AT Document

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Revision History

Revision	Date	Author	Comments
1.00	2015-2-3	Xiang Hua	Draft version
1.01	2015-3-17	Xiang Hua	Delete not used AT commands; Add tcp/ip toolkit.
1.02	2015-4-25	Xiang Hua	Delete not used URC; Add Bluetooth AT commands.
1.03	2015-7-2	Wu Hao	Add +CRSL and +CLVL command.
1.03	2015-7-13	Wu Hao	Delete not used AT commands ATT、ATP
1.04	2015-8-8	Xiang Hua	Add BT command +EHFGAUDIO for BT call.
1.04	2015-8-15	Wu Hao	Add +EALT and +ESAM command.
1.04	2015-9-2	Zhang Qingxin	Add +ZIPDNS command.
1.05	2015-9-14	Zhang Qingxin	Add FTP command +FTPSRV、+TPMODE、+FTPPUTNAME、+FTPPUTPATH、+FTPREST、+FTPGETNAME、+FTPGETPATH、+FTPGET、+FTPPUT、+FTPQUIT、+FTPLOCAL
1.05	2015-9-14	jiangliang	Add HTTP command +HTTPPARA、+HTTPSETUP、+HTTPACTION、+HTTPCLOSE、+HTTPRECV、+HTTPCLOSED
1.06	2016-5-16	Caster.hu	Add chapter 20 and chapter 21
1.07	2016-5-17	Jiangliang	Add ZTTS ZTTSP command

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1 Introduction

1.1 Overview

This document introduces the supported AT command set of L206 project. The target MP branch is L206 related product and after.

We don't suggest using proprietary command in a multiple command. There might be abnormal situation occurs.

1.2 References

- [1] 3GPP TS 27.007 V3.13.0 (2003-03)
- [2] ETSI TS 27.005 V3.1.0 (2000-01)
- [3] ITU-T V.25 ter (07/1997)

2 V.25ter AT Commands

2.1 ATA

2.1.1 Description

Answers and initiates a connection to an incoming call.

2.1.2 Format

Execution command : ATA

2.1.3 Field

Type	Short name	Parameter/comment
String	text	**28800** Connected with data bit rate of 28800 bits/s (HSCSD) **19200** Connected with data bit rate of 19200 bits/s (HSCSD) **14400** Connected with data bit rate of 14400 bits/s (HSCSD) **9600** Connected with data bit rate of 9600 bits/s **4800** Connected with data bit rate of 4800 bits/s **2400** Connected with data bit rate of 2400 bits/s

2.1.4 Response

Execution command : CONNECT

CONNECT <text>

NO CARRIER

ERROR

2.1.5 Note

In UCM project , ATA command will sent to MMI for SYNC

2.2 ATD

2.2.1 Description

Initiates a phone connection, which may be data, or voice (phone number terminated by semicolon). The phone number used to establish the connection will consist of digits and modifiers, or a stored number specification. ATD memory dial can originate call to phone number in entry location <n> (the memory storage of +CPBS setting will be used.). ATDL is used to dial LDN(last dialed number) and it will always dial as voice call.

2.2.2 Format

Execution command : ATD<dial string>

Memory dial command : ATD><n>

2.2.3 Field

Type	Short name	Parameter/comment
String	dial string	**.0 1 2 3 4 5 6 7 8 9 +.** Valid characters for origination **W** The W modifier is ignored but is included for compatibility reasons only **,** The comma modifier is ignored but is included for compatibility reasons only **;** Informs the Infrared Modem that the number is a voice number rather than a data number **T** The T modifier is ignored but is included only for compatibility purposes **P** The P modifier is handled (pulse DTMF dialing functionality)

String	text	**28800** Connected with data bit rate of 28800 bits/s (HSCSD) **19200** Connected with data bit rate of 19200 bits/s (HSCSD) **14400** Connected with data bit rate of 14400 bits/s (HSCSD) **9600** Connected with data bit rate of 9600 bits/s **4800** Connected with data bit rate of 4800 bits/s **2400** Connected with data bit rate of 2400 bits/s

2.2.4 Response

Execution command : CONNECT

CONNECT <text>

NO CARRIER

ERROR

OK

2.2.5 Note

The ATD abortability described in V.25 5.6.1 is implemented, except for the ATD memory dial. Aborting of the command is accomplished by the transmission from the DTE to the DCE of any character before the response. In UCM project , ATD command will sent to MMI for SYNC

2.3 ATE

2.3.1 Description

The setting of this parameter determines whether or not the DCE echoes characters received from the

DTE during command state and online command state.

