQXFI (Global Positioning System Extended Fix Data.) Bit 6 --- GNGNS (fix data for GNSS receivers; output for GPS-only, GLONASS-only, hybrid GLONASS+GPS fixes, or even AFLT fixes) Bit 7 --- GNGSA (DOP and GLONASS satellites; GPS+GLONASS or GLONASS-only fixes. Contains DOP information for all active satellites, but other information is GLONASS-only) Bit 8 --- GLGSV (GLONASS satellites in view GLONASS fixes only) Set the desired NMEA sentence bit(s). If multiple NMEA sentence formats are desired, “OR” the desired bits together.
<nmea1>	0-3	Bit1 --- BDGSA Bit2 --- BDGSV

Example

```
AT+CGPSNMEA?
+CGPSNMEA: 63,0

OK
AT+CGPSNMEA=?
+CGPSNMEA: (0-511),(0-3)

OK
AT+CGPSNMEA=511,3              //111111111,11
OK
```

15.6 AT+CGPSPORT Configure output port for NMEA sentence

Description

The command is used to choose the output port for NMEA sentence.

Syntax

Command	Response
AT+CGPSPORT=<port>	OK
AT+CGPSPORT?	+CGPSPORT: <port> OK
AT+CGPSPORT=?	+CGPSPORT: (list of supported <port>s) OK

Defined value

Parameter	values	Explain
<port>	0-3	0 --- Temporary does not support 1 --- Modem port 2 --- AT port 3 --- UART port

Example

```
AT+CGPSPORT?
+CGPSPORT: 1

OK
AT+CGPSPORT=?
+CGPSPORT: (0,3)
```

OK

AT+CGPSPORT=2

OK

15.7 AT+CBDS Set BeiDou Navigation Satellite System

Description

The command is used to set the BeiDou Navigation Satellite System.

Syntax

Command	Response
AT+CBDS=<state>	OK
AT+CBDS?	+CBDS: <state> OK
AT+CBDS=?	+CBDS: (list of supported <state>) OK

Defined value

Parameter	values	Explain
<state>	0-1	0 --- enable 1 --- disable

Example

the process of using the BeiDou Navigation Satellite System is as follow

AT+CGPSNMEA=511,3

OK

AT+CBDS=1 //enable the BeiDou Navigation Satellite System

OK

AT+CGPS=1

OK

NOTE

BeiDou Navigation Satellite System can't be used alone. The module only supports the Beidou, GPS and GLONASS mode to mix and speed up the positioning speed.

15.8 AT+CGPSQPD Shut down GPS immediately

Description

The default value is 0.The command AT+CGPS=0 can turn off GPS immediately when the value is seted to 1. Otherwise, it will take 1 minutes before GPS can be closed.

Syntax

Command	Response
AT+CGPSQPD=<mode>	OK
AT+CGPSQPD?	+CGPSQPD: 0 OK
AT+CGPSQPD=?	+CGPSQPD: (0,1) OK

Defined value

Parameter	values	Explain
<mode>	0,1	0 --- off 1 --- on

Example

```
AT+CGPSQPD?
+CGPSQPD: 0

OK
AT+CGPSQPD=1
OK
AT+CGPSQPD=?
+CGPSQPD: (0,1)

OK
```

15.9 AT+CGPSPOS Read NMEA information

Description

The command is used to read NMEA information.

Syntax

Command	Response
AT+CGPSPOS=<mode>	$<NMEA>,<GPS information> OK

AT+CGPSPOS?	OK
AT+CGPSPOS=?	+CGPSPOS: (0-5) OK

Defined value

Parameter	values	Explain
<mode>	0,1	0 --- GNGGA 1 --- GPGSA 2 --- GPGSV 3 --- GPRMC 4 --- GPVTG 5 --- GPGLL(Not supported yet)
<GPS information>		This information corresponds to NMEA. Please refer to section 15.10 for details.

Example

```
AT+CGPSPOS=0
$GPGGA,091306.00,3112.475636,N,12137.473751,E,1,04,1.9,73.6,M,10.0,M,,*5F

OK
AT+CGPSPOS=1
$GPGSA,A,2,12,14,20,32,,,,,,,,,2.1,1.9,1.0*3C

OK
```

15.10 NMEA message specification

15.10.1 GPGGA GPS Fixed Data

Data format:

$GPGGA,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,M,<10>,M,<11>,<12>*xx<CR><LF>

Data	Description
$GPGGA	Message ID
<1>	UTC time , format as hhmmss.sss
<2>	Latitude ,format as ddmm.mmmm
<3>	N/S indicator, N-north ,S-south
<4>	Longitude , format as dddmm.mmmm
<5>	E/W indicator , E-east,W-west
<6>	GPS Status 0 --- invalid

