A6/A7/A6C/A20 模组 AT 命令集

A6 GSM/GPRS Module

V1.03

Contents

1 Introduction

1.1 Purpose

This is intended to provide the AT Command Set which implemented by AI-Thinker.

1.2 Document Conventions

The following style conventions and terminology are used throughout this document.

Name	Description
AT	Attention Command
TE	Terminal equipment
TA	Terminal adapter
MT	Mobile termination
MT Message	Mobile terminated message
MO Message	Mobile originated message
SMS	Short message services
USSD	Unstructured supplementary services data
CC	Call control
SS	Supplementary services
CRSS	Call related SS
ID	Identification
NW	Network

All latest version changes are in yellow.
In addition:
The “T” in the status table means the AT command type is the “TEST”.
The “R” in the status table means the AT command type is the “READ”.
The “S” in the status table means the AT command type is the “SET”.
The “E” in the status table means the AT command type is the “EXE”.

The “Y” in the status table means the AT command has been finished.
The “N” in the status table means that the work for this AT command has not been started.
The “P” in the status table means a part of all the functions of the AT command has been finished, leaving the remaining undone.

The **Syntax** table format is shown below:

Test command [If this command supports 'test', the instance should be inputted here.]	Description … Response …
Read command [If this command supports 'read', the instance should be inputted here.]	Description … Response … Parameter …
Set command [If this command supports 'Set', the instance should be inputted here.]	Description … Response … Parameter …
Exe command [If this command supports 'exe', the instance should be inputted here.]	Description … Response … Parameter …
Reference	ITU-T Recommandation V.25 ter

1.3 References

V.25ter
3GPP TS 27.007
3GPP TS 27.005
AT Module Hardware Interface Description

1.4 Character Set

GSM, HEX, PCCP936, UCS2

1.5 AT Command Syntax

The "AT" or "at" prefix must be set at the beginning of each command line. To terminate a command line enter **<CR>**. Commands are usually followed by a response that includes "**<CR><LF>**<response>**<CR><LF>**". Throughout this document, only the responses are presented, **<CR><LF>** are omitted intentionally.

Types of AT commands and responses:

AT command type	Syntax	Function
Test command	AT+CXXX=?	The mobile equipment returns the list of parameters and value ranges set with the corresponding Write command or by internal processes.
Read command	AT+CXXX?	This command returns the currently set value of the parameter or parameters.
Set command	AT+CXXX=<...>	This command sets user-definable parameter values.
Exec(ution) command	AT+CXXX	The execution command reads non-variable parameters determined by internal processes

The basic syntax of basic and extended command order what defined in ITU-T V.25 ter(5.3, 5.4, etc).

1.5.1 Syntax rules

1) Command line must begin with “AT” or “at”, otherwise it would be treated as invalid command line except “A/” and “+++”. Especially, command line begin with “aT” or “At” are also invalid.
2) There is only one “at”/”AT” when it includes several commands which should be at the beginning of a command line.
3) Basic command can be followed either by basic command or by extended command in one command line. So does the extended command, but there should be a “;” between the extended command and others.
4) The maximum length of the command name is 20 bytes.
5) The maximum length of the parameter string is 80 bytes.
6) There should be no more than 256 characters in one command line including characters defined by S5 and S3.
7) There should be no spacing in “at”/”AT” and command name.
8) The command line is ended with the character defined by command S3;
9) If error happened during parser it return error and none of the command will be execute in the command line; but if error happened when execute one of a commands in a command line, system will return error and the rest part of the command line will be discard.
10) Command line will be break when receiving a new one, the rest part and the new command line will both be discarded.
11) The character of command line is not sensitive;
12) ‘a’—‘z’，‘A’—‘Z’，‘1’—‘9’, ‘&’, ‘%’,‘\\’,‘!’,‘:’,‘-’,‘.’,‘/’,‘_’are available for command name.
13) Terminate character “;” is optional for each commands except for “D”. At the same time, “#” can also terminate the “D” command at the data service.
14) Dial numbers are listed as below:

1 2 3 4 5 6 7 8 9 * = ; # + > A B C D

And also the modifier:

, T P ! W @

15) If the basic command's parameter is omitted, parser will set the default value to 0.
16) There should be no spacing in numeric parameter.
17) Unicode string in the command line should be converted to hex string.
18) If the string type parameter of a command include the character '"', '\'and '"', it need to append transferred meaning character "\" before it.

1.5.2 Demo

1.5.2.1 Basic command I follows O

```
ATOI

Ai Thinker
A6 MODULE

VERSION 1.0

OK
```

1.5.2.2 Extended command +COPS? follows basic one

```
ATI+COPS?
+COPS: 0,0,"CMCC"
OK
```

1.5.2.3 Demo3

The +CIMI command ends with ';' and +COPS? Command at the end of the command line,'' is omitted in the last one.

```
AT+CIMI;+COPS?
460000381603828
+COPS: 0,0,"CMCC"
OK
```

1.5.2.4 The extended command +CIMI is followed by basic one I

```
AT+CIMI;I
460000381603828
Ai Thinker
OK
```

1.5.2.5 I followed by D, the command behind D is omitted

```
ATID13240089312;+CIMI
Ai Thinker
A6 MODULE
VERSION 1.0
OK
CONNECT
```

1.5.2.6 Compounded demo

The total number is 6，they are I, E, +CIMI, E1, I, +COPS?.

```
ATIE+CIMI;E1I+COPS?

Ai Thinker
A6 MODULE

VERSION 1.0

460001255014827

Ai Thinker
A6 MODULE

VERSION 1.0+COPS: 0,0,"CMCC"
OK
```

2 General Commands

The AT Commands described in this chapter allow the external application to access system related information in the A6 AT module.

2.1 AT

2.1.1 Description

Return to online command state from online data state.

2.1.2 Syntax

Exec command	Response
AT	OK

2.2 AT+CPOF Switch off mobile station

2.2.1 Description

Switch off mobile station.

2.2.2 Syntax

Test command AT+CPOF=? Description	Response OK +CME ERROR.
Reference …	
Exec command AT+CPOF Description Device will be switched off (power down mode) Do not send any command after this command.	Response +CPOF: MS OFF OK +CME ERROR.
Reference …	

2.2.3 Parameter

2.2.4 Remark

Test this command will lead to the dev board switch off. But as soon as the board switches off, it will automatically power on.

2.2.5 Example

Command	Possible Response
AT+CPOF	+CPOF: MS OFF OK [Device will be switched off (power down mode)]

2.3 ATS0 automatic answering

2.3.1 Description

This S-parameter controls the automatic answering feature of the DCE. If set to 0, automatic answering is disabled. If set to a non-zero value, the DCE shall cause the DCE to answer when the incoming call ringing has occurred the number of times indicated by the value.

2.3.2 Syntax

Test command ATS0=?	Response Success: 0-255 OK Fail: ERROR
Read command ATS0?	Response Success: <n> OK Fail: ERROR
Set command ATS0=[n]	Response Success: OK Fail: *+CME ERROR: <err>*
Reference ITU-V.25ter	

2.3.3 Unsolicited Result Codes

None

2.3.4 Parameter

<n>:
The auto answering times, range from 0~255.

2.3.5 Remark

If set to 0, auto answering is disabled. This command is specially used on data service in GPRS mode.

2.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATS0=2	OK
ATS0=?	0-255 OK
ATS0?	2 OK

2.4 ATS3 Response formatting character

2.4.1 Description

This S-parameter represents the decimal IA5 value of the character recognized by the DCE from the DTE to terminate an incoming command line. It is also generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S4 parameter.

2.4.2 Syntax

Read command ATS3?	Response <n> OK
Reference V.25ter	

Set command ATS3=<n>	Response OK
Reference V.25ter	

2.4.3 Parameter

<n>
Command line termination character 0…13(default) …31

2.4.4 Remark

Using other value than 13 may cause problems when entering commands.
If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

2.4.5 Example

2.5 ATS4 Response formatting character

2.5.1 Description

This S-parameter represents the decimal IA5 value of the character generated by the DCE as part of the header, trailer, and terminator for result codes and information text, along with the S3 parameter.

2.5.2 Syntax

Read command ATS4?	Response <n> OK
Reference V.25ter	

Set command ATS4=<n> Description	Response OK
Reference	

V.25ter

2.5.3 Parameter

<n>
Command line termination character 0…10(default) …31

2.5.4 Remark

If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

2.5.5 Example

2.6 ATS5 Command line editing character

2.6.1 Description

This S-parameter represents the decimal IA5 value of the character recognized by the DCE as a request to delete from the command line the immediately preceding character.

2.6.2 Syntax

Read command ATS5?	Response <n> OK
Reference V.25ter	

Set command ATS5=<n> Description …	Response OK
Reference V.25ter	

2.6.3 Parameter

<n>
Command line termination character 0…8(default) …31

2.6.4 Remark

If ATS3, ATS4, ATS5 be set to the same value, it may be cause some problem.

2.6.5 Example

2.7 +++ Switch from online data or PPP mode to online CMD mode

2.7.1 Description

Return to online command state from online data state.

2.7.2 Syntax

Exec command +++ Description ...
Response OK If value is valid. ERROR If value is not recognized or not supported.
Reference ITU-T V.25

2.7.3 Parameter

2.7.4 Remark

2.7.5 Example

The following examples show the typical application for this command.

Command	Possible Response
+++	OK <*Note :…*>

2.8 ATO Switch from command mode to data mode/PPP online mode

2.8.1 Description

Causes the DCE to return to online data state and issue a CONNECT or CONNECT text result code.

2.8.2 Syntax

Exec command ATO[<value>] Description ...	Response If connection is not successfully resumed: NO CARRIER Or DCE returns to data mode from command mode CONNECT<text> Note: <text> output only if ATX parameter setting with value > 0.
Reference ITU-T V.25	

2.8.3 Parameter

<value>
[0] Switch from command mode to data mode.

2.8.4 Remark

2.8.5 Example

Command	Possible Response
<set to DATA MODE>	+++ OK
ATO0	CONNECT

2.9 AT&F Set all current parameters to manufacturer defaults

2.9.1 Description

This command instructs the DCE to set all parameters to default values specified by the manufacture, which may take hardware configuration switches and other manufacture-defined criteria into consideration.

2.9.2 Syntax

Set command AT&F[<value>] Description Read command returns the list of current active alarm settings in the MT.	Response OK If value is valid. ERROR If value is not recognized or not supported.
Reference ITU-T V.25 ter(6.1.2)	

2.9.3 Parameter

<value>
[0] Set all TA parameters to manufacturer defaults. (other) Reserved for manufacture proprietary use.

2.9.4 Remark

- List of parameters reset to manufacturer default can be found in Section.
- In addition to the default profile, you can store an individual one with AT&W. To alternate between the two profiles enter either ATZ (loads user profile) or AT&F (restores factory profile).
- Configuration table see ***Appendix B***

2.9.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT&F *<Note : Set alarm for Dec 26th, 2007 at 10:20:34 am, the alarm name is alarm1>*	OK *<Note : the alarm is stored>*

2.10 ATV Set result code format mode

2.10.1 Description

The setting of this parameter determines the contents of the header and trailer transmitted with result codes and information responses. It also determines whether result codes are transmitted in a numeric form or an alphabetic (or "verbose") form. The text portion of information responses is not affected by this setting.

2.10.2 Syntax

Execute command ATV[<value>]	Response 0 If value is 0 (because numeric response text is being used). OK If value is 1. 4 For unsupported values (if previous value was V0). ERROR For unsupported values (if previous value was V1).
Reference	

ITU-T V.25 ter(6.2.7)

2.10.3 Parameter

<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>

2.10.4 Remark

Following table shows the effect of the setting of this parameter on the format of information text and result codes. All references to cr mean "the character with the ordinal value specified in parameter S3"; all references to if likewise mean "the character with the ordinal value specified in parameter S4"

V0	V1
<text><cr><lf>	<cr><lf> <text><cr><lf>
<numeric code><cr>	<cr><lf><verbose code><cr><lf>

2.10.5 Example

The following examples show the typical application for this command.

Command	Possible Response
ATV1 <*Note : Set the result code format to default seeting*>	<CR><LF><text><CR><LF> <*Note: Information response*> <CR><LF><verbose code><CR><LF> <*Note: Long result code format >*

2.11 ATE Enable command echo

2.11.1 Description

This setting determines whether or not the TA echoes characters received from TE during command state.

2.11.2 Syntax

Exec command ATE[<value>] Description …	Response OK
Reference ITU-T V.25	

2.11.3 Parameter

<value>	
0	Echo mode off
1	Echo mode on

2.11.4 Remark

- In case of using the command without parameter, <value> is set to 0.

2.11.5 Example

The following examples show the typical application for this command.

Command	Possible Response
ATE	OK

2.12 AT&W Stores current configuration to user defined profile

2.12.1 Description

This command stores the currently set parameters to a user defined profile in the non-volatile memory.

2.12.2 Syntax

Exec command AT&W[<value>] Description …	Response OK
ERROR/+CME ERROR <err>	
Reference ITU-T V.25	

2.12.3 Parameter

<value>	
0	Profile number

2.12.4 Remark

- The user defined profile will be restored automatically after power-up. Use ATZ to restore user profile and AT&F to restore factory settings. Until the first use of AT&W, ATZ works as AT&F.
- A list of parameters stored to the user profile can be found in Section chapter 29, appendix B, AT Command Settings storable with AT&W.

2.12.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT&W	OK

2.13 ATQ Set result code presentation mode

2.13.1 Description

This parameter setting determines whether or not the DCE transmits result codes to the DTE.

2.13.2 Syntax

Exec command ATQ[<value>] Description ATQ0: DCE transmits result codes. ATQ1: Result codes are suppressed and not transmitted.	Response OK none ERROR/+CME ERROR <err>
Reference ITU-T V.25	

2.13.3 Parameter

<value>	
0	DCE transmits result code
1	Result codes are suppressed and not transmitted

2.13.4 Remark

2.13.5 Example

The following examples show the typical application for this command.

Command	Possible Response
ATQ0 *<Note : >* *DCE transmits result code.*	OK
ATQ1 <Note : > Result codes are suppressed and not transmitted	(None)
ATQ <Note : > Current <value not changed>	OK

2.14 ATX Set connect result code format and call monitoring

2.14.1 Description

This parameter setting determines whether or not the DCE detects the presence of dial tone and busy signal and whether or not DCE transmits particular result codes.

2.14.2 Syntax

Exec command ATX[value] Description ….	Response <value> = 0, 1, 2, 3, 4; OK <value> > 4 ERROR/+CME ERROR <err>
Reference ITU-T V.25	

2.14.3 Parameter

<value>	
0	CONNECT result code only returned; dial tone and busy detection are both disable.
1	CONNECT <text> result code only returned; dial tone and busy detection are both disable.
2	CONNECT <text> result code returned; dial tone detection is enabled, busy detection is disabled.
3	CONNECT <text> result code returned, dial tone detection is disabled, busy detection is enabled.
4	CONNECT <text> result code returned; dial tone and busy detection are both enabled.

2.14.4 Remark

2.14.5 Example

2.15 ATZ Set all current parameters to user defined profile

2.15.1 Description

This command instructs the DCE to set all parameters to their factory defaults as specified by the manufactured.

2.15.2 Syntax

Exec command ATZ[<value>] Description DCE sets all current parameters to the user profile stored with AT&W. If a connection is in progress, it will be terminated.	Response OK ERROR/+CME ERROR <err>
Reference ITU-T V.25	

2.15.3 Parameter

<value>	
0	The default configure of the manufacturer.
(other)	Not be used.

2.15.4 Remark

- First the profile will be set to factory default (see AT&F). If there is a valid user profile (stored with AT&W), this profile will be loaded afterwards.
- Any additional commands on the same command line may be ignored. A delay of 300 ms is required before next command is sent; otherwise “OK” response may be corrupted.

2.15.5 Example

2.16 AT+CFUN Set phone functionality

2.16.1 Description

Set command currently can only be used to switch off and on the CSW platform.

2.16.2 Syntax

Test command AT+CFUN=? Description Test command.	Response +CFUN : (list of supported <fun>s),(list of supported <rst>s) ERROR/+CME ERROR <err>
Reference See also 3GPP TS 27.007 V3.12.0 (8.2): set phone functionality	

Read command AT+CFUN? Description Read command.	Response +CFUN:<fun> ERROR/+CME ERROR <err>
Reference See also 3GPP TS 27.007 V3.12.0 (8.2): set phone functionality	

Set command AT+CFUN=<fun>[,<rst>] Description Set command selects the level of functionality <fun> in the MT.	Response OK ERROR/+CME ERROR <err>
Reference See also 3GPP TS 27.007 V3.12.0 (8.2): set phone functionality	

2.16.3 Parameter

<fun>	Description
0	Minimum functionality
1	Full functionality
2	Disable phone transmit RF circuits only
3	Disable phone receive RF circuits only
4	Disable phone both transmit and receive RF circuits
5	Switch on CSW platform
6	Switch off CSW platform

<rst>	Description
0	Do not reset the MT before setting it to <fun> power level. NOTE: this shall be always default when <rst> is not given.
1	Reset the MT before setting it to <fun> power level.

2.16.4 Remark

Current, only Parameter 0 and 1 is support.
When <fun> equals to 0 and 1, the second parameter <rst> is ignored.
For CSW only do the de-registering when switch off, when parameter is set by 0 or 1, CSW will operate the network job independent.
If AT modem can't register the network when parameter is set to 5, please check pin1 status.

2.16.5 Example

Command	Possible Response
AT+CFUN=0	OK
AT+CFUN?	+CFUN:0 OK

2.17 AT+CMEE report mobile equipment error

2.17.1 Description

This command controls the presentation of the result code +CME ERROR: <err> that indicates errors relating to ME functionality.

2.17.2 Syntax

Test command AT+CMEE=? Description Test command.	Response +CMEE: (list of supported <n>s)
Reference See also 3GPP TS 27.007 V3.12.0 (9.1): Mobile Termination event reporting.	

Read command AT+CMEE? Description Read command.	Response +CMEE:<n>

Reference
See also 3GPP TS 27.007 V3.12.0 (9.1): Mobile Termination event reporting.

Set command AT+CMEE=<n> Description Set command.	Response ERROR or OK
Reference See also 3GPP TS 27.007 V3.12.0 (9.1): Mobile Termination event reporting.	

2.17.3 Parameter

<n>	Description
0	Disable +CME ERROR: <err> code and use ERROR instead
1	Enable +CME ERROR: <err> code and use numeric <err> values (refer next sub clause)
2	Enable +CME ERROR: <err> result code and use verbose <err> values refer next sub clause)

2.17.4 Remark

When enable the result code, MT related errors cause +CME ERROR: <err> final result code instead of the regular ERROR final result code. ERROR is returned normally when error is related to syntax, invalid parameters, or TA functionality.

2.17.5 Example

Command	Possible Response
AT+CMEE=1	OK
AT+CMEE=5	+CME ERROR:53
at+cmee=?	+CMEE: (0-2) OK
at+cmee?	+CMEE: 1 OK

2.18 AT+CSCS Select TE character set

2.18.1 Description

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

2.18.2 Syntax

Exec command AT+CSCS=? Description Test command to list the supported <chset>s.	Response If success: +CSCS: (list of supported < chset >s) OK if failed: ERROR
Reference See also 3GPP TS 27.007 V3.12.0 (5.5): Mobile Termination event reporting.	

Exec command AT+CSCS? Description Read command shows current setting and test command displays conversion schemes implemented in the DCE.	Response If success: +CSCS: (list of supported < chset>s) OK If failed: ERROR
Reference See also 3GPP TS 27.007 V3.12.0 (5.5): Mobile Termination event reporting.	

Exec command AT+CSCS=[<chset>] Description Set command informs DCE which character set <chset> is used by the TE.	Response If success: OK If failed: ERROR
Reference See also 3GPP TS 27.007 V3.12.0 (5.5): Mobile Termination event reporting.	

2.18.3 Parameter

<chset>	NOTE
“GSM”	GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems.
“UCS2”	16-bit universal multiple-octet coded character set (ISO/IEC10646 [32]); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. “004100620063” equals three 16-bit characters with decimal values 65, 98 and 99.
“HEX”	Hexadecimal mode. No character set used ; the user read or write directly hexadecimal values.
"PCCP936"	PC Set.

2.18.4 Remark

This command is used to read and write phonebook entries. SMS doesn’t effected by this command.

2.18.5 Example

Command	Possible Response
AT+CSCS=”UCS2”	OK
AT+CSCS?	+CSCS: “UCS2” OK
AT+CSCS=?	+CSCS: ("GSM","HEX","PCCP936","UCS2") OK

2.19 AT+CMUX Multiplexing mode

2.19.1 Description

This command is used to enable the multiplexing protocol control channel.

2.19.2 Syntax

Exec command AT+CMUX=? Description Test command to returns the supported parameters as compound values	Response If success: +CMUX: (list of supported <transparency>s) OK if failed: ERROR
Reference See also 3GPP TS 27.010 [45]	

Exec command AT+CMUX? Description Read command returns the current settings.	Response If success: +CMUX: <transparency> OK If failed: ERROR
Reference See also 3GPP TS 27.010 [45]	

Exec command AT+CMUX=<transparency> Description Set command enable the multiplexing protocol control channel.
Response If success: OK If failed: ERROR
Reference See also 3GPP TS 27.010 [45]

2.19.3 Parameter

<transparency>:	
0	Basic option

2.19.4 Remark

At present we only support basic mode, if you want use this command, please contact Ai Thinker software engineer

2.19.5 Example

Command	Possible Response
AT+CMUX=0	OK
AT+CMUX=?	+CMUX: (0) OK
AT+CMUX?	+CMUX: 0 OK

2.20 AT+ICF DTE DCE character framing

2.20.1 Description

This extended-format compound parameter is used to determine the local serial port start-stop (asynchronous) character framing that the DCE shall use while accepting DTE commands and while transmitting information text and result code, if this is not automatically determined

2.20.2 Syntax

Read command AT+ICF? Description The DCE shall transmit a string of information text to the DTE	Response(s) Success: +ICF:<format>,<parity> OK Fail: ERROR
Test command AT+ICF=? Description The DCE shall transmit a string of information text to the DTE	Response(s) Success: +ICF:(list of supported format values),(list of supported parity values) OK Fail: ERROR
set command AT+ICF=[<format>[，<parity>]]	Response(s) Success: OK Fail: ERROR
Reference	

ITU-T V.25 ter(6.2.11)

2.20.3 Parameter

<format>
determines the number of bits in the data bits, the presence of a parity bit, and the number of stop bits in the start-stop frame.
0: auto detect
1: 8 Data 2 Stop
2: 8 Data 1 Parity 1 Stop
3: 8 Data 1 Stop
4: 7 Data 2 Stop
5: 7 Data 1 Parity 1 Stop
6: 7 Data 1 Stop
<parity>
determines how the parity bit is generated and checked, if present(when format is 2 or 5).
0: Odd
1: Even
2: Mark
3: Space

2.20.4 Remark

Implementation of this parameter is optional. If the format specified is not supported by the DCE, an **ERROR** result code shall be returned

2.20.5 Example

Command	Possible Response
AT+ICF=3,3	OK
<Note : >	*<Note : >*
AT+ICF?	+ICF:3,3 OK
AT+ICF=?	+ICF:(0-6),(0-3) OK

2.21 AT+IPR Set fixed local rate

2.21.1 Description

This numeric extended-format parameter specifies the data rate at which the DCE will accept commands, in addition to 1200 bit/s or 9600 bit/s

2.21.2 Syntax

Test command
AT+IPR=?
Description
This numeric extended-format parameter specifies the data rate at which the DCE will accept commands.
Response
Success:
+IPR:(list of supported auto detectable <rate> values)[,(list of fixed-only <rate> values)]
Fail:

Read command AT+IPR? Description The DCE shall transmit a string of information text to the DTE	Response Success: +IPR:<rate> Fail: ERROR

Set command AT+IPR=<rate>	Response Success: OK Fail: ERROR.
Reference ITU-T V.25 ter(6.2.10)	

2.21.3 Parameter

<rate>

The <rate> value specified shall be the rate in bits per second at which the DTE-DCE interface should operate, e.g. "19 200" or "115 200". The rates supported by a particular DCE are manufacturer-specific; however, the IPR parameter should permit the setting of any rate supported by the DCE during online operation. Rates which include a non-integral number of bits per second should be truncated to the next lower integer (e.g. 134.5 bit/s should be specified as 134; 45.45 bit/s should be specified as 45). If unspecified or set to 0, automatic detection is selected for the range determined by the DCE manufacturer

.

2.21.4 Remark

Make sure the MT and the module has the same bit rate, otherwise it can't work.

2.21.5 Example

Command	Possible Response
AT+IPR=115200	OK
<Note : > AT+IPR? <Note:> at+ipr=?	*<Note : >* +IPR:115200 <Note:> (2400,4800,9600,14400,19200,28800,33600,38400,57600,115200,230400,460800,921600,1843200) OK

2.22 AT+GSN request TA serial number identification

2.22.1 Description

This commandrequest TA serial number identification

2.22.2 Syntax

Test command AT+GSN=? Description	Response OK
Set command AT+GSN Description The set command return the TA serial number indentification.	Response <sn> OK
Reference 3GPP TS 27.007(V3.12.0)	

2.22.3 Parameter

<sn>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

2.22.4 Remark

2.22.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+GSN	012345678901234 OK

2.23 AT+GMM Request TA model identification

2.23.1 Description

This command request TA model identification (may equal to +CGMM)

2.23.2 Syntax

Test command AT+GMM=? Description	Response OK
Read command None.	Response
Set command AT+GMM Description The set command returns product firmware version identification text.	Response <model> OK

Reference
3GPP TS 27.007(V3.12.0)

2.23.3 Parameter

<model>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

2.23.4 Remark

2.23.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+GMM	GSM Ultimate Data Device OK

2.24 AT+CGMM Request model identification

2.24.1 Description

This command causes the TA to return one or more lines of information text <model>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the specific model of the MT to which it is connected to. Typically, the text will consist of a single line containing the name of the product, but manufacturers may choose to provide more information if desired. Refer to subclause 9.2 for possible <err> values.

2.24.2 Syntax

Test command +CGMM=? Description	Response OK
Set command +CGMM Description The set command causes the TA to return one or more lines of information text <model>.	Response <model> *+CME ERROR: <err>*
Reference 3GPP TS 27.007(V3.12.0)	

2.24.3 Parameter

<model>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

2.24.4 Remark

2.24.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGMM	GSM Ultimate Data Device OK

2.25 AT+GMR Request revision identification

2.25.1 Description

This command request TA revision identification (may equal to +CGMR)

2.25.2 Syntax

Test command +GMR=? Description	Response OK
Set command +GMR Description The set command causes the TA to return one or	Response <revision> *+CME ERROR: <err>*

more lines of information text <revision>.

Reference
3GPP TS 27.007(V3.12.0)

2.25.3 Parameter

<revision>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

2.25.4 Remark

2.25.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+GMR	3.00 OK

2.26 AT+ CGMR Request revision identification

2.26.1 Description

This command causes the TA to return one or more lines of information text <revision>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the version, revision level or date, or other pertinent information of the MT to which it is connected to. Typically, the text will consist of a single line containing the version of the product, but manufacturers may choose to provide more information if desired. Refer subclause 9.2 for possible <err> values.

2.26.2 Syntax

Test command +CGMR=? Description	Response OK
Set command +CGMR Description The set command causes the TA to return one or more lines of information text <revision>.	Response <revision> *+CME ERROR: <err>*

Reference
3GPP TS 27.007(V3.12.0)

2.26.3 Parameter

<revision>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

2.26.4 Remark

2.26.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGMR	3.00 OK

2.27 AT+GMI Request TA manufacturer identification

2.27.1 Description

Request TA manufacturer identification (may equal to +CGMI).

2.27.2 Syntax

Test command +GMI=? Description	Response OK
Set command +GMI Description The set command causes the TA to return one or more lines of information text <manufacturer>.	Response <manufacturer> *+CME ERROR: <err>*
Reference 3GPP TS 27.007(V3.12.0)	

2.27.3 Parameter

<manufacturer>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

2.27.4 Remark

2.27.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+GMI	Manufacturer ABC OK

2.28 AT+CGMI Request manufacturer identification

2.28.1 Description

This command causes the TA to return one or more lines of information text <manufacturer>, determined by the MT manufacturer, which is intended to permit the user of the TA to identify the manufacturer of the MT to which it is connected to. Typically, the text will consist of a single line containing the name of the manufacturer, but manufacturers may choose to provide more information if desired. Refer subclause 9.2 for possible <err> values.

2.28.2 Syntax

Test command +CGMI=?	Response OK

Description

Set command
+CGMI
Description
The set command causes the TA to return one or more lines of information text <manufacturer>.

Response
<manufacturer>
+CME ERROR: <err>

Reference
3GPP TS 27.007(V3.12.0)

2.28.3 Parameter

<manufacturer>: the total number of characters, including line terminators, in the information text shall not exceed 2048 characters.

