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ASR Platform Module AT command Manual

V1.06

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Update records

Version	Date	Author	Description
V1.01	2019/3/19	Document group	Initialized version
V1.02	2019/3/19	Document group	Modify the commands ofAT+IFC/AT+ICF/ AT+CFUN/AT+CPAS/AT+CMER
V1.03	2019/5/9	Document group	Add TCP/UDP related commands
V1.04	2019/5/14	Document group	1.Delete the command AT+CMER 2.Modify the command AT+CGACT
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V1.06	2019/11/25	Document group	1.add HTTP and HTPS related commands

Contents

Chapter 1. Summary

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

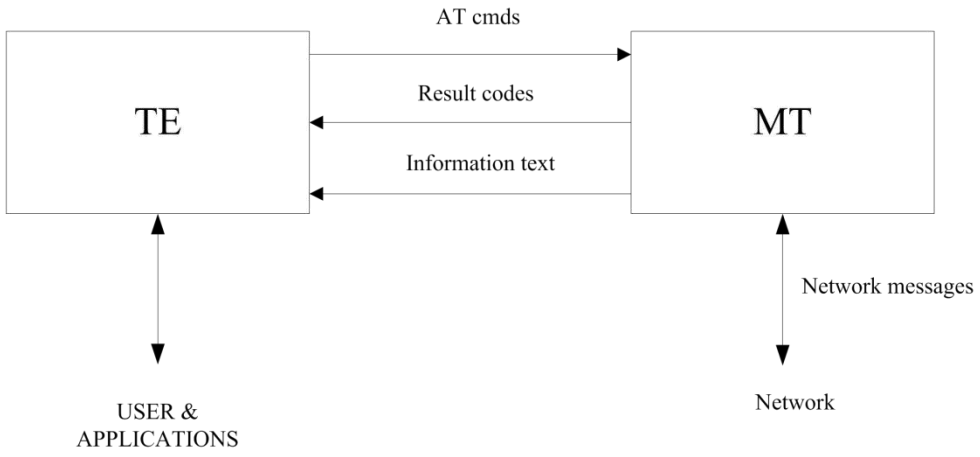

Figure 1-1 AT command interface

1.1 AT Command Syntax

1. Optional parameter and required parameters must be arranged in accordance with the provisions of the order , the parameters must be separated by a comma . An example of this “AT+CPWD=<fac>,<oldpwd>,<newpwd>”，which is used to set a new password for facility lock .
2. If the parameter is a string (such as <number>), the string must be placed in double quotes . For example , the string “1234” or “cmnet” . On the contrary, the symbols in double quotes can be seen as a string .
3. Optional parameters or the optional part of the results return from TA should be in the square brackets .
4. When you don’t use double quotes, the spaces between the characters in the string are negligible .
5. In actual use, do not need to enter < >, [].
6. All AT commands are not case sensitive , “AT”or “at”is OK。

1.2 AT Command Interface

Each interface requires functional cohesion .

Because of the AT command transmit the data packets through communication port , so the size of the package is limited . For sending AT commands , in addition to the characters “AT”,

MT can receiving 1600 characters in length at most , including the null character at the end of the commands . MT active reported response messages or URC , the maximum length is also limited to 1600 characters .

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

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

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

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

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

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

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

1.3 AT Command Interface Standards

1. The standard of add new interface

Parameters can added directly behind the original parameters of AT command , so in the late stage of product development if it is found that the interface can not adapt to the new

demand , it is only allowed add new parameters behind the original interface . Additional parameters should not affect the original function.

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

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

Chapter 2. Terms and Abbreviations

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

PDU	Protocol Data Unit

Chapter 3. General Commands

3.1 ATE Set Command Echo Mode

Description

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

Syntax

Command	Response
ATE[<value>]	OK or ERROR

Defined values

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

NOTE:

✧ The default value of <value> is 1.

Example

```
ATE1
OK
```

3.2 ATV Set Result Code Format Mode

Description

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

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

Syntax

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

Defined values

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

Example

ATV0

ATV1 OK

3.3 ATI Display Product Identification Information

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<manufacturer>		The identification of manufacturer.
<model>		The identification of model.
<revision>		The revision identification of firmware.
<imei>		of a single line containing IMEI (International Mobile station Equipment Identity) number.

<name>	+CGSM	GSM function is supported

Example

```
ATI
Manufacturer: Yuga Co.,Ltd.
Model: CLM920_AC3
Revision: CLM920_AC3-V1 [Feb 22 2019 12:57:48]
IMEI:3520990017614823
+GCAP: +CGSM

OK
```

3.4 AT+CGMI Request Manufacturer Identification

Description

Execution command returns a manufacturer identification text.

Syntax

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

Defined values

Parameter	values	Explain
<manufacturer>		The identification of manufacturer.

Example

```
AT+CGMI
Yuga Co.,Ltd.

OK
AT+CGMI=Shanghai Yuge
OK
AT+CGMI="Shanghai Yuga Co.,Ltd."
```

OK

3.5 AT+CGMM Request Model Identification

Description

Execution command returns a product model identification text.

Syntax

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

Defined values

Parameter	values	Explain
<name>		The identification of model.

Example

AT+CGMM

CLM920_AC3

OK

AT+CGMM=Yuge CLM920_AC3

OK

3.6 AT+CGMR Request Revision Identification

Description

Execution command delivers a product firmware version identification.

Syntax

Command	Response
AT+CGMR	<software version> OK

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

Defined values

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

Example

AT+CGMR

CLM920_AC3-V1 [Mar 1 2019 10:00:25]

OK

3.7 AT+CIMI Request International Mobile Subscriber Identity

Description

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

Syntax

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

Defined values

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

Example

AT+CIMI

460018621323229

OK

3.8 AT^IMEI Set module IMEI

Description

The command is used to set module IMEI value.

Syntax

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

Defined values

Parameter	values	Explain
<IMEI>		Serial number identification（14-16 位）

Example

AT^IMEI?

^IMEI: 3520990017614823

OK

AT^IMEI=357941053041368

OK

3.9 AT+CGSN Request Product Serial Number Identification

Description

Execution command returns International Mobile Equipment Identity (IMEI).

Syntax

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

Defined values

Parameter	values	Explain
<IMEI>		Serial number identification

Example

```
AT+CGSN
357941053041368

OK
```

3.10 AT+CCLK Real Time Clock

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<time>		String type value; format is “yy/MM/dd,hh:mm:ss”, where characters indicate year (two last digits), month, day, hour, minutes, seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; If the MT does not support the time zone, the last three characters of the <time> will not return

		Support setting 1970-2070
yy	1980-2100	Year
MM	01-12	Month
dd	01-31	Day
hh	01-24	Hour
mm	00-59	Minute
ss	00-59	Second

Example

```
AT+CCLK?
+CCLK: "19/03/15,11:04:25"

OK
AT+CCLK="00/12/31,23:59:59"
OK
```

3.11 AT+CSCS Select TE Character Set

Description

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

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

Syntax

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

Defined values

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

Example

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

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

OK
```

3.12 AT+IPR Set Local Baud Rate permanently

Description

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

Syntax

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

	OK

Defined values

Parameter	values	Explain
<rate>	0,300,600,1200,2400,4800,9600,19200,38400,57600,115200,230400	Baud rate

Example

AT+IPR?

+IPR: 115200

OK

AT+IPR=115200

OK

3.13 AT+IFC Set Local Data Flow Control

Description

This command is used to control the operation of local flow control between the DTE and DCE.

Syntax

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

Defined values

Parameter	values	Explain
<n>	0	none
	1	DC1/DC3 on circuit 103; do not pass DC1/DC3 characters to the remote

		DCE
	2	Circuit 133 (Ready for Receiving)
	3	DC1/DC3 on circuit 103 with DC1/DC3 characters being passed through to the remote DCE in addition to being acted upon for local flow control
<m>	0	None
	1	DC1/DC3 on circuit 104
	2	Circuit 106 (Clear to Send/Ready for Sending)

Example

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

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

3.14AT+ICF Set Control Character Framing

Description

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

Syntax

Command	Response
AT+ICF=<n>,<m>	OK Or ERROR
AT+ICF?	+ICF: <n>,<m> OK
AT+ICF=?	+ICF: (<n>list),(<m>list) OK

Defined values

Parameter	values	Explain
< n>	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
<m>	0	odd
	1	even
	2	Mark
	3	none

Example

AT+ICF?
+ICF: 3,3

OK
AT+ICF=3,3
OK

3.15 AT+CSQ Signal Quality Report

Description

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

Syntax

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

	OK

Defined values

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

Example

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

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

OK
```

3.16 AT+CFUN Set Phone Functionality

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<fun>	0	Minimum functionality
	1	Full functionality, online mode
	3	Disable phone receive RF circuits
	4	Disable phone both transmit and receive RF circuits
	5	Disable SIM
	6	Trun off full secondary recieve
<rst>	0	Do not reset the ME before setting it to <fun> power level
	1	Reset the ME before setting it to <fun> power level. This value only takes effect when <fun> equals 1.