	1 --- valid
<7>	Satellites used
<8>	Horizontal dilution of precision
<9>	MSL altitude, Unit is meters
M	Unit of <9>,meters
<10>	Geoid separation, Unit is meters
M	Unit of <10>,meters
<11>	Age of Diff. Corr , null fields when DGPS is not used
<12>	Diff.Ref.Station ID
*xx	checksum
<CR><LF>	End of message termination

Example

$GPGGA,061358.0,3111.219395,N,12134.967684,E,1,04,2.0,15.6,M,10.0,M,,*60

name	Data	Description	Note
Message ID	$GPGGA		
UTC time	061358.0	14:13:58.0	UTC+8h
Latitude	3111.219395	31°11'13"	0.219395×60=13.1637≈13"
N/S Indicator	N	North Latitude	
Longitude	12134.967684	121°34'58"	0.967684×60=58.06104≈58"
E/W Indicator	E	East Longitude	
GPS Status	1	Valid	
Satellites used	04	Using 4 Satellites	
HDOP	2.0	Horizontal dilution of precision	
MSL altitude	15.6	15.6m	
M	M	Meters	
Geoid separation	10.0	10.0m	
M	M	Meters	
Age of Diff. Corr	null		
Diff.Ref.Station ID	null		
checksum	*60		

15.10.2 GPGSA GNSS DOP and Active Satellites

Data format:

$GPGSA,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,<10>,<11>,<12>,<13>,<14>,<15>,<16>,<17>*<18><CR><LF>

Data	Description
$GPGGA	Message ID
<1>	Mode 1 M --- Manual , forced to operate in 2D or 3D mode A --- Allowed to automatically switch 2D/3D
<2>	Mode 2 1 --- fix not available 2 --- 2D 3 --- 3D
<3>	Satellite used , SV on channel 1
<4>	Satellite used , SV on channel 2
<5>	Satellite used , SV on channel 3
<6>	Satellite used , SV on channel 4
<7>	Satellite used , SV on channel 5
<8>	Satellite used , SV on channel 6
<9>	Satellite used , SV on channel 7
<10>	Satellite used , SV on channel 8
<11>	Satellite used , SV on channel 9
<12>	Satellite used , SV on channel 10
<13>	Satellite used , SV on channel 11
<14>	Satellite used , SV on channel 12
<15>	PDOP (0.5 - 99.9)
<16>	HDOP (0.5 - 99.9)
<17>	VDOP (0.5 - 99.9)
<18>	checksum
<CR><LF>	End of message termination

Example

$GPGSA,A,3,07,02,26,27,09,04,15, , , , , ,1.8,1.0,1.5*33

name	Data	Description	Note
Message ID	$GPGSA		
Mode 1	A	Allowed to automatically switch	

		2D/3D	
Mode 2	3	3D	
Satellite used	07	SV on channel 1	
Satellite used	02	SV on channel 2	
...	...	...	
Satellite used		SV on channel 12	
PDOP	1.8	Position Dilution of Precision	
HDOP	1.0	Horizontal Dilution of Precision	
VDOP	1.5	Vertical Dilution of Precision	
checksum	*33	End of message termination	

15.10.3 GPGSV GNSS Satellites in View

Data format:

$GPGSV,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>,<4>,<5>,<6>,<7>*<8><CR><LF>

Data	Description
$GPGSV	Message ID
<1>	Total number of GSV message to be sent in this group
<2>	Message number in this group of GSV message
<3>	Satellites in view
<4>	Satellite ID
<5>	Elevation
<6>	Azimuth
<7>	SNR （C/N0），dBHz
<8>	checksum
<CR><LF>	

Example

$GPGSV,4,1,13,01,45,181,23,04,63,143,44,09,09,226,35,11,65,201,35*76

$GPGSV,4,2,13,16,21,095,37,19,54,022,19,32,02,139,27,07,61,284,*73

$GPGSV,4,3,13,08,68,291,,22,04,066,,27,27,046,,28,07,300,*78

$GPGSV,4,4,13,30,33,312,*48

name	Data	Description	Note

Message ID	$GPGSV		
Number of message	4	Total number of GSV message is 4	
Message number	1	Message number in this group of GSV message is 1	
Satellites in view	13	Number of Satellites in view is 13	
Satellite ID	01	Satellite ID	
Elevation	45	Elevation	
Azimuth	181	Azimuth	
SNR （C/N0）	23	23dBHz	
checksum	*76		

P.S. Each line displays only 4 satellite information, and the rest of the satellite information to continue the branch display

15.10.4 GPRMC Recommended Minimum Specific GNSS Data

Data format:

$GPRMC,<1>,<2>,<3>,<4>,<5>,<6>,<7>,<8>,<9>,<10>,<11>,<12>*<13><CR><LF>

Data	Description
$GPRMC	Message ID
<1>	UTC time
<2>	Mode M --- Manual , forced to operate in 2D or 3D mode A --- Allowed to automatically switch 2D/3D
<3>	Latitude ,format as ddmm.mmmm
<4>	N/S indicator, N-north ,S-south
<5>	Longitude , format as dddmm.mmmm
<6>	E/W indicator , E-east,W-west
<7>	Speed over ground
<8>	Course over ground
<9>	Date , format as ddmmyy
<10>	Magnetic variation
<11>	East/West indicator E-east or W-west
<12>	Mode A --- Autonomous D --- DGPS
<13>	checksum

<CR><LF>	End of message termination

Example

$GPRMC,061406.0,A,3111.219903,N,12134.967443,E,0.0,,250615,0.0,E,A*27

name	Data	Description	Note
Message ID	$GPRMC		
UTC time	061406.0	14:14:06.0	UTC+8h
Mode	A	Allowed to automatically switch 2D/3D	
Latitude	3111.219903	31°11'13"	0.219903×60≈13"
N/S indicator	N	N-north	
Longitude	12134.967443	121°34'58"	0.967443×60≈58"
E/W indicator	E	E-east	
Speed over ground	0.0		
Course over ground			
Date	250615	2015.06.25	
Magnetic variation	0.0		
East/West indicator	E	E-east	
Mode	A	A --- Autonomous	
checksum	*27		

15.10.5 GPVTG Course Over Ground and Ground Speed

Data format:

$GPVTG,<1>,T,<2>,M,<3>,N,<4>,K,<5>*<6><CR><LF>

Data	Description
$GPVTG	Message ID
<1>	Course ,measured heading
T	Reference , true north
<2>	Course , measured heading
M	Reference,Magnetic north
<3>	Speed ,measured horizontal speed
N	Units,Knots
<4>	Speed km/hr measured horizontal speed

K	Units , Kilometers per hour
<5>	Mode A --- Autonomous D --- DGPS
*<6>	checksum
<CR><LF>	End of message termination

Example

$GPVTG,,T,0.0,M,0.0,N,0.0,K,A*0D

name	Data	Description	Note
Message ID	$GPVTG		
Course			
Reference	T	Reference , true north	
Course	0.0	measured heading	
Reference	M	Magneticl north	
Speed	0.0	measured horizontal speed	
Units	N	Knots	
Speed	0.0	measured horizontal speed	
Units	K	Kilometers per hour	
Mode	A	Autonomous	
checksum	*0D		

15.10.6 BDGSA Beidou satellite information

Data format:

$BDGSA,<1>,<2>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<3>,<4>,<5>,<6>

*<7><CR><LF>

Data	Description
$GPGGA	Message ID
<1>	Mode 1 M --- Manual , forced to operate in 2D or 3D mode A --- Allowed to automatically switch 2D/3D
<2>	Mode 2 1 --- fix not available 2 --- 2D 3 --- 3D
<3>	PRN code (pseudorandom noise code)

<4>	PDOP (0.5 ~ 99.9)
<5>	HDOP (0.5 ~ 99.9)
<6>	VDOP (0.5 ~ 99.9)
<7>	checksum
<CR><LF>	End of message termination

Example

$BDGSA,A,2,,,,,,,,,,,,,1.2,0.9,0.8,4*38

name	Data	Description	Note
Message ID	$GPGSA		
Mode 1	A	Allowed to automatically switch 2D/3D	
Mode 2	2	2D	
PRN			
...			
PRN	1.2		
PDOP	0.9	Position Dilution of Precision	
HDOP	0.8	Horizontal Dilution of Precision	
VDOP	4	Vertical Dilution of Precision	
checksum	*38	End of message termination	

Chapter 16. HTTP

16.1 AT+CHTTPACT Launch a HTTP operation

Description

The command is used to launch a HTTP operation like GET or POST. Each <Ctrl+Z> character presented in the data flow of serial port will be coded as <ETX><Ctrl+Z>. Each <ETX> character will be coded as <ETX><ETX>. Single <Ctrl+Z> means end of the HTTP request data or end of the HTTP responded data.

<ETX> is 0x03, and <Ctrl+Z> is 0x1A.

For this command there may be a lot of DATA which need to be transferred to DTE using serial port, it is recommended that the AT+CATR will be used.

Syntax

Command	Response
AT+CHTTPACT=?	+CHTTPACT: “ADDRESS”, (1-65535) OK
AT+CHTTPACT=”<address>”,<port>	+CHTTPACT: REQUEST +CHTTPACT: DATA, <len> ..... +CHTTPACT: DATA, <len> ..... +CHTTPACT: 0
	+CHTTPACT: REQUEST +CHTTPACT: <err>
	+CHTTPACT: REQUEST +CHTTPACT: DATA, <len> … +CHTTPACT: DATA, <len> … … +CHTTPACT: <err>
	+CHTTPACT: REQUEST +CME ERROR

Defined value

Parameter	values	Explain
<address>		The HTTP server domain name or IP address.
<port>		The HTTP server port.
<len>		The length of HTTP data in the packet.
<err>		The error code of HTTP operation.