2.28.4 Remark

2.28.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGMI	Manufacturer ABC OK

2.29 ATI Request manufacturer specific information about the TA

2.29.1 Description

Request manufacturer specific information about the TA(software cannot use this command to determine the capabilities of a TA)

2.29.2 Syntax

Set command
ATI[<value>]
Description
The set command request manufacturer specific information about the TA.

Response
<module name>
<module version>
OK

Reference
3GPP TS 27.007(V3.12.0)

2.29.3 Parameter

<value> may optionally be used to select from among multiple types of identifying information, specified by the manufacturer..
0 return manufacturer identification, model identification and revision identification of software.
(1-255) Reserved for manufacturer proprietary use

2.29.4 Remark

2.29.5 Example

The following examples show the typical application for this command.

Command	Possible Response

ATI	Ai Thinker AT 3.0.0 OK

2.30 AT+CIMI Request international mobile subscriber identity

2.30.1 Description

This command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual active application in the UICC (GSM or USIM) or SIM card which is attached to MT. Refer subclause 9.2 for possible <err> values.

2.30.2 Syntax

Test command +CIMI=? Description	Response OK
Set command +CIMI Description The set command causes the TA to return <IMSI>.	Response <IMSI> *+CME ERROR: <err>*

Reference
3GPP TS 27.007(V3.12.0)

2.30.3 Parameter

<IMSI>: International Mobile Subscriber Identity (string without double quotes)

2.30.4 Remark

2.30.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CIMI	460001033113523 OK

2.31 AT+EGMR Read and write IMEI

2.31.1 Description

This command read IMEI from factory partition,also can write IMEI to factory patition.

2.31.2 Syntax

Test command +EGMR=? Description	Response +EGMR: (0,1),(7) OK
Set command +EGMR=<mode>,<format>,<data> Description	Response <IMEI> *+CME ERROR: <err>*

The set command causes the TA to return <IMEI>.

2.31.3 Parameter

<IMEI>:
<mode> 1 write mode,2 read mode
<format> 7 only can set this value,to match ap.
<data> IMEI number.

2.31.4 Remark

2.31.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+EGMR=1,7,"111111111111111"	+EGMR OK
AT+EGMR=2,7;	+EGMR:11111111111 OK

2.32 AT+CALA Set an alarm time

2.32.1 Description

This command is used to set/list alarms or date/time in the ME.

2.32.2 Syntax

Test command AT+CALA=? Description Test command returns supported array index values, alarm types, and maximum length of the text to be displayed.	Response +CALA: (list of supported <n>s),(list of supported <type>s),<tlength>,<rlength>,(list of supported <silent>s) +CME ERROR: <err>
Read command AT+CALA? Description Read command returns the list of current active alarm settings in the MT.	Response [+CALA: <time>,<n1>,<type>,[<text>],[<recurr>],<silent> [<CR><LF>+CALA: <time>,<n2>,<type>,[<text>],[<recurr>],<silent>[...]]] +CME ERROR: <err>
Set command AT+CALA= <time>[,<n>[,<type>[,<text>[,<recurr>[,<silent>]]]]] Description Set command sets an alarm time in the MT. There can be an array of different types of alarms, and each alarm may cause different text to be displayed in the MT display	Response OK +CME ERROR: <err> is returned
Reference 3GPP TS 27.007 V3.12.0 (8.16)	

2.32.3 Unsolicited Result Codes

URC1 +CALV: <n> NOTE: it is always returned, even if the alarm is set up to be silent

2.32.4 Parameter

<time>
string type value, the format is "yy/mm/dd,hh:mm:ss+zz", 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; range -12...+13). E.g. 6th of May 2005, 22:10:00 GMT+2 hours equals to "05/05/06,22:10:00+08"
Note: if <time> equals current date and time or is set to an earlier date, returns +CME ERROR: 21.
<n>, <n1>, <n2>
Integer type value Indicating the index of the alarm.
Default is 1, in the range of 1~15.
<type>
Integer type value indicating the type of the alarm (e.g. sound, volume, LED); values and default is 0.
<text>
String type value indicating the text to be displayed when alarm time is reached; maximum length <tlength>
<tlength>
Integer type value indicating the maximum length of <text>
<recurr>
String type value indicating day of week for the alarm in one of the following formats:
"<1..7>[,<1..7>[…]]" – Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1), …, Sunday (7).
Example: The string "1,2,3,4,5" may be used to set an alarm for all weekdays.
"0" – Sets a recurrent alarm for all days in the week.
<rlength>
Integer type value indicating the maximum length of <recurr>
<silent>:
Integer type value indicating if the alarm is silent or not. If set to 1 the alarm will be silent and the only result from the alarm is the unsolicited result code +CALV. If set to 0 the alarm will not be silent

2.32.5 Remark

- If you want set a recycle alarm,just import the time
- If don't input recur , it will consider it not a recyclable alarm
- If don't input index,the alarm index is 1 will be substitute
- String format of alarm: "yy/MM/dd,hh:mm:ss".
- Maximum number of alarms is 15. Seconds are not taken into account.

2.32.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CALA="07/10/26,10:20:34",1,0,"alarm1" *<Note : Set alarm for Dec 26th, 2007 at 10:20:34 am, the alarm name is alarm1>*	OK *<Note : the alarm is stored>*
AT+CALA="18:02:10",2,0,"alarm2","2" *<Note : >*	OK <Note : the alarm is stored>
AT+CALA? *<Note : >*	+CALA: "07/10/27,17:35:30",1,0,"alarm1","1,2,3,4,5,6,7" +CALA: "07/10/27,17:40:23",2,0,"alarm2","1,2,3,4,5,6,7" +CALA: "07/10/27,18:50:30",3,0,"alarm test","2,4,6,"" +CALA: "07/10/27,17:35:30",4,0,"alarm5","1,3,5,6,"" +CALA: "07/10/29,18:45:30",5,0,"222","1,3,5,"" OK *<Note : >*
AT+CALA=? *<Note : >*	+CALA: (1-15),(0),(32),(15) OK *<Note : >*

<Note : > <Note : The process for setting alarm clock is same as mentioned above, after setting an alarm clock, close the module, check the '+CALA' event.>	*<Note : This function relates to the implementation of the alarm clock when the Mobile Phone be turned off.>*

2.33 AT+VGR Receive gain selection

2.33.1 Description

This refers to the amplification by the TA of audio samples sent from the TA to the computer.

2.33.2 Syntax

Test command AT+VGR=? Description The command operates on an integer <n>, range 0...255.	Response(s): Success: + VGR：(list of supported <n>s) OK Fail: ERROR
Read command AT+VGR? Description Read command returns the list of current setting.	Response(s): Success: + VGR:<n> OK Fail: ERROR
Set command AT+VGR= <n> Description Set command sets the gain.	Parameter Description < n>：range 5...8. if value equal to 8, then receiver is mute. Response(s) Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0 (2002-12)	

2.33.3 Unsolicited Result Codes

2.33.4 Parameter

<n>

range 5...8. if value equal to 8, then receiver is mute..

2.33.5 Remark

- Values larger than 128 indicate a larger gain than nominal. Values less than 128 indicate a smaller gain than nominal. The entire range of 0...255 does not have to be provided. A value of zero implies the use of automatic gain control by the TA

2.33.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+ VGR =8	Response(s) Success: OK Fail: ERROR
AT+VGR? <*Note : >*	+VGR: 7 OK
AT+VGR=? <*Note : >*	+VGR: (5-8) OK

2.34 AT+VGT Transmit gain selection

2.34.1 Description

This refers to the amplification by the TA of audio samples sent from the computer to the TA.

2.34.2 Syntax

Test command AT+VGT=? Description The command operates on an integer <n>, range 0...255	Response(s): Success: + VGT：(list of supported <n>s) OK Fail: ERROR
Read command AT+VGT? Description Read command returns the list of current audio setting.	Response(s): Success: + VGT:<n> OK Fail: ERROR
Set command AT+VGT= <n> Description Set command sets gain	Response(s) Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0 (2002-12)	

2.34.3 Unsolicited Result Codes

2.34.4 Parameter

<n>

Parameter Description

< n>：range 16. if value equal to 16, then transmit is mute.

2.34.5 Remark

- Values larger than 128 indicate a larger gain than nominal. Values less than 128 indicate a smaller gain than nominal. The entire range of 0...255 does not have to be provided. A value of zero implies the uses

of automatic gain control by the TA.

2.34.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+VGT=16	OK
<Note: >	*<Note : the alarm is stored>*
AT+VGT?	+VGT: 16 OK
<Note : >	*<Note : >*
AT+VGT=?	+VGT: 16 OK
<Note : >	*<Note : >*

2.35 AT+CLVL Loudspeaker volume level

2.35.1 Description

This command is used to select the volume of the internal loudspeaker of the MT.

2.35.2 Syntax

Test command AT+CLVL=? Description Test command returns supported values as compound value	Response +CLVL: (list of supported <level>s)
Read command AT+ CLVL? Description Read command returns the list of current setting.	Response +CLVL: <level> *+CME ERROR: <err>*
Set command AT+CLVL= <level> Description Set command sets	Response *+CME ERROR: <err>*
Reference See also 3GPP TS 27.007 V3.12.0 (8.23): Loudspeaker volume level	

2.35.3 Unsolicited Result Codes

2.35.4 Parameter

<level>

integer type value with manufacturer specific range (smallest value represents the lowest sound level)

2.35.5 Remark

2.35.6 Example

The following examples show the typical application for this command.

Command	Possible Response

AT+CLVL=5 <*Note : *> AT+CLVL? <*Note : *> AT+CLVL=? <*Note : *>	OK <*Note : *> +CLVL:5 OK <*Note : *> +CLVL: (5-8) OK <*Note : *>

2.36 AT+CMUT Mute control

2.36.1 Description

This command is used to enable and disable the uplink voice muting during a voice call.

2.36.2 Syntax

Test command AT+CMUT=? Description .	Response +CMUT: (list of supported <n>s)
Read command AT+CMUT? Description Read command returns.	Response +CMUT: <n> +CME ERROR: <err> Parameter
Set command AT+CMUT= <n> Description Set command sets	Response +CME ERROR: <err>
Reference See also 3GPP TS 27.007 V3.12.0 (8.24): Mute control	

2.36.3 Unsolicited Result Codes

2.36.4 Parameter

<n>
0 mute off
1 mute on.
<type>

2.36.5 Remark

2.36.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMUT=1	OK

<Note : 1> AT+CMUT?	*<Note : >* +CMUT: 1 OK
<Note : > AT+CMUT=?	*<Note : >*
<Note : >	*<Note : >*

2.36.7 Remark

2.36.8 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMUT=1	OK
<Note : 1> AT+CMUT?	*<Note : >* +CMUT: 1 OK
<Note : > AT+CMUT=?	*<Note : >*
<Note : >	*<Note : >*

2.37 AT+CCLK Real time clock

2.37.1 Description

Set command sets the real-time clock of the MT.

2.37.2 Syntax

Test command AT+CCLK=? Description Test command returns.	
Read command AT+CCLK? Description Read command returns	Response +CCLK: <time> +CME ERROR: <err>
Set command AT+CCLK= <time> Description Set command sets	Response OK +CME ERROR: <err>
Reference See also 3GPP TS 27.007 V3.12.0 (8.15): Clock	

2.37.3 Unsolicited Result Codes

2.37.4 Parameter

<time>

string type value, the format is "yy/mm/dd,hh:mm:ss+zz", 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; range -12...+13). E.g. 6th of May 2005, 22:10:00 GMT+2 hours equals to "05/05/06,22:10:00+08"
Note: if <time> equals current date and time or is set to an earlier date, returns +CME ERROR: 21.

2.37.5 Remark

If MT does not support time zone information then the three last characters of <time> are not returned by +CCLK? The format of <time> is specified by use of the +CSDF command The range of the year is from 2000 to 2070

2.37.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CCLK="07/10/25,11:33:40+8"	OK
<Note : >	*<Note : >*
AT+CCLK?	+CCLK: "07/10/25,11:33:44+8" OK
<Note : >	*<Note : >*
AT+CCLK=?	OK
<Note : >	*<Note : >*

2.38 AT+CALD Delete one alarm

2.38.1 Description

Action command deletes an alarm in the MT

2.38.2 Syntax

Test command AT+CALD=? Description Test command returns supported array index values.	Response +CALD: (list of supported <n>s)
Set command AT+CALD= <n> Description Set command sets	Response *+CME ERROR: <err>*
Reference See also 3GPP TS 27.007 V3.12.0 (8.37): delete Alarm	

2.38.3 Unsolicited Result Codes

2.38.4 Parameter

<n>

Integer type value Indicating the index of the alarm.

default is manufacturer specific

2.38.5 Remark

➢ .

2.38.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CALD=1 <*Note : *> AT+CALD=? <*Note : *>	OK <*Note : *> +CALD: 2 OK <*Note : *>

2.39 AT+CBC Battery charging / discharging and charge control

2.39.1 Description

This command is used to set/list alarms or date/time in the ME.

2.39.2 Syntax

Test command AT+CBC=? Description Test command .	Response +CBC: (list of supported <bcs>s),(list of supported <bcl>s) Defined values <bcs> 0 No charging adapter is connected 1 Charging adapter is connected 2 Charging adapter is connected, charging in progress 3 Charging adapter is connected, charging has finished 4 Charging error, charging is interrupted 5 False charging temperature, charging is interrupted while temperature is beyond allowed range <bcl> Battery capacity 0, 10,20, 30,40, 50,60, 70,80, 90,100 percent of remaining capacity (11 steps) 0 indicates that either the battery is exhausted or the capacity value is not available.

Read command AT+CBC? Description Read command returns.	Response +CBC: <bcs>,<bcl> <bcs> Connection status of battery pack <bcl> Battery charge level While charging is in progress (charging adapter connected) The battery capacity is not available. Consequently, parameter <bcl>=0.To query the battery capacity disconnect the charger.
Set command AT+CBC Description Set command sets	Battery charging / discharging and charge control Responses returned by the AT+CBC command vary with the operating mode of the ME: Normal mode: ME is switched on by Ignition pin and running the SLEEP, IDLE, TALK or DATA mode. Charger is not connected. AT+CBC can be used to query the battery capacity. Normal mode + charging: Allows charging while ME is switched on by Ignition pin and running the SLEEP, IDLE, TALK or DATA mode. AT+CBC returns chargerstatus. Battery capacityis not available. Charge-only mode: Allows charging while ME is detached from GSM network. Whenstarted, the mode is indicated by the URC "+SYSTART CHARGEONLY MODE". AT+SBC returns charger status. Percentage of battery capacity is not available.
	Reference

2.39.3 Unsolicited Result Codes

2.39.4 Parameter

2.39.5 Remark

2.39.6 Example

The following examples show the typical application for this command.

Command	Possible Response

AT+CBC? <*Note : >* AT+CBC=? <*Note : >*	+CBC: 0,100 OK <*Note : >* +CBC: (0-5), (0,10,20,30,40,50,60,70,80,90,100) OK <*Note : >*

2.40 AT+CBCM Supply Information when Battery Capacity changed

2.40.1 Description

This command control information display when battery capacity changed. But this command not support now

2.40.2 Syntax

Test command AT+CBCM=? Description Test command returns	Response(s) Success: +CBCM：list of supported <bNumber>s OK Fail: ERROR
Read command AT+CBCM Description Read command returns	Response(s) Success: +CBCM： <bNumber> OK Fail: ERROR
Set command AT+CBCM=<bNumber> Description Set command sets	Response(s) Success: OK Fail: ERROR
Reference none	

2.40.3 Unsolicited Result Codes

2.40.4 Parameter

<bNumber>

0 means the battery status event will not be reported initiatively

1 means the battery status event will be reported initiatively

2.40.5 Remark

2.40.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CBC=1 <*Note :* > AT+CBC? <*Note :* > AT+CBC=? <*Note :* >	OK <*Note :* > +CBC:0 OK <*Note :* > +CBC: (0-1) OK <*Note :* >

2.41 AT+CMER Mobile Termination event reporting

2.41.1 Description

This command set or query the sending mode of unsolicited result codes from TA to TE.

2.41.2 Syntax

Test command +CMER=? Description Test command returns the modes supported as compound values.	Response +CMER: (list of supported <mode>s),(list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s)
Read command +CMER? Description Read command returns the mode of MT indicators. If MT is not currently reachable, +CME ERROR: <err> is returned. Refer subclause 9.2 for <err> values.	Response +CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>
Set command +CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>]]]]] Description Set command enables or disables sending of unsolicited result codes from TA to TE in the case of key pressings, display changes, and indicator state changes.	Response Success: OK Failing: +CME ERROR: <err>
Reference 3GPP TS 27.007 V3.12.0	

2.41.3 Parameter

<mode>:

0 buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be buffered in some other place or the oldest ones can be discarded 1 discard 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 3 forward unsolicited result codes directly to the TE; TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode
<keyp>:
0 no keypad event reporting 1 keypad event reporting using result code +CKEV: <key>,<press>. <key> indicates the key (refer IRA values defined in table in subclause "Keypad control +CKPD") and <press> if the key is pressed or released (1 for pressing and 0 for releasing). Only those key pressings, which are not caused by +CKPD shall be indicated by the TA to the TE. NOTE 1: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting. 2 keypad event reporting using result code +CKEV: <key>,<press>. All key pressings shall be directed from TA to TE. NOTE 2: When this mode is enabled, corresponding result codes of all keys currently pressed should be flushed to the TA regardless of <bfr> setting.
<disp>:
0 no display event reporting 1 display event reporting using result code +CDEV: <elem>,<text>. <elem> indicates the element order number (as specified for +CDIS) and <text> is the new value of text element. Only those display events, which are not caused by +CDIS shall be indicated by the TA to the TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS 2 display event reporting using result code +CDEV: <elem>,<text>. All display events shall be directed from TA to TE. Character set used in <text> is as specified by command Select TE Character Set +CSCS
<ind>:
0 no indicator event reporting 1 indicator event reporting using result code +CIEV: <ind>,<value>. <ind> indicates the indicator order number (as specified for +CIND) and <value> is the new value of indicator. Only those indicator events, which are not caused by +CIND shall be indicated by the TA to the TE 2 indicator event reporting using result code +CIEV: <ind>,<value>. All indicator events shall be directed from TA to TE
<bfr>:
0 TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered 1 TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes)

2.41.4 Remark

2.41.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMER=3,0,0,2	OK +CIEV:battchg,5 +CIEV:signal,99
AT+CMER =?	+CMER:(3),(0),(0),(0,2) OK
AT+CMER?	+CMER:3,0,0,2 OK

2.42 AT+CEER Extended error report

2.42.1 Description

This command causes the TA to return one or more lines of information text <report>, determined by the MT manufacturer, which should offer the user of the TA an extended report of the reason for

- the failure in the last unsuccessful call setup (originating or answering) or in-call modification;
- the last call release;
- the last unsuccessful GPRS attach or unsuccessful PDP context activation;
- the last GPRS detach or PDP context deactivation.

Typically, the text will consist of a single line containing the cause information given by GSM/UMTS network in textual format.

.

2.42.2 Syntax

Test command +CEER=? Description The test command shell return “OK”.	Response OK
Set command +CEER Description The set command causes the TA to return one or more lines of information text <report>.	Response +CEER: <report>
Reference 3GPP TS 27.007 V3.12.0	

2.42.3 Parameter

<report>: the total number of characters, including line terminators, in the information text shall not exceed 2041 characters.
Text shall not contain the sequence 0<CR> or OK<CR>

2.42.4 Remark

2.42.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CEER = ? ATD13501275915; AT+CEER	OK OK BUSY +CEER: CALL RELEASED, NETWORK SENT UDUB TO ME OK

2.43 AT+CPAS Phone activity status

2.43.1 Description

This command returns the activity status <pas> of the MT. It can be used to interrogate the MT before requesting action from the phone. Refer subclause 9.2 for possible <err> values.

2.43.2 Syntax

Test command +CPAS=? Description Test command returns values supported as a compound value.	Response +CPAS: (list of supported <pas>s) *+CME ERROR: <err>*
Set command +CPAS Description The set command returns the activity status <pas> of the MT. It can be used to interrogate the MT before requesting action from the phone. Refer subclause 9.2 for possible <err> values.	Response +CPAS: <pas> *+CME ERROR: <err>*
Reference 3GPP TS 27.007 V3.12.0	

2.43.3 Parameter

<pas>:	
0	ready (MT allows commands from TA/TE)
1	unavailable (MT does not allow commands from TA/TE)
2	unknown (MT is not guaranteed to respond to instructions)
3	ringing (MT is ready for commands from TA/TE, but the ringer is active)
4	call in progress (MT is ready for commands from TA/TE, but a call is in progress)
5	asleep (MT is unable to process commands from TA/TE because it is in a low functionality state)

also all other values below 128 are reserved by the present document.

2.43.4 Remark

2.43.5 Example

The following examples show the typical application for this command.

Command	Possible Response
At+cpas=? +cpas:0,1,3,4 Ok	
At+cpas +cpas:0 ok	

2.44 AT+CCID Query SIM CCID

本条指令用于查询 SIM 的 CCID，也可以用于查询 SIM 是否存或者插好。

2.45 AT+RST Soft Reset

AT+RST=1，Reboot the module。

3 SIM/PBK Commands

The AT Commands described in this chapter are related to the A6 AT Module hardware interface. More information regarding this interface is available with the "A6 AT Module Hardware Interface Description"[4].

3.1 AT+CPIN PIN Authentication

3.1.1 Description

Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.).

3.1.2 Syntax

Test command AT+CPIN =? Description ..	Response OK
Read command AT+CPIN? Description Read command returns an alphanumeric string indicating whether some password is required or not	Response +CPIN: <code> OK ERROR *+CME ERROR: <err>*
Set command AT+CPIN=<pin>[,<newpin>] Description Set command sends to the MT a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards MT and an error message, +CME ERROR, is returned to TE. Refer subclause 9.2 for possible <err> values. If the PIN required is SIM PUK, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the active application in the UICC (GSM or USIM) or SIM card.	Response OK ERROR *+CME ERROR: <err>*
Reference 3GPP TS 27.007 V3.2.0 (2002-06)	

3.1.3 Parameter

<pin>, <newpin>:

string type values

<code>

values reserved by the present document:

READY	MT is not pending for any password
SIM PIN	MT is waiting UICC/SIM PIN to be given
SIM PUK	MT is waiting UICC/SIM PUK to be given
SIM PIN2	MT is waiting active application in the UICC (GSM or USIM) or SIM card PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that MT does not block its operation)
SIM PUK2	MT is waiting active application in the UICC (GSM or USIM) or SIM card PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that MT does not block its operation)

3.1.4 Remark

Commands which interact with MT that are accepted when MT is pending SIM PIN, SIM PUK, or PH-SIM are: +CGMI, +CGMM, +CGMR, D112; (emergency call), +CPAS, +CFUN, +CPIN, +CDIS (read and test command only), and +CIND (read and test command only).

Notes: After input three times wrong PIN, SIM card will be locked!

3.1.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPIN=”1234” Ok AT+CPIN=”5678” +CME ERROR: 3 AT+CPIN=”00000000”,”2134” +CME ERROR: 16 AT+CPIN=”123456578”,”1234” OK AT+CPIN? +CPIN: READY	 Don’t need password +CPIN: SIM PIN: need input CHV1 code +CPIN: SIM PUK:need input PUK1 code

3.2 AT^CPINC total times of access the sim card

3.2.1 Description

Remaining times of access the sim card

3.2.2 Syntax

Test command AT^CPINC=? Description	Response ^CPINC: PIN1&PIN2: (1-3), PUK1&PUK2: (1-10) OK

..	ERROR : *+CME ERROR: <err>*
Exe command AT^CPINC Description Return the rest time corresponding to the current status of sim card.	Response ^CPINC: <rest time> OK ERROR : *+CME ERROR: <err>*
Reference	

3.2.3 Example

The following examples show the typical application for this command.

Command	Possible Response
AT^CPINC ^CPINC:3,10,3,10 OK	

3.3 AT+CPIN2 PIN2 Authentication(For SIM)

3.3.1 Description

+CPIN2 controls network authentication of the MT.

3.3.2 Syntax

Test command AT+CPIN2=? Description	Response Success: OK Fail: ERROR
Read command AT+CPIN2? Description	Response Success: +CPIN2: <code> OK Fail: ERROR
Set command AT+CPIN2=<pin>[, <new pin>] Description <pin>: Password (string type), usually SIM PIN2 or, if requested, SIM PUK2 <new pin>: If the requested code was SIM PUK2: new password (PIN2). <code>: READY ME is not pending for any password. SIM PIN2 ME is waiting for SIM PIN2. SIM PUK2 ME is waiting for SIM PUK2.	Response Success: OK Fail: ERROR
Reference MC55 AT Command Set	

3.3.3 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPIN2=?	OK
AT+CPIN2? +CPIN2: READY	OK
AT+CPIN2=”2345”	OK

3.4 AT+CLCK Facility lock

3.4.1 Description

This command be used to lock or unlock some functions of the list that be supported by this ME.

3.4.2 Syntax

Test command
AT+CLCK=?
Response
+CLCK: (list of supported <fac>s)
+CME ERROR: <err>
Description
Test command returns facility values supported as a compound value

set command
AT+CLCK=<fac>,<mode>[,<passwd>[,<class>]]
Description
Execute command is used to lock, unlock or interrogate a MT or a network facility <fac>. Password is normally needed to do such actions. When querying the status of a network service (<mode>=2) the response line for 'not active' case (<status>=0) should be returned only if service is not active for any <class>. Refer subclause 9.2 for possible <err> values. This command should be abortable when network facilities are set or interrogated.
Call barring facilities are based on GSM/UMTS supplementary services (refer 3GPP TS 22.088 [6]). The interaction of these with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard.

Response

Mode == 2
+CLCK:<status>[,<class1>[<CR><LF>+CLCK:<status>,<class2>[...]]
+CME ERROR: <err>
Reference
3GPP TS 27.007 V3.2.0 (2002-06)

3.4.3 Parameter

<fac>

Type: string type

Meaning: values reserved by the present document:

"CS" CNTRL (lock Control surface (e.g. phone keyboard))

"AO" BAOC (Barr All Outgoing Calls) (refer 3GPP TS 22.088 [6] clause 1)

"OI" BOIC (Barr Outgoing International Calls) (refer 3GPP TS 22.088 [6] clause 1)

"OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) (refer 3GPP TS

22.088 [6] clause 1)

"FD" SIM card or active application in the UICC (GSM or USIM) fixed dialling memory feature (if PIN2 authentication has not been done during the current session, PIN2 is required as <passwd>)

<mode>:

Type: integer type

Meaning:

0 unlock

1 lock

2 query status

<status>:

Type: integer type

Meaning:

0 not active

1 active

<passwd>:

Type: string type;

Meaning: shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD

<class*x*> →for ss

Type: integer type

Meaning: is a sum of integers each representing a class of information (default 7):

1 voice (telephony)

2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)

4 fax (facsimile services)

8 short message service

16 data circuit sync

32 data circuit async

64 dedicated packet access

128 dedicated PAD access

3.4.4 Remark

3.4.5 Example

The following examples show the typical application for this command.

Command	Possible Response
<.SC: lock SIM cards> AT+CLCK="SC",1,"1234" OK Require lock status AT+CLCK="SC",2 +CLCK: 1 OK <Restart system> AT+CPIN? +CPIN: SIM PIN OK AT+CPIN=”1234” OK AT+CLCK="SC",0,”1234” OK < Restart system > AT+CPIN? +CPIN: READY OK	Notes：1) After input three times wrong PIN, SIM card will be locked; 2) Here suppose correct SIM pin = 1234
<.FD: SIM fixed dialing memory, NO support for the moment > <Call barring> AT+CLCK=”OI”,1,”0000”, 255 OK ATD13560243602; NO CARRIER ＜can,t call＞ AT+CLCK=”OI”,2,”0000” +CLCK: 1,1 +CLCK: 1,2 +CLCK: 1,4 OK AT+CLCK=”AC”,0,”0000”,3 OK <Factory set SIM locks, NO support for the moment>	Here suppose Bar code=0000。

3.5 AT+CPWD Change password

3.5.1 Description

This command is used to change password [pin/pin2]

3.5.2 Syntax

Test command AT+CPWD=? Description Test command returns a list of pairs which present the available facilities and the maximum length of their password.
Response +CPWD: list of supported (<fac>,<pwdlength>) *+CME ERROR: <err>*
set command AT+CPWD=<fac>,<oldpwd>,<newpwd> Description Action command sets a new password for the facility lock function defined by command Facility Lock

+CLCK.
Response *+CME ERROR: <err>*
Reference 3GPP TS 27.007 V3.2.0 (2002-06)

3.5.3 Unsolicited Result Codes

..
..