Example

```
AT+CFUN?
+CFUN: 1

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

3.17 AT+ICCID Read ICCID in SIM Card

Description

The command is used to Read the ICCID in SIM card

Syntax

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

Defined values

Parameter	values	Explain
<ICCID>		Integrate circuit card identity

Example

```
AT+ICCID
+ICCID: 89861116040211636036

OK
```

3.18 AT+CPAS Mobile Equipment Activity Status

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<cpas>	0	Ready (ME allows commands from TA/TE)
	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)

Example

```
AT+CPAS
+CPAS: 0

OK
```

Chapter 4.SIM Card Related Commands

4.1 AT+CLCK Facility Lock

Description

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

Syntax

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

Defined values

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

	"SC"	Lock SIM card or USIM card
	"FD"	SIM fixed dialing memory feature
<mode>	0	Unlock
	1	Lock
	2	Query status
<passwd>		Password.
<class>	1	Voice (telephony)
	2	Data (refers to all bearer services)
	4	Fax (facsimile services)
	8	Short message service
	16	Short message service
	32	Short message service
	64	Dedicated packet access
<status>	0	Not active
	1	Active

Example

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

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

OK
```

4.2 AT+CPWD Change Password

Description

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

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

Syntax

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

Defined values

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

Example

```
AT+CPIN?
+CPIN: READY

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

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

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

OK
```

4.3 AT+CPIN Enter PIN

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<pin>		Password (string type).
<newpin>		New password (string type)

<code>	READY	ME is not pending for any password
	SIM PIN	ME is waiting SIM PIN to be given
	SIM PUK	ME is waiting SIM PUK to be given
	SIM PIN2	ME is waiting SIM PIN2 to be given
	SIM PUK2	ME is waiting SIM PUK2 to be given

Example

```
AT+CPIN?
+CPIN: READY

OK
```

4.4 AT+CRSM Restricted SIM Access

Description

By using this command instead of Generic SIM Access +CSIM TE application has easier but more limited access to the SIM database. Set command transmits to the MT the SIM command and its required parameters.

Syntax

Command	Response
AT+CRSM=<command>[,<fileID>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]]	+CRSM: <sw1>,<sw2>[,<response>] OK
AT+CRSM=?	+CRSM: (176,178,192,214,220,242),(12037-28599),(0-255),(0-255),(0-255),<data>,<pathid> OK

Defined values

Parameter	values	Explain
<command>	176	READ BINARY
	178	READ RECORD

	192	GET RESPONSE
	214	UPDATE BINARY
	220	UPDATE RECORD
	242	STATUS
<fileID>		Identifier for an elementary data file on SIM, if used by <command>.
<P1>,<P2>,<P3>		Integer type; parameters transferred by the MT to the SIM.
<data>		Information which shall be written to the SIM
<sw1>,<sw2>		Status information from the SIM about the execution of the actual command.These parameters are delivered to the TE in both cases, on successful or failed execution of the command.
<response>		Response data from SIM.

NOTE:

Example

```
AT+CRSM=242
+CRSM:
144,0,62338202782183023F00A5038001718A01058B032F0605C61890017C830101830102
95010083011183010A83010B83010C81021F14

OK
```

4.5 AT+CIND Indicator Control

Description

Set command is used to set the values of MT indicators.

Read command returns the status of MT indicators.

Test command returns pairs, where string value <49escry> is a maximum 16 character description of the indicator and compound value is the allowed values for the indicator.

Currently only support network mode indicator.

Syntax

Command	Response
AT+CIND=<ind>	OK
AT+CIND?	+CIND: <ind>[,<ind>[,...]] OK
AT+CIND=?	+CIND: (“service”,(0-1)) OK

Defined values

Parameter	values	Explain
<ind>	0	Indicator is off
	1	Indicator is on

Example

AT+CIND?

+CIND: 0

OK

Chapter 5. Packet Domain Commands

5.1 AT+CGDCONT Define PDP Context

Description

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>.

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

The test command returns values supported as a compound value.

Syntax

Command	Response
AT+CGDCONT=<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]]	
AT+CGDCONT?	[+CGDCONT: <cid>, <PDP_type>,<APN>, <PDP_addr>, <d_comp>,<h_comp>[,<pd1> [,…[,pdN]]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] […]]] OK
AT+CGDCONT=?	+CGDCONT: (0-15),"IP",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1) +CGDCONT: (0-15),"IPV6",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1) +CGDCONT: (0-15),"IPV4V6",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1) +CGDCONT: (0-15),"PPP",,,(0-3),(0-4),(0,1),(0,1),(0-2),(0,1) OK

Defined values

Parameter	values	Explain
<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) is returned by the test form of the command.
<PDP_type>	IP,IPV6, PPP, IPV4V6	(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol
<APN>		(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.
<PDP_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>	0-2	a numeric parameter that controls PDP data compression (applicable for SNDCP only) (refer 3GPP TS 44.065) 0 – off (default if value is omitted) 1 – on (manufacturer preferred compression) 2 – V.42bis Other values are reserved. Note: only support 0 and 2 now.
<h_comp>		a numeric parameter that controls PDP header compression (refer 3GPP TS 44.065 and 3GPP TS 25.323) 0 – off (default if value is omitted) 1 – RFC1144 (applicable for SNDCP only) 2 – RFC2507 Note: only support 0 and 1 now.
<pd1>, … <pdN>		zero to N string parameters whose meanings are specific to the <PDP_type>

Example

```
AT+CGATT?
+CGATT: 1

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

OK

5.2 AT+CGATT PS Attach or Detach

Description

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

Syntax

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

Defined value

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

Example

AT+CGATT?
+CGATT: 1

OK
AT+CGATT=0
OK

5.3 AT+CGACT PDP Context Activate or Deactivate

Description

The execution command is used to activate or deactivate the specified PDP context (s).

The read command returns the current activation states for all the defined PDP contexts.

The test command is used for requesting information on the supported PDP context activation states.

Syntax

Command	Response
AT+CGACT=<state>[,<cid>]	OK
AT+CGACT?	[+CGACT: <cid>,<state> [<CR><LF>+CGACT: <cid>, <state>[…]]] OK
AT+CGACT=?	+CGACT: (0,1), (<cid>list) OK

Defined values

Parameter	values	Explain
<state>	0-1	Indicates the state of PDP context activation 0--- Deactivated 1--- Activated
<cid>	1-16	A numeric parameter which specifies a particular PDP context definition

Example

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

OK
AT+CGACT=?
```

```
+CGACT: (0,1), (1-16)

OK
```

5.4 AT+RNDISCALL For RNDIS On/Off

Description

The write command is used to activate or deactivate the RNDIS.

Syntax

Command	Response
AT+RNDISCALL=<value>	OK
AT+RNDISCALL?	+RNDISCALL: <value> OK
AT+RNDISCALL=?	+RNDISCALL: (0,1) OK

Defined values

Parameter	values	Explain
<value>	0	RNDIS off
	1	RNDIS on

Example

```
AT+RNDISCALL?
+RNDISCALL: 1

OK
AT+RNDISCALL=0
OK
```

5.5 AT+DIALMODE RNDIS Automatic dialing

Description

This command is used to enable or disable the automatic dialing function after RNDIS is turned on. The default value is 0.Scenes dialed using ppp need to turn off automatic dialing.

Syntax

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

Defined values

Parameter	values	Explain
<mode>	0-1	0 --- ON 1 --- OFF

Example

```
AT+DIALMODE?
+DIALMODE: 0

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

OK
AT+DIALMODE=1
OK
```

5.6 ATD*99# Initiate Data Connection

Description

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

Syntax

Command	Response
ATD*99#[*[<called_address>]	CONNECT 115200

[*[<L2P>][*[<cid>]]]#	

Defined values

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

Example

ATD*99#
CONNECT 115200

Chapter 6. Network Service Commands

6.1 AT+COPS Operator Selection

Description

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

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

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

Syntax

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

Defined values

Parameter	values	Explain
<mode>	0-4	0--- Automatic mode; <oper> field is 1--- Manual operator selection. <oper> present. 2--- Force deregister 3--- Set only <format> 4--- Manual/automatic
<format>	0-2	0---Long format alphanumeric <oper> 1--- Short format alphanumeric <oper> 2--- Numeric <oper>
<oper>		String type; <format> indicates if alphanumeric or numeric

<sys>	2,7	2 --- WCDMA 7 --- LTE
<stat>	0-3	0--- unknown 1--- available 2--- current 3--- forbidden

Example

```
AT+COPS?
+COPS: 0,2,"46000",7

OK
```

6.2 AT+CREG Network Registration

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<n>	0-3	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>,<AcT>] 3: enable network registration, location information and cause value information unsolicited result code +CREG: <stat>[,[<lac>],[<ci>],[<AcT>],[<rac>] [,<cause_type>,<reject_cause>]]
<stat>	0-11	<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 6: registered, home network, SMS-only (applicable only when AcT is E-UTRAN) 7: registered, roaming, SMS-only (applicable only when AcT is E-UTRAN) 8: attached for emergency bearer services only (not applicable) 9: registered for “CSFB not preferred”,home network(applicable only when AcT is E-UTRAN) 10: registered for “CSFB not preferred”,roaming (applicable only when AcT is E-UTRAN) 11: only emergency services are available
<lac>		string type; two byte location area code in hexadecimal format
<ci>		string type; four byte cell identifier in hexadecimal format. GSM case: 16 least significant bits ,WCDMA case: CellId – 16 least significant bits ,RNCID – 12 most significant bits
<AcT>	0-8	0: GSM 1: GSM Compact 2: UTRAN 3: GSM w/EGPRS 4: UTRAN w/HSDPA 5: UTRAN w/HSUPA 6: UTRAN w/HSDPA and HSUPA 7: E-UTRAN 8: UTRAN HSPA+

Example

AT+CREG?