2.3.2 Format

Execution command : ATE[<value>]

2.3.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** DCE does not echo characters during command state and online command state. **1** DCE echoes characters during command state and online command state.

2.3.4 Response

Execution command : OK

2.4 ATH

2.4.1 Description

Terminates a connection.

2.4.2 Format

Execution command : ATH

2.4.3 Response

Execution command : NO CARRIER
OK

2.4.4 Note

In non-UCM projects (excluding Neptune Gemini with BT supported) projects, ATH can only hang up the call from the same source. In UCM project , ATH command will sent to MMI for SYNC

2.5 ATI

2.5.1 Description

Request Identification Information.

2.5.2 Format

Execution command : ATI[<value>]

2.5.3 Field

Type	Short name	Parameter/comment
Integer	value	used to select from among multiple types of identifying information
String	text	product information

2.5.4 Response

Execution command : <text>

2.6 ATL

2.6.1 Description

Set volume of the monitor speaker.

2.6.2 Format

Execution command : ATL[<value>]

2.6.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** Low speaker volume **1** Low speaker volume **2** Medium speaker volume **3** High speaker volume

2.6.4 Response

Execution command : OK

2.6.5 Note

1. Do not use this command several times in the multiple command in the modem load project because it is not reasonable and might cause unexpected result due to our SW architecture design. Ex. ATLLLLLLLLLLLLLLLLLL

2.7 ATO

2.7.1 Description

Switch from on-line command mode to on-line data mode during an active call. Returns ERROR when not in on-line command mode.

2.7.2 Format

Execution command : ATO

2.7.3 Field

Type	Short name	Parameter/comment
String	text	**28800** Connected with data bit rate of 28800 bits/s (HSCSD) **19200** Connected with data bit rate of 19200 bits/s (HSCSD) **14400** Connected with data bit rate of 14400 bits/s (HSCSD) **9600** Connected with data bit rate of 9600 bits/s **4800** Connected with data bit rate of 4800 bits/s **2400** Connected with data bit rate of 2400 bits/s

2.7.4 Response

Execution command : CONNECT

CONNECT <text>

NO CARRIER

ERROR

2.8 ATQ

2.8.1 Description

Set result code suppression mode.

2.8.2 Format

Execution command : ATQ[<value>]

2.8.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** DCE transmits result codes. **1** Result codes are suppressed and not transmitted.

2.8.4 Response

Execution command :

OK If value is **0**.

(none) If value is **1** (because result codes are suppressed).

ERROR For unsupported values (if previous value was **Q0**).

(none) For unsupported values (if previous value was **Q1**).

2.8.5 Note

2.8.5.1 Change History

N/A

2.8.5.2 Usage Note

- If use input ATQ, it is equal to ATQ1 by default

2.9 ATS0

2.9.1 Description

Automatic answer.

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 indication (ring) has occurred the number of times indicated by the value.

2.9.2 Format

Execution command : ATS0=<value>

2.9.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** Automatic answering is disabled..

2.9.4 Response

Execution command : OK

2.9.5 Note

In GEMINI architecture, the setting of ATS0 applies both on SIM1 and SIM2.

2.10 ATS3

2.10.1 Description

Command line termination character

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 (see the

description of the V parameter for usage).

2.10.2 Format

Execution command : ATS3=<value>

2.10.3 Field

Type	Short name	Parameter/comment
Integer	value	**13** Carriage return character (CR, IA5 0/13). **0 to 127** Set command line termination character to this value.