Example

1. Download data

AT+CHTTPACT="114.80.207.156",8080 //Server address，Server port

+CHTTPACT: REQUEST //Command returns information, the following 5 actions are manually entered.

GET http://114.80.207.156/echo.php HTTP/1.1<\r\n>

Host: 114.80.207.156<\r\n>

User-Agent: MY WEB AGENT<\r\n>

Content-Length: 0<\r\n>

<\r\n> //<Ctrl+Z>end

OK //Command returns information

//The following is the data information returned after the download

+CHTTPACT: DATA,1381

http/1.1 413 request entity too large

date: fri, 08 jul 2016 06:41:02 gmt

server: apache/2.2.9 (apmserv) mod_ssl/2.2.9 openssl/0.9.8h php/5.2.6

vary: accept-language,accept-charset

accept-ranges: bytes

connection: close

content-type: text/html; charset=iso-8859-1

content-language: en

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
   "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en">
<head>
<title>Request entity too large!</title>
<link rev="made" href="mailto:webmaster@localhost" />
<style type="text/css"><!--/*--><![CDATA[/*><!--*/
      body { color: #000000; background-color: #FFFFFF; }
      a:link { color: #0000CC; }
      p, address {margin-left: 3em;}
      span {font-size: smaller;}
/*]]>*/--></style>
</head>
```

<body>
<h1>Request entity too large!</h1>

The GET
method does not allow the data transmitted, or the data volume
exceeds the capacity limit.

If you think this is a server error, please contact
the webmaster.

<h2>Error 413</h2>
<address>
114.80.207.156

07/08/16 14:41:02
Apache/2.2.9 (APMServ) mod_ssl/2.2.9 OpenSSL/0.9.8h PHP/5.2.6
</address>
</body>
</html>

+CHTTPACT: 0

上传数据

AT+CHTTPACT="114.80.207.156",8080
+CHTTPACT: REQUEST<\r\n> //Command returns information, the following 10

actions are manually entered.

POST http://114.80.207.156/echo.php HTTP/1.1<\r\n>

Host: 114.80.207.156<\r\n>

User-Agent: MY WEB AGENT<\r\n>

Accept: */*<\r\n>

Content-Type: application/x-www-form-urlencoded<\r\n>

Cache-Control: no-cache<\r\n>

Accept-Charset: utf-8, us-ascii<\r\n>

Pragma: no-cache<\r\n>

Content-Length: 29<\r\n>

myparam1=test1&myparam2=test2 //<Ctrl+Z>end，The content of the uploaded data is test1,test2

OK //Command returns information

//The following is the data information returned after the upload.

+CHTTPACT: DATA,265

http/1.1 200 ok

date: fri, 08 jul 2016 06:41:50 gmt

server: apache/2.2.9 (apmserv) mod_ssl/2.2.9 openssl/0.9.8h php/5.2.6

x-powered-by: php/5.2.6

content-length: 68

content-type: text/html

Array

(

)

Array

(

[myparam1] => test1

[myparam2] => test2

)

+CHTTPACT: 0

16.2 AT^SOCDELAY Time delay in HTTP and FTP transmission

Description

The command is used to set the Time delay for serial ports to receiving data in HTTP and FTP transmission.

Syntax

Command	Response
AT^SOCDELAY=<delay_time>	OK
AT^SOCDELAY?	^SOCDELAY: <delay_time> OK
AT^SOCDELAY=?	^SOCDELAY: <delay_time> OK
Maximum Response Time	
Reference V.25ter	

Defined values

Parameter	values	Explain
<delay_time>	0-65535	How many milliseconds is delayed for every 4096 bytes The default value is 0.

Example

```
AT^SOCDELAY?
^SOCDELAY: 0

OK
AT^SOCDELAY=?
^SOCDELAY: <delay_time>

OK
AT^SOCDELAY=20
OK
```

16.3 AT+CHTTPEND Disconnect HTTP connection

Description

This command is used to actively disconnect the HTTP connection.After this command is executed, the http connection will be disconnected in about 100ms.

Syntax

Command	Response
AT+CHTTPEND	OK
Maximum Response Time	
Reference V.25ter	

Defined values

Parameter	values	Explain

Example

```
AT+CHTTPEND
OK


+CHTTPACT: 0
```

16.4 Unsolicited HTTP codes

Code of <err>	Description
220	Unknown error for HTTP
221	HTTP task is busy
222	Failed to resolve server address
223	HTTP timeout
224	Failed to transfer data
225	Memory error
226	Invalid parameter
227	Network error

Chapter 17. HTTPS

17.1 AT+CHTTPSSTART Acquire HTTPS protocol stack

Description

This command is used to acquire HTTPS protocol stack.

Syntax

Command	Response
AT+CHTTPSSTART	OK or ERROR

Example