+CREG: 0,1

```
OK
AT+CREG=?
+CREG: (0-3)

OK
```

6.3 AT+CGREG GPRS Network Registration Status

Description

The set command controls the presentation of an unsolicited result for GSM/UMTS package network registration status: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>,<AcT>,<rac>] when <n>=2 and there is a change of the network cell, or code +CGREG: <stat>[,[<lac>],[<ci>], [<AcT>],[<rac>][,<cause_type>,<reject_cause>]] when <n>=3 and there is a change of the network cell.

The read command returns the status of result code presentation and an integer <stat> which shows whether the network has currently indicated the registration of the MT.

Syntax

Command	Response
AT+CGREG=[<n>]	OK
AT+CGREG?	+CGREG: <n>,<stat>[,[<lac>],[<ci>],[<AcT>],[<rac>][,<cause_type>,<reject_cause>]] OK
AT+CGREG=?	+CGREG: (0,3) OK

Defined values

Parameter	values	Explain
<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>,<AcT>,<rac>] 3: enable network registration, location information and cause

		value information unsolicited result code +CGREG:
<stat>	0-11	<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 6: registered, home network, SMS-only (applicable only when AcT is E-UTRAN) 7: registered, roaming, SMS-only (applicable only when AcT is E-UTRAN) 8: attached for emergency bearer services only (not applicable) 9: registered for “CSFB not preferred”,home network(applicable only when AcT is E-UTRAN) 10: registered for “CSFB not preferred”,roaming (applicable only when AcT is E-UTRAN) 11: only emergency services are available
<lac>		string type; two byte location area code in hexadecimal format
<ci>		string type; four byte cell identifier in hexadecimal format. GSM case: 16 least significant bits ,WCDMA case: CellId – 16 least significant bits ,RNCID – 12 most significant bits
<AcT>	0-8	0: GSM 1: GSM Compact 2: UTRAN 3: GSM w/EGPRS 4: UTRAN w/HSDPA 5: UTRAN w/HSUPA 6: UTRAN w/HSDPA and HSUPA 7: E-UTRAN 8: UTRAN HSPA+

Example

```
AT+CGREG?
+CGREG: 3,1,"e802","00bd8515",7

OK
AT+CGREG=?
+CGREG: (0,3)

OK
```

6.7 AT^SYSINFO Query System Information

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<srv_status>	0-4	0--- No service 1--- Limited service 2--- Service available 3--- Limited regional service 4--- Power save or deep sleep
<srv_domain>	0-4	0--- No service 1--- CS only capable 2--- PS only capable 3--- CS and PS capable 4--- Searching network
Searching network	0-1	0--- Roaming off 1--- Roaming on
<sys_mode>	0-3	0--- No service 5--- WCDMA mode 9--- LTE mode
<sim_state>	0-1	0--- SIM is not available 1--- SIM is available

Example

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

OK
```

6.8 AT^SYSCONFIG Set System Parameter

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<mode_pref>	2,14,16 38,54,99	Integer type, mode preferences: 2 --- Automatic 14--- WCDMA only 16--- No Change 38--- LTE only 99--- Unknow
<acq_pref>	0,2,3,4	Integer type, indicate access network order 0--- Automatic 2--- WCDMA, LTE WCDMA preferred 3--- No change 4--- Unknown
<roam_pref>	0-3	0--- Forbid roam 1--- Allow roam 2--- No change

		3--- Unknown
<domain_pref>	0-4	0--- CS only 1--- PS only 2--- CS and PS 3--- Any 4--- No Change 5--- Unknown

Example

```
AT^SYSCONFIG?
^SYSCONFIG: 2,2,1,2


OK
```

6.9AT^MODECONFIG Network Mode Selection

Description

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

Read command returns the current system mode.

Syntax

Command	Response
AT^MODECONFIG=<mode>	OK
AT^MODECONFIG?	^MODECONFIG: 2 OK
AT^MODECONFIG=?	^MODECONFIG: <mode>list OK

Defined values

Parameter	values	Explain
<mode>	2,14 ,38,5 5,56	2 ---AUTO 14 --- WCDMA only 38--- LTE only 55---UMTS_LTE, UMTS preferred

		56--- UMTS_LTE, LTE preferred

Example

```
AT^MODECONFIG?
^MODECONFIG: 2

OK
```

6.10 AT+CEMODE EPS Registry Settings

Description

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

Read command returns the current EPS registration mode.

Syntax

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

Defined values

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

Example

```
AT+CEMODE?
+CEMODE: 2

OK
```

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

OK
```

6.11 AT+CPOL Preferred Operator List

Description

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

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

Syntax

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

Defined values

Parameter	values	Explain
<index>	1-254	Integer type, the order number of oper preferred operator list.
<format>	0-2	0 --- Long format alphanumeric <oper> 1 --- Short format alphanumeric <oper> 2 --- Numeric <oper>
<oper>		String type; <format> indicates if alphanumeric or numeric.
<GSM_AcT>	0-1	GSM access technology: 0--- access technology not selected

		1--- access technology selected
<GSM_Compact_AcT>	0-1	GSM compact access technology: 0--- access technology not selected 1--- access technology selected
<UTRAN_AcT>	0-1	UTRAN access technology: 0--- access technology not selected 1---access technology selected
<E-UTRAN_Act>	0-1	integer type;E-UTRAN access technology 0---access technology not selected 1--- access technology selected

Example

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

+CPOL: 2, 2, "46009", 0, 0, 1, 0

OK
```

6.12 AT+EEMGINFO Query UMTS/LTE information

Description

Query UMTS/LTE information in Engineering Mode. Only valid in query mode. Before executing this command, you need to enter the engineering mode with the command AT+CGED=2.

Syntax

Command	Response
AT+EEMGINFO?	+EEMGINFO : <state>,<nw_type> OK

Defined values

Parameter	values	Explain
<state>	0-3	0 --- ME in Idle mode 1 --- ME in Dedicated mode 2 --- ME in PS PTM mode 3 --- Invalid state
<nw_type>	1-2	1: UMTS 2: LTE

Example