2.10.4 Response

Execution command : OK or ERROR

2.11 ATS4

2.11.1 Description

Response formatting character

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

(see the description of the V parameter for usage).

2.11.2 Format

Execution command : ATS4=<value>

2.11.3 Field

Type	Short name	Parameter/comment
Integer	value	**10** Line feed character (LF, IA5 0/10).. **0 to 127** Set response formatting character to this value.

2.11.4 Response

Execution command : OK or ERROR

2.12 ATS5

2.12.1 Description

Command line editing character.

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.

2.12.2 Format

Execution command : ATS5=<value>

2.12.3 Field

Type	Short name	Parameter/comment
Integer	value	**8** Backspace character (BS, IA5 0/8). **0 to 127** Set command line editing character to this value.

2.12.4 Response

Execution command : OK or ERROR

2.13 ATS6

2.13.1 Description

Pause before blind dialing.

The command is ignored.

2.14 ATS7

2.14.1 Description

Connection completion timeout.

This parameter specifies the amount of time, in seconds, that the DCE shall allow between either

answering a call (automatically or by the A command) or completion of signaling of call addressing

information to network (dialing), and establishment of a connection with the remote DCE. If no

connection is established during this time, the DCE disconnects from the line and returns a result

code indicating the cause of the disconnection.

2.14.2 Format

Execution command : ATS7=<value>

2.14.3 Field

Type	Short name	Parameter/comment
Integer	value	**1 to 255** Number of seconds in which connection must be established or call will be disconnected.

2.14.4 Response

Execution command : OK or ERROR

2.15 ATS8

2.15.1 Description

Comma dial modifier time.

This parameter specifies the amount of time, in seconds, that the DCE shall pause, during signaling

of call addressing information to the network (dialing), when a "," (comma) dial modifier is

encountered in a dial string.

2.15.2 Format

Execution command : ATS8=<value>

2.15.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** DCE does not pause when "," encountered in dial string. **1 to 255** Number of seconds to pause. Recommended default setting **2** DCE pauses two seconds when "," is encountered.

2.15.4 Response

Execution command : OK or ERROR

2.16 ATS10

2.16.1 Description

Automatic disconnect delay.

This parameter specifies the amount of time, in tenths of a second, that the DCE will remain

connected to the line (off-hook) after the DCE has indicated the absence of received line signal. If the

received line signal is once again detected before the time specified in S10 expires, the DCE remains

connected to the line and the call continues.

2.16.2 Format

Execution command : ATS10=<value>

2.16.3 Field

Type	Short name	Parameter/comment

Integer	value	**1 to 254** Number of tenths of a second of delay.

2.16.4 Response

Execution command : OK or ERROR

2.17 ATV

2.17.1 Description

Set DCE response format.

2.17.2 Format

Execution command : ATV[<value>]

2.17.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** DCE transmits limited headers and trailers and numeric text. **1** DCE transmits full headers and trailers and verbose response text.

2.17.4 Response

Execution command : OK

2.18 ATX

2.18.1 Description

The setting of this parameter determines whether or not the DCE transmits particular result codes to

the DTE. It also controls whether or not the DCE verifies the presence of dial tone when it first goes

off-hook to begin dialing, and whether or not engaged tone (busy signal) detection is enabled.

However, this setting has no effect on the operation of the W dial modifier, which always checks for

dial tone regardless of this setting, nor on the busy signal detection capability of the W and @ dial

modifiers. See Table.

2.18.2 Format

Execution command : ATX[<value>]

2.18.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** CONNECT result code is given upon entering online data state. Dial tone and busy detection are disabled. **1** CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are disabled. **2** CONNECT <text> result code is given upon entering online data state. Dial tone detection is enabled, and busy detection is disabled. **3** CONNECT <text> result code is given upon entering online data state. Dial tone detection is disabled, and busy detection is enabled. **4** CONNECT <text> result code is given upon entering online data state. Dial tone and busy detection are both enabled.