3.5.4 Parameter

<fac>

Type: string type
Meaning:
"P2" SIM PIN2
refer Facility Lock +CLCK for other values

<oldpwd>, <newpwd>:

Type: string type;
Meaning: <oldpwd> shall be the same as password specified for the facility from the MT user interface or with command Change Password +CPWD and <newpwd> is the new password; maximum length of password can be determined with <pwdlength>

<pwdlength>:

Type: integer type
Meaning: maximum length of the password for the facility

3.5.5 Remark

3.5.6 Example

The following examples show the typical application for this command.

Command	Possible Response
<.SC: to change SIM PIN> *AT+CPWD="SC",”3333”,”1234”* *+CME ERROR: 16* *AT+CPINC* *+CPINC: 2* *OK* *AT+CPWD="SC",”1234”,”0000”* *OK* *<.P2: to change SIM PIN2>* *AT+CPWD="P2",”1111”,”1234”* *+CME ERROR: 16* *AT+CPINC* *+CPINC: 2* *OK* *AT+CPWD="P2",”0000”,”1234”* *OK*	

3.6 AT+CRSM Restricted SIM Access

3.6.1 Description

This command support limited access to SIM database.

3.6.2 Syntax

Test command AT+CRSM=? Description This command support limited access to SIM database.	Response +OK +CME ERROR: <err>
Set command AT++CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>]]] Description Set command transmits to the MT the SIM <command> and its required parameters.	Response Success: +CRSM: <sw1>,<sw2>[,<response>] Error: +CME ERROR: <err>
Reference 3GPP TS 27.007	

3.6.3 Parameter

<command>(command passed on by the MT to the SIM; refer GSM 11.11[28]);

176 READ BINARY

178 READ RECORD

192 GET RESPONSE

214 UPDATE BINARY

220 UPDATE RECORD

242 STATUS

All other values are reserved

NOTE 1: NOTE 1: The MT internally executes all commands necessary for selecting the desired file, before performing the actual command.

<fileid>: integer type; this is the identifier of a elementary datafile on SIM. Mandatory for every command except STATUS

NOTE 2 : The range of valid file identifiers depends on the actual SIM and is defined in GSM 11.11 [28]. Optional files may not be present at all.

<P1>, <P2>, <P3>: integer type; parameters passed on by the MT to the SIM. These parameters are mandatory for every command, except GET RESPONSE and STATUS. The values are described in GSM 11.11 [28]

<data>: information which shall be written to the SIM (hexadecimal character format; refer +CSCS)

<sw1>, <sw2>: integer type; 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 of a successful completion of the command previously issued (hexadecimal character format; refer +CSCS). STATUS and GET RESPONSE return data, which gives information about the current elementary datafield. This information includes the type of file and its size (refer GSM 11.11 [28]). After READ

BINARY or READ RECORD command the requested data will be returned. <response> is not returned after a successful UPDATE BINARY or UPDATE RECORD command

3.6.4 Remark

3.6.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CRSM=192,28433,0,0,15	+CRSM:144,0,621E82054221001C0283026F40A503 OK

3.1 AT+CNUM Subscriber number

3.1.1 Description

The MS ISDN related to the subscriber.

3.1.2 Syntax

Test command AT+CNUM=? Description Just return OK	Response OK
Exe command +CNUM Description ..	Response Success: +CNUM: [<alpha1>],<number1>,<type1>[<CR><LF>] +CNUM: [<alpha2>],<number2>,<type2> OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0	

3.1.3 Unsolicited Result Codes

None

3.1.4 Parameter

< alphax > optional alphanumeric string associated with <number*x*>; used character set should be the one selected with command Select TE Character Set +CSCS
<**numberx**> string type phone number of format specified by <typex>
< **typex** > type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)
< **text** > **Meaning: field of maximum length <tlength>; character set as specified by command +CSCS. The display of text depending to the storage format in the sim card. If we store the pbk entry with ucs2 format, we show Chinese string here, otherwise, we show NON-Chinese string. We don't care about**

charsets, it is decided by command +CSCS setting when we store them.

3.1.5 Remark

3.1.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CNUM	+CNUM: "john","111",129 (non-Chinese string) *(with non-ucs2 of AT+CSCS setting as pbk storing)* +CNUM: "XXXXX","34",129 (Chinese string) (with ucs2 of AT+CSCS setting as pbk storing) OK

3.2 AT+CPBR Read current Phonebook

3.2.1 Description

Read phonebook entries in location number range <index1>…<index2> form the current phonebook memory storage selected. If the <index2> is omitted, only the entry with index of <index1> is returned if exists.

3.2.2 Syntax

Test command AT+CPBR=? Description Return the parameter ranges.	Response Success: +CPBR: (support<index>s),[<nlength>],[<tlength>] OK Fail: ERROR
Set command +CPBR=<index1>[,<index2>] Description ..	Response Success: [+CPBR: <index1>,<number>,<type>,<text>[[...] <CR><LF>+CPBR: <index2>,<number>,<type>,<text>]] OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0	

3.2.3 Unsolicited Result Codes

None

3.2.4 Parameter

<index1>, **<index2>**
Integer type values in the range of location numbers of phonebook memory
<number>
Type: string type Meaning: phone number of format <type>
< type >

Type: integer type **Meaning: type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7) ; default 145 when dialing string includes international access code character "+", otherwise 129**
< **text** >
Type: string type **Meaning: character set as specified by command +CSCS. The display of text depending to the storage format in the sim card. If we store the pbk entry with ucs2 format, we show Chinese string here, otherwise, we show NON-Chinese string. We don't care about charsets, it is decided by command +CSCS setting when we store them.**
< **nlength** >
Type: integer type Meaning: value indicating the maximum length of field <number>
< <**tlength**> >
Meaning: field of maximum length <tlength>

3.2.5 Remark

- If <index2> is smaller than <index1>, error should be returned.
- When DTE character set is "GSM" (set by +CSCS command), the target phonebook entry will be output in an (big-endian) UCS2 hex string form if it is not a pure ASCII (single byte encoding) string. If the DTE character set is "UCS2" it will always be output in UCS2 hex string form.

3.2.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPBR=1 *(with non-ucs2 of AT+CSCS setting as pbk storing)*	+CPBR: 1,"111",129,"linda" OK
AT+CPBR=2 *(with ucs2 of AT+CSCS setting as pbk storing)*	+CPBR: 2,"+ 999999",145,"XXXXX" (Chinese string) OK

3.3 AT+CPBS Select phonebook memory storage

3.3.1 Description

Select a certain memory storage.

3.3.2 Syntax

Test command AT+CPBS=? Description Return the parameter ranges.	Response Success: +CPBS: (list of supported <storage>s) OK Fail: ERROR
Read command AT+CPBS? Description Read current storage.	Response Success: +CPBS: <storage>[,<used>,<total>] OK Fail: ERROR

Set command AT+CPBS=<storage> Description ..select certain storage	Response Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0	

3.3.3 Unsolicited Result Codes

none.

3.3.4 Parameter

<storage>
"SM" SIM/UICC phonebook "ON" active application in the UICC (GSM or USIM) or SIM card (or MT) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also) "DC" MT dialled calls list (+CPBW may not be applicable for this storage) "EN" active application in the UICC (GSM or USIM) or SIM card (or MT) emergency number (+CPBW is not be applicable for this storage) "FD" active application in the UICC (GSM or USIM) or SIM card fixdialling-phonebook "LD" active application in the UICC (GSM or USIM) or SIM card last-dialling-phonebook "MC" MT missed (unanswered received) calls list (+CPBW may not be applicable for this storage) "ME" MT phonebook "MT" combined MT and SIM/UICC phonebook "RC" MT received calls list (+CPBW may not be applicable for this storage) "TA" TA phonebook
<password>:
string type value representing the PIN2-code required when selecting PIN2-code locked <storage>s above, e.g. "FD".
<used>:
integer type value indicating the number of used locations in selected memory
<total>
integer type value indicating the total number of locations in selected memory

3.3.5 Remark

- **If we want to write to "FD" pbk, the pin2-code are required, otherwise operation is forbidden.**
- **Once we input pin2-code with "AT+CPIN2" or "AT+CLCK" or others operation related with inputing pin2-code, the pin2-code will keep active and will be lost when system restart.**

3.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPBS=?	+CPBS: ("SM","ON","FD","LD") OK
AT+CPBS?	+CPBS: "ON",2,2 OK
AT+CPBS="SM"	OK
AT+CPBS?	+CPBS: "SM",1,250

OK

3.4 AT+CPBF find phonebook entries

3.4.1 Description

The command returns phonebook entries with alphanumeric fielda starting with a given string. The AT+CPBF="" command can be used to display all phonebook entries sorted in alphabetical order.

This command is not allowed for "LD","RC","MC","SN" phonebooks and for the "EN" phonebook, which does not contain alphanumeric fields.

It is possible to use this command with UCS2 strings. If a wrong UCS2 format is entered, the string is considered as an ASCII string..

3.4.2 Syntax

Test command AT+CPBF=? Description Return the parameter maximum.	Response Success: +CPBF: [<nlength>],[<tlength>] OK Fail: *+CME ERROR: <err>*
Set command AT+CPBF=<findtext> Description	Response Success: [+CPBF: <index1>,<number>,<type>,<text>[[...] <CR><LF>+CBPF: <index2>,<number>,<type>,<text>]] Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0	

3.4.3 Parameter

<index1>, **<index2>**
Integer type values in the range of location numbers of phonebook memory
<number>
Type: string type Meaning: phone number of format <type>
< **type** >
Type: integer type Meaning: type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7) ; default 145 when dialing string includes international access code character "+", otherwise 129
<findtext>, **<text>**
Type: string type **Meaning: character set as specified by command +CSCS. If we want to find Chinese string in the all pbk entry, we must set charset value with command +CSCS of "ucs2", otherwise we find non-Chinese string with command +CSCS of "non-ucs2". And now the ucs2 supported in our environment is big-ending Unicode, we must input big-ending Unicode string in the field if setting value of cscs is equal to "ucs2".**
< **nlength** >
Type: integer type Meaning: value indicating the maximum length of field <number>
<tlength>
Type: integer type Meaning: value indicating the maximum length of field <text>

3.4.4 Remark

1. If we want to write to “FD” pbk, the pin2-code are required, otherwise operation is forbidden.
2. Once we input pin2-code with “AT+CPIN2” or “AT+CLCK” or others operation related with inputing pin2-code, the pin2-code will keep active and will be lost when system restart.

3.4.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPBF=? (query storage information of cpbf)	+CPBF: 20,14 OK
AT+CSCS=”non-ucs2 value” AT+CPBF=”John” *(note1:with non-ucs2 of AT+CSCS setting when we find non-Chinese storing)* *(note2: “non-ucs2 value” = "GSM",or "HEX",or "PCCP936")*	OK +CPBF:3,”123434543”,129,” John” OK
AT+CSCS=”UCS2” AT+CPBF=”XXXXX” *(note1: with ucs2 of AT+CSCS setting when we find Chinese storing)* *(note2: “XXXXX” = uncode big-ending string to input)*	OK +CPBF:5,”+861382253”,145,”XXXXX”(Chinese string) OK *(if we found, “XXXXX” = local language, here is Chinese string)*

3.5 AT+CPBW write phonebook entries

3.5.1 Description

Writes phonebook entry in location number <index> in the current phonebook memory storage selected. if there is no index parameter in the command line, the record will be written to the free location.

If the current phonebook storage is “ON”, modification is allowed, but deleting entry is forbidden.We can add entries to the “ON” phonebook when it have free location, otherwise add entry to “ON” is forbidden.

If the current phonebook storage is “LD”, deleting is allowed, but adding or modification entry is forbidden.

If the current phonebook storage is “FD”, which is locked by pin2, executing the command may be returned ERROR or relevant CME error. To continue the operation, please enter the relevant pin specified by “+cpin?”. Input pin2, deleting or adding or modification entry is allowed.

If the current phonebook storage is “SM”, deleting or adding or modification entry is allowed.

3.5.2 Syntax

Test command AT+CPBW=? Description Return the parameter maximum.	Response Success: +CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>] Fail:

	ERROR
Set command AT+CPBW=[<index>],<number> [,<type> [,<text>]] Description	Response Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0	

3.5.3 Parameter

<index>
Type: integer type Meaning: values in the range of location numbers of phonebook memory
<number>
Type: string type Meaning: phone number of format <type> Note: valid phone numbe chars are as follows: 0-9,*,#,+(+only can be the first position)
< type >
Type: integer type Meaning: type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7) ; default 145 when dialling string includes international access code character "+", otherwise 129
<text>
Type: string type **Meaning: character set as specified by command +CSCS. If we want to find Chinese string in the all pbk entry, we must set charset value with command +CSCS of “ucs2”, otherwise we find non-Chinese string with command +CSCS of “non-ucs2”. And now the ucs2 supported in our environment is big-ending Unicode, we must input big-ending Unicode string in the field if setting value of cscs is equal to “ucs2”.**
< nlength >
Type: integer type Meaning: value indicating the maximum length of field <number>
<tlength>
Type: integer type Meaning: value indicating the maximum length of field <text>,counting in single byte char. Note: if phonebook characterset is “HEX”, the supported UCS2 char count is smaller than that specified by <tlength> by 1.This is because UCS2 char storing flag occupies 1 byte.

3.5.4 Remark

1. AT+CPBW=[<index>],<number>[,<type>[,<text>]]，the number setting NULL is forbidden.
1. **Executed AT+CLCK and “FD” is locked, then operation of “SM” phonebooks are forbidden, but operation of other phonebooks is allowed.**

3.5.5 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPBW=? *(query storage information of cpbw)*	+CPBW: (1-250),20,(129,145,161),14 OK
AT+CSCS=”non-ucs2 value”	OK

	OK
AT+CPBW=1, “123”,129, ”Linda”	
(note1:with non-ucs2 of AT+CSCS setting when we write non-Chinese storing) *(note2: “non-ucs2 value” = "GSM",or "HEX",or "PCCP936")*	
AT+CSCS=” UCS2”	OK
AT+CPBW=1,”+123”,145, ”XXXXX”	OK
(note1: with ucs2 of AT+CSCS setting when we write Chinese storing) *(note2: “XXXXX” = uncode big-ending string to input)*	
AT+CPBW=1 *(not care about AT+CSCS setting when delete some one pbk entry whether it is Chinese string or not)*	OK

4 Call Control Commands

The AT Commands described in this chapter are related to Mobile Originated (MOC, i.e. outgoing) Calls and Mobile Terminated (MTC, i.e. incoming) Calls.

4.1 ATA Answer a call

4.1.1 Description

This command is used to answer an incoming call.

4.1.2 Syntax

Exe command ATA	Response Success: CONNECT Fail: ERROR NO CARRIER
Reference：ITU-T Recommandation V.25 ter	

4.1.3 Unsolicited Result Codes

URC1
RING:
URC2
CIEV: SOUNDER 1
CIEV: CALL 1

4.1.4 Parameter

NONE

..

4.1.5 Remark

This command should be used only when there is one call. When there are several calls, please use the AT+CHLD to answer a new call.

4.1.6 Example

The following examples show the typical application for this command.

Command	Possible Response
RING<incoming call> **ATA**	*CONNECT*

4.2 ATD Make a call

4.2.1 Description

This command is used to make an outgoing call. The length of dial number is less than 20.

4.2.2 Syntax

Exe command ATD<number>;	Response Success: When the call is in progress: OK **and** NO ANSWER **or** NO CARRIER **or** //connection be released NO DAILTONE **or** BUSY Fail:

	ERROR
Reference ITU-T Recommandation V.25 ter	

4.2.3 Unsolicited Result Codes

URC1
CONNECT:

URC2
CIEV: SOUNDER 1
CIEV: CALL 1

4.2.4 Parameter

<Number>:

Dialing digits, include 1,2,3,4,5,6,7,8,9,0,*,#,+,A,B,C,….

4.2.5 Remark

4.2.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD10086;	OK CONNECT
AT+CLCC	+CLCC: 1,0,0,0,0,"10086",129 OK OK
ATD112;	NO CARRIER <Only an emergency call can be made when we do the test without SIM card. “NO CARRIER” will be returned when you press the “CANCEL” button.>

4.3 AT+DLST Redial last MO call

4.3.1 Description

Redial last outgoing call.

4.3.2 Syntax

Exe command AT+DLST	Response Success: When the call is in progress: OK **and** NO ANSWER **or** NO CARRIER **or** //connection be released NO DAILTONE **or** BUSY Fail: ERROR
Reference MRD document	

4.3.3 Unsolicited Result Codes

URC1
CONNECT

4.3.4 Parameter

NONE

4.3.5 Remark

The usage of the command is the same as the ATD. The other command following this command in the same line is omitted.

4.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD10086;	OK CONNECT
ATH	OK
AT+DLST	OK CONNECT

4.4 ATH Disconnect existing call

4.4.1 Description

Hang up all existing connected calls, including active, waiting and hold calls

4.4.2 Syntax

Exe command ATH	Response Success: OK Fail: ERROR
Reference ITU-T V.25 ter(6.2.7): Result code suppression	

4.4.3 Unsolicited Result Codes

URC1 CIEV: SOUNDER 0 CIEV: CALL 0	None

4.4.4 Parameter

NONE

4.4.5 Remark

When the link is established or ringing, the command will get OK. But for the establishing, the command will get error.

4.4.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD10086;	OK CONNECT
ATH	OK

4.5 AT+CHUP Hang up all existing connected calls

4.5.1 Description

Hang up all existing connected calls, including active, waiting and hold calls

4.5.2 Syntax

Test command AT+CHUP=?	Response OK
Set command AT+CHUP	Response Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0	

4.5.3 Unsolicited Result Codes

URC1 CIEV: SOUNDER 0 CIEV: CALL 0

4.5.4 Parameter

NONE

4.5.5 Remark

This command implements the same behavior as ATH.

4.5.6 Example

The following examples show the typical application for this command.

Command	Possible Response
<there are two connecting calls, one is active and the other is held> **AT+CHUP** <Both of the call was hang up>	OK

4.6 AT+CHLD Call hold and multiparty

4.6.1 Description

This command deal with call held, retrieve, multiparty and hang up functions and so on.

4.6.2 Syntax

Test command AT+CHLD=?	Response OK
Set command AT+CHLD=<n>	Response Success: OK Fail: ERROR

Reference
3GPP TS 27.007 V3.12.0

4.6.3 Unsolicited Result Codes

URC1
CSSU: <code2>,

4.6.4 Parameter

<n>:

0: Releases all held calls or sets User Determined User Busy (UDUB) for a waiting call.

1: Releases all active calls (if any exist) and accepts the other (held or waiting) call [waiting call is the first].

1X: Releases a specific call X it can be in active, hold or waiting state.

2: Places all active calls (if any exist) on hold and accepts the other (held or waiting) call.

2X: Places all active calls on hold except call X with which communication shall be supported.

3: Adds a held call to the conversation.

<code2>:

2: call has been put on hold (during a voice call).

3: call has been retrieved (during a voice call).

4: multiparty call entered (during a voice call).

4.6.5 Remark

The multiparty call has the MAX connection is 5, at the same time, the phone can also has a waiting call.

4.6.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD10086;	OK
RING +CCWA: "13501275915",161,1,,255	
AT+CHLD=0	OK
	OK
AT+CHLD=2	
AT+CLCC	+CLCC: 1,0,1,0,0,"10086",129 +CLCC: 2,1,0,0,0,"13501275915",161 OK
<when there is a hold call and an active call>	
AT+CHLD=3	OK
at+clcc	+CLCC: 1,0,0,0,1,"10086",129 +CLCC: 2,1,0,0,1,"13501275915",161 OK
AT+CHLD=21	OK

at+clcc	+CLCC: 1,0,0,0,0,"10086",129 +CLCC: 2,1,1,0,1,"13501275915",161 OK
AT+CHLD=1	OK
at+clcc	+CLCC: 2,1,0,0,1,"13501275915",161 OK
AT+CHLD=12<hang up connect 2>	OK
at+clcc	OK

4.7 AT+CLCC List current calls of ME

4.7.1 Description

List all calls of ME.

4.7.2 Syntax

Test command AT+CLCC=?	Response OK
Set command AT+CLCC	Response Success: [+CLCC: <id1>, <dir>, <stat>, <mode>, <mpty>[, <number>,<type>] [<CR><LF>+CLCC: <id2>, <dir>, <stat>, <mode>, <mpty>[, <number>,<type>] …] OK Fail: *+CME ERROR: <err>*
Reference：3GPP TS 27.007 V3.12.0	

4.7.3 Unsolicited Result Codes

None

4.7.4 Parameter

< id*x*>:
integer type; call identification number as described in 3GPP TS 22.030 [19] sub clause 4.5.5.1; this number can be used in +CHLD command operations
<dir>:
0 mobile originated (MO) call
1 mobile terminated (MT) call
<stat>: (state of the call)
0 active
1 held
2 dialing (MO call)
3 alerting (MO call)
4 incoming (MT call)

5 waiting (MT call)

7 release (network release this call)

<mode> (bearer/teleservice)

0 voice

1 data

2 fax

3 voice followed by data, voice mode

4 alternating voice/data, voice mode

5 alternating voice/fax, voice mode

6 voice followed by data, data mode

7 alternating voice/data, data mode

8 alternating voice/fax, fax mode

9 unknown

<mpty>

0call is not one of multiparty (conference) call parties

1call is one of multiparty (conference) call parties

<number>:

string type phone number in format specified by <type>

<type>:

type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7)

4.7.5 Remark

4.7.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD10086;	OK
RING +CCWA: "13501275915",161,1,,255	OK
AT+CHLD=2	+CLCC: 1,0,1,0,0,"10086",129 +CLCC: 2,1,0,0,0,"13501275915",161
AT+CLCC	OK

4.8 AT+VTD Tone duration

4.8.1 Description

Set tone duration.

4.8.2 Syntax

Test command AT+VTD=?	Response Success: +VTD：(1-10) OK Fail: ERROR

Read command AT+VTD?	Response Success: +VTD:<n> OK Fail: ERROR
Set command AT+VTD=<n>	Response Success: OK Fail: *+CME ERROR: <err>*
Reference 3GPP TS 27.007 V3.12.0	

4.8.3 Unsolicited Result Codes

None

4.8.4 Parameter

<n>:
Duration of the tone in 1/10 second

4.8.5 Remark

4.8.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+VTD=10	OK
AT+VTD?	+VTD:10 OK
AT+VTD=?	+VTD: (1-10) OK

4.9 AT+VTS DTMF and Tone generation

4.9.1 Description

Sent the DTMF and generate the tone.

4.9.2 Syntax

Test command AT+VTS=?	Response Success: (list of supported <DTMF>s). OK Fail: ERROR
Set command AT+VTS=< DTMF>,<duration>	Response Success: OK Fail: *+CME ERROR: <err>*

Reference 3GPP TS 27.007 V3.12.0

4.9.3 Unsolicited Result Codes

None

4.9.4 Parameter

<DTMF>: A single ASCII character in the set 0-9, #,*,A-D. This is interpreted as a single ACSII character whose duration is set by the +VTD command.
<duration>: time in 1/10 second

4.9.5 Remark

4.9.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD10086;	OK
AT+VTS=1	CONNECT
AT+VTS=2，10	OK OK
AT+VTS=?	+VTS: (0-9,*,#,A,B,C,D),(1-10) OK

4.10 AT+VTSEX play special DTMF and Tone

4.10.1 Description

Play special DTMF and tone.

4.10.2 Syntax

Set command AT+VTS=< Type>	Response Success: OK Fail: *+CME ERROR: <err>*

4.10.3 Unsolicited Result Codes

None

4.10.4 Parameter

<DTMF>:
Type only can be 1, it can play special tone two times

4.10.5 Remark

4.10.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD112;	CONNECT
AT+VTSEX=1	OK

5 Network Service Commands

The AT Commands described in this chapter are related to various network services. More commands related to this area can be found in Chapter 10, Supplementary Service Commands.

5.1 AT+COPN Read operator names

5.1.1 Description

List the operators name form MT

5.1.2 Syntax

Test command AT+COPN=? Description	Response Success: OK Fail: ERROR
Exec command AT+COPN Description	Response +COPN: <numeric1>,<alpha1> [<CR><LF>+COPN: <numeric2>,<alpha2> [...]] *+CME ERROR: <err>*
Reference 3GPP TS 27.007 V3.12.0	

5.1.3 Unsolicited Result Codes

URC1 +CALA: <text>
URC2 +SYSSTART ALARM MODE+CALA: <text>

5.1.4 Parameter

< numericn >
string type; operator in numeric format (see +COPS)
< alphan >
string type; operator in long alphanumeric format (see +COPS)

5.1.5 Remark

Execute command returns the list of operator names from the MT. Each operator code <numeric*n*> that has an alphanumeric equivalent <alpha*n*> in the MT memory shall be returned.

5.1.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+COPN <*Note : ..*>	+COPN: 46000, “CMCC” +COPN: 46001, “China Unicom” …… OK <*Note :..*>

5.2 AT+COPS Operator selects

5.2.1 Description

This command be used to select the vender.

5.2.2 Syntax

Test command AT+COPS=? Description	Response +COPS: [list of supported (<stat>,long alphanumeric <oper> ,short alphanumeric <oper>,numeric <oper>)s] [,,(list of supported <mode>s),(list of supported <format>s)] *+CME ERROR: <err>*
Read command AT+COPS? Description	Response +COPS: <mode>[,<format>,<oper>] *+CME ERROR: <err>*
Set command AT+COPS=mode[,<format> [,<oper>]] Description	Response *+CME ERROR: <err>*
Reference 3GPP TS 27.007 V3.12.0	

5.2.3 Unsolicited Result Codes

URC1 +CALA: <text>
URC2 +SYSSTART ALARM MODE+CALA: <text>

5.2.4 Parameter

<mode>:
0 automatic (<oper> field is ignored) 1 manual (<oper> field shall be present) 2 deregister from network 3 set only <format> (for read command +COPS?), do not attempt registration/deregistration (<oper> field is ignored); this value is not applicable in read command response 4 manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered
<format>:
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; long alphanumeric format can be upto 16 characters long and short format up to 8 characters (refer GSM MoU SE.13 [9]); numeric format is the GSM Location Area Identification number (refer GSM 04.08 [8] subclause 10.5.1.3) which consists of a three BCD digit country code coded as in ITU-T E.212 Annex A [10], plus a two BCD digit network code, which is administration specific; returned <oper> shall not be in BCD format, but in IRA characters converted from BCD; hence the number has structure: (country code digit 3)(country code digit 2)(country code digit 1)(network code digit 2)(network code digit 1)
<stat>:
0 unknown 1 available 2 current 3 forbidden

5.2.5 Remark

Set command forces an attempt to select and register the GSM/UMTS network <oper>. Mode is used to decide the register should be automatic or manual. If the selected mode is manual or manual first, the network should return with a list from which user can select one to register on.

Read command returns the current mode and the currently selected operator. If no operator is selected, <format> and <oper> are omitted.

Test command returns a list of quadruplets, each representing an operator present in the network. Quadruplet consists of an integer indicating the availability of the operator <stat>, long and short alphanumeric format of the name of the operator, and numeric format representation of the operator. Any of the formats may be unavailable and should then be an empty field. The list of operators shall be in order: home network, networks referenced in SIM/UICC, and other networks.

5.2.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+COPS=? *<Note : ..>*	+COPS: (1,"D2",,"26202"),(2,"E-Plus",,"26203"),,(0-4),(0,2) OK *<Note :..>*
AT+COPS?	+COPS: 0 OK *<Note :..>* Register network failed
AT+COPS=3,0 <Set oper format>	OK
AT+COPS?	+COPS: 0,0," CMCC " OK
AT+COPS=3,2	OK
AT+COPS?	+COPS: 0, 0, 46000 OK *<Note :..>* Register network succeed
AT+COPS=0	OK
AT+COPS=1,2,"46000"	OK
AT+COPS?	+COPS: 0, 0, "CMCC" OK *<Note :..>* Automatic and manual

5.3 AT+CREG Network registration

5.3.1 Description

This command be used to query the register status.

5.3.2 Syntax

Test command AT+CREG=? Description	Response +CREG: (list of supported <n>s)
Read command AT+CREG? Description Read command return current register status.	Response +CREG: <n>,<stat>[,<lac>,<ci>] *+CME ERROR: <err>*
Set command AT+CREG=<n> Description Set CMD used to control the unsolicited result code +CREG	Response OK
Reference 3GPP TS 27.007 V3.12.0	

5.3.3 Unsolicited Result Codes

URC1 +CALA: <text>
URC2 +SYSSTART ALARM MODE+CALA: <text>

5.3.4 Parameter

<n>:

0	disable network registration unsolicited result code
1	enable network registration unsolicited result code +CREG: <stat>
2	enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<ci>]
<stat>:	
0	not registered, MT is not currently searching a new operator to register to
1	registered, home network
2	not registered, but MT 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 (e.g. "00C3" equals 195 in decimal)	
<ci>:	
string type; two byte cell ID in hexadecimal format	

5.3.5 Remark

5.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CREG=1 <*Note : ..*>	OK <参考 URC: +CREG> <*Note :..*> 1: Enable URC +CREG:<stat> to report status change of network registration
AT+CREG?	+CREG:0,1 OK <参考 URC: +CREG> <*Note :..*> Query the register status of the local and network

5.4 AT+CSQ Signal quality

5.4.1 Description

This command be used to query the quality of the signal.