```
AT+EEMGINFO?
+EEMGINFO : 3, 2

OK
```

6.12.1 +EEMLTESVC Serving-cell information in LTE

Description

Indication of serving-cell information in LTE Engineering Mode.

Syntax

Command
+EEMLTESVC: <mcc>, <lenOfMnc>, <mnc>, <tac>, <phyCellId>, <dlEuArfcn>, <ulEuArfcn>, <band>, <dlBandwidth>, <rsrp>, <rsrq>, <sinr>, <errcModeState>, <emmState>, <serviceState>, <IsSingleEmmRejectCause>, <EMMRejectCause>, <mmeGroupId>, <mmeCode>, <mTmsi>, <cellId>, <subFrameAssignType>, <specialSubframePatterns>, <transMode>, <mainRsrp>, <diversityRsrp>, <mainRsrq>, <diversityRsrq>, <rssi>, <cqi>, <pathLoss>, <tb0DlTpt>, <tb1DlTpt>, <tb0DlPeakTpt>, <tb1DlPeakTpt>, <tb0UlPeakTpt>, <tb1UlPeakTpt>, <dlThroughPut>, <dlPeakThroughPut>, <averDlPRB>, <averCQITb0>, <averCQITb1>, <rankIndex>, <grantTotal>, <ulThroughPut>, <ulPeakThroughPut>, <currPuschTxPower>, <averUlPRB>, <dlBler>, <ulBler>

Defined values

Parameter	values	Explain
<mcc>		Mobile Country Code
<lenOfMnc>		length of mnc
<mnc>		Mobile Network Code
<tac>		Tracking area code
<phyCellId>		Physical Cell Identifier
<dlEuArfcn>		dl arfcn
<ulEuArfcn>		ul arfcn
<band>		band
<dlBandwidth>		dl band width
<rsrp>		rsrp
<rsrq>		rsrq
<sinr>		sinr
<errcModeState>		ErrcModeState
<emmState>		emmState

<serviceState>		serviceState
<IsSingleEmmRejectCause>		IsSingleEmmRejectCause
<EMMRejectCause>		EMMRejectCause
<mmeGroupId>		mmeGroupId
<mmeCode>		mmeCode>
<mTmsi>		mTmsi
<cellId>		cellId
<subFrameAssignType>		subFrameAssignType
<specialSubframePatterns>		specialSubframePatterns
<transMode>		transMode
<mainRsrp>		ainRsrp
<diversityRsrp>		diversityRsrp
<mainRsrq>		mainRsrq
<diversityRsrq>		iversityRsrq
<rssi>		rssi
<cqi>		cqi
<pathLoss>		pathLoss
<tb0DlTpt>		tb0DlTpt
<tb1DlTpt>		tb1DlTpt
<tb0DlPeakTpt>		tb0DlPeakTpt
<tb1DlPeakTpt>		tb1DlPeakTpt
<tb0UlPeakTpt>		tb0UlPeakTpt
<tb1UlPeakTpt>		tb1UlPeakTpt
<dlThroughPut>		dlThroughPut
<dlPeakThroughPut>		dlPeakThroughPut
<averDlPRB>		averDlPRB
<averCQITb0>		averCQITb0
<averCQITb1>		averCQITb1
<rankIndex>		rankIndex
<grantTotal>		grantTotal
<ulThroughPut>		ulThroughPut
<ulPeakThroughPut>		ulPeakThroughPut
<currPuschTxPower>		currPuschTxPower
<averUlPRB>		averUlPRB
<dlBler>		dlBler
<ulBler>		ulBler

Example

+EEMLTESVC: 1120, 2, 17, 23324, 372, 100, 18100, 1, 5, 49, 25, 20, 2, 10, 13, 1, 0, 12544, 4, 3775713504, 186088834, 255, 255, 1, 255, 255, 255, 255, 255, 65535, 107, 4816, 0, 4816, 0, 0, 0, 0, 0, 4, 15, 0, 0, 459, 0, 0, 18, 2, 0, 0

6.12.2 +EEMLTEINTER Inter freq information in LTE

Description

Indication of Inter freq information in LTE Engineering Mode.

Syntax

Command
+EEMLTEINTER: <p1>, <p2>, <p3>, <p4>, <p5>

Defined values

Parameter	values	Explain
<p1>		index of ENGMODE INTERFREQ
<p2>		phyCellId
<p3>		euArfcn
<p4>		rsrp
<p5>		rsrq

Example

+EEMLTEINTER: 0, 175, 2452, 37, 15

+EEMLTEINTER: 1, 89, 2452, 33, 8

6.12.3 +EEMLTEINTERRAT Inter RAT information

Description

Indication of inter RAT information in LTE Engineering Mode.

Syntax

Command
+EEMLTEINTERRAT: <network>,<numInterRATGsm>

Defined values

Parameter	values	Explain

<network>	0-1	0 --- GSM 1 --- UMTS
<numInterRATGsm>		numInterRATGsm

6.12.4 +EEMUMTSSVC serving-cell information in UMTS

Description

Indication of serving-cell information in UMTS Engineering Mode.

Syntax

Command
+EEMUMTSSVC: <mode>, <sCellMeasPresent>, <sCellParamPresent>, <ueOpStatusPresent>, <rscp>, <utraRssi>, <cpichEcN0>, <sQual>, <sRxLev>, <txPower>, <rac>, <nom>, <mcc>, <lenOfMnc>, <mnc>, <lac>, <ci>, <uraId>, <psc_cellParameterId>, <arfcn>, <t3212>, <t3312>, <hcsUsed>, <attDetAllowed>, <csDrxCycleLen>, <psDrxCycleLen>, <utranDrxCycleLen>, <HSDPASupport>, <HSUPASupport>, <rrcState>, <numLinks>, <srncId>, <sRnti>, <algPresent>, <cipherAlg>, <cipherOn>, <algPresent>, <cipherAlg>, <cipherOn>, <HSDPAActive>, <HSUPAActive>, <MccLastRegisteredNetwork>, <MncLastRegisteredNetwork>, <TMSI>, <PTMSI>, <IsSingleMmRejectCause>, <IsSingleGmmRejectCause>, <MMRejectCause>, <GMMRejectCause>, <mmState>, <gmmState>, <gprsReadyState>, <readyTimerValueInSecs>, <NumActivePDPContext>, <ULThroughput>, <DLThroughput>, <serviceStatus>, <pmmState>, <LAU_status>, <LAU_count>, <RAU_status>, <RAU_count>

Defined values

Parameter	values	Explain
<mode>		Engineer Mode
<sCellMeasPresent>		sCellMeasPresent
<sCellParamPresent>		sCellParamPresent
<ueOpStatusPresent>		ueOpStatusPresent
<rscp>		rscp
<utraRssi>		utraRssi
<cpichEcN0>		cpichEcN0
<sQual>		sQual
<sRxLev>		sRxLev
<txPower>		txPower
<rac>		rac

<nom>		nom
<mcc>		mcc
<lenOfMnc>		Length Of Mnc
<mnc>		mnc
<lac>		lac
<ci>		ci
<uraId>		uraId
<psc_cellParameterId>		psc_cellParameterId
<arfcn>		arfcn
<t3212>		t3212
<t3312>		t3312
<hcsUsed>		hcsUsed
<attDetAllowed>		attDetAllowed
<csDrxCycleLen>		csDrxCycleLen
<psDrxCycleLen>		psDrxCycleLen
<utranDrxCycleLen>		utranDrxCycleLen
<HSDPASupport>		HSDPASupport
<HSUPASupport>		HSUPASupport
<rrcState>		rrcState
<numLinks>		numLinks
<srncId>		srncId
<sRnti>		sRnti
<algPresent>		algPresent
<cipherAlg>		cipherAlg
<cipherOn>		cipherOn
<algPresent>		algPresent
<cipherAlg>		cipherAlg
<cipherOn>		cipherOn
<HSDPAActive>		HSDPAActive
<HSUPAActive>		HSUPAActive
<MccLastRegisteredNetwork>		MccLastRegisteredNetwork
<MncLastRegisteredNetwork>		MncLastRegisteredNetwork
<TMSI>		TMSI
<PTMSI>		PTMSI
<IsSingleMmRejectCause>		IsSingleMmRejectCause
<MMRejectCause>		MMRejectCause
<GMMRejectCause>		GMMRejectCause
<mmState>		mmState
<gmmState>		gmmState

<gprsReadyState>		gprsReadyState
<readyTimerValueInSecs>		readyTimerValueInSecs
<NumActivePDPContext>		NumActivePDPContext>
<ULThroughput>		ULThroughput
<DLThroughput>		DLThroughput
<serviceStatus>		serviceStatus
<pmmState>		pmmState
<LAU_status>		LAU_status
<LAU_count>		LAU_count
<RAU_status>		RAU_status
<RAU_count>		RAU_count

Example

+EEMUMTSSVC: 3, 1, 1, 1, -4096, 41, -4096, -32768, -32768, 0, 0, 3, 1120, 0, 1, 43063, 45342, 65535, 139, 10713, 60, 0, 0, 1, 65535, 65535, 65535, 0, 0, 6, 1, 219, 55626, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1053756281, 4157227662, 1, 1, 28672, 255, 191, 29, 0, 65535, 0, 0, 0, 0, 2, 0, 0, 0, 0

6.12.5 +EEMUMTSINTRA Intra freq information in UMTS

Description

Indication of Intra freq information in UMTS Engineering Mode.

Syntax

Command
+EEMUMTSINTRA: <index>, <rscp>, <utraRssi>, <cpichEcN0>, <sQual>, <sRxLev>, <mcc>, <mnc>, <lac>, <ci>, <arfcn>, <psc_cellParameterId>

Defined values

Parameter	values	Explain

Example

+EEMUMTSINTRA: 0, -62, -1, -2, -32768, -32768, 65535, 65535, 65534, 0, 10713, 139

+EEMUMTSINTRA: 1, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 8, 10713, 127

+EEMUMTSINTRA: 2, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 9, 10713, 128

+EEMUMTSINTRA: 3, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 10, 10713, 129

+EEMUMTSINTRA: 4, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 11, 10713, 144

+EEMUMTSINTRA: 5, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 13, 10713, 281

+EEMUMTSINTRA: 6, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 14, 10713, 283

+EEMUMTSINTRA: 7, -32768, -1, -32768, -32768, -32768, 65535, 65535, 65534, 15, 10713, 256

6.13 AT*CELL Activate or to deactivate Cell/Frequency lock

Description

This proprietary AT command is used to requests to activate or to deactivate Cell/Frequency lock.

Syntax

Command	Response
AT*CELL=<mode>,<act>,<band>,<freq>,<cellId>	OK
AT*CELL=?	*CELL:<mode>,<act>,<band>,<freq>,<cellId> OK

Defined values

Parameter	values	Explain
<mode>	0-2	0 – Cell/Frequency disabled 1 – Frequency lock enabled 2 – Cell lock enabled
<act>		0 – GSM

			1 – UMTS_TD 2 – UMTS_WB 3 – LTE
<band>	UMTS	0-8	0: Band_1 1: Band_2 2: Band_3 3: Band_4 4: Band_5 5: Band_6 6: Band_7 7: Band_8 8: Band_9
	LTE	0-63	FDDLTE: 0~30 TDDLTE:32~43 0-63: Band1~Band64
<freq>	UMTS		Band_1 arfcn 10562-10838 Band_2 arfcn 9662-9938 Band_3 arfcn 1162-1513 Band_4 arfcn 1537-1738 Band_5 arfcn 4357-4458 Band_6 arfcn 4387-4413 Band_7 arfcn 2237-2563 Band_8 arfcn 2937-3088 Band_9 arfcn 9237-9387
	LTE		Band_1: 0-599 Band_3: 1200-1949 Band_5: 2400-2649 Band_7: 2750-3449 Band_8: 3450-3799 Band_13: 5180-5279 Band_17: 5730-5849 Band_20: 6150-6449 Band_38: 37750-38249 Band_39: 38250-38649 Band_40: 38650-39649 Band_41: 39650-41589
<cellId>	UMTS	0-127	CELL ID: 0-127
	LTE	0-503	CELL ID: 0-503

Example