2.18.4 Response

Execution command : OK or ERROR

2.19 ATZ

2.19.1 Description

Reset to default configuration

2.19.2 Format

Execution command : ATZ[<value>]

2.19.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** Set parameters to factory defaults.

2.19.4 Response

Execution command : OK or ERROR

2.20 AT&F

2.20.1 Description

Set to factory-defined configuration

2.20.2 Format

Set command : AT&F[<value>]

2.20.3 Field

Type	Short name	Parameter/comment
Integer	value	**0** Set parameters to factory defaults.

2.20.4 Response

Set command: OK | ERROR | +CME ERROR: <err>

2.21 AT+GMI

2.21.1 Description

Same as AT+CGMI

2.22 AT+GMM

2.22.1 Description

Same as AT+CGMM

2.23 AT+GMR

2.23.1 Description

Same as AT+CGMR

2.24 AT+IPR

2.24.1 Description

Specifies the data rate, in addition to 1200 bits/s or 9600 bits/s, at which the DCE will accept commands. May be used to select operation at rates at which the DCE is not capable of automatically detecting the data rate being used by the DTE.

2.24.2 Format

Execution command : AT+IPR=[<rate>]
Read command : AT+IPR? Displays the current <rate> setting.
Test command : AT+IPR=? Shows if the command is supported.

2.24.3 Field

Type	Short name	Parameter/comment

Integer	rate	The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 0, 300, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, and 115200. If unspecified, or set to zero, automatic detection is selected, and the character format is forced to auto-detect (AT+ICF=0)

2.24.4 Response

2.25 AT+GCAP

2.25.1 Description

Request complete capabilities list.

2.25.2 Format

Execution command : AT+GCAP

Test command : AT+GCAP=? Shows if the command is supported.

2.25.3 Response

Execution command : +GCAP: +FCLASS, +CGSM
OK

Test command : OK

3 07.07 AT Commands – General commands

3.1 AT+CGMI – Request manufacturer identification (Sec 5.1)

3.1.1 Description

The command causes the phone to return one or more lines of information text <manufacturer> which is intended to permit the user of the ITAE/ETAE to identify the manufacturer of the phone to which it is connected to.

3.1.2 Format

Command	Possible response(s)
+CGMI	<manufacturer> *+CME ERROR:* *<err>*
+CGMI=?	

3.2 AT+CGMM – Request model identification (Sec 5.2)

3.2.1 Description

The command causes the phone to return one or more lines of information text <model> which is intended to permit the user of the ITAE/ETAE to identify the specific model of phone to which it is connected to.

3.2.2 Format

Command	Possible response(s)
+CGMM	<model> *+CME ERROR:* *<err>*
+CGMM=?	

3.3 AT+CGMR – Request revision identification (Sec 5.3)

3.3.1 Description

The command causes the phone to return a string containing information regarding SW

version.

3.3.2 Format

Command	Possible response(s)
+CGMR	<revision> *+CME ERROR: <err>*
+CGMR=?	

3.4 AT+CGSN – Request product serial number identification (Sec 5.4)

3.4.1 Description

Returns the IMEI number of the phone.

3.4.2 Format

Command	Possible response(s)
+CGSN	<serial number> <CR><LF> <IMEI> *+CME ERROR: <err>*
+CGSN=?	

3.5 AT+CSCS – Select TE character set (Sec 5.5)

3.5.1 Description

Set 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.

3.5.2 Format

Command	Possible response(s)
+CSCS=[<chset>]	
+CSCS?	+CSCS: <chset>

+CSCS=?	+CSCS: (list of supported <chset>s)

3.5.3 Field

"GSM" GSM 7 bit default alphabet (3GPP TS 23.038); this setting causes easily software flow control (XON/XOFF) problems

"HEX" character strings consist only of hexadecimal numbers from 00 to FF; e.g. "032FE6" equals three 8-bit characters with decimal values 3, 47 and 230; no conversions to the original MT character set shall be done.