5.4.2 Syntax

Test command AT+CSQ=? Description	Response +CSQ: (list of supported <rssi>s),(list of supported <ber>s)
Exec command AT+CSQ Description Execution command returns received signal strength indication <rssi> and channel bit error rate <ber> from the MT.	Response +CSQ: <rssi>,<ber> *+CME ERROR: <err>*
Reference 3GPP TS 27.007 V3.12.0	

5.4.3 Unsolicited Result Codes

URC1 +CALA: <text>

URC2 +SYSSTART ALARM MODE+CALA: <text>

5.4.4 Parameter

<rssi>:
0 -113 dBm or less 1 -111 dBm 2...30 -109... -53 dBm 31 -51 dBm or greater 99 not known or not detectable
<ber> (in percent):
0...7 as RXQUAL values in the table in GSM 05.08 [20] sub clause 8.2.4 99 not known or not detectable

5.4.5 Remark

5.4.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CSQ	+CSQ: 13, 99 OK *<Note :..>*
AT+CSQ=?	+CSQ: (0-31,99),(0-7,99)

5.5 AT+CPOL Preferred operator list

5.5.1 Description

This command is used to edit the user preferred list of networks in the active application on the UICC (GSM or USIM) or preferred list of networks in the SIM card. Execute command writes an entry in the SIM list of preferred operators ($EF_{PLMNsel}$), when the SIM card is present or when the UICC is present with an active GSM application. When UICC is present with an active USIM application, execute commands writes an entry in the User controlled PLMN selector with Access Technology list ($EF_{PLMNwAcT}$), only the PLMN field could be entered, the Access Technologies for each PLMN in this list is not accesible with this command (Note: new command for accessing the Access Technologies for each PLMN in this list is FFS). 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. Refer subclause 9.2 for possible <err> values.

Note: when adding preferred operater, <format> can only be 2.

Read command returns all used entries from the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card list of preferred operators.

Note: if <format> is 0, but there is no relevant long format alphanumeric <oper>, the numeric <oper> will be returned.

Test command returns the whole index range supported by the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card.

5.5.2 Syntax

Test command AT+CPOL=? Description	Response +CPOL: (list of supported <index>s),(list of supported <format>s)+*CME ERROR: <err>*

Read command AT+CPOL? Description	Response +CPOL: <index1>,<format>,<oper1> [<CR><LF>+CPOL: <index2>,<format>,<oper2> [...]] *+CME ERROR: <err>*
Set command AT+CPOL=[<index>][, <format>[,<oper>]] Description	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

5.5.3 Unsolicited Result Codes

URC1 +CALA: <text>
URC2 +SYSSTART ALARM MODE+CALA: <text>

5.5.4 Parameter

<indexn>:
integer type; the order number of operator in the active application in the UICC (GSM or USIM) user preferred list of networks or SIM card preferred operator list
<format>:
0 long format alphanumeric <oper> 1 short format alphanumeric <oper> 2 numeric <oper>
<opern>:
string type; <format> indicates if the format is alphanumeric or numeric (see +COPS)

5.5.5 Remark

5.5.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPOL=?	+CPOL: (1-8),(0,2) OK
AT+CPOL?	+CPOL: 1,2,"46000" OK
AT+CPOL=2,2,"46001"	OK *<Note : ..>*Add a preferred operator
AT+CPOL?	+CPOL: 1,2,"46000" +CPOL: 2,2,"46001" OK
AT+CPOL=,0	OK <Note : ..>Set the display format as long format alphanumeric <oper>
AT+CPOL?	+CPOL: 1,0,"China Mobile" +CPOL: 2,0,"China Unicom" OK
AT+CPOL=1 AT+CPOL?	OK <Note : ..>Delete the preferred operator with index of 1 +CPOL: 2,0,"China Unicom"
<Note : ..>	OK

6 STK/SS Commands

The AT Commands described in this chapter are related to various network services. More commands related to this area can be found in Chapter.

6.1 AT+CACM Accumulated call meter (ACM) reset or query

6.1.1 Description

The read command returns the current ACM value.
The write command resets the Advice of Charge related to the accumulated call meter (ACM) value in SIM file EF(ACM). ACM contains the total number of home units for both the current and preceding calls

6.1.2 Syntax

Test command AT+CACM=? Description ..Only return ok	Response OK
Read command AT+CACM? Description ..	Response Success: ＋CACM：<acm> OK Fail: +CME ERROR: <err>
Set command AT+CACM = < password > Description ..reset ACM to zero.	Response Success: OK Fail: +CME ERROR: <err>
Reference 3GPP TS 27.007 V3.12.0	

6.1.3 Unsolicited Result Codes

none.

6.1.4 Parameter

<passwd>
.. SIM PIN2 Note: the string length supported in our environment is no more than 4.
<acm>
.. string type; accumulated call meter value similarly coded as <ccm> under +CAOC

6.1.5 Remark

Set CMD reset ACM with parameter SIM PIN2, read CMD get current ACM, Test CMD not defined yet.

Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units

Command AT+CCWE control the unsolicited result code: +CCWV to be sent shortly before the ACM maximum value reached.

6.1.6 Example

The following examples show the typical application for this command.

Command	Possible Response

AT+CACM?	+CACM: "000000" OK < TA returns the current ACM value: 000000-FFFFFF (Total call fare)>
AT+CACM="1234"	*OK* < TA resets the Advice of Charge related to the ACM value in SIM file EF(ACM). 1234 is SIM PIN2>

6.2 AT+CAMM Accumulated call meter maximum (ACMmax) set or query

6.2.1 Description

The write command sets the Advice of Charge related to the accumulated call meter maximum value in SIM file EF (ACMmax). ACMmax contains the maximum number of home units allowed to be consumed by the subscriber.

The read command returns the current ACMmax value

6.2.2 Syntax

Test command AT+CAMM=? Description ..Only return ok	Response OK
Read command AT+CAMM? Description Get the ACMmax value	Response Success: ＋CAMM：<acmmax> OK Fail: +CME ERROR: <err>
Set command AT+CAMM =<acmmax>[,<passwd>] Description .reset the ACM MAX value	Response Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.12.0	

6.2.3 Unsolicited Result Codes

none..

6.2.4 Parameter

<passwd>
SIM PIN2
< acmmax >
string type; accumulated call meter maximum value similarly coded as <ccm> under +CAOC; value zero disables ACMmax feature

6.2.5 Remark

Set CMD set the maximum of ACM with SIM PIN2, read command get the AMM, test CMD not defined yet.

Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value

30); value is in home units

Shortly before ACM reaches AMM, the unsolicited result code +CCWV will be sent if AT+CCWE enables this operation.

For some SIM card, if the PIN1 is verified, the SIM PIN2 is not used as password and ignored.

6.2.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CAMM?	+CAMM: 1e OK < TA returns the current ACMmax value: 0-ffffff)>
AT+CAMM= “00001E”, “2345”	OK < TA sets the Advice of Charge related to the ACM maximum value in SIM file EF (ACMmax). 2345 is SIM PIN2>

6.3 AT+CAOC Advice of charge information

6.3.1 Description

Execute command returns the current call meter value. (**Currently not support**)

The write command sets the Advice of Charge supplementary service function mode.

6.3.2 Syntax

Test command AT+CAOC=? Description ..Return parameter range	Response [+CAOC: (list of supported <mode>s] OK
Read command AT+CAOC? Description Get current mode	Response Success: +CAOC: <mode> OK Fail: +CME ERROR: <err>
Set command AT+CAOC[=<mode>] Description Operation mode	Response Success: +CAOC: <ccm>] Fail: +CME ERROR: <err>
Reference：3GPP TS 27.007 V3.12.0	

6.3.3 Unsolicited Result Codes

none..

6.3.4 Parameter

< mode >	
0	query CCM value
1	deactivate the unsolicited reporting of CCM value

2 activate the unsolicited reporting of CCM value
< ccm >
string type; three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units and bytes are similarly coded as ACMmax value in the SIM card or in the active application in the UICC (GSM or USIM)

6.3.5 Remark

Set CMD set the maximum of ACM with SIM PIN2, read command get the AMM, test CMD not defined yet.

Three bytes of the current call meter value in hexadecimal format (e.g. "00001E" indicates decimal value 30); value is in home units

Shortly before ACM reaches AMM, the unsolicited result code +CCWV will be sent if AT+CCWE enables this operation.

6.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CAOC? +CAOC: 0 OK	+CAOC: 0 OK < TA returns the current call meter value: 000000-FFFFFF (Last call fare) >

6.4 AT+CPUC Price per unit and currency table

6.4.1 Description

Read command returns the current parameters of PUC.

Write command sets the parameters of Advice of Charge related price per unit and currency table. SIM PIN2 is usually required to set the parameters.

PUCT information can be used to convert the home units (as used in +CAOC, +CACM and +CAMM) into currency units

6.4.2 Syntax

Test command AT+CPUC=? Description ..Only return ok	Response OK
Read command AT+CPUC? Description Get the currency and ppu	Response Success: ＋CPUC：<currency>,<ppu> OK Fail: ERROR
Set command AT+CPUC=<currency>,<ppu>,<password> Description Set currency and ppu	Response Success: OK Fail: ERROR

Reference：3GPP TS 27.007 V3.12.0

6.4.3 Unsolicited Result Codes

none..

6.4.4 Parameter

< currency >

string type; three-character currency code (e.g. "GBP", "DEM")

Note: if the string length of <currency> is less than 3, null character(0x20) will be a complement defaultly. Null string is also be allowed.

<ppu>

string type; price per unit; dot is used as a decimal separator (e.g. "2.66").

Note: the supported string length is no more than 5, and the valid number is less than 4096

< passwd >

string type; SIM PIN2

Note: the string length supported in our environment is no more than 4.

6.4.5 Remark

For some SIM card, if the PIN1 is verified, the SIM PIN2 is not used as password and ignored.

6.4.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPUC="EUR","0.10",”8888”	OK
AT+CPUC?	+CPUC: "EUR","0.10" OK

6.5 AT+CCFC call forwarding number and condition

6.5.1 Description

This command Controls the call forwarding supplementary services. Registration, erasure, activation, deactivation and status query are supported.

6.5.2 Syntax

Test command AT+CCFC=? Description List the supported reasons	Response Success: ＋CCFC：(list of supported<reason>s) OK Fail: ERROR

Set command AT+CCFC=<reason>,<mode>,[<number>,[<type>,[<class>,[<subaddr> , [<satype>,[<time>]]]]]] Description Set call forwarding control	Response Success: If <mode> is not equal 2 and command successful: OK If <mode>= 2, <reason> is not equal 2 and command successful: +CCFC: <status>, <class>[, <number>, <type>] OK If <mode>= 2, <reason>= 2 and command successful: +CCFC: <status>, <class>[, <number>, <type>, <time>] OK Fail: If error is related to ME functionality +CME ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.5.3 Unsolicited Result Codes

URC 1
CSSU: <code2>
CSSI: <code1>

6.5.4 Parameter

< reason >

0 unconditional
1 mobile busy
2 no reply
3 not reachable
4 all call forwarding. Note: After setting, if quering the result, need set “reason” to 0.
5 all conditional call forwarding.
This operation can finish the call forwarding for the reason that from 1 to 3 by one time, not need by three times. That means all the call forwarding can be done by one time except unconditional.

< mode >

- ✓ When set mode=2, the range of “reason” is 0～3.
- ✓ For mode＝2, reason＝0, only the query of “class ＝1” is support. The other will get error due to not support of the network.

0 disable
1 enable
2 query status
3 registration
4 erasure

< number >

string type phone number of forwarding address in format specified by <type>. The string length of <number> is 0-20.

< type >

type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7); default 145 when dialling string includes international access code character "+", otherwise 129

< satype >

type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8); default 128, others

should be defined by factory

< classx >

is a sum of integers each representing a class of information (default 1):

1 voice (telephony)
2 data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
4 fax (facsimile services)
8 short message service
16 data circuit sync
32 data circuit async
64 dedicated packet access
128 dedicated PAD access

< time >

5...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

<subaddr>

string type subaddress of format specified by <satype>

<satype>

type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8); default 128

6.5.5 Remark

When setting the international call, the fourth parameter “type” must be filled. The “type” will be checked if presented.
When the “mode” is set to “1”, the third parameter “number” will be omitted and don’t be checked. Except that non-number is input as “number”.
When the parameters are NULL, some will use the default parameters, some is omitted. The parameter “classx” is 1. the “subaddr” and “satype” is not used in current version. The “type” is determined by the “number”.

6.5.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CCFC=0,3,"13698754858",145	
	OK
AT+CCFC=0,2	
	+CCFC:1,1,"+13698754858",145
	OK

6.6 AT+CCWA Set call waiting control

6.6.1 Description

This command allows control of the Call Waiting supplementary service according to 3GPP TS 22.083 [5]. Activation, deactivation and status query are supported. The interaction of this command with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standards..

6.6.2 Syntax

Test command AT+CCWA=? Description List the supported <n>s	Response ＋CCWA：(list of supported<n>s) OK
Read command AT+CCWA? Description Get current control value n	Response Success: ＋CCWA：<n> OK Fail: ERROR
Set command AT+CCWA=<n>[,<mode>[,<class>]] Description Set call waiting control	Response Success: If <mode> is not equal 2 and command successful: OK If <mode>= 2 and command successful: +CCWA: <status>, <class> [+CCWA: <status>, <class>] [+CCWA: ...]<CR><LF> <CR><LF> OK Fail: If error is related to ME functionality +CME ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.6.3 Unsolicited Result Codes

URC 1 CCWA; < number >,<type>,<class>,[<alpha>][,<CLI validity>]

6.6.4 Parameter

< n > (sets/shows the result code presentation status in the MT/TA) 0 disable 1 enable
< mode > (when <mode> parameter is not given, network is not interrogated) 0 disable 1 enable 2 query status
< class*x* > is a sum of integers each representing a class of information (default 1) 1 voice (telephony)
< status >

0	not active
1	active
< number >	
string type phone number of calling address in format specified by <type>	
< type >	
type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)	
< alpha >	
optional 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 +CSCS	
< CLI validity >	
0	CLI valid
1	CLI has been withheld by the originator.
2	CLI is not available due to interworking problems or limitations of originating network.

6.6.5 Remark

6.6.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CCWA=1,1,1	
	OK
ATD1861;	
	OK +CCWA: "02085563410", 129, 1, "", 0
AT+CCWA=0,1 ,1	
	OK
ATD1861;	
	OK
AT+CCWA=1,2	
	+CCWA: 0,1 +CCWA: 0,2 +CCWA: 0,4
	OK
AT+CCWA=0,0,1	
	OK
AT+CCWA=1,1,1	
	OK

6.7 AT+ CLIP calling line identification presentation

6.7.1 Description

This command refers to the GSM 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

6.7.2 Syntax

Test command AT+CLIP=? Description List the supported <n>s	Response ＋CLIP：(list of supported<n>s)) OK

Read command AT+CLIP? Description Get current control value n	Response Success: ＋CLIP：<n><m> OK Fail: ERROR
Set command AT+CLIP=<n> Description Set CLIP	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.7.3 Unsolicited Result Codes

URC 1
+CLIP: <number>,<type>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]

6.7.4 Parameter

< n >
(sets/shows the result code presentation status in the MT/TA)
0 disable
1 enable

< m >
(parameter shows the subscriber CLIP service status in the network):
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 >
type of address octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.7)

< alpha >
optional 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 +CSCS

< CLI validity >
0 CLI valid
1 CLI has been withheld by the originator.
2 CLI is not available due to interworking problems or limitations of originating network.

< subaddr >
string type subaddress of format specified by <satype>

< satype>
type of subaddress octet in integer format (refer GSM 04.08 [8] subclause 10.5.4.8)

6.7.5 Remark

Parameter n may control the unsolicited result code +CLIP should be presented to TE or not

6.7.6 Example

The following examples show the typical application for this command.

Command	Possible Response

AT+CLIP=1	
	OK
RING	
+CLIP: "02085563192",129,,,,0	<URC presentation>

6.8 AT+ CLIR Calling line identification restriction

6.8.1 Description

The AT+CLIR command refers to the GSM supplementary service CLIR (Calling Line Identification Restriction).

6.8.2 Syntax

Test command AT+CLIR=? Description List the supported <n>s	Response ＋CLIR：(list of supported<n>s)) OK
Read command AT+CLIR? Description Get current control value n	Response Success: ＋CLIR：<n>,<m> OK Fail: ERROR
Set command AT+CLIR=<n> Description Set CLIR	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.8.3 Unsolicited Result Codes

None

6.8.4 Parameter

< n >
(parameter sets the adjustment for outgoing calls)
0 presentation indicator is used according to the subscription of the CLIR service
1 CLIR invocation
2 CLIR suppression
< m >
(parameter shows the subscriber CLIR service status in the network)
0 CLIR not provisioned
1 CLIR provisioned in permanent mode
2 unknown (e.g. no network, etc.)
3 CLIR temporary mode presentation restricted
4 CLIR temporary mode presentation allowed

6.8.5 Remark

6.8.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CLIR=2	OK
AT+CLIR=?	+CLIR:(0-2) OK
AT+CLIR?	+CLIR:2,0 OK

6.9 AT+ COLP Connected line identification presentation

6.9.1 Description

This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network

6.9.2 Syntax

Test command AT+COLP=? Description List the supported <n>s	Response ＋COLP：(list of supported<n>s)) OK
Read command AT+COLP? Description Get current control value n	Response Success: ＋COLP：<n>,<m> OK Fail: ERROR
Set command AT+COLP=<n> Description Set COLP	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.9.3 Unsolicited Result Codes

None

6.9.4 Parameter

< n > (parameter sets/shows the result code presentation status in the MT/TA): 0 presentation indicator is used according to the subscription of the CLIR service 1 CLIR invocation
< m > (parameter shows the subscriber COLP service status in the network): 0 COLP not provisioned

1	COLP provisioned
2	unknown (e.g. no network, etc.)

6.9.5 Remark

6.9.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+COLP=1	OK
AT+COLP=?	+COLP:(0,1) OK

6.10 AT+ CSSN Supplementary service notifications

6.10.1 Description

The write command enables or disables the presentation of URCs for supplementary services.

6.10.2 Syntax

Test command AT+CSSN=? Description List the supported values	Response +CSSN: (list of supported <n>s),(list of supported<m>s) OK
Read command AT+CSSN? Description Get current control values	Response Success: ＋CSSN:<n>,<m> OK Fail: ERROR
Set command AT+CSSN=<n>[,<m>] Description Set control value	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.10.3 Unsolicited Result Codes

URC1
+CSSI: <code1>

URC 2
+CSSU: <code2>

6.10.4 Parameter

< n >

(parameter sets/shows the +CSSI result code presentation status to the TE):

0	disable
1	enable

< m >

(parameter sets/shows the +CSSU result code presentation status to the TE):

0 disable

1 enable

< code1>

(it is manufacturer specific, which of these codes are supported):

0 unconditional call forwarding is active

1 some of the conditional call forwardings are active

2 call has been forwarded

3 call is waiting

< code2>

(it is manufacturer specific, which of these codes are supported):

0 this is a forwarded call (MT call setup)

1 this is a CUG call (also <index> present) (MT call setup)

2 call has been put on hold (during a voice call)

3 call has been retrieved (during a voice call)

4 multiparty call entered (during a voice call)

5 call on hold has been released (this is not a SS notification) (during a voice call)

6.10.5 Remark

When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: <code1>[,<index>] is sent to TE before any other MO call setup result codes presented in the present document or in V.25ter [14]. When several different <code1>s are received from the network, each of them shall have its own +CSSI result code.

When <m>=1 and a supplementary service notification is received during a mobile terminated call setup or during a call, or when a forward check supplementary service notification is received, unsolicited result code +CSSU: <code2>[,<index>[,<number>,<type>[,<subaddr>,<satype>]]] is sent to TE. In case of MT call setup, result code is sent after every +CLIP result code (refer command "Calling line identification presentation +CLIP") and when several different <code2>s are received from the network, each of them shall have its own +CSSU result code.

Refer 27007 release99.

The gray item of <code1> doesn't been supported by CMCC and UMCC.S

6.10.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CSSN=1,1	OK

6.11 AT+ CUSD Unstructured supplementary service data

6.11.1 Description

This command allows control of the Unstructured Supplementary Service Data (USSD) according to GSM 02.90. Both network and mobile initiated operations are supported.

6.11.2 Syntax

Test command AT+CUSD=? Description List the supported values	Response +CUSD: (list of supported <n>s) OK
Read command AT+CUSD? Description Get current control values	Response Success: +CUSD:<n> OK Fail: ERROR
Set command AT+ CUSD=<n>[,<str>[,<dcs>]] Description Set control value and data	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.11.3 Unsolicited Result Codes

URC1
+CUSD: <m>[,<str>,<dcs>]

6.11.4 Parameter

< n >

0 disable the result code presentation to the TE

1 enable the result code presentation to the TE

2 cancel session (not applicable to read command response)

< 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

3 other local client has responded

4 operation not supported

5 network time out

< str >

string type USSD-string (when <str> parameter is not given, network is not interrogated):

- if <dcs> indicates that 3GPP TS 23.038 [25] 7 bit default alphabet is used:
  - if TE character set other than "HEX" (refer command Select TE Character Set +CSCS): MT/TA converts GSM alphabet into current TE character set according to rules of 3GPP TS 27.005 [24] Annex A
  - if TE character set is "HEX": MT/TA converts each 7-bit character of GSM alphabet into two IRA character long hexadecimal number (e.g. character Π (GSM 23) is presented as 17 (IRA

	49 and 55)) - if <dcs> indicates that 8-bit data coding scheme is used: MT/TA converts each 8-bit octet into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))
< DCS>	
	3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 0)

6.11.5 Remark

This command allows control of the Unstuctured Supplementary Service Data (USSD) according to 3GPP TS 22.090 [23]. 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.

When <str> is given, a mobile initiated USSD-string or a response USSD-string to a network initiated operation is sent to the network. The response USSD-string from the network is returned in a subsequent unsolicited +CUSD result code.

If the <dcs> parameter is input, the data will be transmitted as USSD vertion2, otherwise, it will be transmitted as USSD version 1.

6.11.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CUSD=1	OK
AT+CUSD?	+CUSD: 1 OK

6.12 AT^STA SAT Interface Activation

6.12.1 Description

This command is used to ask the current running status of the RSAT and the character set used by the RSAT, and it can be used to set SAT and the AT interface to activation.

6.12.2 Syntax

Test command AT^STA=?	Response Success: ^STA: (list of supported <Alphabet>s) OK Fail: ERROR
Read command AT^STA?	Response Success: ^STA: <Alphabet>, <allowedInstance>, <SatProfile> OK Fail: ERROR
Exe command AT^STA=<Alphabet>	Response Success: OK Fail:

ERROR

Reference：3GPP TS 27.007 V3.12.0

6.12.3 Unsolicited Result Codes

```
URC1
..
URC2
..
```

6.12.4 Parameter

<Alphabet>：
0 GSM character set
1 UCS2 character set
<allowedInstance>：
0 SAT This module has been started.
1 SAT This module can be started.
<SatProfile>：SAT configuration data

6.12.5 Remark

6.12.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT^STA?	^STA: 1,1,"7FFFFFFF7F0100DF1F" OK

6.13 AT^STN STK Notification

6.13.1 Description

Proactive Command notification

6.13.2 Syntax

6.13.3 Unsolicited Result Codes

```
URC1
^STN: <cmdType>..
..
```

6.13.4 Parameter

6.13.5 Remark

Every time the SIM Application issues a Proactive Command, via the ME, the TA will receive a notification. This indicates the type of Proactive Command issued.
AT^STGI must then be used by the TA to request the parameters of the Proactive Command from the ME. Upon receiving the^STGI response from the ME, the TA must send AT^STR to confirm the execution of the Proactive Command and provide any required user response, e.g. a selected menu item.

6.13.6 Example

The following examples show the typical application for this command.

Command	Possible Response
<Reference: URC: ^STN	URC

6.14 AT^STGI Remote-SAT Get Information

6.14.1 Description

AT^STGI: This command is used after receiving URC ^STN notification，That can get the parameters of the proactive command, current command type or some information of the current proactive command.

6.14.2 Syntax

Test command AT^STGI=?	Response Success: ^STGI: (list of supported <cmdType>s) OK Fail: ERROR
Read command AT^STGI?	Response Success: ^STGI: <cmdType> OK Fail: ERROR
Set command AT^STGI=<cmdType>	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.14.3 Response definition

The event format：
Command type =37 or 36：
The first line: ^STGI: command type, 0, The number of the item,” Alpha identifier”, ”nComQualifier”
Other lines：^STGI: command type, Item type,”contents of menu,”nComQualifier”

Command type＝16：
^STGI: command type, ”text string”, type of address, address, subadress, text in calling”, scheme of the text, time unit when autodial, interval of “nComQualifier“
Command type＝33：
^STGI: command type, “text”, scheme of text, ”nComQualifier”
Command type＝19：
^STGI: command type, “text for display” , Type of address, “address of SMS, “contents of SMS”
Command type＝35:
^STGI: command type, ”text”, “Default text”, scheme of text, max length of text, min length of text, ”nComQualifier”
Command type＝38:

^STGI: command type, “nComQualifier”
,

6.14.4 Parameter

<Alphabet>：
0 GSM character set
1 UCS2 character set
<allowedInstance>：
0 SAT This module has started up. you can execute the read or test command.
1 SAT This module can be started.
<SatProfile>：SAT configuration data.

6.14.5 Remark

< cmdType >：Proactive command
。

6.14.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT^STGI=37 < acknowledge > AT^STR=37,0 <Select Submenu> AT^STR=211,0,1 <Get URC> ^STN: 36 <get submenu content> AT^STGI=36 <acknowledge> AT^STR=36,0,1 <get urc> ^STN: 35 <Get menu content> AT^STGI=35	^STGI: 37,128,5,"51687403901A670D52A1",0,1,1,0 ^STGI: 37,1,"516C51714FE1606F670D52A1",0,0 ^STGI: 37,2,"8BC15238",0,0 ^STGI: 37,3,"624B673A94F6884C",0,0 ^STGI: 37,4,"5BA26237670D52A1",0,0 ^STGI: 37,5,"82F16C498BCD5178",0,0 OK OK ^STGI: 36,0,3,"",0,0,0,0,0 ^STGI: 36,1,"59296C14988462A5",0,0 ^STGI: 36,2,"4EA4901A4FE1606F",0,0 ^STGI: 36,3,"65B095FB",0,0 OK OK ^*STGI: 35,0,"957F9014533A53F7FF1F",3,5,"",0,0* *OK*

6.15 AT^STR Remote-SAT Response

6.15.1 Description

AT^STR: TA can use this command AT^STR to answer the AT^STGI command to tell the SIM that the result executed of the proactive command.

6.15.2 Syntax

Test command AT^STR=?	Response Success: ^STR: (list of supported <cmdType>s) OK Fail:

	ERROR
Read command AT^STR?	Response Success: ^STR: <cmdType> OK Fail: ERROR
Exe command AT^STR=<cmdType>, <status>[, <inputNumber>][, <inputString>]	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.007 V3.12.0	

6.15.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

6.15.4 Parameter

< cmdType >：Proactive command
<status>：The status response to the proactive command.
00 Command performed successfully
16 Proactive SIM session terminated by user
17 Backward move in the proactive SIM session requested by the user
18 No response from user
19 Help information required by the user
20 USSD/SS Transact terminated by user
32 ME currently unable to process command
132 ME currently unable to process command -screen is busy
34 User did not accept the proactive command
35 User cleared down call before connection or network release
<inputNumber>：Response number.
<inputString>： Response string.

6.15.5 Remark

6.15.6 Example

The following examples show the typical application for this command.

Command	Possible Response
<Under main menu> AT^STR=211,0,X	STK select submenu

6.16 AT^STF Set format of responses

6.16.1 Description

This command is used to set format of a response of SAT command.

6.16.2 Syntax

AT^STF=<mode>

Read command AT^STF?	Response Success: ^STF: [Current mode] OK Fail: ERROR
Set command AT^STF=<mode>	Response Success: Set STF to [Mode] OK Fail: ERROR
Test command AT^STF=?	Response Success: ^STF: (0,1) OK Fail: ERROR

6.16.3 Unsolicited Result Codes

None

6.16.4 Parameter

<mode>:

0: PDU mode

1: Text mode

6.16.5 Remark

6.16.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT^STF?	^STF: PDU Mode OK
AT^STF=1	Set STF to TEXT Mode OK

7 SMS Commands

This chapter describes AT Commands that a TE (Terminal Equipment, e.g. an application running on a controlling PC) may use to control the MC55 acting as GPRS Mobile Termination (MT).