```
AT*CELL=1,3,0,100
OK
AT*CELL=1,3,0,100,372
OK
```

Chapter 7. TCP/UDP

7.1 AT+QIPCSGP Set context parameters

Description

Configure the <APN>, <username>, <password> and other contexts by AT+QICSGP.

Syntax

Command	Response
AT+QIPCSGP=<CID>,<CONTEXTTYPE>,<APN>,[<username>,<password>]	OK
AT+QIPCSGP?	OK
AT+QIPCSGP=?	+QIPCSGP:(1-6),(1,2),<APN>,<username>,<password>,(0-2) OK

Defined values

Parameter	values	Explain
<CID>	1-6	Numeric parameter; used to specify a specific PDP context definition
<CONTEXTTYPE>	1,2	Context type
<APN>		APN
<username>		username
<password>		password

Example

```
AT+QIPCSGP=1,1,"3GNET"
OK
```

7.2 AT+QIPACT Activation context

Description

Before activating context by AT+QIACT, host should configure the cont xt by AT+QICSGP. After activation, the IP address can be queried by AT+QIACT?

Syntax

Command	Response
AT+QIPACT=<CID>	OK

	+QIPACTURC: <CID>,<CONTEXTTYPE>,"IP"
AT+QIPACT?	If it is the default value, it will return： OK If the instruction AT+QIPACT=<CID> is executed, it will return： +QIPACT:<CID>,<CONTEXTTYPE>,"IP" OK
AT+QIPACT=?	+QIPACT:(1-6) OK

Defined values

Parameter	values	Explain
<CID>	1-6	Numeric parameter; used to specify a specific PDP context definition
<CONTEXTTYPE>	1,2	Context type
"IP"		

Example

```
AT+QIPACT=1
OK

+QIPACTURC: 1,1,"10.76.7.39"

AT+QIPACT?
+QIPACT:1,1,"10.76.7.39"

OK
```

7.3 AT+QIPOPEN Establish a socket connection

Description

Start a socket service by AT+QIOPEN. The service type can be specified by the parameter <service_type>. The data access mode (buffer access mode, direct push access mode and transparent access mode) can be specified by parameter <access_mode>. The URC “+QIOPEN” indicates whether the socket service is started successfully.

Syntax

Command	Response
AT+QIPOPEN=<CID>,<socketID>,"<service_type>","<IP_address>",<remote_port>,<local_port>,<access_mode>	OK +QIPOPEN: <socketID>,0
AT+QIPOPEN?	+QIPOPEN: <CID>,<socketID>,<service_type>,<remote_port>,<local_port>,<access_mode> ..... OK
AT+QIPOPEN=?	+QIPOPEN:(1-6),(0-11),"TCP/UDP/TCP LISTENER/UDP SERVICE","IP_address/domain_name",<remote_port>,<local_port>,(0-2) OK

Defined values

Parameter	values	Explain
<CID>	1-6	
<socketID>	1-11	Currently only supports 1-6
<service_type>	TCP/UDP/TCP LISTENER/UDP SERVICE	Currently only supports TCP and UDP
<IP_address>		Remote server address
<remote_port>		Remote server port
<local_port>		Local port
<access_mode>	0-2	Access mode 0 --- Buffer access mode.Report notification when the news arrives 1 --- Direct push mode.Report the message directly when the message arrives 2 --- Transparent mode

Example

```
AT+QIPOPEN=1,1,"TCP","203.156.205.55",8866,12341,1
OK


+QIPOPEN: 1,0
```

7.4 AT+QIPSEND Send data

Description

The command used to send data.

Syntax

Command	Response
AT+QIPSEND=<socketID>	Enter data after “>”,Ended by ctrl+z +QIPSEND:<socketID>,<length> OK
AT+QIPSEND?	OK
AT+QIPSEND=?	AT+QIPSEND=? +QIPSEND:(0-11),(0-1460) OK

Defined values

Parameter	values	Explain
<socketID>	1-11	Currently only supports 1-6
<length>		Data length

Example

```
AT+QIPSEND=1
>1234567890<CTRL+Z>
+QIPSEND:1,10

OK
```

7.5 AT+QIPREAD Read data

Description

In buffer access mode, after receiving data, the module will buffer it and report a URC as +QIPREADURC: <socketID> to notify the host. Then host can retrieve data by AT+QIPREAD

Syntax

Command	Response
AT+QIPREAD=<socketID>	+QIPREAD: <length> OK
AT+QIPREAD=<socketID>,<length>	+QIPREAD: <socketID>,<length> data OK
AT+QIPREAD?	OK
AT+QIPREAD=?	+QIPREAD:(0-11),(0-1500) OK

Defined values

Parameter	values	Explain
<socketID>	1-11	Currently only supports 1-6
<length>	0-1500	

Example

```
+QIPREADURC: 2
AT+QIPREAD=2
+QIPREAD: 10

OK
AT+QIPREAD=2,10
+QIPREAD: 2,10
##########
OK
```

7.6 AT+QIPCLOSE Close the socket connection

Description

The command use to be close the socket connection.

Syntax

Command	Response
AT+QIPCLOSE=<socketID>	+QIPCLOSE: <socketID> OK
AT+QIPCLOSE?	OK

Defined values

Parameter	values	Explain
<socketID>	1-6	

Example

```
AT+QIPCLOSE=1
+QIPCLOSE: 1

OK
```

7.7 AT+QIPDEACT Disconnect TCP/IP connection

Description

The command will deactivate the specific context <context ID> and close a TCP/IP connections set up in this context.

Syntax

Command	Response
AT+QIPDEACT=<CID>	OK
AT+QIPDEACT?	OK
AT+QIPDEACT=?	+QIPDEACT:(1-6) OK

Defined values

Parameter	values	Explain
<CID>	1-6	

Example

```
AT+QIPDEACT=1
OK
```

7.8 err code

err code	Description
0	SUCCESS

550	UNKNOWN
551	OPERATION_BLOCKED
552	INVALID_PARAMETERS
553	MEMORY_NOT_ENOUGH
554	CREATE_SOCKET_FAILED
555	OPERATION_NOT_SUPPORTED
556	SOCKET_BIND_FAILED
557	SOCKET_LISTEN_FAILED
558	SOCKET_WRITE_FAILED
559	SOCKET_READ_FAILED
560	SOCKET_ACCEPT_FAILED
561	OPEN_PDP_CONTEXT_FAILED
562	CLOSE_PDP_CONTEXT_FAILED
563	SOCKET_IDENTITY_HAS_BEEN_USED
564	DNS_BUSY
565	DNS_PARSE_FAILED
566	SOCKET_CONNECT_FAILED
567	SOCKET_HAS_BEEN_CLOSED
568	OPERATION_BUSY
569	OPERATION_TIMEOUT
570	PDP_CONTEXT_BROKEN_DOWN
571	CANCEL_SEND
572	OPERATION_NOT_ALLOWED
573	APN_NOT_CONFIGURED
574	PORT_BUSY

Chapter 8. FTP

8.1 AT+CFTPPORT Set the server FTP port

Description

This command is used to set the server FTP port.The default is 0, 0 means not set.

Syntax

Command	Response
AT+CFTPPORT=?	+CFTPPORT: (1-65535) OK
AT+CFTPPORT?	+CFTPPORT: <port> OK
AT+CFTPPORT=<port>	OK

Defined values

Parameter	values	Explain
<port>	1-65535	The FTP port

Example

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

OK
```

8.2 AT+CFTPMODE Set FTP mode

Description

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

Syntax

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

	OK
AT+CFTPMODE=<mode>	OK

Defined values

Parameter	values	Explain
<mode>	0-1	0 --- passive mode. 1 --- proactive mode

Example

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

OK
AT+CFTPMODE?
+CFTPMODE: 0

OK
AT+CFTPMODE=0
OK
```

8.3 AT+CFTPTYPE Set FTP type

Description

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

Syntax

Command	Response
AT+CFTPTYPE=?	+CFTPTYPE: (A,I) OK
AT+CFTPTYPE?	+CFTPTYPE: <type> OK
AT+CFTPTYPE=<type>	OK

Defined values

Parameter	values	Explain
<type>	A,I	I – binary type.

		A – ASCII type

Example

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

OK
AT+CFTPTYPE?
+CFTPTYPE: I

OK
AT+CFTPTYPE=I
OK
```

8.4 AT+CFTPSERV Set the FTP server address

Description

The command is used to set the FTP server address.The address is empty by default.