"IRA" international reference alphabet (ITU-T T.50 [13])

"PCCP437" PC character set Code Page 437

"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

"8859-*1*" ISO 8859 Latin character set

"UCS2_08X1"

The supported parameters are subject to change according to different compile directives (options).

3.6 AT+CIMI – Request international mobile subscriber identity (Sec 5.6)

3.6.1 Description

Execution command causes the TA to return <IMSI>, which is intended to permit the TE to identify the individual SIM which is attached to ME. Refer [1] 9.2 for possible <err> values.

3.6.2 Format

Command	Possible response(s)
+CIMI	<IMSI> *+CME ERROR: <err>*
+CIMI=?	

4 07.07 AT Commands – Call Control commands

4.1 AT+CSTA – Select type of address (Sec 6.1)

4.1.1 Description

Selects the type of number for further dialing commands (D) according to GSM/UMTS specifications.

4.1.2 Format

Command	Possible response(s)
+CSTA=[<type>]	
+CSTA?	+CSTA: <type>
+CSTA=?	+CSTA: (list of supported <type>s)

4.1.3 Field

<type>: type of address octet in integer format (refer 3GPP TS 24.008 [8] subclause 10.5.4.7); default 145 when dialing string includes international access code character "+", otherwise 129

4.1.4 Note

If '+' appears at the beginning of <dial string>, the TON to network is set to 145, otherwise we use the setting of +CSTA.

4.2 AT+CHUP – Hang up call (Sec 6.5)

4.2.1 Description

Request to hang up the current GSM call.

4.2.2 Format

Command	Possible response(s)
+CHUP	
+CHUP=?	

4.2.3 Note

In non-UCM projects (excluding Neptune Gemini with BT supported) projects, AT+CHUP can only hang up the call from the same source. In UCM project , this command will sent to MMI for SYNC

4.3 AT+CR – Service reporting control (Sec 6.9)

4.3.1 Description

Service reporting control.

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

4.3.2 Format

Command	Possible response(s)
+CR=[<mode>]	
+CR?	+CR: <mode>
+CR=?	+CR: (list of supported <mode>s)

4.3.3 Field

<mode>:

0 disables reporting

1 enables reporting

<serv>:

ASYNC asynchronous transparent

SYNC synchronous transparent

REL ASYNC asynchronous non-transparent

REL SYNC synchronous non-transparent

4.4 AT+CEER – Extended error report (Sec 6.10)

4.4.1 Description

Execution command causes the TA to return one or more lines of information text <report>, which 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;

4.4.2 Format

Command	Possible response(s)
+CEER	+CEER: <cause>, <report>
+CEER=?	

4.4.3 Field

<cause>: cause value listed in GSM 04.08 annex H.

<report>: string type describes cause value.

Note: For error cause other than those listed in GSM 04.08 annex H.

+CEER: 128 ,"ERROR_CAUSE_UNKNOWN" will be given.

If there is no error happened , +CEER: 0 ,"NONE" will be given.

4.5 AT+CRC – Cellular result code (Sec 6.11)

4.5.1 Description

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

4.5.2 Format

Command	Possible response(s)
+CRC=[<mode>]	
+CRC?	+CRC: <mode>
+CRC=?	+CRC: (list of supported <mode>s)

4.5.3 Field

<mode>:

0 disables extended format

1 enables extended format

<type>:

ASYNC	asynchronous transparent
SYNC	synchronous transparent
REL ASYNC	asynchronous non-transparent
REL SYNC	synchronous non-transparent
VOICE	normal voice (TS 11) VOICE/XXX voice followed by data (BS 81)

(XXX is ASYNC, SYNC, REL ASYNC or REL SYNC)

ALT VOICE/XXX	alternating voice/data, voice first (BS 61)
ALT XXX/VOICE	alternating voice/data, data first (BS 61)
GPRS	GPRS network request for PDP context activation

4.6 AT+CSNS – Single Numbering Scheme (Sec 6.19)

4.6.1 Description

Set command selects the bearer or teleservice to be used when mobile terminated single numbering scheme call is established. Parameter values set with +CBST command shall be used when <mode> equals to a data service.