7.1 AT+CSDH Show Text Mode Parameters (For SMS)

7.1.1 Description

Set command controls whether detailed header information is shown in text mode result codes.

7.1.2 Syntax

Test command AT+CSDH=? Description ..	Response Success: +CSDH: (list of supported < show >s) OK Fail: ERROR
Read command AT+CSDH? Description ..	Response Success: +CSDH: <show> OK Fail: ERROR
Set command AT+CSDH=<show> Description ..	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.005 V3.2.0 (2002-06)	

7.1.3 Unsolicited Result Codes

URC1
+CALA: <text>
..
URC2
+SYSSTART ALARM MODE+CALA: <text>
..

7.1.4 Parameter

<show> Range: 0-1
0 do not show the values in result codes
1 show the values in result codes

..

7.1.5 Remark

7.1.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CSDH=0 *<not show the message header when list message at the storage, read message in the storage, or indicate to CMTI that new message recieved.>*	OK

AT+CSDH=1 *< show the message header when list message at the storage, read message in the storage, or indicate to CMTI that new message recieved.>*	OK

7.2 AT+CSMP Set Text Mode Parameters

7.2.1 Description

Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected.

7.2.2 Syntax

Test command AT+CSMP=? Description ..	Response Success: OK Fail: ERROR
Read command AT+CSMP? Description ..	Response Success: +CSMP:<fo>,<vp>,<pid>,<dcs> OK Fail: ERROR
Set command AT+CSMP=<fo>[,<vp>[,pid>[,<dcs>]]] Description ..	Response Success: OK Fail: ERROR
Reference：3GPP TS 27.005 V3.2.0 (2002-06)	

7.2.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.2.4 Parameter

<fo>
depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER[mt], SMS-SUBMIT[mo] (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format.
<vp>
depending on SMS-SUBMIT <fo> setting: 3G TS 23.040 [3] TP-Validity-Period either in integer format (default 167), in time-string format (refer <dt>), or if EVPF is supported, in enhanced format (hexadecimal coded string with double quotes)
<pid>
3G TS 23.040 [3] TP-Protocol-Identifier in integer format (default 0)—protocol identity [Different data storage protocol according to which services protocol used]
<dcs>
depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default0), or Cell Broadcast Data Coding Scheme in integer format [supported there types of csw allowed，0，4，8]

7.2.5 Remark

Parameter <fo> <vp> <pid> and <dcs>, we recommend to set default value of them, but can use other values if need according to spec definite.
if setting “fo” value for MO message, we must make sure the “mti” segment of “fo” (as 03.40 description) is “01”,
meanings that bit1 is “0” and bit0 is “1”, otherwise exception would happened.
3. if setting “dcs” value for MO message, we must make sure that the dcs is equal to 0, or 4, or 8, other values is not allowed now.

7.2.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CSMP=17,167,0,0 *<in text mode, send message to others or write message to storage with 7bit encode>*	OK
AT+CSMP=17,167,0,4 *<in text mode, send message to others or write message to storage with 8bit encode>*	OK
AT+CSMP=17,167,0,8 *<in text mode, send message to others or write message to storage with 16bit encode, sometimes the Chinese string>*	OK

7.3 AT+CMSS Send Message from Storage(For SMS)

7.3.1 Description

Execution command sends message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND).

7.3.2 Syntax

Test command AT+CMSS=? Description ..	Response Success: OK Fail: ERROR
Read command Description ..	Response
Set command AT+CMSS=<index>[,<da>[,<toda>]] Description	Response Success: +CMSS:<mr> OK Fail: ERROR
Reference：3GPP TS 27.005 V3.2.0 (2002-06)	

7.3.3 Unsolicited Result Codes

7.3.4 Parameter

<index>

integer type; value in the range of location numbers supported by the associated memory

7.3.5 Remark

1. <toda>have there values: 161，145，129
2. At PDU mode , wen can't send MT message.

7.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMGF=0	OK
AT+CMGR=1	+CMGR: 3,,21 0891683110102105F031010B813120117013F50000A707F4F29C9E769F0
AT+CMSS=1	+CMSS: 3 OK
AT+CMGF=0	OK
AT+CMGR=1	+CMGR: 3,,21 0891683110102105F031010B813120117013F50000A707F4F29C9E769F0
AT+CMSS=1, "13466507607", 129	+CMSS: 6 OK
AT+CMGF=1	OK
AT+CSDH=1	OK
AT+CMGR=1	+CMGR: "STO SENT","13021107315",,129,17,0,0,167,"+8613010112500",145,7 testing
AT+CMSS=1	+CMSS: 7 OK
AT+CMGF=1	OK
AT+CSDH=1	OK
AT+CMGR=1	+CMGR: "STO SENT","13021107315",,129,17,0,0,167,"+8613010112500",145,7 testing
AT+CMSS=1, "13466507607", 129	+CMSS: 10 OK

7.4 +CMTI/+CMT Indication New Short Message [For SMS]

7.4.1 Description

When receive new short message ,send +CMTI or +CMT[+CDS are message report]

7.4.2 Syntax

Test command Description ..	Response
Read command Description ..	Response
Set command Description ..	Response +CMTI: <mem>,<index> or +CMT: [<alpha>],<length><CR><LF><pdu> (PDU mode enabled) +CMT: <oa>, [<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>, <length>]<CR><LF><data> (Text mode enbaled)
Reference：3GPP TS 27.005 V3.2.0 (2002-06)	

7.4.3 Unsolicited Result Codes

7.4.4 Parameter

<mem> string type; memory for storage new messages ***<index>*** integer type; value in the range of location numbers supported by the associated memory ***<length>*** integer type value indicating in the text mode (+CMGF=1) the length of the message body ***<data>*** (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length) ***<fo>*** depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER, SMS-SUBMIT (default 17), SMS-STATUS-REPORT, or SMS-COMMAND (default 2) in integer format ***<vp>*** depending on SMS-SUBMIT is supported, in enhanced format (hexadecimal coded string with double quotes) ***<pid>*** 3G TS 23.040 [3] TP-Protocol-Identifier in integer format (default 0) ***<dcs>*** depending on the command or result code: 3G TS 23.038 [2] SMS Data Coding Scheme (default0), or Cell Broadcast Data Coding Scheme in integer format ***<sca>*** 3G TS 24.011 [6] RP SC address Address-Value field in string format; ***<tosca>*** 3G TS 24.011 [6] RP SC address Type-of-Address octet in integer format ***<scts>*** 3G TS 23.040 [3] TP-Service-Centre-Time-Stamp in time-string format (refer <dt>) ***<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 Characte
..

7.4.5 Remark

7.4.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CNMI=0,1,0,0,0 +CMTI: "SM",7	OK
AT+CMGF=0 AT+CNMI=0,2,0,0,0	OK

+CMT: ,27 0891683110102105F0240D91683120117013F500008070206193930007F4F29C9E769F01	OK
AT+CMGF=1 AT+CSDH=1 AT+CNMI=0,2,0,0,0 +CMT: "+8613021107315",,"2008/07/02,16:40:24+00",145,17,0,0,"+8613010112500",145 ,8 Testing	OK OK OK
AT+CMGF =1 AT+CNMI=0,0,0,1,0 *(need status report)* AT+CMGS=”13445555991” +CDS: 2,12,"+8613021107315",145,"2008/07/02,16:42:22+00","2008/07/02,16:42:34+00",0	OK OK +CMGS: 12 OK

7.5 AT+CMGD Delete SMS message

7.5.1 Description

Execution command deletes message from preferred message storage <mem1> location <index>. If <delflag> is present and not set to 0 then the ME shall ignore <index> and follow the rules for <delflag> shown below. If deleting fails, final result code +CMS ERROR: <err> is returned. See chapter Message Service Failure Result Code for <err> values.

7.5.2 Syntax

Test command AT+CMGD=? Description ..	Response Success: +CMGD: (list of supported <index>s),(list of supported <delflag>s) Fail: ERROR
Read command Description ..	Response
Set command AT+CMGD=<index>[,<delflag>] Description ..	Response Success: OK Fail: +CMS ERROR: <err>
Reference：3GPP TS 27.005 V3.2.0 (2002-06)	

7.5.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text>

..

7.5.4 Parameter

Index : indicate which message will be deleted
<delflag>: an integer indicating multiple message deletion request as follows:
0 (or omitted) Delete the message specified in <index>

1 Delete all read messages from preferred message storage, leaving unread messages and stored mobile originated messages (whether sent or not) untouched

2 Delete all read messages from preferred message storage and sent mobile originated messages, leaving unread messages and unsent mobile originated messages untouched

3 Delete all read messages from preferred message storage, sent and unsent mobile originated messages leaving unread messages untouched.

4 Delete all messages from preferred message storage including unread messages.

..

7.5.5 Remark

Test command
list of supported <index>s

7.5.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMGD=1 *< note1:delete the specific index message in the storage>* *<note2: if have no message we specific to delete, just return "OK" only>*	OK
AT+CMGD=1,4 *<note1:delete all the message in the storage>* *<note2: if have no message we specific to delete, just return "OK" only>*	OK

7.6 AT+CMGF Select SMS message format

7.6.1 Description

Set command specifies the input and output format of the short messages. The input and output format of the short messages can be either PDU mode or Text mode.

7.6.2 Syntax

Test command AT+CMGF=? Description .. list of supported <mode>s	Response +CMGF：(list of supported <mode>s) OK
Read command AT+CMGF? Description .. Return current setting	Response +CMGF:<mode > OK
Set command AT+CMGF=< mode > Description	Response Success: OK

..	Fail: ERROR
Reference：3GPP TS 27.005 V3.2.0 (2002-06)	

7.6.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.6.4 Parameter

<mode>: 0 PDU mode (default when implemented) 1 text mode ..

7.6.5 Remark

7.6.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMGF=0 *< PDU mode>*	OK
AT+CMGF=1 *<Text mode>*	OK

7.7 AT+CMGL List SMS messages from preferred store

7.7.1 Description

... Execution command returns messages with status value <stat> from message storage <mem1> to the TE.

7.7.2 Syntax

Test command AT+CMGL=? Description ..	Response Success: +CMGL:(list of supported <stat>s) OK Fail: ERROR
Read command Description	Response ..
Set command AT+CMGL[=<stat>] Description ..	Response Success: TEXT mode（+CMGF=1） SMS-SUBMIT： +CMGL:<index>,<stat>,<da>,[<alpha>],<toda>,<length>]<CR><LF><data>[<CR><LF>]

		[...] SMS-DELIVER： +CMGL:<index>,<stat>,<oa>,[<alpha>],[<scts>] [,<tooa >,<length>]<CR><LF><data>[...]] OK PDU mode（+CMGF=0） SMS-SUBMIT or SMS-DELIVER： +CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu>[<CR><LF>] [...] OK
	Fail:	ERROR

Reference：3GPP TS 27.005 V3.2.0 (2002-06)

7.7.3 Unsolicited Result Codes

URC1
+CALA: <text>
..
URC2
+SYSSTART ALARM MODE+CALA: <text>
..

7.7.4 Parameter

<stat>
integer type in PDU mode (default 0), or string type in text mode (default "REC UNREAD"); indicates the status of message in memory; defined values:

0	"REC UNREAD"	received unread message (i.e. new message)
1	"REC READ"	received read message
2	"STO UNSENT"	stored unsent message (only applicable to SMs)
3	"STO SENT"	stored sent message (only applicable to SMs)
4	"ALL"	all messages (only applicable to +CMGL command)

..

7.7.5 Remark

1. <alpha> is not supported now.
2. if PDU mode, each bit meaning of DCS byte are reference in chapter 11.10,5, CMGW remark.

7.7.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMGF=0	OK
AT+CMGL=n *<note1: n=0,1,2,3,4, meaning as description of 11.7.4 parameters definition> <note2: if have no message we specific to list, just return "OK" only> <note3: don't care about the dcs value with at+csmp setting or charset value with at+cscs setting here, the display is only depending to formats when the message store.>*	…… …… OK
AT+CMGF=1	OK

AT+CMGL=”string” *< note1:string=” REC UNREAD”, ” REC READ”, ” STO UNSENT”, ” STO SENT”, ”ALL”, meaning as description of 11.7.4 parameters definition >* *<note2: if have no message we specific to list, just return “OK” only>* *<note3: don’t care about the dcs value with at+csmp setting or charset value with at+cscs setting here, the display is only depending to formats when the message store.>*	…… …… OK

7.8 AT+CMGR Read SMS Message

7.8.1 Description

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

7.8.2 Syntax

Test command AT+CMGR=? Description ..	Response ok
Read command Description ..	Response
Set command AT+CMGR=<index> Description ..	

Response
Success:

TEXTmode (+CMGF=1)：
SMS-DELIVER:
+CMGR:<stat>,<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>]<CR><LF><data>
OK
SMS-SUBMIT:
+CMGR:<stat>,<da>,[<alpha>][,<toda>,<fo>,<pid>,<dcs>,[<vp>],<sca>,<tosca>,<length>]<CR><LF><data>
OK
PDU mode (+CMGF=0)：
+CMGR: <stat>,[<alpha>],<length><CR><LF><pdu>
OK

Fail:
ERROR

Reference：3GPP TS 27.005 V3.2.0 (2002-06)

7.8.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.8.4 Parameter

<index> Indicate which message will be read.

..

7.8.5 Remark

1. <alpha> and <scts> is not supported now.
2. Can't read short message report now.
3. When DTE character set is "GSM" (set by +CSCS command), the SMS content will be output by an ASCII string form if it is an pure ASCII SMS, otherwize it will be output in an UCS2 hex string form. If the DET character set is "UCS2" it will always be output in UCS2 hex string form.
4. if PDU mode, each bit meaning of DCS byte are reference in chapter 11.10,5, CMGW remark.

7.8.6 Example

The following examples show the typical application for this command.we don't care about the dcs value with at+csmp setting or charset value with at+cscs setting here, the display is only depending to formats when the message store. Storing of message with 7bit encode, show 7bit charsets. And storing of message with 8bit or 16bit encode, show 8bit or 16bit charsets.

Command	Possible Response
1. AT+CMGF=1	OK
AT+CMGR=1 *(the message store in the mem with 7bit encode of dcs)*	+CMGR: "STO UNSENT","123" testing OK
AT+CMGR=2 *(the message store in the mem with 8bit encode of dcs)*	+CMGR: "STO UNSENT","456" testing OK
AT+CMGR=3 *(the message store in the mem with 16bit encode of dcs)*	+CMGR: "STO UNSENT","789" XXXXXX (Chinese string) OK
<note1: don't care about the dcs value with at+csmp setting or charset value with at+cscs setting here, the display is only depending to formats when the message store.> *<note2: all of above examples, if have no message we specific to read, just return "OK" only>*	
2. AT+CMGF=0	OK
AT+CMGR=1 *(the message store in the mem with 7bit encode of dcs)*	+CMGR: 2,,17 069168311010F13100038121F30000A707F4F29C9E769F01 OK
AT+CMGR=2 *(the message store in the mem with 8bit encode of dcs)*	+CMGR: 2,,17 069168311010F13100038154F60004A70774657374696E67 OK
AT+CMGR=3 *(the message store in the mem with 16bit encode of dcs)*	+CMGR: 2,,14 069168311010F13100038187F90008A7044E2D56FD OK
<note1: don't care about the dcs value with at+csmp setting or charset value with at+cscs setting here, the display is only depending to formats when the message store.>	

<note2: all of above examples, if have no message we specific to read, just return "OK" only>

7.9 AT+CMGS Send SMS message

7.9.1 Description

... The write command transmits a short message from TE to network (SMS-SUBMIT).After invoking the write command wait for the prompt ">" and then start to write the message. To send the message simply enter <CTRL-Z>

7.9.2 Syntax

Test command AT+CMGS=? Description ..	Response OK
Read command Description ..	Response
Set command TEXT mode（+CMGF=1）: AT+CMGS=<da>[,<toda>]<CR> text is entered <ctrl-Z/ESC> PDU mode（+CMGF=0）: AT+CMGS=<length><CR> pdu is given <ctrl-Z/ESC> Description …	Response Success: +CMGS:<mr> OK Fail: ERROR
Reference:3GPP TS 27.005 V3.2.0 (2002-06)	

7.9.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.9.4 Parameter

<da> 3G TS 23.040 [3] TP-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 (refer command +CSCS in3G TS 27.007 [9]); type of address given by <toda>tring type; memory to which writing and sending operations are made

<toda> 3G TS 24.011 [6] 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> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)

PDU is given:

- we can send pdu message depending to the dcs value of oct in the pdu header.

the PDU shall be hexadecimal format (similarly as specified for <pdu>) and given in one line; ME/TA converts this coding into the actual octets of PDU.

text is entered

- we should care about the dcs of at+csmp setting, if we set 7bit encode of dcs, we can send 7bit encode message with text mode. If we set 8bit or 16bit encode of dcs, we can send 8bit or 16bit message with text mode.

the entered text should be formatted as follows:

- if <dcs> (set with +CSMP) indicates that 3GPP TS 23.038 [2] GSM 7 bit default alphabet is used and <fo> indicates that

3GPP TS 23.040 [3] TP-User-Data-Header-Indication is not set:

- if TE character set other than "HEX" (refer command Select TE Character Set +CSCS in 3GPP TS 27.007 [9]): ME/TA converts the entered text into the GSM 7 bit default alphabet according to rules of Annex A; backspace can be used to delete last character and carriage returns can be used (previously mentioned four character sequence shall be sent to the TE after every carriage return entered by the user);
- if TE character set is "HEX": the entered text should consist of two IRA character long hexadecimal numbers which ME/TA converts into the GSM 7 bit default alphabet characters. (e.g. 17 (IRA 49 and 55) will be converted to character Π (GSM 7 bit default alphabet 23)).

<mr>
Type: integer type
Meaning: 3GPP TS 23.040 [3] TP-Message-Reference in integer format

..

7.9.5 Remark

1. Not support long short message.
2. <toda>have there values: 161，145，129
3. At PDU mode , wen can't send MT message.

7.9.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMGF=0	OK
AT+CMGS=17 *(value of "dcs" is getting from dcs oct in the pdu header)*	>0011000B813170862334F20000A70361F118<CTRL Z> +CMGS: 1 OK
AT+CMGF=1	OK
AT+CSMP=17,167,0,0 *(7bit encode of message to store or send in text mode)*	OK
AT+CMGS="13560243602"	>abc<CTRL Z> +CMGS: 5 OK
AT+CSMP=17,167,0,4 *(8bit encode of message to store or send in text mode)*	OK
AT+CMGS="13560243602",129	>abc<CTRL Z> +CMGS:3 OK
AT+CSMP=17,167,0,8 *(16bit encode of message to store or send in text mode)*	OK
AT+CMGS="+13560243602",145	>XXX<CTRL Z> (Chinese string) +CMGS:4

7.10 AT+CMGW Write SMS message to memory

7.10.1 Description

… Execution command stores message (either SMS-DELIVER or SMS-SUBMIT) to memory storage <mem2>. Memory location <index> of the stored message is returned.

7.10.2 Syntax

Test command AT+CMGW=? Description ..	Response ok
Read command Description ..	Response
Set command TEXT mode（+CMGF=1）: AT+CMGW [=<oa/da>[,<tooa/toda>[,<stat>]]]<CR> text is entered <ctrl-Z/ESC> PDU mode（+CMGF=0）: AT+CMGW=<length>[,<stat>]<CR> pdu is given <ctrl-Z/ESC> Description .. **1.The Execution command is executed successful:** **if PDU mode (+CMGF=0):** +CMGW: <index> **if text mode (+CMGF=1):** +CMGW: <index> **2.the Execution command is executed failing:** *+CMS ERROR: <err>*	Response Success: +CMGW:<index> OK Fail: ERROR
Reference 3GPP TS 27.005 V3.2.0 (2002-06)	

7.10.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.10.4 Parameter

<index>	integer type; value in the range of location numbers supported by the associated memory
<da>	3G TS 23.040 [3] TP-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 (refer command +CSCS in3G TS 27.007 [9]); type of address given by <toda>tring type; memory to which writing and sending operations are made
<toda>	3G TS 24.011 [6] 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>	integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
<stat>	Integer type in PDU mode (default 2 for +CMGW), or string type in text mode (default .STO UNSENT. for +CMGW). Indicates the status of message in memory.

..

7.10.5 Remark

1.not support long message.
2.<toda> have three values: 161, 145 and 129.
3. if pdu mode, each bit meaning of the dcs byte are following:
Dcs byte: bit7……bit0

bit7..bit4 - encode group

bit7 - reserved
bit6 - reserved
bit5 - 0:text uncompress 1: GSM default compress
bit4 - 0: bit0 and bit1 no use 1: bit0 and bit1 useful

bit0: bit1:
0 0 class1
0 1 class2
1 0 class3
1 1 class4

bit2: bit3:
0 0 GSM default 7 bit encode
0 1 8 bit encode
1 0 16bit(UCS2) encode
1 1 reserved

4. At PDU mode ,if we want to write MT message at storage, we must specify the status of UNREAD or READ.
And at PDU mode , wen can't write MT message which have status of UNSENT or SENT.

7.10.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMGF=0	OK
AT+CMGW=17 *(value of "dcs" is getting from dcs oct in the pdu header)*	>0011000B813170862334F20000A70361F118<CTRL Z> +CMGW: 1 OK
AT+CMGF=1	OK
AT+CSMP=17,167,0,0 *(7bit encode of message to store or send in text mode)*	OK
AT+CMGW="13560243602"	>abc<CTRL Z> +CMGW: 5 OK
AT+CSMP=17,167,0,4 *(8bit encode of message to store or send in text mode)*	OK
AT+CMGW="13560243602",129	>abc<CTRL Z> +CMGW:3 OK
AT+CSMP=17,167,0,8 *(16bit encode of message to store or send in text mode)*	OK

AT+CMGW=” 13560243602”	>XXX<CTRL Z> (Chinese string) +CMGW:4 OK

7.11 AT+CNMA New SMS message acknowledge to ME/TE, only phase 2+(Currently not support)

7.11.1 Description

… Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE (refer command +CNMI tables 2 and 4). This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1. TA shall not send another +CMT or +CDS result code to TE before previous one is acknowledged.

7.11.2 Syntax

Test command AT+CNMA=? Description .. **if PDU mode (+CMGF=0):** +CNMA[=<n>[,<length>[<CR>***PDU is given***<ctrl-Z/ESC>]]] **if text mode (+CMGF=1):** +CNMA **The syntax of Test command is:** +CNMA=?	Response ok
Read command Description ..	Response
Set command AT+CNMA Description ..	Response Success: OK Fail: ERROR **1.The Execution command is executed successful:** None **2.the Execution command is executed failing:** *+CMS ERROR: <err>* **3.the Test command is executed successful:** **if PDU mode (+CMGF=0):** +CNMA: (list of supported <n>s) **if text mode (+CMGF=1):** None
Reference:3GPP TS 27.005 V3.2.0 (2002-06)	

7.11.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.11.4 Parameter

<n>: Type: integer type Meaning:

0	command operates similarly as defined for the text mode
1	send RP-ACK (or buffered result code received correctly)
2	send RP-ERROR (if PDU is not given, ME/TA shall send SMS-DELIVER-REPORT with 3GPP TS 23.040 [3] TP-FCS value set to 'FF' (unspecified error cause))

..

7.11.5 Remark

1. Have no interface with CSW, this AT command only support test mode , and have no others functions.

7.11.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CNMI=1,2,2	OK <send message to mobile，and mobile received URC> +CMT: 35 0891683108200005F0240D91683165203406F20008400172013033000676848BDD8BF4 AT+CNMA OK <reference AT+CNMI and URC: +CMT>
<Note : ..>	*<Note :..>*

7.12 AT+CNMI New SMS message indications

7.12.1 Description

... Set command selects the procedure, how receiving of new messages from the network is indicated to the TE when TE is active.

7.12.2 Syntax

Test command AT+CNMI=? Description ..	Response Success: +CNMI:(list of supported <mode>s),(list of supported <mt>s), (list of supported <bm>s),(list of supported <ds>s), (list of supported <bfr>s) OK Fail: +CMS ERROR:<err>
Read command AT+CNMI? Description ..	Response +CNMI:<mode>,<mt>,<bm>,<ds>,<bfr> OK
Set command AT+CNMI=<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]] Description ..	Response Success: OK Fail: ERROR
Reference:3GPP TS 27.005 V3.2.0 (2002-06)	

7.12.3 Unsolicited Result Codes

URC1 +CALA: <text>

..

URC2
+SYSSTART ALARM MODE+CALA: <text>
..

7.12.4 Parameter

<mode> **support one value now : 0**

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.

3 Forward unsolicited result codes directly to the TE. TA-TE link specific inband technique used to embed result codes and data when TA is in on-line data mode.

<mt> **support three values now: 0，1，2，and have no CLASS type.**

0 No SMS-DELIVER indications are routed to the TE.（default value）

1 If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code:+CMTI: <mem>,<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> **Broadcast—csw not supported**

0 No CBM indications are routed to the TE.

1 If CBM is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code:+CBMI: <mem>,<index>

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) If ME supports data coding groups which define special routing also for messages other than class 3 (e.g. (U)SIM specific messages), ME may choose not to route messages of such data coding schemes into TE (indication of a stored CBM may be given as defined in <bm>=1).

3 Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. If CBM storage is supported, messages of other classes result in indication as defined in <bm>=1.

<ds>**: message report can't be storaged，the value 2 is not supported now**

0 No SMS-STATUS-REPORTs are routed to the TE. （default value）

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: <mem>,<index>

<bfr>: **not supported**

0 TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1...3 is entered (OK response shall be given before flushing the codes).

1 TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1...3 is entered.

..

7.12.5 Remark

1. if PDU mode, each bit meaning of DCS byte are reference in chapter 11.10,5, CMGW remark.

7.12.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CNMIi=0,1,0,0,0 +CMTI: "SM",7	OK
AT+CMGF=0 AT+CNMI=0,2,0,0,0 +CMT: ,27 0891683110102105F0240D91683120117013F500008070206193930007F4F29C9E769F01	OK OK
AT+CMGF=1 AT+CSDH=1 AT+CNMI=0,2,0,0,0 +CMT: "+8613021107315",,"2008/07/02,16:40:24+00",145,17,0,0,"+8613010112500",145 ,8 testing	OK OK OK
AT+CMGF=1 AT+CNMI=0,0,0,1,0 AT+CMGS=”13445555991” +CDS: 2,12,"+8613021107315",145,"2008/07/02,16:42:22+00","2008/07/02,16:42:34+00",0	OK OK +CMGS: 12 OK

7.13 AT+CPMS Preferred SMS message storag

7.13.1 Description

… Set command selects memory storages <mem1>, <mem2> and <mem3> to be used for reading, writing, etc.

7.13.2 Syntax

Test command AT+CPMS=? Description ..	Response Success: +CPMS: (list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s) OK Fail: ERROR
Read command AT+CPMS? Description ..	Response Success: +CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>,<mem3>, <used3>,<total3>

	OK Fail: ERROR
Set command AT+ CPMS =<mem1>[, <mem2>[,<mem3>]] Description ..	Response Success +CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> OK Fail: ERROR
Reference:3GPP TS 27.005 V3.2.0 (2002-06)	

7.13.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.13.4 Parameter

<mem1> string type; mmory from which messages are read and deleted <mem2> string type; memory to which writing and sending operations are made <mem3> string type; memory to which received SMs are preferred to be stored <used1> integer type;number of messages currently in <mem1> <used2> integer type;number of messages currently in <mem2> <used3> integer type;number of messages currently in <mem3> <total1> integer type;number of messages storable in <mem1> <total2> integer type;number of messages storable in <mem2> <total3> integer type;number of messages storable in <mem3>
..

7.13.5 Remark

Parameters <mem1>，<mem2> and <mem3> have two kinds fo values：“SM”,”ME”

7.13.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CPMS="SM","ME","SM" *<**“SM”** : SMS message storage in SIM, default>*	+CPMS: 11,40,0,200,11,40 OK
AT+CPMS?	+CPMS: 11,40,0,200,11,40 OK
AT+CPMS="ME","ME","ME"	+CPMS: 0,200,0,200,0,200 OK
AT+CPMS?	+CPMS: 0,200,0,200,0,200 OK
AT+CPMS="SM","SM","SM"	+CPMS: 11,40,11,40,11,40 OK

AT+CPMS?	+CPMS: 11,40,11,40,11,40 OK

7.14 AT+CSCA SMS service center address

7.14.1 Description

... Set command updates the SMSC address.