Syntax

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

Defined values

Parameter	values	Explain
<ADDRESS>		FTP server address

Example

```
AT+CFTPSERV=?
+CFTPSERV: <ADDRESS>

OK
```

```
AT+CFTPSERV?
+CFTPSERV:

OK
AT+CFTPSERV=203.156.205.55
OK
AT+CFTPSERV?
+CFTPSERV: 203.156.205.55

OK
```

8.5 AT+CFTPUN Set the FTP server username

Description

The command is used to set the FTP server username.Username is empty by default.

Syntax

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

Defined values

Parameter	values	Explain
<NAME>		FTP server username

Example

```
AT+CFTPUN=?
+CFTPUN: <NAME>

OK
AT+CFTPUN?
+CFTPUN:
```

```
OK
AT+CFTPUN=yuge
OK
AT+CFTPUN?
+CFTPUN: yuge

OK
```

8.6 AT+CFTPPW Set the FTP server password

Description

The command is used to set the FTP server password.Password is empty by default.

Syntax

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

Defined values

Parameter	values	Explain
<PASSWORD>		FTP server password

Example

```
AT+CFTPPW=?
+CFTPW: <PASSWORD>

OK
AT+CFTPPW?
+CFTPPW:

OK
AT+CFTPPW=yuge
OK
```

AT+CFTPPW?

+CFTPPW: yuge

OK

8.7 AT+CFTPSTART FTP connection

Description

This command is used to make an FTP connection.

Syntax

Command	Response
AT+CFTPSTART	OK +CFTPSTART: 0,230

Example

AT+CFTPSTART

OK

+CFTPSTART: 0,230

8.8 AT+CFTPTIMEOUT FTP connection hold time

Description

This command is used to set the number of periods for the FTP connection hold time. One period is 5s.

Syntax

Command	Response
AT+CFTPTIMEOUT=?	+CFTPTIMEOUT: (20-180) OK
AT+CFTPTIMEOUT?	+CFTPTIMEOUTE: <period> OK
AT+CFTPTIMEOUT=<period>	OK

Defined values

Parameter	values	Explain

<period>	20-180	The number of periods for the FTP connection to hold time. The default value is 30.

Example

```
AT+CFTPTIMEOUT=?
+CFTPTIMEOUT: (20-180)

OK
AT+CFTPTIMEOUT?
+CFTPTIMEOUTE: 30

OK
AT+CFTPTIMEOUT=20
OK
```

8.9 AT+CFTPGET Get a file from FTP server

Description

This command is used to get a file from FTP server and output it to serial port.

Syntax

Command	Response
AT+CFTPGET=?	+CFTPGET: <file_name>,<local_name>,<startpos>,<downloadlen> OK
AT+CFTPGET=<file_name>,<local_name>,<startpos>,<downloadlen>	+CFTPGET: DATA OK +CFTPGET: <startpos>,<downloadlen>

Defined values

Parameter	values	Explain
<file_name>		File name
<local_name>		Local name is”COM:”
<startpos>		Offset of the starting position
<downloadlen>		Download data length

Example

```
AT+CFTPGET=11.txt,COM:,12,46
+CFTPGET:
2222222222
3333333333
4444444444

OK
AT+CFTPGET=11.txt,COM:,12,22
+CFTPGET:
2222222222
3333333333

OK

+CFTPGET: 0,22
```

8.10 AT+CFTPPUT Upload files to the FTP server

Description

This command is used to upload files to the FTP server.

Syntax

Command	Response
AT+CFTPPUT=?	+CFTPPUT: <file_name>,<local_name>,<startpos>,<uploadlen>,<beof> OK
AT+CFTPPUT=<file_name>,<local_name>,<startpos>,<uploadlen>,<beof>	+CFTPGET: DATA OK +CFTPGET: <startpos>,<uploadlen>

Defined values

Parameter	values	Explain

<file_name>		File name
<local_name>		Local name is"COM:"
<startpos>		Offset of the starting position
<uploadlen>		Length of uploaded data. If size is 0, exit data input and transfer data in +++
<beof>		Number of retransmissions after data transmission failure.

Example

```
AT+CFTPPUT=22.txt,COM:,0,20,0
+CFTPPUT: BEGIN
AAAAAAAAAABBBBBBBBBB    /Data does not echo

OK

+CFTPPUT: 0,20
AT+CFTPGET=22.txt,COM:,0,20
+CFTPGET:
AAAAAAAAAABBBBBBBBBB

OK

+CFTPGET: 0,20
AT+CFTPPUT=22.txt,COM:,0,0,0
+CFTPPUT: BEGIN
AAAAAAAAAABBBBBBBBBB+++      /Size is 0, end data transfer in +++

OK

+CFTPPUT: 0,20
AT+CFTPGET=22.txt,COM:,0,20
+CFTPGET:
AAAAAAAAAABBBBBBBBBB

OK
```

+CFTPGET: 0,20

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

Description

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

Syntax

Command	Response
AT+CFTPLIST=?	+CFTPLIST: <dirname>,<local_name> OK
AT+CFTPLIST=<dir>[,<local_name>]	<File name and attribute> OK

Defined values

Parameter	values	Explain
<dirname>		The path and name of the folder. Read the current directory, the directory is "/".
<local_name>		Local name is”COM:”

Example

```
AT+CFTPLIST=/,COM:
drw-rw-rw-      1 user          group                0 Nov    8 14:30 .
drw-rw-rw-      1 user          group                0 Nov    8 14:30 ..
-rw-rw-rw-      1 user          group               46 Aug 28 15:56 11.txt
-rw-rw-rw-      1 user          group               40 Nov    8 14:01 22.txt
drw-rw-rw-      1 user          group                0 Nov    8 14:13 FTP
drw-rw-rw-      1 user          group                0 Nov    8 14:31 VBD
-rw-rw-rw-      1 user          group       3420557312 Sep 12 16:22
cn_windows_7_professional_with_sp1_x64_dvd_u_677031.iso
drw-rw-rw-      1 user          group                0 Oct 11 17:45 iperf



OK

+CFTPLIST: 0,539
```

```
AT+CFTPLIST=/FTP
total 7
drw-rw-rw-     1 user        group              0 Nov    8 14:13 .
drw-rw-rw-     1 user        group              0 Nov    8 14:13 ..
-rw-rw-rw-     1 user        group            518 Oct 14 10:42 test1.fota
-rw-rw-rw-     1 user        group           2048 Oct 21 14:35 test1.txt
-rw-rw-rw-     1 user        group             44 Nov    1 13:31 test2.txt


OK

+CFTPLIST: 0,325
```

8.12 AT+CFTPMKDIR Create a new directory on FTP server

Description

This command is used to create a new directory on the FTP server.

Syntax

Command	Response
AT+CFTPMKDIR=?	+CFTPMKDIR: <folder_name> OK
AT+CFTPMKDIR=<folder_name>	OK +CFTPMKDIR: 0,257

Defined values

Parameter	values	Explain
<folder_name>		Folder name

Example

```
AT+CFTPMKDIR=TEST
OK


+CFTPMKDIR: 0,257
```

8.13 AT+CFTPDEL Delete a file on FTP server

Description

This command is used to delete a file on FTP server.

Syntax

Command	Response
AT+CFTPDEL=?	+CFTPDEL: <filename> OK
AT+CFTPDEL=<filename>	OK +CFTPDEL: 0,250

Defined values

Parameter	values	Explain
<filename>		File path and file name

Example

```
AT+CFTPDEL=TEST/test3.txt
OK


+CFTPDEL: 0,250
```

8.14 AT+CFTPRMD Delete a directory on FTP server

Description

This command is used to delete a directory on FTP server.