4.6.2 Format

Command	Possible response(s)
+CSNS=[<mode>]	
+CSNS?	+CSNS: <mode>
+CSNS=?	+CSNS: (list of supported <mode>s)

4.6.3 Field

<mode>:

0	voice
3	alternating voice/data, voice first (BS 61)
4	data
6	alternating voice/data, data first (BS 61)
7	voice followed by data (BS 81)

4.7 AT+CVHU – Voice Hangup Control (Sec 6.20)

4.7.1 Description

Set command selects whether ATH or "drop DTR" shall cause a voice connection to be disconnected or not. By voice connection is also meant alternating mode calls that are currently in voice mode.

4.7.2 Format

Command	Possible response(s)
+CVHU=[<mode>]	
+CVHU?	+CVHU:<mode>
+CVHU=?	+CVHU:(list of supported <mode>s)

4.7.3 Field

<mode>:

0 "Drop DTR" ignored but OK response given. ATH disconnects.

1 "Drop DTR" and ATH ignored but OK response given.

4.8 AT+ECPI – call progress information (Proprietary Command)

4.8.1 Description

To enable/disable call progress information

4.8.2 Format

Command	Possible Response(s)
+ECPI=<mode>	
+ECPI?	+ECPI: <mode>
+ECPI=?	+ECPI: (0-4294967295)

4.8.3 Field

<mode>: is a 32 bit unsigned integer value . each bit represent the report mode of each event.

i.e. You can enable/disable specific +ECPI event

[NOTE]

+ECPI:<call_id>, <msg_type>, <is_ibt>, <is_tch>, <dir>, <call_mode>, <number>, <type>, "<pau>"[,<disc_cause>]

Type	Short name	Parameter/comment	
integer	Call_id	Call id for this call	
integer	msg_type	0	CLCC_MT_CALL
		1	CSMCC_DISCONNECT_MSG
		2	CSMCC_ALERT_MSG
		3	CSMCC_CALL_PROCESS_MSG
		4	CSMCC_SYNC_MSG
		5	CSMCC_PROGRESS_MSG
		6	CSMCC_CALL_CONNECTED_MSG
		129	CSMCC_ALL_CALLS_DISC_MSG
		130	CSMCC_CALL_ID_ASSIGN_MSG

		131	CSMCC_STATE_CHANGE_HELD
		132	CSMCC_STATE_CHANGE_ACTIVE
		133	CSMCC_STATE_CHANGE_DISCONNECTED
		134	CSMCC_STATE_CHANGE_MO_DISCONNECTING
integer	is_ibt	0	No in band tone
		1	In band tone assigned
integer	is_tch	0	No TCH assigned
		1	TCH assigned
integer	dir	0	CLCC_MO_CALL
		1	CLCC_MT_CALL

integer	call_mode	0	CLCC_VOICE_CALL
		1	CLCC_DATA_CALL
		3	CLCC_VFD_VOICE
		4	CLCC_AVD_VOICE
		5	CLCC_AVF_VOICE
		6	CLCC_VFD_DATA
		7	CLCC_AVD_DATA
string	Number	Calling/called number	
integer	Type	145	International call
		129	National call
String	Pau	P-Asserted-URI	
Integer	disc_cause	see Design Note	

Type	Short name	Parameter/comment	
Integer	mode	CSMCC_SETUP_MSG(MT call)	Any value that bit 1 is 1
		CSMCC_DISCONNECT_MSG	Any value that bit 2 is 1
		CSMCC_ALERT_MSG	Any value that bit 3 is 1
		CSMCC_CALL_PROCESS_MSG	Any value that bit 4 is 1
		CSMCC_SYNC_MSG	Any value that bit 5 is 1
		CSMCC_PROGRESS_MSG	Any value that bit 6 is 1
		CSMCC_CALL_CONNECTED_MSG	Any value that bit 7 is 1
		CSMCC_ALL_CALLS_DISC_MSG	Any value that bit 8 is 1
		CSMCC_CALL_ID_ASSIGN_MSG	Any value that bit 9 is 1
		CSMCC_STATE_CHANGE_HELD	Any value that bit 10 is 1
		CSMCC_STATE_CHANGE_ACTIVE	Any value that bit 11 is 1
		CSMCC_STATE_CHANGE_DISCONNECTED	Any value that bit 12 is 1