7.14.2 Syntax

Test command AT+CSCA=? Description ..	Response ok
Read command AT+CSCA? Description ..	Response Success: +CSCA:<sca>,<tosca> OK Fail: ERROR
Set command AT+ CSCA =<sca>[,<tosca>] Description ..	Response Success: OK Fail: ERROR
Reference:3GPP TS 27.005 V3.2.0 (2002-06)	

7.14.3 Unsolicited Result Codes

URC1 +CALA: <text>
URC2 +SYSSTART ALARM MODE+CALA: <text>

7.14.4 Parameter

<sca>
GSM 04.11 RP SC address Address-Value field in string format
<tosca>
GSM 04.11 RP SC address Type-of-Address octet in integer format

7.14.5 Remark

7.14.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CSCA=” +8613800100500"	OK
AT+CSCA?	+CSCA: "+8613800100500",145 OK

7.15 AT+CSCB Select cell broadcast messages

7.15.1 Description

... Set command selects which types of CBMs are to be received by the ME(**Currently not support**)

7.15.2 Syntax

Test command AT+CSCB=? Description ..	Response Success: +CSCB:(list of supported <mode>s) OK Fail: ERROR
Read command AT+CSCB? Description ..	Response Success: +CSCB:<mode>,<mids>,<dcss> OK Fail: ERROR
Set command AT+CSCB=[<mode>[,<mids>[,<dcss>]]] Description ..	Response Success: OK Fail: ERROR
Reference:3GPP TS 27.005 V3.2.0 (2002-06)	

7.15.3 Unsolicited Result Codes

URC1 +CALA: <text> ..
URC2 +SYSSTART ALARM MODE+CALA: <text> ..

7.15.4 Parameter

<mode>: 0 message types specified in <mids> and <dcss> are accepted 1 message types specified in <mids> and <dcss> are not accepted <mids>: string type; all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string). <dcss>: string type; all different possible combinations of CBM data coding schemes (refer <dcs>) (default is empty string).
..

7.15.5 Remark

This command is not available now.

7.15.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CSCB=0,"0-999","0-255"	OK
AT+CSCB=1,"0-999","0-255"	OK
<reference URC: +CBM >	*<Note :..>*
<Note : ..>	

7.16 AT+CSAS Save Settings(Currently not support)

7.16.1 Description

... Execution command saves active message service settings to a non-volatile memory. A TA can contain several profiles of settings. Settings specified in commands Service Centre Address +CSCA, Set Message Parameters +CSMP are saved. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be saved. See chapter Message Service Failure Result Code for <err> values.

7.16.2 Syntax

Test command AT+CSAS=? Description ..	Response Success: OK Fail: ERROR
Read command Description ..	Response
Set command AT+CSAS Description	Response Success: OK Fail: +CMS ERROR: <err>
Reference:3GPP TS 27.005 V3.2.0 (2002-06)	

7.16.3 Unsolicited Result Codes

URC1 +CALA: <text>
URC2 +SYSSTART ALARM MODE+CALA: <text>

7.16.4 Parameter

7.16.5 Remark

This command is not available now cause of having no interface by CSW.

7.16.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CSAS	OK
AT+CRES	OK
AT+CSMP?	*<Note :..>*

7.17 AT+CRES Restore Settings(Currently not support)

7.17.1 Description

... Recover the parameter's settings of AT commands +CSCA and +CSMP

7.17.2 Syntax

Test command AT+CRES=? Description	Response Success: OK Fail: *ERROR*
Read command Description	Response
Exe command AT+CRES Description	Response OK +CME ERROR: <err> is returned
Reference:3GPP TS 27.007 V3.12.0	

7.17.3 Unsolicited Result Codes

7.17.4 Parameter

..

7.17.5 Remark

This command is not available now cause of having no interface by CSW.

7.17.6 Example

The following examples show the typical application for this command.

Command	Possible Response
If CSMP and CSCA successful AT+CRES	OK
AT+CSMP? *<Note : ..>*	*<Note :..>*

7.18 +CDS Indicates SMS status report has been received

7.18.1 Description

... Indicates that SMS status report has been received

7.18.2 Syntax

+CDS: <length><CR><LF><pdu> (PDU mode enabled)

+CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)

Reference
3GPP TS 27.005 V3.2.0 (2002-06)

7.18.3 Unsolicited Result Codes

7.18.4 Parameter

<pdu> In the case of SMS: 3G TS 24.011 [6] SC address followed by 3G TS 23.040 [3] TPDU in hexadecimal format: ME/TA converts each octet of TP data unit into two IRA character long hexadecimal number (e.g. octet with integer value 42 is presented to TE as two characters 2A (IRA 50 and 65))

<length> integer type value indicating in the text mode (+CMGF=1) the length of the message body <data> > (or <cdata>) in characters; or in PDU mode (+CMGF=0), the length of the actual TP data unit in octets (i.e. the RP layer SMSC address octets are not counted in the length)
<fo> depending on the command or result code: first octet of 3G TS 23.040 [3] SMS-DELIVER, SMS-SUBMIT SMS-STATUS-REPORT, or SMS-COMMAND in integer format
is supported, in enhanced format (hexadecimal coded string with double quotes)
<scts> 3G TS 23.040 [3] TP-Service-Centre-Time-Stamp in time-string format (refer <dt>)
<st> 3G TS 23.040 [3] TP-Status in integer format
<mr> 3G TS 23.040 [3] TP-Message-Reference in integer format
<ra> 3G TS 23.040 [3] TP-Recipient-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 (refer command +CSCS in 3G TS 27.007 [9]); type of address given by <tora>
<dt> 3G TS 23.040 [3] 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. E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to “94/05/06,22:10:00+08”
<tora> 3G TS 24.011 [6] TP-Recipient-Address Type-of-Address octet in integer format (default refer <toda>)

7.18.5 Remark

Please refer to +CNMI

7.18.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CMGF =0	OK
AT+CNMI=0,0,0,1,0	OK
	+CDS: 34 91683110102105F006110D91683120117013F5807020812014008070208120740000
AT+CMGF=1	OK
AT+CNMI=0,0,0,1,0	OK
AT+CMGS="13466507607"	+CMGS: 12 OK
	+CDS: 2,14,"+8613021107315",145,"2008/07/02,17:30:50+00","2008/07/02,17:30:55+00 ",0

8 Audio Commands

The AT Commands described in this chapter are related to the A6 AT Module's audio interface.

8.1 AT+CAUDIO Open or Close Audio

8.1.1 Description

Open or Close audio, used during a call.

8.1.2 Syntax

Test command AT+CAUDIO=? Description ...	Response If success: +CAUDIO: (0-1) OK If failed: +CME ERROR

Set command AT+CAUDIO=<n> Description …	Response OK If value is valid. +CME ERROR If value is not recognized or not supported.
Reference …	

8.1.3 Parameter

<n>	NOTE
0	Close audio (transmitter and receiver)
1	Open audio (transmitter and receiver)

8.1.4 Remark

The command will be forbidden during audio cycle test.

8.1.5 Example

Command	Possible Response
AT+CAUDIO=0	OK
AT+CAUDIO =?	+CAUDIO: (0-1) OK

8.2 AT+CRSL Ringer Sound Level

8.2.1 Description

This command is used to set/get the sound level of the ringer on incoming calls. The set command changes the default <volume> value of the +CRMP command.

8.2.2 Syntax

Test command AT+CRSL=? Description …	Response If success: +CRSL: (0-15) If failed: +CME ERROR

Reference … *not sure*

Test command AT+CRSL? Description ...	Response If success: +CRSL: <number>NOTE: Current level is number. If failed: +CME ERROR
Reference … *not sure*	

Test command AT+CRSL=<value> Description ...	Response If success: OK If failed: +CME ERROR

8.2.3 Parameter

<value>	NOTE
value	Set volume to value.

8.2.4 Remark

8.2.5 Example

Command	Possible Response
AT+CRSL=0	OK [Set volume to Min.]
AT+CRSL =15	OK [Set volume to Max.]
AT+CRSL?	+CRSL: 15 OK [Get current ringer sound level]
AT+CRSL=?	+CRSL: (0-15) OK [Supported parameters.]

8.3 AT+CDTMF Play DTMF tones but don’t send DTMF tones to a remote subscriber

8.3.1 Description

Play DTMF tones but don’t send DTMF tones to a remote subscriber

8.3.2 Syntax

Test command AT+CDTMF=? Description …	Response +CDTMF: (list of supported <DTMF>s) (list of supported <duration>s) OK

Write command AT+CDTMF=<DTMF>[,<duration>] Description …	Response If success: OK If failed: +CME ERROR

Reference:

8.3.3 Parameter

<DTMF>	NOTE
A single ASCII character in the set 0-9,#,*,A-D	

<duration>	NOTE
A integer time in 1/10 second.	Default value is 1.

8.3.4 Remark

8.3.5 Example

Command	Possible Response
AT+CDTMF=?	+CDTMF: (0-9,*,#,A,B,C,D),(1-10) OK
	When input AT+CDTMF=0 ,you can hear key tone OK
AT+CDTMF=0	

8.4 AT+AUST Test Audio Cycle

8.4.1 Description

This command is used to test audio cycle. At the same time, the command modifies the audio mode.

8.4.2 Syntax

Test command AT+AUST=? Description …	Response +AUST: (list of supported <number>s) OK +CME ERROR if failed…

Set command AT+AUST=<value> Description The default audio cycle test mode is Mic mode. When audio cycle test is going on, the execution is forbidden.	Response OK +CME ERROR if failed…

Exe command AT+AUST Description The execution will automatically modify the value of <nSPKGain>,<nMICGain> <nSideGain> (see in AT+SAIC) as 6, 15, 11. Surely, the gains can be changed by AT+SAIC. Note: when audio cycle test is going on, the execution is forbidden.	Response OK +CME ERROR if failed…

8.4.3 Parameter

<value>	NOTE
0	Aux mode
1	Mic mode

2	Loud mode

8.4.4 Remark

8.4.5 Example

Command	Possible Response
AT+AUST=0	OK
AT+AUST	OK
AT+AUEND	OK
AT+AUST=1	OK
AT+AUST	OK
AT+AUEND	OK

8.5 AT+AUEND Stop Audio Cycle Test

8.5.1 Description

This command is used to stop audio cycle test. The default audio mode (Mic mode) is recovered.

8.5.2 Syntax

Exec command AT+AUEND Description …	Response OK +CME ERROR if failed…
Reference *… not sure*	

8.5.3 Parameter

8.5.4 Remark

8.5.5 Example

Command	Possible Response
AT+AUST=0	OK
AT+AUST	OK
AT+AUEND	OK
AT+AUST=1	OK
AT+AUST	OK
AT+AUEND	OK

8.6 AT+ SNFS

这个命令用于耳机，听筒的切换，默认是听筒。
AT+SNFS=0,切换到耳机
AT+SNFS=1，切换到听筒

9 GPRS Commands

This chapter describes AT Commands that a TE (Terminal Equipment, e.g. an application running on a controlling PC) may use to control the MC55 acting as GPRS Mobile Termination (MT).

9.1 AT+CGATT PS attach or detach

9.1.1 Description

This 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

9.1.2 Syntax

Test command AT+CGATT=? Description ..	Success: +CGATT: (list of supported <state>s) OK Fail: ERROR
Read command AT+CGATT? Description ..	Response(s) Success: +CGATT: <state> OK Fail: ERROR
Set command AT+CGATT= <state> Description ..	Response(s) Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.13.0 (2003-03)	

9.1.3 Unsolicited Result Codes

9.1.4 Parameter

< state >
indicates the state of PS attachment 0 – detached 1 – attached Other values are reserved and will result in an ERROR response to the execution command.

9.1.5 Remark

9.1.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGATT=?	+CGATT: (0-1) OK
AT+CGATT=1	OK
AT+CGATT?	+CGATT: 1 OK

9.2 AT+CGDCONT Define PDP Context

9.2.1 Description

This command be used to defined PDP context

9.2.2 Syntax

Test command AT+CGDCONT=? Description .. Response(s) Success: +CGDCONT: (range of supported <cid>s), <PDP_type>,(list of supported<d_comp>s), (list of supported <h_comp>s) [<CR><LF> [+CGDCONT: (range of supported <cid>s), <PDP_type>,(list of supported <d_comp>s), (list of supported <h_comp>s) […]] OK Fail: ERROR
Read command AT+CGDCONT? Description .. Response(s) Success: +CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>,<h_comp>[<CR><LF> +CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp> OK Fail: ERROR
Set command AT+CGDCONT= <cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]] Description .. Response(s) Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.13.0 SIEMENS GPRS AT Module

9.2.3 Unsolicited Result Codes

9.2.4 Parameter

< cid >
(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1, maximum value =7) is returned by the test form of the command.
< PDP_type >
(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol IP Internet Protocol (IETF STD 5) IPV6 Internet Protocol, version 6 (IETF RFC 2460) PPP Point to Point Protocol (IETF STD 51)
< APN >
(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network. If the value is null or omitted, then the subscription value will be requested.

< PDP_address >
a string parameter that identifies the MT in the address space applicable to the PDP. If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested. The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.
< d_comp >
a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 04.65 [59]) 0 - off (default if value is omitted) 1 - on (manufacturer preferred compression) 2 - V.42bis 3 - V.44bis Other values are reserved.
< h_comp >
a numeric parameter that controls PDP header compression (refer 3GPP TS 04.65 [59]) 0 – off (default if value is omitted) 1 – on (manufacturer preferred compression) 2 – RFC1144 3 – RFC2507 4 – RFC3095 Other values are reserved.

9.2.5 Remark

9.2.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGDCONT=?	+CGDCONT: (1..7), (IP,IPV6,PPP),(0..3),(0..4) OK

AT+CGDCONT=1, "IP","cmnet" AT+CGDCONT?	OK +CGDCONT:1,"IP", " cmnet ", ,0,0 OK

9.3 AT+CGACT PDP context activate or deactivate

9.3.1 Description

This command is used to activate or deactivate the specified PDP context (s). After the command has completed, the MT remains in V.25ter command state. If any PDP context is already in the requested state, the state for that context remains unchanged. 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. If no <cid>s are specified the activation form of the command activates all defined contexts or deactivates all active contexts.

9.3.2 Syntax

Test command AT+ CGACT =? Description The test command is used for requesting information on the supported PDP context activation states.	Response(s) Success: +CGACT: (list of supported <state>s) OK Fail: ERROR
Read command AT+ CGACT? Description The read command returns the current activation states for all the defined PDP contexts.	Response(s) Success: +CGACT: (<cid>, <state>) OK Fail: ERROR
Set command AT+ CGACT=<state> [,<cid>[,<cid>[,…]]] Description See 22.1.1	Response(s) Success: OK Fail: ERROR
Reference:3GPP TS 27.007 V3.13.0 (2003-03)	

9.3.3 Unsolicited Result Codes

9.3.4 Parameter

< state > State indicates the state of PS attachment 0 –deactivated 1 – activated Other values are reserved and will result in an ERROR response to the execution command.
< cid > A numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). Range from 1 to 7.

9.3.5 Remark

1. Before activating, use command AT+CGATT=1 first to attach to the network.
2. Currently，only 3 active PDP contexts are allowed to exist simultaneity. So the number of cid in this

command is limited to 3. And if you have defined more than 3 cids with command AT+CGDCONT, only the first 3 will be acted on when you use AT+CGACT=1 to activate all cids.

9.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGACT=? <Note : ..>	+CGACT: (0,1) OK <Note :..>
AT+CGACT=1,1	OK
AT+CGACT?	+CGACT: (1,1) OK

9.4 AT+CRC Cellular result codes

9.4.1 Description

This command is to control whether or not the extended format of incoming call indication or GPRS network request for PDP context activation or notification for VBS/VGCS calls is used. When enabled, an incoming call is indicated to the TE with unsolicited result code +CRING: <type> instead of the normal RING.

9.4.2 Syntax

Test command AT+ CRC =? Description ..	Response(s) Success: +CRC: (list of supported <mode>s) OK Fail: ERROR
Read command AT+ CRC? Description ..	Response(s) Success: +CRC: <mode> OK Fail: ERROR
Set command AT+CRC=<mode> Description ..	Response(s) Success: OK Fail: ERROR

Reference
3GPP TS 27.007 V3.13.0 (2003-03)
SIEMENS GPRS ATModem

9.4.3 Unsolicited Result Codes

URC1 +CRING: <type> <type>: VOICE normal voice (TS 11)

9.4.4 Parameter

<mode>	
0	disables extended format (default)
1	enables extended format

9.4.5 Remark

9.4.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CRC=? <Note : ..>	+CRC: (0,1) OK <Note :...>
AT+CRC=1	OK
AT+CRC?	+CRC: 1 OK

9.5 AT+CGQMIN Quality of Service Profile (Minimum acceptable)

9.5.1 Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message. A special form of the set command, +CGQMIN= <cid> causes the minimum acceptable profile for context number <cid> to become undefined. In this case no check is made against the negotiated profile.

9.5.2 Syntax

Test command
AT+CGQMIN=?
Description
The test command returns values supported as a compound value. If the MT supports several PDP types, the parameter value ranges for each PDP type are returned on a separate line.
Response(s)
Success:
+CGQMIN: <PDP_type>, (list of supported <precedence>s),
(list of supported <delay>s),
(list of supported <reliability>s) ,
(list of supported <peak>s),
(list of supported <mean>s)
[<CR><LF>
+CGQMIN: <PDP_type>,
(list of supported <precedence>s),
(list of supported <delay>s),
(list of supported <reliability>s) ,
(list of supported <peak>s),
(list of supported <mean>s)
[…]]
OK

Fail:
ERROR

Read command
AT+CGQMIN?

Description
The read command returns the current settings for each defined context.

Success:
+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>[<CR><LF>
+CGQMIN: <cid>, <precedence>, <delay>, <reliability.>, <peak>, <mean>[…]]
OK
Fail:
ERROR

Set command
AT+CGQMIN=<cid> [,<precedence > [,<delay> [,<reliability.>
[,<peak> [,<mean>]]]]]
Description
The set command specifies a profile for the context identified by the (local) context identification parameter, <cid>. Since this is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, the +CGQMIN command is effectively an extension to these commands. The QoS profile consists of a number of parameters, each of which may be set to a separate value

Response(s)
Success:
OK
Fail:
ERROR

Reference
3GPP TS 27.007 V3.13.0 (2003-03)

9.5.3 Unsolicited Result Codes

9.5.4 Parameter

< cid >
a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

< precedence >
Specifies the precedence class
0 network subscribed value
1 High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3
2 Normal priority. Service commitments shall be maintained ahead of precedence class 3
3 Low priority. Service commitments shall be maintained ahead of precedence classes 1 and 2

< delay >
Specifies the delay class.
0 network subscribed value
1 < 0.5
2 < 5
3 < 50
4 Unspecified (Best Effort)

< reliability >
Specify the reliability class.
0 network subscribed value
1 Non real-time traffic, error-sensitive application that cannot cope with data loss
2 Non real-time traffic, error-sensitive application that can cope with infrequent data loss
3 Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS
4 Real-time traffic, error-sensitive application that can cope with data loss
5 Real-time traffic, error non-sensitive application that can cope with data loss

< peak >
Specify the peak throughput class.
Class Peak Throughput(in octets per second)

0	network subscribed value
1	Up to 1 000 (8 kbit/s)
2	Up to 2 000 (16 kbit/s).
3	Up to 4 000 (32 kbit/s)
4	Up to 8 000 (64 kbit/s)
5	Up to 16 000 (128 kbit/s)
6	Up to 32 000 (256 kbit/s)
7	Up to 64 000 (512 kbit/s)
8	Up to 128 000 (1 024 kbit/s)
9	Up to 256 000 (2 048 kbit/s)

< mean >

Class Peak Throughput(in octets per second)
0 network subscribed value
1 (in octets per hour) 100 (~0.22 bit/s)
2 200 (~0.44 bit/s)
3 500 (~1.11 bit/s)
4 1 000 (~2.2 bit/s)
5 2 000 (~4.4 bit/s)
6 5 000 (~11.1 bit/s)
7 10 000 (~22 bit/s)
8 20 000 (~44 bit/s)
9 50 000 (~111 bit/s)
10 100 000 (~0.22 kbit/s)
11 200 000 (~0.44 kbit/s)
12 500 000 (~1.11 kbit/s)
13 1 000 000 (~2.2 kbit/s)
14 2 000 000 (~4.4 kbit/s)
15 5 000 000 (~11.1 kbit/s)
16 10 000 000 (~22 kbit/s)
17 20 000 000 (~44 kbit/s)
18 50 000 000 (~111 kbit/s)
31 best effort

PDP_type >

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol:

IP	Internet Protocol (IETF STD 5)
IPV6	Internet Protocol, version 6 (IETF RFC 2460)
PPP	Point to Point Protocol (IETF STD 51)

9.5.5 Remark

9.5.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGQMIN=?	+CGQMIN: (IP,PPP,IPV6), (0..3), (0..4), (0..5) , (0..9), (0..18,31)
AT+CGQMIN=1,1,1,1,1,1	OK
AT+CGQMIN?	+CGQMIN: 1,1,1,1,1,1 +CGQMIN: 2,0,0,0,0,0 +CGQMIN: 3,0,0,0,0,0 OK

9.6 AT+CGPADDR Show PDP address

9.6.1 Description

The execution command returns a list of PDP addresses for the specified context identifiers.

9.6.2 Syntax

Test command AT+CGPADDR=? Description The test command returns a list of defined <cid>s	Response(s) Success: +CGPADDR: (list of defined <cid>s) OK Fail: ERROR
Set command AT+CGPADDR= <cid> [,<cid> [,…]] Description	Response(s) Success: +CGPADDR: <cid>,<PDP_addr>[<CR><LF> +CGPADDR: <cid>,<PDP_addr>[...]] OK Fail: ERROR

Reference:3GPP TS 27.007 V3.13.0 (2003-03)

9.6.3 Unsolicited Result Codes

9.6.4 Parameter

< cid >

a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). If no <cid> is specified, the addresses for all defined contexts are returned.

< PDP_address >

a string that identifies the MT in the address space applicable to the PDP. The address may be static or dynamic. For a static address, it will be the one set by the +CGDCONT and +CGDSCONT commands when the context was defined. For a dynamic address it will be the one assigned during the last PDP context activation that used the context definition referred to by <cid>. <PDP_address> is omitted if none is available

9.6.5 Remark

9.6.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGPADDR=? <Note : ..>	+CGPADDR: (1,2,3) OK <Note :..>
AT+CGPADDR=1	+CGPADDR: 1,"10.14.57.241" OK

9.7 AT+CGAUTO Automatic response to a network request for PDP context activation

9.7.1 Description

The set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network. It also provides control over the use of the V.25ter basic commands 'S0', 'A and 'H' for handling network requests for PDP context activation. The setting does not affect the issuing of the unsolicited result code RING or +CRING

9.7.2 Syntax

Test command AT+ CGAUTO =? Description The test command returns the values of <n> supported by the MT as a compound value	Response(s) Success: +CGAUTO: (list of supported <n>s) OK Fail: ERROR
Read command AT+ CGAUTO? Description ..	Response(s) Success: +CGAUTO: <n> OK Fail: ERROR
Set command AT+ CGAUTO = <n> Description ..	Response(s) Success: OK Fail: ERROR
Reference:3GPP TS 27.007 V3.13.0 (2003-03)	

9.7.3 Unsolicited Result Codes

9.7.4 Parameter

< n >
0 turn off automatic response for Packet Domain only 1 turn on automatic response for Packet Domain only 2 modem compatibility mode, Packet Domain only 3 modem compatibility mode, Packet Domain and circuit switched calls (default) For <n> = 0 Packet DomainS network requests are manually accepted or rejected by the +CGANS command. For <n> = 1 Packet Domain network requests are automatically accepted according to the description above. For <n> = 2, automatic acceptance of Packet Domain network requests is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject Packet Domain requests. (+CGANS may also be used.) Incoming circuit switched calls can be neither manually nor automatically answered. For <n> = 3, automatic acceptance of both Packet Domain network requests and incoming circuit switched calls is controlled by the 'S0' command. Manual control uses the 'A' and 'H' commands, respectively, to accept and reject Packet Domain requests. (+CGANS may also be used.) Circuit switched calls are handled as described elsewhere in this specification.

9.7.5 Remark

When the +CGAUTO=0 command is received, the MT shall not perform a PS detach if it is attached. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING, the TE may manually accept or reject the request by issuing the +CGANS command or may simply ignore the network request.

When the +CGAUTO=1 command is received, the MT shall attempt to perform a PS attach if it is not already attached. Failure will result in ERROR or, if enabled, +CME ERROR being returned to the TE. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the TE, this is followed by the intermediate result code CONNECT. The MT then enters V.25ter online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

9.7.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGAUTO=? <Note : ..>	+CGAUTO: (0-3) OK <Note :...>
AT+CGAUTO=0	OK
AT+CGAUTO?	+CGAUTO: 0 OK

9.8 AT+CGQREQ Quality of Service Profile (Requested)

9.8.1 Description

This AT command be used to set the parameters of the QoS when MT send the PDP context message for activation

9.8.2 Syntax

Test command AT+CGQREQ=? Description ..	
Response(s) Success: +CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s)[<CR><LF> [+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s), (list of supported <reliability>s) , (list of supported <peak>s), (list of supported <mean>s) […]] OK Fail: ERROR	
Read command AT+CGQREQ? Description ..	Response(s) Success: +CGQREQ: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean>[<CR><LF> +CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean>[…]] OK Fail: ERROR

Set command	Response(s)
AT+CGQREQ=<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]	Success: OK
Description	Fail:
..	ERROR
Reference 3GPP TS 27.007 V3.13.0 SIEMENS GPRS AT Module	

9.8.3 Unsolicited Result Codes

9.8.4 Parameter

< cid >
a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands)
< precedence >
Specifies the precedence class 0 network subscribed value 1 High Priority. Service commitments shall be maintained ahead of precedence classes 2 and 3 2 Normal priority. Service commitments shall be maintained ahead of precedence class 3 3 Low priority. Service commitments shall be maintained ahead of precedence classes 1 and 2
< delay >
Specifies the delay class 0 network subscribed value 1 < 0.5 2 < 5 3 < 50 4 Unspecified (Best Effort)
< reliability >
Specify the reliability class 0 network subscribed value 1 Non real-time traffic, error-sensitive application that cannot cope with data loss 2 Non real-time traffic, error-sensitive application that can cope with infrequent data loss 3 Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS 4 Real-time traffic, error-sensitive application that can cope with data loss 5 Real-time traffic, error non-sensitive application that can cope with data loss
< peak >
Specify the peak throughput class 0 network subscribed value 1 Up to 1 000 (8 kbit/s). 2 Up to 2 000 (16 kbit/s) 3 Up to 4 000 (32 kbit/s). 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s) 8 Up to 128 000 (1 024 kbit/s) 9 Up to 256 000 (2 048 kbit/s)
< mean >

Specify the mean throughout class.
0 network subscribed value
1 (in octets per hour) 100 (~0.22 bit/s)
2 200 (~0.44 bit/s)
3 500 (~1.11 bit/s)
4 1 000 (~2.2 bit/s)
5 2 000 (~4.4 bit/s)
6 5 000 (~11.1 bit/s)
7 10 000 (~22 bit/s)
8 20 000 (~44 bit/s)
9 50 000 (~111 bit/s)
10 100 000 (~0.22 kbit/s)
11 200 000 (~0.44 kbit/s)
12 500 000 (~1.11 kbit/s)
13 1 000 000 (~2.2 kbit/s)
14 2 000 000 (~4.4 kbit/s)
15 5 000 000 (~11.1 kbit/s)
16 10 000 000 (~22 kbit/s)
17 20 000 000 (~44 kbit/s)
18 50 000 000 (~111 kbit/s)
31 best effort

< PDP_type >

(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol:

IP	Internet Protocol (IETF STD 5)
IPV6	Internet Protocol, version 6 (IETF RFC 2460)
PPP	Point to Point Protocol (IETF STD 51)

9.8.5 Remark

All parameters omitted will be set to 0.

9.8.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGQREQ=?	+CGQREQ: IP, (0..3), (0..4), (0..5) , (0..9), (0..18,31) OK
AT+CGQREQ=1,1,1,1,1,1	OK
AT+CGQREQ?	+CGQREQ: 1,1,1,1,1,1 +CGQREQ: 2,0,0,0,0,0 +CGQREQ: 3,0,0,0,0,0 OK

9.9 AT+CGREG GPRS network registration status

9.9.1 Description

This AT command be used to set and show the register information of MT and the position information of the MT.