Syntax

Command	Response
AT+CFTPRMD=?	+CFTPRMD: <folder_name> OK
AT+CFTPRMD=TEST	OK +CFTPRMD: 0,250

Defined values

Parameter	values	Explain
<folder_name>		Folder name

Example

```
AT+CFTPRMD=TEST
OK


+CFTPRMD: 0,250
```

Chapter 9. SMS

9.1 AT+CSMS Select Message Service

Description

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

Syntax

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

Defined values

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

Example

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

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

OK
```

9.2 AT+CPMS Preferred Message Storage

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<mem1>	“SM”	SIM message storage,memory from which messages are read and deleted
	“ME”or“MT”	FLASH message storage,memory from which messages are read and deleted
	“SR”	Status report storage,memory from which messages are read and deleted
<mem2>	“SM”	SIM message storage,memory to which writing and sending operations are made
	“ME”or“MT”	FLASH message storage,memory to which writing and sending operations are made
	“SR”	Status report storage,memory to which writing and sending operations are made
<mem3>	“SM”	SIM message storage,memory to which received SMS is preferred to be stored
	“ME”	FLASH message storage,memory to which received SMS is preferred to be stored
<usedx>		Number of messages currently in <memX>.
<totalx>		Total number of message locations in <memX>.

Example

```
AT+CPMS?
+CPMS: "SM",1,40,"SM",1,40,"SM",1,40

OK
AT+CPMS="ME","ME","ME"
+CPMS: 0,180,0,180,0,180

OK
```

9.3 AT+CMGF Select Short Message Format

Description

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

Syntax

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

Defined values

Parameter	values	Explain
<mode>	0	PDU mode (default when implemented)
	1	Text mode

Example

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

OK
AT+CMGF=1
OK
```

9.4 AT+CSCA SMS Service Center Address

Description

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

Syntax

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

Defined values

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

Example

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

OK
```

9.5 AT+CNMI New Message Indications to TE

Description

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

Syntax

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

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

Defined values

Parameter	values	Explain
<mode>	0	Buffer unsolicited result codes in the TA. If TA result code buffer is full, indications can be buffered in some other place or the oldest indications may be discarded and replaced with the new received indications.
	1	Discard indication and reject new received message unsolicited result codes when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.
	2	Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after reservation. Otherwise forward them directly to the TE
<mt>	0	No SMS-DELIVER indications are routed to the TE.
	1	If SMS-DELIVER is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CMTI: <mem3>,<index>.
	2	SMS-DELIVERs (except class 2 messages and messages in the message waiting indication group (store message)) are routed directly to the TE using unsolicited result code: +CMT:[<alpha>],<length><CR><LF><pdu> (PDU mode enabled); or +CMT:<oa>,[<alpha>],<scts>[,<tooa>,<fo>,<pid>,<dcs>,<sca>,<tosca>,<length>] <CR> <LF><data>
	3	Class 3 SMS-DELIVERs are routed directly to TE using unsolicited result codes defined in <mt>=2. Messages of other data coding schemes result in indication as defined in

		<mt>=1.
<bm>	0	No CBM indications are routed to the TE.
	2	New CBMs are routed directly to the TE using unsolicited result code: +CBM: <length><CR><LF><pdu> (PDU mode enabled); or +CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)
<ds>	0	No SMS-STATUS-REPORTs are routed to the TE.
	1	SMS-STATUS-REPORTs are routed to the TE using unsolicited result code: +CDS: <length><CR><LF><pdu> (PDU mode enabled); or +CDS: <fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> (text mode enabled)
	2	If SMS-STATUS-REPORT is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CDSI: <mem3>,<index>.
<bfr>	0	TA buffer of unsolicited result codes defined within this command is flushed to the TE when <mode> 1 to 3 is entered
	1	TA buffer of unsolicited result codes defined within this command is cleared when <mode> 1 to 3 is entered.

Example

```
AT+CNMI=1,1
OK

+CMTI: "SM",20              //short message is coming
```

9.6 AT+CMGW Write Message to Memory

Description

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

Syntax

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

Defined values

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

Example

```
AT+CMGF=1
OK
AT+CMGW="1381627xxxx"
> TEST
+CMGW: 1
```

```
OK
AT+CMGF=0
OK
AT+CMGW=20
> 0011000D9168311826x7xxFx0000AA05D4E2941A03
+CMGW: 2

OK
```

9.7 AT+CMSS Send Message From Storage

Description

The command is used to send message with location value <index> from preferred message storage to the network.

Syntax

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

Defined values

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

		3GPP TS 24.011 SC address field and parameter shall be bounded by double quote characters like a normal string type parameter.

Example

```
AT+CMGF=1
OK
AT+CMSS=8
+CMSS: 32

OK
AT+CMGF=0
OK
AT+CMSS=9
+CMSS: 33

OK
```

9.8 AT+CMGS Send Message

Description

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

Syntax

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

Defined values

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

Example

```
AT+CMGF=1          //TEXT mode
OK
AT+CMGS="1381627XXXX"
> TEST
+CMGS: 34

OK
AT+CMGF=0        //PDU mode
OK
AT+CMGS=20
> 0011000D9168311826X7XXFX0000AA05D4E2941A03
+CMGS: 35

OK
```

9.9 AT+CMGL List Messages

Description

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

Test command shall give a list of all status values supported by the TA.

Syntax

Command		Response
AT+CMGL[=<stat>]	PDU	+CMGL: <index>,<stat>,[<alpha>],<length> <CR><LF><PDU> OK
	text	+CMGL: <index>,<stat>,<da>/<oa>,[<alpha>],[<scts>] [,<tooa>/<toda>,<length>]<CR><LF><data>[...]] OK
AT+CMGL=?		+CMGL: (<stat>list) OK

Defined values

Parameter	values		Explain
<index>			Value in the range of location numbers supported by the associated memory and start with zero.
<stat>	text	"REC UNREAD"	Received unread messages
		"REC READ"	Received read messages
		"STO UNSENT"	Stored unsent messages
		"STO SENT"	Stored sent messages
		"ALL"	All messages
	PDU	0	Received unread messages
		1	Received read messages
		2	Stored unsent messages
		3	Stored sent messages
		4	All messages
<alpha>			String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS.

<length>		Message length.
<da>		Destination-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <toda>.
<oa>		Originating-Address, Address-Value field in string format; BCD numbers (or GSM 7 bit default alphabet characters) are converted to characters of the currently selected TE character set, type of address given by <tooa>.
<scts>		Service center time stamp.
<tooa>		Type of originating address.
<toda>		Type of recipient address.

Example

```
AT+CMGF=1       //TEXT mode
OK
AT+CMGL="ALL"
+CMGL: 1,"STO UNSENT","13816278107"
TESTE1

+CMGL: 2,"STO SENT","13816278107"
TEST2

+CMGL: 3,"REC READ","15618593215",,"19:11:1215:54:10 GMT+8"
TEST3

+CMGL: 4,"REC UNREAD","15618593215",,"19:11:1215:55:12 GMT+8"
TEST4

OK
AT+CMGF=0       //PDU mode
```

```
AT+CMGL=4
+CMGL: 1,2,,19
010021000B813118268701F7000006D4E2945A8C01

+CMGL: 2,3,,18
010021000B813118268701F7000005D4E2942A03

+CMGL: 3,1,,24
0891683108200115F2240BA15116583912F500009111215145012305D4E2943A03

+CMGL: 4,1,,24
0891683108200115F2240BA15116583912F500009111215155212305D4E2944A03

OK
```

9.10 AT+CMGR Read Message

Description

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

Syntax

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

Defined value

Parameter	values		Explain
<index>			Value in the range of location numbers supported by the associated memory and start with zero.
<stat>	text	“REC UNREAD”	Received unread messages

		“REC READ”	Received read messages
		“STO UNSENT”	Stored unsent messages
		“STO SENT”	Stored sent messages
		“ALL”	All messages
	PDU	0	Received unread messages
		1	Received read messages
		2	Stored unsent messages
		3	Stored sent messages
		4	All messages
<number>			Sender number
<reserved>			null
<time>			TP-Discharge-Time in time-string format :”yy/MM/dd , hh:mm:ss+zz”,where characters indicate year (two last digits),month,day,hour,minutes,seconds and time zone.
<alpha>			String type alphanumeric representation of <da> or <oa> corresponding to the entry found in MT phonebook; implementation of this feature is manufacturer specific; used character set should be the one selected with command Select TE Character Set AT+CSCS.
<length>			Message length.

Example

```
AT+CMGF=1
OK
AT+CNMI=1,1
OK

+CMTI: "SM",8
AT+CMGR=8
+CMGR: "REC UNREAD","15618593215",,"19:11:1216:19:33 GMT+8"
TEST10
```

```
OK
AT+CMGF=0
OK

+CMTI: "SM",9
AT+CMGR=9
+CMGR: 0,,25
0891683108200115F1240BA15116583912F500009111216102612306D4E2941A8B01

OK
```

9.11 AT+CMGD Delete Message

Description

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

Syntax

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

Defined value

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

Example

```
AT+CMGL="ALL"
+CMGL: 1,"REC UNREAD","15618593215",,"19:11:1216:24:21 GMT+8"
TEST1

+CMGL: 2,"REC UNREAD","15618593215",,"19:11:1216:24:38 GMT+8"
TEST2

+CMGL: 3,"REC UNREAD","15618593215",,"19:11:1216:24:51 GMT+8"
TEST3

OK
AT+CMGD=3       //Delete the third message
OK
AT+CMGL="ALL"
+CMGL: 1,"REC READ","15618593215",,"19:11:1216:24:21 GMT+8"
TEST1

+CMGL: 2,"REC READ","15618593215",,"19:11:1216:24:38 GMT+8"
TEST2

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

Chapter 10. HTTP&HTTPS

10.1 AT+HTTPSND Send http and https request

Description

This command is used to send http and https request.