```
AT+CHTTPSSTART
OK
```

17.2 AT+CHTTPSSTOP Release HTTPS protocol stack

Description

This command is used to release HTTPS protocol stack.

Syntax

Command	Response
AT+CHTTPSSTOP	OK or ERROR

Example

```
AT+CHTTPSSTOP
OK
```

17.3 AT+CHTTPSOPSE Open HTTPS session

Description

This command is used to open a new HTTPS session. Every time, the module must call AT+CHTTPSSTART before calling AT+CHTTPSOPSE .

Syntax

Command	Response

AT+CHTTPSOPSE=”<host>”,<port>[,<server_type>]	OK or ERROR

Defined values

Parameter	values	Explain
<host>		The host address
<port>		The host listening port for SSL
<server_type>	1-2	Server type 1 --- HTTP server 2 --- HTTPS server (supports SSL 3.0/TSL1.0)

Example

```
AT+CHTTPSOPSE=”www.mywebsite.com”,443
OK
```

17.4 AT+CHTTPSCLSE Close HTTPS session

Description

This command is used to close the opened HTTPS session.

Syntax

Command	Response
AT+CHTTPSCLSE	OK or ERROR

Example

```
AT+CHTTPSCLSE
OK
```

17.5 AT+CHTTPSSEND Send HTTPS request

Description

This command is used to send HTTPS request. The AT+CHTTPSSEND=<len> is used to download the data to be sent. The AT+CHTTPSSEND is used to wait the result of sending .

Syntax

Command	Response
AT+CHTTPSSEND=?	+CHTTPSSEND: (1-4096) OK

AT+CHTTPSSEND?	+CHTTPSSEND: <unsent_len> OK
AT+ CHTTPSSEND =<len>	> OK ERROR
AT+CHTTPSSEND	OK +CHTTPSSEND: <result> ERROR

Defined values

Parameter	values	Explain
<unsent_len>		The length of the data in the sending buffer which is waiting to be sent.
<len>		The length of the data to send
<result>	0-8	The final result of the sending. 0 – ok 1 – unknown error 2 – busy 3 – server closed 4 – timeout 5 – transfer failed 6 – memory error 7 – invalid parameter 8 – network error

Example

```
AT+CHTTPSSEND=88
>GET / HTTP/1.1
Host: www.mywebsite.com
User-Agent: MY WEB AGENT
Content-Length: 0
OK

AT+CHTTPSSEND
OK
+CHTTPSSEND: 0

AT+CHTTPSSEND?
+CHTTPSSEND: 88
OK
```

17.6 AT+CHTTPSRECV Receive HTTPS response

Description

This command is used to receive HTTPS response after sending HTTPS request.

Syntax

Command	Response
AT+CHTTPSRECV?	+CHTTPSRECV: LEN, <cache_len> OK
AT+CHTTPSRECV=<max_recv_len>	OK +CHTTPSRECV: DATA,<len> ... +CHTTPSRECV: DATA,<len> ... +CHTTPSRECV:<result> +CHTTPSRECV:<result> ERROR ERROR

Defined values

Parameter	values	Explain
<cache_len>		Cache length
<max_recv_len>		The maximum number of bytes received by the command AT+CHTTPSRECV, the minimum value is 1.
<len>		The length of the data received.
<result>	0-8	The final result of the sending. 0 – ok 1 – unknown error 2 – busy 3 – server closed 4 – timeout 5 – transfer failed 6 – memory error 7 – invalid parameter 8 – network error

Example

```
AT+CHTTPSRECV=249
OK
+CHTTPSRECV: DATA,249
HTTP/1.1 200 OK
```

Content-Type: text/html

Content-Language: zh-CN

Content-Length: 57

Date: Tue, 31 Mar 2009 01:56:05 GMT

Connection: Close

Proxy-Connection: Close

<html>

<header>test</header>

<body>

Test body

</body>

+CHTTPSRECV: 0

17.7 Unsolicited HTTPS Codes

Command	Response
+CHTTPS: RECV EVENT	If there is data in the buffer and the command AT+CHTTPSRECV is not executed, the result code will be reported.
+CHTTPSNOTIFY: PEER CLOSED	This result code is reported when the HTTPS session is closed by the server.

Chapter 18. FTP

18.1 Set FTP server port AT+CFTPPORT

Description

This command is used to set FTP server port.

Syntax

Command	Response
AT+CFTPPORT=<port>	OK
AT+CFTPPORT?	+CFTPPORT: <port> OK
AT+CFTPPORT=?	+CFTPPORT: (list of supported <port>s) OK

Defined value

Parameter	values	Explain
<port>	1-65535	The FTP server port, from 1 to 65535, and default value is 21

Example