9.9.2 Syntax

Test command AT+CGREG=? Description ..	Response(s) Success: +CGREG: (list of supported <n>s) OK Fail: ERROR
Read command AT+CGREG? Description ..	Response(s) Success: +CGREG: <n>,<stat>[,<lac>,<ci>] OK Fail: ERROR
Set command AT+CGREG =<n> Description ..	Response(s) Success: OK Fail: ERROR
Reference 3GPP TS 27.007 V3.13.0 SIEMENS GPRS AT Module	

9.9.3 Unsolicited Result Codes

9.9.4 Parameter

< n >
0 disable network registration unsolicited result code 1 enable network registration unsolicited result code +CGREG: <stat> 2 enable network registration and location information unsolicited result code +CGREG: <stat>[,<lac>,<ci>]
< stat >
0 not registered, MT is not currently searching an operator to register to The UE is in GMM state GMM-NULL or GMM-DEREGISTERED-INITIATED. The GPRS service is disabled, the UE is allowed to attach for GPRS if requested by the user. 1 registered, home network The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED INITIATED on the home PLMN. 2 not registered, but MT is currently trying to attach or searching an operator to register to The UE is in GMM state GMM-DEREGISTERED or GMM-REGISTERED-INITIATED. The GPRS service is enabled, but an allowable PLMN is currently not available. The UE will start a GPRS attach as soon as an allowable PLMN is available. 3 registration denied The UE is in GMM state GMM-NULL. The GPRS service is disabled, the UE is not allowed to attach for GPRS if requested by the user. 4 unknown 5 registered, roaming The UE is in GMM state GMM-REGISTERED or GMM-ROUTING-AREA-UPDATING-INITIATED on a visited PLMN.
< lac >

string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
< ci >
string type; two byte cell ID in hexadecimal format

9.9.5 Remark

9.9.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGREG=?	+CGREG: (0-2) OK
AT+CGREG=2	OK
AT+CGREG?	+CGREG: 2,1,"10DC","0D2B" OK

9.10 ATD*99***1# Request GPRS service

9.10.1 Description

Login the server, the IP of it be provided by DHCP of GGSN.

This command causes the MT to perform whatever actions are necessary to establish communication between the TE and the external PDN.

The V.25ter 'D' (Dial) command causes the MT to enter the V.25ter online data state and, with the TE, to start the specified layer 2 protocols. The MT shall return CONNECT to confirm acceptance of the command prior to entering the V.25ter online data state. No further commands may follow on the AT command line.

9.10.2 Syntax

Exe command D*<GPRS_SC_IP>[*<cid>[,<cid>[,…]]]# ..
Response(s) Success: CONNECT OK Fail: ERROR
Reference

9.10.3 Unsolicited Result Codes

9.10.4 Parameter

< called_address >
It's a string that identifies the called party in the address space applicable to the PDP. For communications software that does not support arbitrary characters in the dial string, a numeric equivalent may be used. Also, the character comma ',' may be used as a substitute for the character period '.'.

< L2P >
It's a string which indicates the layer 2 protocol to be used (see +CGDATA command). For communications software that does not support arbitrary characters in the dial string, the following numeric equivalents shall be used: "PPP"
< cid >
It's a digit string which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

9.10.5 Remark

9.10.6 Example

The following examples show the typical application for this command.

Command	Possible Response
ATD*99***1# <Note : ..>	CONNECT <Note :. dial GPRS service code and start up connecting.>

9.11 AT+CGSMS Select service for MO SMS messages

9.11.1 Description

The set command is used to specify the service or service preference that the MT will use to send MO SMS messages.

9.11.2 Syntax

Test command AT+ CGSMS =? Description The test command is used for requesting information on the currently available services and service preferences	Response(s) Success: + CGSMS: (list of supported <service>s) OK Fail: ERROR
Read command AT+ CGSMS? Description The read command returns the currently selected service or service preference	Response(s) Success: + CGSMS: <service> OK Fail: ERROR
Set command AT+ CGSMS=<service> Description	Response(s) Success: OK Fail: ERROR
Reference:3GPP TS 27.007 V3.13.0 (2003-03)	

9.11.3 Unsolicited Result Codes

9.11.4 Parameter

< service >

a numeric parameter which indicates the service or service preference to be used

0 Packet Domain
1 circuit switched
2 Packet Domain preferred (use circuit switched if GPRS not available)
3 circuit switched preferred (use Packet Domain if circuit switched not available)

9.11.5 Remark

This command is NOT available now

9.11.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGSMS=?	+CGSMS: (0-3) OK
AT+CGSMS=0	OK
AT+CGSMS?	+CGSMS: 0 OK

9.12 AT+CGANS PDP Manual response to a NW REQ for PDP context activation

9.12.1 Description

The execution command requests the MT to respond to a network request for Packet Domain PDP context activation which has been signaled to the TE by the RING or +CRING: unsolicited result code. The <response> parameter allows the TE to accept or reject the request.
Commands following the +CGANS command in the AT command line shall not be processed by the MT

9.12.2 Syntax

Test command AT+CGANS=? Description ..	Response(s) Success: +CGANS: (list of supported <response>s), (list of supported <L2P>s) OK Fail: ERROR
Read command ..	
Set command AT+CGANS=[<response>, [<L2P> ,[<cid>]]] Description ..	Response(s) Success: CONNECT ……..(data transfer) OK

	Fail: ERROR

Reference
3GPP TS 27.007 V3.13.0 (2003-03)

9.12.3 Unsolicited Result Codes

9.12.4 Parameter

< response >

Response is a numeric parameter which specifies how the request should be responded to.

0 reject the request (default value)
1 accept and request that the PDP context be activated

< L2P >

a string parameter which indicates the layer 2 protocol to be used (see +CGDATA command).

< cid >

a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

<>

..

9.12.5 Remark

This command is not available now.

9.12.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGANS=? <Note : ..>	+CGANS: (0-1) OK <Note :...>

9.13 AT+CGEREP Packet Domain event reporting

9.13.1 Description

This command is to enables or disables sending of unsolicited result codes, +CGEV: XXX from MT to TE in the case of certain events occurring in the Packet Domain MT or the network

9.13.2 Syntax

Test command AT+ CGEREP =? Description ..	Response(s) Success: +CGEREP: (list of supported <mode>s),(list of supported <bfr>s) OK Fail: ERROR
Read command AT+ CGEREP? Description	Response(s) Success: +CGEREP: <mode>,<bfr>

..	OK Fail: ERROR
Set command AT+CGEREP= [<mode> [,<bfr>]] Description ..	Response(s) Success: OK Fail: ERROR
Reference:3GPP TS 27.007 V3.13.0 (2003-03)	

9.13.3 Unsolicited Result Codes

URC1
+CGEV: REJECT <PDP_type>, <PDP_addr> A network request for PDP context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected...
URC2
+CGEV: NW REACT <PDP_type>, <PDP_addr>, [<cid>] The network has requested a context reactivation. The <cid> that was used to reactivate the context is provided if known to the MT...
URC3
+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>] The network has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT.
URC4
+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>] The mobile termination has forced a context deactivation. The <cid> that was used to activate the context is provided if known to the MT...
URC5
+CGEV: NW DETACH The network has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately...
URC6
+CGEV: ME DETACH The mobile termination has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately...
URC7
+CGEV: NW CLASS <class> The network has forced a change of UE class. The highest available class is reported (see +CGCLASS)...
URC8
+CGEV: ME CLASS <class> The mobile termination has forced a change of UE class. The highest available class is reported (see +CGCLASS)...

9.13.4 Parameter

< mode >

0 buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE.

1 discard unsolicited result codes when MT-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 MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE

< bfr >

0 MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered

1 MT buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 or 2 is entered (OK response shall be given before flushing the codes)

9.13.5 Remark

This command is NOT available now

9.13.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGEREP=?	+CGEREP: (0,2),(0) OK
<Note : ..>	<Note :...>
AT+CGEREP=2,0	OK
AT+CGEREP?	+CGEREP: 2,0 OK

9.14 AT+CGDATA Enter data state

9.14.1 Description

The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types. This may include performing a PS attach and one or more PDP context activations. If the <L2P> parameter value is unacceptable to the MT, the MT shall return an ERROR or +CME ERROR response. Otherwise, the MT issues the intermediate result code CONNECT and enters V.25ter online data state.

Commands following +CGDATA command in the AT command line shall not be processed by the MT.

The context shall be activated using the matched value for PDP type and a static PDP address if available, together with the other information found in the PDP context definition. If a static PDP address is not available then a dynamic address is requested.

If no <cid> is given or if there is no matching context definition, the MT shall attempt to activate the context with whatever information is available to the MT. The other context parameters shall be set to their default values.
If the activation is successful, data transfer may proceed.

After data transfer is complete, and the layer 2 protocol termination procedure has completed successfully, the V.25ter command state is re-entered and the MT returns the final result code OK.
In the event of an erroneous termination or a failure to start up, the V.25ter command state is re-entered and the MT returns the final result code NO CARRIER or, if enabled, +CME ERROR. Attach, activate and other errors may be reported.

9.14.2 Syntax

Test command AT+CGDATA=? Description The test command is used for requesting information on the supported layer 2 protocols	Response(s) Success: +CGDATA: (list of supported <L2P>s) OK Fail: ERROR
Set command AT+CGDATA= <L2P>, <cid> [,<cid> [,…]] Description ..	Response(s) Success: CONNECT ……..(data transfer) OK Fail: ERROR
Reference:3GPP TS 27.007 V3.13.0 (2003-03)	

9.14.3 Unsolicited Result Codes

9.14.4 Parameter

< L2P >
a string parameter that indicates the layer 2 protocol to be used between the TE and MT PPP Point-to-point protocol for a PDP such as IP
< cid >
a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands).

9.14.5 Remark

This command may be used in both normal and modem compatibility modes.
This command is NOT available now

9.14.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGDATA=? <Note : ..>	+CGDATA: OK <Note :..>
AT+CGDATA=1,1	CONNECT 115200

9.15 AT+CGCLASS GPRS mobile station class

9.15.1 Description

The set command is used to set the MT to operate according to the specified mode of operation, see TS 23.060 [47]. If the requested mode of operation is not supported, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

9.15.2 Syntax

Test command AT+CGCLASS =? Description The test command is used for requesting information on the supported MT mode of operation	Response(s) Success: + CGCLASS: (list of supported <class>s) OK Fail: ERROR
Read command AT+CGCLASS? Description The read command returns the mode of operation set by the TE, independent of the current serving cell capability and independent of the current serving cell Access Technology. If no value has been set by the TE previously, the return value shall be the highest mode of operation that can be supported by the MT.	Response(s) Success: + CGCLASS: <class> OK Fail: ERROR

Set command	Response(s)
AT+ CGCLASS = [<class>]	Success: OK
Description ..	Fail: ERROR
Reference:3GPP TS 27.007 V3.13.0 (2003-03)	

9.15.3 Unsolicited Result Codes

9.15.4 Parameter

< class >

a string parameter which indicates the mode of operation
A Class-A mode of operation (A/Gb mode), or CS/PS mode of operation (Iu mode) (highest mode of operation)
B Class-B mode of operation (A/Gb mode), (not applicable in Iu mode)
CG Class-C mode of operation in PS only mode (A/Gb mode), or PS mode of operation (Iu mode)
CC Class-C mode of operation in CS only mode (A/Gb mode), or CS (Iu mode) (lowest mode of operation)
NOTE: <class> A means that the MT would operate simultaneous PS and CS service
<class> B means that the MT would operate PS and CS services but not simultaneously
<class> CG means that the MT would only operate PS services
<class> CC means that the MT would only operate CS services
Other values are reserved and will result in an ERROR response to the set command.
If the MT is attached to the PS domain when the set command is issued with a <class> = CC specified, a PS detach shall be performed by the MT.

9.15.5 Remark

This command is NOT available now

9.15.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CGCLASS=?	+CGCLASS: ("CG","CC","B") OK
<Note : ..>	<Note :...>
AT+CGCLASS="B"	OK
AT+CGCLASS?	+CGCLASS: "B" OK

10 TCP/IP Commands

The AT Commands described in this chapter are related to the A6 AT Module's TCP/IP application toolkit interface.

10.1 AT+CIPSTART Start up TCP or UDP connection

10.1.1 Description

This command is to start up TCP or UDP connection.

10.1.2 Syntax

Test command AT+CIPSTART=?	Response(s) Success: +CIPSTART: (list of supported <mode>),(IP address range),(port range) +CIPSTART: (list of supported <mode>),(domain name),(port range) OK Fail: ERROR
Set command AT+ CIPSTART =<mode>,<IP address>,<port> AT+ CIPSTART =<mode>,<domain name>,<port>	Response(s) Success: OK Fail: ERROR
Reference	

10.1.3 Unsolicited Result Codes

If connect successfully response CONNECT OK Otherwise STATE:<state> CONNECT FAIL

10.1.4 Parameter

< mode>
A string parameter which indicates the connection type "TCP" Establish a TCP connection "UDP" Establish a UDP connection
< IP address>
Remote server IP address
< port>
Remote server port
< domain name>
Remote server domain name
<state>
A string parameter which indicates the progress of connecting 0 IP INITIAL

1	IP START
2	IP CONFIG
3	IP IND
4	IP GPRSACT
5	IP STATUS
6	TCP/UDP CONNECTING
7	IP CLOSE
8	CONNECT OK

10.1.5 Remark

10.1.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CIPSTART="TCP","124.42.0.80",7	CONNECT OK OK

10.2 AT+CIPSEND Send data through TCP or UDP connection

10.2.1 Description

This command is to send data through TCP or UDP connection.

10.2.2 Syntax

Test command AT+ CIPSEND =?	Response(s) Success: OK
Execution command AT+ CIPSEND Description Response ”>”, then type data for send, tap CTRL+Z to send.	Response(s) Success: OK Fail: ERROR
Reference	

使用例子 如下：

AT+CIPSEND=5,”12345” //同步发送字符串

AT+CIPSEND=5 //出现”>”后可以发送 5 个字节的二进制数据

AT+CIPSEND //出现”>”后可以发送以CTRL+Z结尾的字符串

10.2.3 Unsolicited Result Codes

If sending successfully: SEND OK If sending fail: SEND FAIL

10.2.4 Parameter

< data_length>
A numeric parameter which indicates the length of sending data, it must less than 1024. ..

10.2.5 Remark

This command is used to send data on the TCP or UDP connection that has been established already. Ctrl－Z is used as a termination symbol. There are at most 1024 bytes that can be sent at a time.

Set the time that send data automatically with the command of AT+CIPATS.

Only send data at the status of established connection, otherwise response ERROR.

10.2.6 Example

The following examples show the typical application for this command.

Command	Possible Response
at+cipsend > shengnshghshghgshghshgsghg	OK
at+cipsend=?	OK

10.3 AT+CIPCLOSE Close TCP or UDP Connection

10.3.1 Description

The command only close connection at the status of TCP/UDP CONNECTING or CONNECT OK, Otherwise response error. After close the connection, the status is IP CLOSE.

10.3.2 Syntax

Test command AT+ CIPCLOSE =?	Response(s) Success: + CIPCLOSE: OK
Exe command AT+ CIPCLOSE Description ..	Response(s) Success: CLOSE OK Fail: ERROR
Reference	

10.3.3 Unsolicited Result Codes

10.3.4 Parameter

10.3.5 Remark

10.3.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CIPSTART="TCP","124.42.0.80",7	CONNECT OK OK
at+cipclose	OK

10.4 AT+CIPSHUT Disconnect wireless connection

10.4.1 Description

The command disconnects the wireless connection, except at the status of IP INITIAL. You can close moving scene by AT+CIPSHUT. After closed, the status is IP INITIAL.

10.4.2 Syntax

Test command AT+ CIPSHUT =?	Response(s) Success: + CIPSHUT: OK
Exe command AT+ CIPSHUT Description ..	Response(s) Success: SHUT OK Fail: ERROR
Reference	

10.4.3 Unsolicited Result Codes

10.4.4 Parameter

10.4.5 Remark

10.4.6 Example

The following examples show the typical application for this command.

Command	Possible Response
AT+CIPSTART="TCP","124.42.0.80",7	CONNECT OK OK
at+cipshut	OK

10.5 AT+CSTT Start task and Set APN, USER ID, PASSWORD

10.5.1 Description

The command starts task and Set APN, USER ID, PASSWORD.

10.5.2 Syntax

Test command AT+ CSTT =?	Response(s) Success: + CSTT: “APN”, “USER”, “PWD” OK
Read command AT+ CSTT?	Response(s) Success: + CSTT: <apn>, <user id>, <password> OK
Set command AT+ CSTT=<apn>, <user id>, <password>	Response(s) Success: OK Fail: ERROR
Reference	

10.5.3 Unsolicited Result Codes

10.5.4 Parameter

<apn>
A string parameter which indicates the GPRS access point name.
<user id>
A string parameter which indicates the GPRS user name.
<password>
A string parameter which indicates the GPRS password.

10.5.5 Remark

10.5.6 Example

The following examples show the typical application for this command.

Command	Possible Response

10.6 AT+CIICR Bring up wireless connection with GPRS

10.6.1 Description

The command only activate moving scene at the status of IP START, after operate this command, the state changed to IP CONFIG. If module accept the activate operation, the state changed to IP IND; after module accept the operation, if activate successfully, the state changed to IP GPRSACT, response OK, otherwise response ERROR.

10.6.2 Syntax

Test command AT+ CIICR =?	Response(s) Success: OK
Exe command AT+ CIICR Description ..	Response(s) Success: OK Fail: ERROR
Reference	

10.6.3 Unsolicited Result Codes

10.6.4 Parameter

<state>
Referred to AT+CIPSTART

10.6.5 Remark

10.6.6 Example

The following examples show the typical application for this command.

Command	Possible Response

10.7 AT+CIFSR Get local IP address

10.7.1 Description

The command only at the status of activated the moving scene: IP GPRSACT, TCP/UDP CONNECTING, CONNECT OK, IP CLOSE can get local IP Address by AT+CIFSR, otherwise response ERROR.

10.7.2 Syntax

Test command AT+ CIFSR =?	Response(s) Success: + CIFSR: OK
Read command AT+ CIFSR?	Response(s) Success: + CIFSR: OK
Exe command AT+ CIFSR	Response(s) Success: <IP address> OK Fail: ERROR
Reference	

10.7.3 Unsolicited Result Codes

10.7.4 Parameter

<IP address>
A string parameter which indicates the IP address assigned from GPRS or CSD.

10.7.5 Remark

10.7.6 Example

The following examples show the typical application for this command.

Command	Possible Response
at+cifsr 10.8.18.69 OK	

10.8 AT+CIPSTATUS Query current connection status

10.8.1 Description

The command query current connection status.

10.8.2 Syntax

Test command AT+ CIPSTATUS =?	Response(s) Success: + CIPSTATUS: OK
Read command AT+ CIPSTATUS?	Response(s) Success: + CIPSTATUS: OK
Exe command AT+ CIPSTATUS	Response(s) Success: STATE:<state> OK Fail: ERROR
Reference	

10.8.3 Unsolicited Result Codes

10.8.4 Parameter

<state>
Referred to AT+CIPSTART

10.8.5 Remark

10.8.6 Example

The following examples show the typical application for this command.

Command	Possible Response
at+cipstatus	+IPSTATUS: IP INITIAL OK
AT+CIPSTART="TCP","124.42.0.80",7	CONNECT OK OK
at+cipstatus	+IPSTATUS: CONNECT OK OK
at+cipclose	OK
at+cipstatus	+IPSTATUS: IP CLOSE

OK

10.9 AT+CIPATS Set auto sending timer

10.9.1 Description

The command set auto sending timer.

10.9.2 Syntax

Test command AT+ CIPATS =?	Response(s) Success: + CIPATS: (list of supported <mode>s) OK
Read command AT+ CIPATS?	Response(s) Success: + CIPATS: <mode> OK
Set command AT+ CIPATS =<mode>,<time> Description ..	Response(s) Success: OK Fail: ERROR
Reference	

10.9.3 Unsolicited Result Codes

10.9.4 Parameter

<mode> A numerical parameter which indicates whether set timer when sending data. 0 not set timer when sending data. 1 set timer when sending data. <time> A numerical parameter which indicates the seconds after which the data will be sent.

10.9.5 Remark

- If you set mode to 0, no timer is allowed to set.
- Timer value range: 1~65536.

10.9.6 Example

The following examples show the typical application for this command.

Command	Possible Response

10.10 AT+CIPSCONT save TCP/IP application context

10.10.1 Description

The command saves TCP/IP application context which consist of following AT command parameters. and system is rebooted, the parameters will be loaded automatically.

10.10.2 Syntax

Read command AT+ CIPSCONT?	Response(s) Success: + CIPSCONT: OK
Exe command AT+ CIPSCONT Description ..	Response(s) Success: OK Fail: ERROR
Reference	

10.10.3 Unsolicited Result Codes

10.10.4 Parameter

10.10.5 Remark

Currently no parameter is saved.

10.10.6 Example

The following examples show the typical application for this command.

Command	Possible Response

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

10.11.1 Description

The command query the IP address of given domain name.

10.11.2 Syntax

Test command AT+ CDNSGIP =?	Response(s) Success: + CDNSGIP: DOMAIN NAME LENGTH(0,100) OK
Read command AT+ CDNSGIP?	Response(s) Success: + CDNSGIP: (“DOMAIN NAME”) OK
Set command AT+ CDNSGIP=<domain name>	Response(s) Success: <IP address> OK Fail: ERROR
Reference	

10.11.3 Unsolicited Result Codes

10.11.4 Parameter

<domain name>
A string parameter which indicates the domain name <IP address> A string parameter which indicates the IP address corresponding to the domain name.

10.11.5 Remark

If set command fail, a numeric parameter which indicates the error.

- DNS not Authorization
- invalid parameter
- network error
- no server
- time out
- no configuration
- no memory

10.11.6 Example

The following examples show the typical application for this command.

Command	Possible Response

10.12 AT+CIPMUX 设置多路 socket

AT+CIPMUX=1，开启多路 socket 模式，最多同时开启 4 路，启动该模式以后 AT+CIPSEND,AT+CIPCLOSE AT+CIPSHUT,AT+CIPHCFG,AT+CIPHMODE 指令都增加一个参数是 socket 通道号。
具体使用例子参加附录的例子。
AT+CIPCMUX=0,推出多路模式。
注意多路模式下不支持透明传输。

10.13 AT+CIPHCFG 设置心跳包参数

AT+CIPHCFG=?可以查询该指令的用法。
AT+CIPHCFG=mode,param;
参数说明：
Mode: 0, 心跳包间隔时间，单位秒，参数为 5-7200
1， 心跳发送包，长度不超过 100 个字节
2， 回应包，长度不超过 100 个字节

AT+CIPHCFG?查询配置的参数

AT+CIPHCFG=0,15,配置 15 秒发送一次心跳包
AT+CIPHCFG=1,553435ff,配置心跳包的内容为 16 进制的” 553435ff”
AT+CIPHCFG=2,883435ee, 配置回应心跳包的内容为 16 进制的” 883435ee”

10.14 AT+CIPHMODE 启动心跳包

AT+CIPHCFG=1,启动心跳包
AT+CIPHCFG=0； 停止心跳包

10.16 AT+CIPTCFG 设置透明传输参数

AT+CIPTCFG=?可以查询该指令的用法。
AT+CIPTCFG=mode,param;
参数说明：
Mode: 0, 失败发送次数，参数为 0-5 次；
1， 失败发送延时，参数 0-3000 毫秒；
2， 触发发送的发送包大小，取值为 10-100，；当发送内容达到这个长度，立马启动发送；
3， 触发发送的延时，1000-8000，毫秒，当向串口发送的最后一个字符完成后，延时这个时间就可以触发发送；

AT+CIPTCFG？查询配置的参数
AT+CIPTCFG=0,15,配置 15 秒发送一次心跳包

10.17 AT+CIPTMODE 启动透明传输模式

AT+CIPTCFG=1,启动透明传输

如果需要推出，需要发送三个“+++”字符；

11 扩展指令

11.1 AT+CLDSTART

安信可云启动指令，自动连接到安信可云平台，自动登陆和发送心跳包，不需要用户处理；

11.2 AT+CLDSTOP

停止安信可云平台服务。

11.3 AT+CLDSEND

发送数据给云服务器，用法参见+CIPSEND。

11.4 AT+CLDUNBIND

解绑该设备和用户。

12 微信直连云扩展指令

12.1 AT+WXCLDSTART

启动微信直连云。AT+WXCLDSTART=devicelicense,//devicelicense 是微信授权的设备 license，要向微信官方申请；

12.2 AT+WXCLDSTOP

停止微信直连云，由于微信官方提供的接口还不完善，该功能还不起作用

12.3 AT+WXCLDSEND

发送微信数据；用法参见 AT+CIPSEND;

12.4 AT+WXCLDVER

查询支持的微信云 SDK 的版本。

12.5 AT+WXCLDDEV

查询的微信云设备 ID。

12.6 AT+WXCLDVEN

查询微信云厂商 ID

13 GPS指令

13.1 AT+GPS

AT+GPS=1,开 GPS
AT+GPS=0,关闭 GPS
AT+GPS? ,查询 GPS 的状态

13.2AT+AGPS

AT+AGPS=1,开 AGPS，同时会打开 GPS
AT+AGPS=0,关闭 AGPS，
AT+AGPS? ,查询 AGPS 的状态

13.3 AT+GPSRD

打开 GPS 或 AGPS 以后，NEMA 数据默认使用 GPS_TXD 管脚以 9600 波特率输出，
通过本指令，可以在 AT 串口输出 NEMA 信息。

AT+GPSRD=N，N 是数字表示 N 秒输出一条 NEMA 信息从 AT 串口。

14 Camera扩展指令

14.1 AT+CAMSTART

开启摄像头，
AT+CAMSTART=0,QVGA 格式
AT+CAMSTART=1，VGA 格式
AT+CAMSTART=2，QQVGA 格式

14.2 AT+CAMSTOP

停止摄像头；

14.3 AT+CAMCAP

拍一张照片。

14.4 AT+CAMRD

读取照片内容。
AT+CAMRD=fromaddr,toaddr;
AT+CAMRD=0;//从 0 开始读取照片，直到结束
AT+CAMRD=5,10,读取照片的地址从 5 到 10 之间的字节内容

14.5 AT+CAMREC

暂时不支持。

14.6 AT+CAMPOST

通过这条指令可以把照片内容通过标准的 POST 协议上传到 HTTP 服务器；
AT+CAMPOST=<”http 服务器地址”>,<port>

上传成功会返回:
+CAMPOST:1
失败：
+CAMPOST:0

例子：
AT+CAMPOST=”192.168.1.111/A6C/123.jpg”,80 //把照片内容上传到服务器的地址

14.7 AT+CAMCFG

配置摄像头。
指令格式如下:
AT+CAMCFG=mode,param
mode:0 表示闪光灯模式,参数为 0,关闭，1 自动，2 打开
1 表示是否具有夜市功能，参数为 0，没有夜视,1 打开夜视
2 表示图像质量 ,参数 0,1,2 //7,10,14,20
3 表示图像旋转 ，参数 0，表示不旋转，1 旋转 90 度，2 旋转 180 度，3 旋转 270 度
4 曝光度 参数 -2,-1,0,1,2
5 亮度 ， 参数 -2,-1,0,1,2
6 白平衡， 参数 0-auto,1-daylight,2-日光灯(0x08),3-cloudy(0x09),4-钨丝灯(0x0a)
7 对比度 ，参数 1-5；

15 GPIO扩展指令

15.1 AT+IORD

读取 GPIO 指令.
AT+IORD=<gpio>.