Syntax

Command	Response
AT+HTTPSND=?	+HTTPSND: (0-2),(0-10),(0-1)... OK
AT+HTTPSND=<method>,<ssl_enable>,<hex_mode>,<url>[,<header>[,<body>]]	OK +HTTPSND:<result>

Defined values

Parameter	values	Explain
<method>	0-1	HTTP request method 0 : GET 1 : POST
<ssl_enable>		0 //default 0 https: url Start with “https://”
<hex_mode>		Header and body data format for ASCII or HEX format when HTTP send and receive. 0 : ASCII 1 : HEX
<url>		Max 256 char Start with “http:// or https:// ”
<header>		Max 256 char, multiple headers are divided by -H, and the format is as follows： ASCII ： " - H 'Connection=keep-alive' - H 'Content-Type=multipart/form-data'" HEX ： "E28093482027436F6E6E656374696F6E3D6B6565702D616C6976652720E28093482027436F6E74656E742D547970653D6D756C7469706172742F666F726D2D6461746127"
<body>		Max 512 char
<result>	0-1	0：successed 1：failed

NOTE:

1. Execute the command AT+CGDCONT? to query if IP address is obtained before executing the command AT+HTTPSND .
2. In LTE mode, the PDN is automatically activated after successful registration, and can be used the command AT+HTTPSND directly. In WCDMA mode, you need to execute AT+CGDCONT=1,5 to activate the PDN, and then execute the command AT+HTTPSND after obtaining the IP address.

Example

HTTP:

AT+CGDCONT?

+CGDCONT: 5,"IP","wonet.mnc001.mcc460.gprs","10.226.177.186",0,0,,,,

OK

ASCII mode:

AT+HTTPSND=0,0,0,http://203.156.205.55:8080/web/123.txt,"-H 'Connection: keep-alive'"

OK

+HTTPSND: 0

+HTTPRCV:291,HTTP/1.1 200 OK

Content-Type: text/plain

Content-Length: 46

Accept-Ranges: bytes

Server: HFS 2.3k

Set-Cookie: HFS_SID_=0.812043825862929; path=/; HttpOnly

ETag: 9ACD6BA42FA6D11C5E58D8CB8A5C93C8

Last-Modified: Mon, 25 Nov 2019 06:52:28 GMT

Content-Disposition: filename="123.txt";

+HTTPRCV:46,AAAAAAAAAA

BBBBBBBBBB

CCCCCCCCCC

DDDDDDDDDD

HEX mode:

AT+HTTPSND=0,0,1,http://203.156.205.55:8080/web/123.txt,"2D482027436F6E6E656374696F6E3A206B6565702D616C69766527"

OK

+HTTPSND: 0

+HTTPRCV:291,485454502F312E3120323030204F4B0D0A436F6E74656E742D547970653A20746578742F706C61696E0D0A436F6E74656E742D4C656E6774683A2034360D0A4163636570742D52616E6765733A2062797465730D0A5365727665723A2048465320322E336B0D0A5365742D436F6F6B69653A204846535F5349445F3D302E383232333303637313330383933343733B20706174683D2F3B20487474704F6E6C790D0A455461673A203941434364241343246413644313143354535384438434238413543393343380D0A4C6173742D4D6F6469666965643A204D6F6E2C203235204E6F76203230313920303633A35323A323820474D540D0A436F6E74656E742D446973706F736974696F6E3A2066696C656E616D653D223132332E747874223B0D0A0D0A

+HTTPRCV:46,414141414141414141410D0A424242424242424242420D0A434343434343434343430D0A44444444444444444444

HTTPS:

ASCII mode：

AT+HTTPSND=0,0,0,https://www.baidu.com,"-H 'Accept:*/*'"

OK

+HTTPSND: 0

+HTTPRCV:1024,HTTP/1.0 200 OK

Accept-Ranges: bytes

Cache-Control: no-cache

Content-Length: 227

Content-Type: text/html

Date: Mon, 25 Nov 2019 07:33:47 GMT

P3p: CP=" OTI DSP COR IVA OUR IND COM "

P3p: CP=" OTI DSP COR IVA OUR IND COM "

Pragma: no-cache

Server: BWS/1.1

Set-Cookie: BD_NOT_HTTPS=1; path=/; Max-Age=300

Set-Cookie: BIDUPSID=FA9AA01407412E3F018C0F3FA2B9EC29; expires=Thu,

31-Dec-37 23:55:55 GMT; max-age=2147483647; path=/; domain=.baidu.com

Set-Cookie: PSTM=1574667227; expires=Thu, 31-Dec-37 23:55:55 GMT;

max-age=2147483647; path=/; domain=.baidu.com

Set-Cookie: BAIDUID=FA9AA01407412E3F83015F87A948EF1B:FG=1;

max-age=31536000; expires=Tue, 24-Nov-20 07:33:47 GMT; domain=.baidu.com; path=/;

version=1; comment=bd

Strict-Transport-Security: max-age=0

Traceid: 157466722704209249381256035197990312646 3

X-Ua-Compatible: IE=Edge,chrome=1

<html>

<head>

<script>

location.replace(location.href.replace("https://","http://"));

</script>

</head>

<body>

<noscript><meta http-equiv="refresh" content="

+HTTPRCV:58,0;url=http://www.baidu.com/"></noscript>

</body>

</html>

HEX mode：

AT+HTTPSND=0,0,1,https://www.baidu.com,"2D4820274163636570743A2A2F2A27"

OK

+HTTPSND: 0

+HTTPRCV:512,485454502F312E3020323030204F4B0D0A4163636570742D52616E67657
33A2062797465730D0A43616368652D436F6E74726F6C3A206E6F2D63616368650D0A4
36F6E74656E742D4C656E6774683A203232370D0A436F6E74656E742D547970653A2074
6578742F68746D6C0D0A446174653A204D6F6E2C203235204E6F7620323031392030373
A33333A323120474D540D0A5033703A2043503D22204F54492044535020434F522049564
1204F555220494E4420434F4D20220D0A5033703A2043503D22204F54492044535020434
F5220495641204F555220494E4420434F4D20220D0A507261676D613A206E6F2D6361636
8650D0A5365727665723A204257532F312E310D0A5365742D436F6F6B69653A2042445F
4E4F545F48545450533D313B20706174683D2F3B204D61782D4167653D3330300D0A536
5742D436F6F6B69653A20424944455505349443D434433434642393346414630393030434
5324641384235443536303043394538 3B20657870697265733D5468752C2033312D4465632
D33372032333A35353A353520474D543B206D61782D6167653D323134373438333634373
B20706174683D2F3B20646F6D61696E3D2E62616964752E636F6D0D0A5365742D436F6
F6B69653A205053544D3D313537343636373230313B20657870697265733D5468752C203
3312D4465632D33372032333A35353A3535

+HTTPRCV:512,20474D543B206D61782D6167653D323134373438333634373B207061746
83D2F3B20646F6D61696E3D2E62616964752E636F6D0D0A5365742D436F6F6B69653A2
042414944554944 3D434433434642393346414630393030433431304432323033393245393
4641363A46473D313B206D61782D6167653D333135333630303B20657870697265733D
5475652C2032342D4E6F762D32302030373A33333A323120474D543B20646F6D61696E3
D2E62616964752E636F6D3B20706174683D2F3B2076657273696F6E3D313B20636F6D6
D656E743D62640D0A5374726963742D5472616E73706F72742D53656375726974793A20
6D61782D6167653D300D0A547261636569643A203135373436363732303130343231323
5323631383135323430363735373133303935383331303634 0D0A582D55612D436F6D70617
469626C653A2049453D456467652C6368726F6D653D310D0A0D0A3C68746D6C3E0D0A
3C686561643E0D0A093C7363726970743E0D0A09096C6F636174696F6E2E7265706C616
365286C6F636174696F6E2E687265662E7265706C6163652822687474703A2F2F222C22
687474703A2F2F2229293B0D0A093C2F7363726970743E0D0A3C2F686561643E0D0A3C
626F64793E0D0A093C6E6F7363726970743E3C6D6574612068747470 2D65717569763D2
272656672657368222 0636F6E74656E743D22

+HTTPRCV:58,303B75726C3D687474703A2F2F7777772E62616964752E636F6D2F223E3
C2F6E6F7363726970743E0D0A3C2F626F64793E0D0A3C2F68746D6C3E