```
AT+CFTPPORT=21
OK
AT+CFTPPORT?
+CFTPPORT:21

OK
AT+CFTPPORT=?
+CFTPPORT: (1-65535)

OK
```

18.2 Set FTP mode AT+CFTPMODE

Description

This command is used to set FTP passive/proactive mode. Default is proactive mode.

Syntax

Command	Response
AT+CFTPMODE=<mode>	OK

AT+CFTPMODE?	+CFTPMODE: <mode> OK
AT+CFTPMODE=?	+CFTPMODE: (list of supported <mode>s) OK

Defined value

Parameter	values	Explain
<mode>	0-1	The FTP access mode: 0 – passive mode. 1 – proactive mode.

Example

```
AT+CFTPMODE=1
OK
AT+CFTPMODE?
+CFTPMODE: 1

OK
AT+CFTPMODE=?
+CFTPMODE: (0,1)

OK
```

18.3 Set FTP type AT+CFTPTYPE

Description

This command is used to set FTP type. Default is binary type.

Syntax

Command	Response
AT+CFTPTYPE=<type>	OK
AT+CFTPTYPE?	+CFTPTYPE: <type> OK
AT+CFTPTYPE=?	+CFTPTYPE: (list of supported <type>s) OK

Defined value

Parameter	values	Explain
<type>		The FTP type:

		I – binary type. A – ASCII type

Example

```
AT+CFTPTYPE=A
OK
AT+CFTPTYPE?
+CFTPTYPE: A

OK
AT+CFTPTYPE=?
+CFTPTYPE: (A,I)

OK
```

18.4 Set FTP server domain name or IP address AT+CFTPSERV

Description

This command is used to set FTP server domain name or IP address.

Syntax

Command	Response
AT+CFTPSERV=”<address>”	OK
AT+CFTPSERV?	+CFTPSERV: “<address>” OK
AT+CFTPSERV=?	+CFTPSERV: “ADDRESS” OK

Defined value

Parameter	values	Explain
<address>		The FTP server domain name or IP address. The maximum length is 100.

Example

```
AT+CFTPSERV=”test.51modem.com”
OK
AT+CFTPSERV?
+CFTPSERV:  “test.51modem.com”
```

OK
AT+CFTPSERV=?
+CFTPSERV: “ADDRESS”

OK
AT+CFTPSERV=”203.156.205.56”
OK

18.5 Set user name for FTP access AT+CFTPUN

Description

This command is used to set user name for FTP server access.

Syntax

Command	Response
AT+CFTPUN=”<name>”	OK
AT+CFTPUN?	+CFTPUN: “<name>” OK
AT+CFTPUN=?	+CFTPUN: “NAME” OK

Defined value

Parameter	values	Explain
<name>		The user name for FTP server access. The maximum length is 30.

Example

AT+CFTPUN=”myname”
OK
AT+CFTPUN=”anonymous”
OK
AT+CFTPUN?
+CFTPUN: “myname”

OK
AT+CFTPUN=?
+CFTPUN: “NAME”

OK

18.6 Set user password for FTP access AT+CFTPPW

Description

This command is used to set user password for FTP server access

Syntax

Command	Response
AT+CFTPPW="<password>"	OK
AT+CFTPPW?	+CFTPPW: "<password>" OK
AT+CFTPPW=?	+CFTPPW: "PASSWORD" OK

Defined value

Parameter	values	Explain
<password>		The user password for FTP server access. The maximum length is 40.

Example

```
AT+CFTPPW="mypass"
OK
AT+CFTPPW?
+CFTPPW: "mypass"

OK
AT+CFTPPW=?
+CFTPPW: "mypass"

OK
```

18.7 Get a file from FTP server and output it to SIO AT+CFTPGET

Description

This command is used to get a file from FTP server and output it to serial port. This command may have a lot of DATA transferred to DTE using serial port, The AT+CATR command is recommended to be used.

Syntax

Command	Response
AT+CFTPGET=”<filepath>” [,<rest_size>]	OK +CFTPGET: DATA,<len> ... +CFTPGET: DATA, <len> ... ... +CFTPGET: 0
	If the file size is 0: OK +CFTPGET: 0
	OK [+CFTPGET: DATA, <len> ... +C FTPGET: DATA, <len> ... ...] +CFTPGET: <err>
AT+CFTPGET=?	+CFTPGET: [{non-ascii}] “FILEPATH”[, (list of supported<rest_size>s)] OK

Defined value

Parameter	values	Explain
<filepath>		The remote file path. When the file path doesn′t contain ″/″, this command transfer file from the current remote FTP directory. If the file path contains non-ASCII characters, the file path parameter should contain a prefix of {non-ascii}.
<rest_size>		The value for FTP ″REST″ command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<len>		The length of FTP data contained in this packet.
<err>		The error code of FTP operation.

Example