15.2 AT+IOWR

设置输出 gpio 高或者低。
AT+IOWR=<gpio>,<0-1>

15.3 AT+IODIR

设置 GPIO 是用作输出还是输入,0 是输入，1 是输出。
AT+IODIR=<gpio>,<0-1>

16 HTTP协议扩展指令

16.1 AT+HTTPGET

AT+HTTPGET=<domain name/ip address>,80

16.2 AT+HTTPPOST

AT+HTTPPOST=<domain name/ip address>,80
出现”>”后输入 POST 的内容以 CTRL+Z 结尾，用法和 AT+CIPSEND 相同

Appendix A

1 Summary of CME ERRORS

Code of <err>	Meaning
0	PHONE_FAILURE
1	NO_CONNECT_PHONE
2	PHONE_ADAPTER_LINK_RESERVED
3	OPERATION_NOT_ALLOWED
4	OPERATION_NOT_SUPPORTED
5	PHSIM_PIN_REQUIRED
6	PHFSIM_PIN_REQUIRED
7	PHFSIM_PUK_REQUIRED
10	SIM_NOT_INSERTED
11	SIM_PIN_REQUIRED
12	SIM_PUK_REQUIRED
13	SIM_FAILURE
14	SIM_BUSY
15	SIM_WRONG
16	INCORRECT_PASSWORD
17	SIM_PIN2_REQUIRED
18	SIM_PUK2_REQUIRED
20	MEMORY_FULL
21	INVALID_INDEX
22	NOT_FOUND
23	MEMORY_FAILURE
24	TEXT_LONG
25	INVALID_CHAR_INTEXT
26	DAIL_STR_LONG
27	INVALID_CHAR_INDIAL
30	NO_NET_SERVICE
31	NETWORK_TIMOUT
32	NOT_ALLOW_EMERGENCY
40	NET_PER_PIN_REQUIRED
41	NET_PER_PUK_REQUIRED
42	NET_SUB_PER_PIN_REQ
43	NET_SUB_PER_PUK_REQ
44	SERVICE_PROV_PER_PIN_REQ
45	SERVICE_PROV_PER_PUK_REQ
46	CORPORATE_PER_PIN_REQ
47	CORPORATE_PER_PUK_REQ
48	PHSIM_PBK_REQUIRED
49	EXE_NOT_SURPORT
50	EXE_FAIL
51	NO_MEMORY
52	OPTION_NOT_SURPORT
53	PARAM_INVALID
54	EXT_REG_NOT_EXIT
55	EXT_SMS_NOT_EXIT
56	EXT_PBK_NOT_EXIT
57	EXT_FFS_NOT_EXIT
103	GPRS_ILLEGAL_MS_3
106	GPRS_ILLEGAL_MS_6
107	GPRS_SVR_NOT_ALLOWED
111	GPRS_PLMN_NOT_ALLOWED
112	GPRS_LOCATION_AREA_NOT_ALLOWED
113	GPRS_ROAMING_NOT_ALLOWED
132	GPRS_OPTION_NOT_SUPPORTED
133	GPRS_OPTION_NOT_SUBSCRIBED
134	GPRS_OPTION_TEMP_ORDER_OUT
149	GPRS_PDP_AUTHENTICATION_FAILURE
150	GPRS_INVALID_MOBILE_CLASS
148	GPRS_UNSPECIFIED_GPRS_ERROR
264	SIM_VERIFY_FAIL
265	SIM_UNBLOCK_FAIL
266	SIM_CONDITION_NO_FULLFILLED
267	SIM_UNBLOCK_FAIL_NO_LEFT
268	SIM_VERIFY_FAIL_NO_LEFT

269	SIM_INVALID_PARAMETER
270	SIM_UNKNOW_COMMAND
271	SIM_WRONG_CLASS
272	SIM_TECHNICAL_PROBLEM
273	SIM_CHV_NEED_UNBLOCK
274	SIM_NOEF_SELECTED
275	SIM_FILE_UNMATCH_COMMAND
276	SIM_CONTRADICTION_CHV
277	SIM_CONTRADICTION_INVALIDATION
278	SIM_MAXVALUE_REACHED
279	SIM_PATTERN_NOT_FOUND
280	SIM_FILEID_NOT_FOUND
281	SIM_STK_BUSY
282	SIM_UNKNOW
283	SIM_PROFILE_ERROR

2 Summary of CMS ERRORS

Code of <err>	Meaning
1	UNASSIGNED_NUM
8	OPER_DETERM_BARR
10	CALL_BARRED
21	SM_TRANS_REJE
27	DEST_OOS
28	UNINDENT_SUB
29	FACILIT_REJE
30	UNKONWN_SUB
38	NW_OOO
41	TMEP_FAIL
42	CONGESTION
47	RES_UNAVAILABLE
50	REQ_FAC_NOT_SUB
69	RFQ_FAC_NOT_IMP
81	INVALID_SM_TRV
95	INVALID_MSG
96	INVALID_MAND_INFO
97	MSG_TYPE_ERROR
98	MSG_NOT_COMP
99	INFO_ELEMENT_ERROR
111	PROT_ERROR
127	IW_UNSPEC
128	TEL_IW_NOT_SUPP
129	SMS_TYPE0_NOT_SUPP
130	CANNOT_REP_SMS
143	UNSPEC_TP_ERROR
144	DCS_NOT_SUPP
145	MSG_CLASS_NOT_SUPP
159	UNSPEC_TD_ERROR
160	CMD_CANNOT_ACT
161	CMD_UNSUPP
175	UNSPEC_TC_ERROR
176	TPDU_NOT_SUPP
192	SC_BUSY
193	NO_SC_SUB
194	SC_SYS_FAIL
195	INVALID_SME_ADDR
196	DEST_SME_BARR
197	SM_RD_SM
198	TP_VPF_NOT_SUPP
199	TP_VP_NOT_SUPP
208	D0_SIM_SMS_STO_FULL
209	NO_SMS_STO_IN_SIM
210	ERR_IN_MS
211	MEM_CAP_EXCCEEDED
212	SIM_APP_TK_BUSY
213	SIM_DATA_DL_ERROR

255 UNSPEC_ERRO_CAUSE
300 ME_FAIL
301 SMS_SERVIEC_RESERVED
302 OPER_NOT_ALLOWED
303 OPER_NOT_SUPP
304 INVALID_PDU_PARAM
305 INVALID_TXT_PARAM
310 SIM_NOT_INSERT
311 SIM_PIN_REQUIRED
312 PH_SIM_PIN_REQUIRED
313 SIM_FAIL
314 SIM_BUSY
315 SIM_WRONG
316 SIM_PUK_REQUIRED
317 SIM_PIN2_REQUIRED
318 SIM_PUK2_REQUIRED
320 MEM_FAIL
321 INVALID_MEM_INDEX
322 MEM_FULL
330 SCA_ADDR_UNKNOWN
331 NO_NW_SERVICE
332 NW_TIMEOUT
340 NO_CNMA_ACK_EXPECTED
500 UNKNOWN_ERROR
512 USER_ABORT
513 UNABLE_TO_STORE
514 INVALID_STATUS
515 INVALID_ADDR_CHAR
516 INVALID_LEN
517 INVALID_PDU_CHAR
518 INVALID_PARA
519 INVALID_LEN_OR_CHAR
520 INVALID_TXT_CHAR
512 TIMER_EXPIRED

3 Summary of DCE Codes

Index	string
0	"OK"
1	"CONNECT"
2	"RING/CRING"
3	"NO CARRIER"
4	"ERROR"
5	"NO DIALTONE"
6	"BUSY"
7	"NO ANSWER"
8	"NOT SUPPORT"
9	"INVALID COMMAND LINE"

4 Summary of Unsolicited Result Codes (URC)

AT Command	Description	How to activate URC	Example
RING(CC)	Incoming calls		<拨本测试号码> RING +CLIP: "02085563192",129,,,,0

+CALA(HW)	Reminder message set with AT+CALA command. Executed while ME is in normal operation. Do not confuse with Alarm mode.		<参考AT+CALA>
+CIEV(CC/SMS/ Battery/……)	Reports changes from indicators listed in the AT+CIND command specification.		<参考AT+CMER>
+CREG(NW)	Registration to ME network changed		<参考AT+CREG>
+CLIP (SS)	Telephone number of caller		<参考AT+CLIP，RING>
+CMTI(SMS)	Indication of a new short message (PDU mode)		**AT+CNMI=1,1,2** OK +CMTI: "SM", 6 **AT+CMGR=6** +CMGR: 0,, 35 0891683108200005F0240D916 83165203406F20008400172909 552000676848BDD8BF4 OK <参考AT+CNMI>
+CMT(SMS)	Short message is output directly to the TE (in PDU mode)		**AT+CNMI=1,2,2** OK +CMT: 35 0891683108200005F0240D916 83165203406F20008400172013 033000676848BDD8BF4 <参考AT+CNMI>
+CSSI (SS) **+CSSU**	Supplementary service intermediate/unsolicited result code		**AT+CSSN=1,1** OK **ATD1861;** OK <拨本测试号码> +CSSI: 3 +CCWA: "02085563410",129,1,,0 **AT+CHLD=2** OK <对方挂机> NO CARRIER +CSSU: 5 <参考AT+CSSN>
+CUSD (SS)	USSD response from the network after a mobile originated or network initiated action.		**ATD#222#;** OK +CUSD: 2,"UNKNOWN APPLICATION",15 <参考AT+CUSD>
^SBC: (HW) Undervoltage	Under voltage of battery detected. ME will be switched off within a minute.	AT^CBCM=1	**^ SBC:UNDERVOLTAGE**
^STN(SS)	Remote-SAT Notification		
^CBCI(BATTERY)	Battery charge level indication	AT^CBCM=1	AT^CBCM=1 OK ^CBCI: 0,100,0,4487
+CCWA	Call waiting indication	AT+CCWA=1	

Appendix B

Configuration table

命 令 名	说 明
ATQ	result code present control
ATV	Format of response and result code
ATE	UART echo control
ATS0	Auto answer
ATS3	Specify Carriage return character
ATS4	Specify Linefeed character
ATS5	Command line editing character
AT+CMEE	Format of errcode
AT+CMER	Indicator reporting way
AT+VTD	Duration of the DTMF tone
AT+COPS	Operator format Network register mode
AT+CPOL	Preferred operator format
AT+CPBS	Phonebook storage
AT^STA	Alphabet
AT+CCWA	Parameter <n>
AT+CUSD	Parameter <n>
AT+CLIP	Parameter <n>
AT+CLIR	Parameter <n>
AT+COLP	Parameter <n>
AT+CSSN	Parameter <n> Parameter<m>
AT^MONI	Parameter <n>
AT^NONPP	Parameter <n>
AT^CBCM	Indicator controller
AT+VGR	Receiver gain
AT+VGT	Transmit gain
AT+CMUT	Mute control in a voice call
AT+CGAUTO	Parameter <n>
AT+IPR	Parameter <rate>

Appendix C AT Commands Application Notes

a) How to build AT Command Running Environment

1）Run DEV boar and then download *AT command . lod* file into it;
2）Open test tools such as com testing tool or HyperTerminal tool;
3）Execute AT commands by test tools;
4）Executing result which will be returned shows on testing tool view;

b) AT commands application samples

Notes: There will be omitted <CR> in AT commands line samples, and the <CR><LF> characters are also omitted in commands response as well.

i. MO Call

AT Commands and Response	Description
ATD10086;	MO call
OK	Call connect success
CONNECT	Call success
ATH	Disconnect existing call
OK	
AT+CCWA=1,1,1	Set call waiting control
OK	
ATD10086;	MO call
OK	Call connect success
AT+CLCC	List current calls of ME
+CLCC: 1,0,0,0,0,"10086",129	Show call number
OK	
CONNECT	Call success
ATH	Disconnect existing call
OK	
ATD10086;	MO call
RING +CCWA: "13501275915",161,1,,255	Input a MT call
AT+CHLD=2	Hold one call connect

OK	Success
AT+CLCC	List current calls
+CLCC: 1,0,1,0,0,"10086",129 +CLCC: 2,1,0,0,0,"13501275915",161	Show all of the call number
OK	OK
AT+CHUP	Hang up all existing connected calls
OK	Success

ii. Send Message

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value is returned to the TE on successful message delivery. If sending fails in a network or an ME error, final result code +CMS ERROR: <err> is returned.

AT Commands and Response	Description
AT+CMGF=1	Text mode
OK	
AT+CSDH=1	Show the values in result codes
OK	
AT+CMGS=”13021105632” >Test <ctrl-Z>	Send message”Test” to 13021105632
+CMSS: 4	Send success and return <mr>
OK	
AT+CMGS=”13021107315” >Test1<ctrl-Z>	Send message”Test1” to 13021107315
+CMSS: 4	Send success and return <mr>
OK	
AT+CMGR=1	Read message from record 1
+CMGR: 1,,61 Hello	Show in message ”Hello”
OK	

iii. List Unread Message

Execution command returns messages with status value <stat> from message storage <mem1> to the TE. If status of the message is 'received unread', status in the storage changes to 'received read'. If listing fails, final result code +CMS ERROR: <err> is returned.

As for the status value <stat> which indicates the status of message in memory, defined values:

0	"REC UNREAD"	received unread message
1	"REC READ"	received read message
2	"STO UNSENT"	stored unsent message
3	"STO SENT"	stored sent message
4	"ALL"	all messages

AT Commands and Response	Description
AT+CMGF=1	Text mode
OK	
AT+CSDH=1	Show the values in result codes
OK	
AT+CMGL= " REC UNREAD "	Receive unread message
+CMGL: 15,"REC UNREAD","10658223",,"2008/4/1,10:53:4+32"	List unread message
OK	
AT+CMGL=”ALL”	All message
+CMGL: 2,"STO UNSENT","1365125588" testing +CMGL: 3,"STO UNSENT","1365125588" testing +CMGL: 4,"STO UNSENT","1365125588" testing +CMGL: 5,"STO UNSENT","1365125588" testing +CMGL: 13,"REC READ","13800138000",,"2008/3/28,16:17:18+32" +CMGL: 14,"REC READ","13800138000",,"2008/3/28,16:17:17+32" +CMGL: 15,"REC UNREAD","10658223",,"2008/4/1,10:53:4+32"	Show all of message
OK	
AT+CMGD=1	Delete record 1 message
OK	Delete success
AT+CMGD=0	Delete all message
OK	

iv. Change PIN & ActivePIN1

Change PIN+CPWD command which is used to change password [pin/pin2…]

AT+CLCK command which is used to lock,unlock or interrogate a MT or a network facility. Password is normally needed to do such actions. When querying the status of a network service the response line for 'not active' case should be returned only if service is not active. This command should be abortable when network

facilities are set or interrogated.
Call barring facilities are based on GSM/UMTS supplementary services (refer 3GPP TS 22.088). The interaction of these with other commands based on other GSM/UMTS supplementary services is described in the GSM/UMTS standard.

AT Commands and Response	Description
AT+CPIN?	Indicating whether some password is required or not
+CPIN:READY	MT is not pending for any password
AT+CLCK="SC",1,"1234"	Active PIN
OK	
AT+CLCK="SC",2	Query PIN status
+CLCK:1	Active status
OK	
Restart System …	
AT+CPIN?	Query PIN status
+CPIN: SIM PIN	ME request SIM PIN
OK	
AT+CPIN=”1234”	Input SIM PIN
OK	Success
AT+CLCK="SC",0,”1234”	Return to not active status
OK	
Restart System …	
AT+CPIN?	Query PIN status
+CPIN:READY	MT is not pending for any password
OK	
AT+CLCK="SC",1,"1234"	Active PIN
OK	
AT+CPWD="SC","1234","2345"	Change PIN “1234” to “2345”
OK	Success
AT+CPWD="SC","2345","1234"	Change PIN “2345” to “1234”
OK	Success
AT+CPWD="SC",”7890”,”1234”	Change PIN “7890” to “1234”
+CME ERROR: 16	Incorrect PIN number

AT+CPINC	Query the remaining times of access the sim card
+CPINC: 2	Two times
OK	
AT+CPWD="SC",”1111”,”1234”	Change PIN “1111” to “1234”
+CME ERROR: 16	Incorrect PIN number
AT+CPWD="SC",”2222”,”1234”	Change PIN “2222” to “1234”
+CME ERROR: 16	Incorrect PIN number
AT+CPIN?	Query PIN status
+CPIN: SIM PUK	ME request SIM PUK
OK	
AT+CPWD="SC",” 12345678”,”1234”	Input PUK “12345678” and new PIN ”1234”
OK	Success
AT+CPIN?	Query PIN status
+CPIN:READY	MT is not pending for any password
OK	
AT+CLCK="SC",0,”1234”	Return to not active status
OK	

v. GPRS operation

AT Commands and Response	Description
AT+CGATT=1	Attach to the GPRS network, can also use parameter 0 to detach.
OK	Response, attach successful
AT+CGDCONT=?	Input test command for help information.
+CGDCONT: (1..7), (IP,IPV6,PPP),(0..3),(0..4) OK	Response, show the helpful information.
AT+CGDCONT=1, "IP", "cmnet"	Before active, use this command to set PDP context.
OK	Response. Set context OK.
AT+CGACT=1,1	Active command is used to active the specified PDP context.
OK	Response, active successful.
ATD*99***1#	This command is to start PPP translation.
CONNECT	Response, when get this, the module has been set to data state. PPP data should be transferred after this response and anything input is treated as data.
+++	This command is to change the status to online data state. Notice that before input this command, you need to wait for a three seconds’ break, and it should also be followed by 3 seconds’ break, otherwise “+++” will be treated as data.

ATH	Use this command to return COMMAND state
ok	Response

vi. TCP/IP operation

AT Commands and Response	Description
at+cipstatus	Check the status of TCP/IP
+IPSTATUS: IP INITIAL OK	Response, in the state of INITIAL
AT+CIPSTART="TCP","124.42.0.80",7	Start TCP/IP, if the MS hadn't attached to the GPRS network, this command will fulfill all the prepare task and make ready for TCP/IP data transfer.
CONNECT OK OK	Response
at+cipstatus	Check the status of TCP/IP
+IPSTATUS: CONNECT OK OK	Response, in the state of CONNECT
at+cipsend > this is a test<ctl+z>	Send data "this is a test" ended with ctrl+z
OK	Response
at+cifsr	Check IP
10.8.18.69 OK	Response
at+cipclose	Close a TCP/IP translation
OK	Response
at+cipstatus	Check status
+IPSTATUS: IP CLOSE OK	In the state of IP CLOSE
AT+CIPSHUT	Disconnect the wireless connection
OK	
at+cipstatus	Check status
+IPSTATUS: IP INITIAL OK	Return to the initial status

Appendix D 透明传输及心跳包设置例子

^CINIT: 2, 32, 41891

^CINIT: 1, 0, 0

^CINIT: 8, 2048, 1

^CINIT: 16, 0, 1638450

^CINIT: 32, 0, 0

+CREG: 0

+CTZV:16/05/27,06:33:27,+08

+CREG: 5 //到这里，表示网络已经注册，在漫游模式下
ATI //查询固件版本信息

Ai Thinker Co.LTD
A6
V20160530H03S05BETA //BEAT 版本，仅用于测试

OK
AT+CCID //查询 SIM ，CCID 用于判断是否插卡

+SCID: SIM Card ID: 898602#4221620070426

OK

AT+CREG? //查询网络注册情况

+CREG: 1,5 //表示网络已经注册，在漫游模式下

OK

AT+CGATT=1 //附着网络，如果需要上网，这条指令是必选的

+CTZV:16/05/27,06:33:39,+08 //基站下发的时间信息 GMT 时间和时区

OK

AT+CGDCONT=1,"IP","CMNET" //设置 PDP 参数

OK
AT+CGACT=1,1 //激活 PDP，正确激活以后就可以上网了

OK
at+cipstart="TCP","121.41.97.28",60000 //连接服务器，该服务器是我们的测试服务器

CONNECT OK

OK
at+ciphcfg? //查询心跳包的设置

+CIPHCFG:10,00,00 //心跳包的默认设置 10,表示 10 秒发送一次心跳包，00 表示发送的包内容，默认是空的，第二个 00 表示接受的回应包内容，默认也是空的，这 2 个包必须设置，否则启动不了心跳包

OK
at+ciphcfg=1,55FAFBEE //设置发送心跳包内容，长度不能低于 3 个字节，16 进制格式

OK
at+ciphcfg=2,55AFBFEE //设置接受回应包内容，长度不能低于 3 个字节，16 进制格式

OK
at+ciphcfg=0,15 //设置发送心跳包的时间 15 秒钟

OK

at+ciphmode=1 //启动心跳包,该命令只能在连接服务器成功以后用

OK
AT+CIPTCFG? //查询透传默认参数

+CIPTCFG:3,200,50,2000 //3 表示最大尝试发送失败次数，200 是重发延时，单位毫秒，50 是触发发送的包长度，2000 是触发发送时间，单位毫秒，从输入最后一个字符算起，延至超过 2000 毫秒，系统也会自动发送数据

OK
AT+CIPTMODE=1 //启动透传模式，该指令也是只能在连接服务器成功以后使用

OK
SEND DATA TO SERVER //发送到服务器的数据
SEND DATA TO A6 //收到的服务器的数据

+++ //退出透传模式,和前一次发送时间超过 2 秒，输入+++，就可以退出透传模式
OK
at+ciphmode=0 //退出心跳包模式

OK

Appendix E 多路连接操作示例

^CINIT: 2, 32, 41891

^CINIT: 1, 0, 0

^CINIT: 8, 6144, 1

^CINIT: 16, 0, 1638450

^CINIT: 32, 0, 0

+CREG: 0

+CTZV:16/07/06,11:33:25,+08

+CREG: 5
ati //查询版本，厂家，型号信息

Ai Thinker Co.LTD
A6
V03.03.20160710006H03

OK
at+ccid //查询 ccid，确定是否有 sim 卡

+SCID: SIM Card ID: 898602#4221620070426

OK
at+creg? //查询是否注册上网络

+CREG: 1,5

OK
at+csq //查询信号

+CSQ: 31,99

```
OK

at+cgatt=1              //附着网络

+CTZV:16/07/06,11:34:17,+08

OK
at+cgdcont=1,"IP","cmnet"     //设置 pdp 参数

OK
at+cgact=1,1                  //激活该 pdp

OK
at+cipstatus?                 //查询 ip 连接情况，共有 8 路，实际最多支持同时开 4 路 tcpip 连接


+CIPSTATUS:0,IP GPRSACT
1,IP INITIAL
2,IP INITIAL
3,IP INITIAL
4,IP INITIAL
5,IP INITIAL
6,IP INITIAL
7,IP INITIAL


OK
at+cipstart="TCP","121.41.97.28",60000     //连接服务器

CONNECT OK

OK
at+cipsend=5,qwert      //发送 5 个字节的字符，注意此种方式只支持可见字符

OK
at+cipsend=5            //发送 6 个字节的数据，此种方式可以发送任意二进制数据

>
OK
at+cipsend              //发送字符，以 CTRL+Z(16 进制的 0x1a)结尾

> qwert

OK

+CIPRCV:4,test          //收到服务器发送过来的 4 个字节，内容是"test",注意也可能是二进制的任意数据

at+cipstatus?           //插叙 ip 链路状态


+CIPSTATUS:0,CONNECT OK
1,IP INITIAL
2,IP INITIAL
3,IP INITIAL
4,IP INITIAL
5,IP INITIAL
6,IP INITIAL
7,IP INITIAL
```

```
OK
at+cipclose    //关闭该链路

OK
at+cipmux?     //查询是否开启多连接

+CIPMUX:0

OK
at+cipmux=1    //开启多链接

OK
at+cipstart="TCP","121.41.97.28",60000   //发起第一个 TCP 连接

+CIPNUM:0                                //只有点开启多链接的时候才会有，0 为返回的链路号

CONNECT OK

OK
at+cipstart="TCP","121.41.97.28",60001   //发起第二路连接

+CIPNUM:1                                //只有点开启多链接的时候才会有，1 为返回的链路号

CONNECT OK

OK
at+cipstart="TCP","121.41.97.28",60003 //发起第三路连接

COMMAND NO RESPONSE!                     //指令超时，由于服务器没有开启这个端口
at+cipstatus?


+CIPSTATUS:0,CONNECT OK
1,CONNECT OK
2,TCP/UDP CONNECTING
3,IP INITIAL
4,IP INITIAL
5,IP INITIAL
6,IP INITIAL
7,IP INITIAL


OK
at+cipclose=3                  //关闭链路号为 3 的连接

+CME ERROR:50                  //第三路连接没有建立所以返回错误
at+cipclose=2                  //关闭链路号为 2 的连接

OK
at+cipstart="TCP","121.41.97.28",60002   //发起新的连接

+CIPNUM:2

CONNECT OK

OK
at+cipstart="UDP","121.41.97.28",60006   //发起新的 UDP 连接

+CIPNUM:3
```

```
UDP BIND OK

OK
at+cipstatus?


+CIPSTATUS:0,CONNECT OK                    //可以看到 0-3 链路号都被占用，建立了 4 路 IP 连接
1,CONNECT OK
2,CONNECT OK
3,BIND OK
4,IP INITIAL
5,IP INITIAL
6,IP INITIAL
7,IP INITIAL


OK
at+cipsend=0,5,qwert          //链路 0 发送 5 个字节的字符，“qwert”，本指令只支持可见字符

OK

+CIPRCV:0,4,test               //链路 0，收到服务器发送过来的 4 个字节，“test”，本指令支持接受任意数据

at+cipclose=2                  //关闭链路 2

OK
at+cipstatus?                  //查询链路信息


+CIPSTATUS:0,CONNECT OK
1,CONNECT OK
2,IP CLOSE
3,BIND OK
4,IP INITIAL
5,IP INITIAL
6,IP INITIAL
7,IP INITIAL


OK
at+ciphcfg?                    //查询心跳包配置


+CIPHCFG:0,10,00,00
1,10,00,00
2,10,00,00
3,10,00,00
4,10,00,00
5,10,00,00
6,10,00,00
7,10,00,00


OK
at+ciphcfg=0,1,112233          //设置链路 0 的心跳发送包为 16 进制的 0x11，0x22，0x33

OK
at+ciphcfg?


+CIPHCFG:0,10,112233,00
```

```
1,10,00,00
2,10,00,00
3,10,00,00
4,10,00,00
5,10,00,00
6,10,00,00
7,10,00,00


OK
at+ciphmode=0,1        //启动链路 0 的心跳包

OK
at+cipsend=3,5,qwert       //链路 3 发送 5 个字节的字符，“qwert”

OK

at+cipclose=3        //关闭链路 3

OK

+TCPCLOSED:1       //服务器关闭链路 1

OK
at+cipstatus?


+CIPSTATUS:0,CONNECT OK
1,IP CLOSE
2,IP CLOSE
3,IP CLOSE
4,IP INITIAL
5,IP INITIAL
6,IP INITIAL
7,IP INITIAL


OK

+TCPCLOSED:0       //服务器关闭链路 0

OK
at+cipstatus?


+CIPSTATUS:0,IP CLOSE
1,IP CLOSE
2,IP CLOSE
3,IP CLOSE
4,IP INITIAL
5,IP INITIAL
6,IP INITIAL
7,IP INITIAL


OK
```

Appendix F GPS操作示例

```
^CINIT: 2, 32, 41891
```

^CINIT: 1, 0, 0

^CINIT: 8, 2048, 1

^CINIT: 16, 0, 1638450

^CINIT: 32, 0, 0

+CREG: 0

+CTZV:16/07/06,10:25:40,+08

+CIEV: service, 1
+CIEV: roam, 1

+CREG: 5
ati //查询版本，厂商，型号信息

Ai Thinker Co.LTD
A7
V03.03.20160710006H03

OK
at+ccid //查询 sim 卡的 ccid，可以用于判断是否插有 sim 卡

+SCID: SIM Card ID: 898602#4221620070426

OK
at+creg? //查询网络注册情况

+CREG: 1,5 //表示已经注册，在漫游扎状态下

OK
at+csq //查询信号质量

+CSQ: 24,99

OK
at+gps=1 //打开 gps

OK
at+gpsrd=1 //通过 at 串口输出 gps 定位的 nema 信息，1 秒钟发送一条信息

OK

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

```
+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPGSA,A,1,,,,,,,,,,,,,,*1E
$GPGSV,1,1,01,17,00,000,33*4E
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C
at+gpsrd=0   //at 串口不发送 nema 信息

OK
at+gpsrd=2   //2 秒钟一次通过 at 串口发送 nema 信息

OK

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C
at+gpsrd=0       //关闭 at 串口发送 nema 信息

OK
at+gps=0      //关闭 gps

OK

at+cgatt=1    //附着网络

+CTZV:16/07/06,10:33:23,+08

OK
at+cgact=1,1   //激活 pdp


OK
at+agps=1     //打开 agps，本条指令由于要联网下载星历数据，周期会比较长

OK
at+gpsrd=1   //通过 at 串口发送定位信息

OK

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,,,,,,0,00,,,M,,M,,0000*66
$GPGSA,A,1,,,,,,,,,,,,,,*1E
$GPGSV,1,1,04,06,00,000,32,09,00,000,30,17,00,000,32,19,00,000,31*7D
$GPRMC,,V,,,,,,,,,,N*53
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,103421.000,,,,,0,00,,,M,,M,,0000*7D
```

```
$GPRMC,103421.000,V,,,,,,060716,,,N*4E
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,103422.000,,,,,0,00,,,M,,M,,0000*7E
$GPRMC,103422.000,V,,,,,,060716,,,N*4D
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,103423.000,,,,,0,00,,,M,,M,,0000*7F
$GPRMC,103423.000,V,,,,,,060716,,,N*4C
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,103424.000,,,,,0,00,,,M,,M,,0000*78
$GPRMC,103424.000,V,,,,,,060716,,,N*4B
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,103425.000,,,,,0,00,,,M,,M,,0000*79
$GPGSA,A,1,,,,,,,,,,,,,,,*1E
$GPGSV,2,1,06,28,00,000,,23,00,000,27,06,00,000,32,09,00,000,30*7F
$GPGSV,2,2,06,17,00,000,32,19,00,000,32*71
$GPRMC,103425.000,V,,,,,,060716,,,N*4A
$GPVTG,,T,,M,,N,,K,N*2C

+GPSRD:$GPGGA,103426.000,,,,,0,00,,,M,,M,,0000*7A
$GPRMC,103426.000,V,,,,,,060716,,,N*49
$GPVTG,,T,,M,,N,,K,N*2C
at+gpsrd=0     //关闭通过 at 串口发送定位信息

OK
```