```
AT+CFTPGET=″/pub/mydir/test1.txt″,10
OK
+CFTPGET: DATA, 1020,
... +CFTPGET: DATA, 1058,
...
```

```
...
+CFTPGET: 0
AT+CFTPGET={non-ascii}" /2F74657374646972/B2E2CAD42E747874"
OK
+CFTPGET: DATA, 1020,
...
+CFTPGET: 0
AT+CFTPGET=?
+CFTPGET: [{non-ascii}] "FILEPATH"  [,(0-2147483647)]

OK
```

18.8 Upload the DATA from SIO to FTP server AT+CFTPPUT

Description

This command is used to upload the DATA from serial port to FTP server as a file . Each <Ctrl+Z>character present in the data flow of serial port when downloading FTP data will be coded as <ETX><Ctrl+Z>. Each <ETX> character will be coded as <ETX><ETX>. Single <Ctrl+Z> means end of the FTP data.

<ETX> is 0x03, and <Ctrl+Z> is 0x1A

Syntax

Command	Response
AT+CFTPPUT="<filepath>" [,<rest_size>]	+CFTPPUT: BEGIN OK
	+CME ERROR
	[+CFTPPUT: BEGIN] +CFTPPUT: <err_code> ERROR
AT+CFTPPUT=?	+CFTPPUT: [{non-ascii}] "FILEPATH" [, (list of supported<rest_size>s)] OK

Defined value

Parameter	values	Explain
<filepath>		The remote file path. When the file path doesn't contain "/", this command transfers file to the current remote FTP directory. If the file path contains

		non-ASCII characters, the file path parameter should contain a prefix of {non-ascii}
<rest_size>		The value for FTP "REST" command which is used for broken transfer when transferring failed last time. The range is from 0 to 2147483647.
<err_code>		Refer to "Unsolicited FTP Codes".

Example

```
AT+CFTPPUT=" /pub/mydir/test1.txt" , 20
+CFTPPUT: BEGIN
.....<Ctrl+Z>

OK
AT+CFTPPUT={non-ascii}" /2F74657374646972/B2E2CAD42E747874"
+CFTPPUT: BEGIN
.....<Ctrl+Z>

OK
AT+CFTPPUT=?
+CFTPPUT: [{non-ascii}] "FILEPATH" [,(0-2147483647)]

OK
```

18.9 List the items in the directory on FTP server AT+CFTPLIST

Description

This command is used to list the items in the specified directory on FTP server.

Syntax

Command	Response
AT+CFTPLIST="<dir>"	OK [+CFTPLIST: DATA,<len> ...] +CFTPLIST:<err> +CME ERROR
AT+CFTPLIST=?	+CFTPLIST: [{non-ascii}] "FILEPATH" OK

Defined value

Parameter	values	Explain

<dir>		The directory to be listed. If the directory contains non-ASCII characters, the <dir> parameter should contain a prefix of {non-ascii}.
<len>		The length of data reported
<err>		The result code of the listing

Example

```
AT+CFTPLIST=”/testd”
OK
+CFTPLIST: DATA,193
drw-rw-rw- 1 user group 0 Sep 1 18:01 .
drw-rw-rw- 1 user group 0 Sep 1 18:01 ..
-rw-rw-rw- 1 user group 2017 Sep 1 17:24 19800106_000128.jpg

+CFTPLIST: 0
```

18.10 Create a new directory on FTP server AT+CFTPMKD

Description

This command is used to create a new directory on the FTP server. The maximum length of the full path name is 256.

Syntax

Command	Response
AT+CFTPMKD=”<dir>”	OK +CFTPMKD:<err> ERROR
AT+CFTPMKD=?	+CFTPMKD: [{non-ascii}]”DIR” OK

Defined value

Parameter	values	Explain
<dir>		The directory to be created. If the directory contains non-ASCII characters, the <dir> parameter should contain a prefix of {non-ascii}
<err>		The result code of the command

Example

```
AT+CFTPMKD=”/testdir”
OK
```

AT+CFTPMKD={non-ascii}”74657374646972”
OK

18.11 Delete a directory on FTP server AT+CFTPRMD

Description

This command is used to delete a directory on FTP server

Syntax

Command	Response
AT+CFTPRMD=”<dir>”	OK +CFTPRMD:<err> ERROR
AT+CFTPRMD=?	+CFTPRMD: [{non-ascii}]″ DIR″ OK

Defined value

Parameter	values	Explain
<dir>		The directory to be removed. If the directory contains non-ASCII characters, the <dir> parameter should contain a prefix of {non-ascii}.
<err>		The result code of the command

Example

AT+CFTPRMD=”/testdir”
OK
AT+CFTPRMD={non-ascii}”74657374646972”
OK

18.12 Delete a file on FTP server AT+CFTPDELE

Description

This command is used to delete a file on FTP server

Syntax

Command	Response
AT+CFTPDELE=”<filename>”	OK +CFTPDELE:<err> ERROR
AT+CFTPDELE=?	+CFTPDELE: [{non-ascii}]”FILENAME” OK

Defined value

Parameter	values	Explain
<filename>		The name of the file to be deleted. If the file name contains non-ASCII characters, the <filename> parameter should contain a prefix of {non-ascii}.
<err>		The result code of the command

Example

```
AT+CFTPDELE=”test”
OK
AT+CFTPDELE={non-ascii}”74657374”
OK
```

18.13 Unsolicited FTP Codes (Summary of CME ERROR Codes)

Code of <err>	Description
201	Unknown error for FTP
202	FTP task is busy
203	Failed to resolve server address
204	FTP timeout
205	Failed to read file
206	Failed to write file
207	Not allowed in current state
208	Failed to login
209	Failed to logout
210	Failed to transfer data
211	FTP command rejected by server
212	Memory error
213	Invalid parameter
214	Network error
215	Failed to connect socket
216	Failed to send data using socket
217	Failed to receive data using socket
218	Failed to verify user name and password
219	Socket connect timeout

Chapter 19. AT Commands for Module dormancy

19.1 AT+CSCLK Control Sleep function

Description

This command is used to enable sleep function.

Syntax

Command	Response
AT+CSCLK=?	+CSCLK: (range of supported <status>s) OK
AT+CSCLK?	+CSCLK: <status> OK
AT+CSCLK=<status>	OK OR ERROR
AT+CSCLK	OK

Defined value

Parameter	values	Explain
<status>	0-1	0---Disable sleep mode 1--- Enable sleep mode

Example

```
AT+CSCLK=?
+CSCLK: (0-1)

OK
AT+CSCLK?
+CSCLK: 0

OK
AT+CSCLK=1
OK
AT+CSCLK    //Set <status> = 0
OK
AT+CSCLK?
```

```
+CSCLK: 0

OK
```

19.2 AT+DISABLEUSB Open or close the USB port

Description

This command is used to open or close the USB port.

Syntax

Command	Response
AT+DISABLEUSB=?	+DISABLEUSB: (range of supported <stat>s) OK
AT+DISABLEUSB=<stat>	OK

Defined value

Parameter	values	Explain
<stat>	0-1	0---Open the USB port 1--- Close the USB port

Example

```
AT+DISABLEUSB=?
+DISABLEUSB: (0-1)
OK
AT+DISABLEUSB=1    //Close the USB port
OK
```

Chapter 20. Baidu TTS Voice

20.1 Dial AT+CDIAL

Description

This command is used for internal dialing.Please ensure that the module has registered before executing this command.

Syntax

Command	Response
AT+CDIAL	OK +CDIAL: SUCCESS

Example

```
AT+CDIAL
OK
+CDIAL: SUCCESS
```

20.2 Get tokey AT+CTTSKEY

Description

This command is used to obtain tokey for Baidu voice authentication.

Syntax

Command	Response
AT+CTTSKEY=<apikey>,<secretkey>	OK

Defined values

Parameter	values	Explain
<apikey>		Baidu voice authentication application public key, need to apply on Baidu AI open platform
<secretkey>		Baidu voice authentication, need to apply in Baidu AI open platform

Example

```
AT+CTTSKEY=4E1BG9lTnlSeIf1NQFlrSq6h,544ca4657ba8002e3dea3ac2f5fdd241
OK
```

20.3 Set TTS voice parameters AT+CTTSPARAM

Description

This command is used to initialize and set the TTS voice parameters.

Syntax

Command	Response
AT+CTTSPARAM=<per>,<spd>,<pit>,<vol>,<aue>	OK

Defined values

Parameter	values	Explain
<per>	0-4	0---Ordinary female voice 1---Ordinary male voice 3---Emotional-Duxiaoyao 4---Emotional-Duyaya
<spd>	0-9	Voice speed
<pit>	0-9	Pitch
<vol>	0-9	Volume
<aue>	3-6	File format 3--- MP3(default) 4--- PCM-16K 5--- PCM-8K 6--- wav

Example

```
AT+CTTSPARAM=1,5,4,5,5
OK
```

20.4 Play voice AT+CTTS

Description

Mainly used to select voice coding and voice content.

Syntax

Command	Response
AT+CTTS= <code>,<speech>	

Defined values

Parameter	values	Explain
<code>	1-2	Encoding type 1--- UNICODE 2--- GBK
<speech>		Voice content

Example

```
AT+CTTS=2,"青青园中葵，朝露待日晞。"
OK


+WAVSTATE: wav play stop
```