		CSMCC_STATE_CHANGE_MO_DISCONNECTING	Any value that bit 13 is 1

```
ex:  AT+ECPI = 257  .
257  = 0x101  =  0001 0000 0001
so only event 1 (CSMCC_SETUP_MSG) and event
9(CSMCC_CALL_ID_ASSIGN_MSG) report is enabled.
```

4.8.4 Design Notes

4.8.4.1 Call Disconnection Cause

1. <disc_cause> is only provided for CSMCC_DISCONNECT_MSG event,which is sent when modem receive RELEASE or RELEASE COMPLETE CC message from the Network.
2. <disc_cause> is defined in SPEC 24.008 Annex H. ex: CM_USER_BUSY (17) for Call Control cause.
   - 0 Please refer to l3_inc_enums.h (under mcu\ps\interfaces\enum) before HAL revise.(before 11B.W11.44MP)
   - 1 Please refer to ps_public_enum.h (under mcu\interfaces\modem) after HAL revise (after 11B.W11.44MP)
3. Call application shall monitor CSMCC_CALL_DISCONNECTED event for all call disconnection event. That's because not every call disconnection event has <disc_cause>,ex: the MO call setup fail in local ,maybe MM connection setup fail. In such case, there will be no Call Control cause from Network.

For call application that want to get <disc_cause>, it shall also monitor CSMCC_DISCONNECT_MSG event to get <disc_cause>. And it's guaranteed that CSMCC_DISCONNECT_MSG (for call_id =x) must come before CSMCC_CALL_DISCONNECTED(for call_id = x). Thus, call application can keep the <cause> for call_id = x when receiving CSMCC_DISCONNECT_MSG (for call_id =x) first and use it as the <disc_cause> when receiving CSMCC_CALL_DISCONNECTED(for call_id = x)

4.8.4.2 Pau

It is P-Asserted-Identity and format is *PAssertedID-value * (COMMA PAssertedID-value)*

PAssertedID-value = name-addr / addr-spec

name-addr = [display-name] LAQUOT addr-spec RAOUOT

addr-spec = SIP-URI / SIPS-URI/absoluteURI

please refer to RFC3325 chapter 9.1 and RFC3261 Chapter 25.1 for detail information

Example:

name-addr

“dan” <sip:dan.lee@mediatek.com>

Or

addr-spec

sip:dan.lee@mediatek.com

tel:123456

4.9 AT+EALS - line switch (Proprietary Command)

4.9.1 Design note

Used to set or get line id in MS, originally, there is no such command.

4.9.2 Format

Command	Possible Response(s)
+EALS=<line_id>	OK ERROR
+EALS?	+EALS: <line id>
+EALS=?	+EALS: (0,1)

4.9.3 Field

Type	Short name	Parameter/comment	
Integer	Line_id	0	Line 1
		1	Line 2

4.10 AT+EVTS - send DTMF (Proprietary Command)

4.10.1 Design note

This command is intended to be send START_DTMF and STOP_DTMF message to NW separately. AP can send START_DTMF when keypad is pressed and send STOP_DTMF when keypad is released. The result code will be given immediately. If __VTS_LATE_RESPONSE__ is

turned on, “OK” is printed when SEND DTMF is acknowledged by network

4.10.2 Format

Command	Possible Response(s)
+EVTS=<mode>[,<DTMF_digit>]	OK ERROR
+EVTS =?	+EVTS: 0,1,2,3,4,5,6,7,8,9,#,*

4.10.3 Field

Type	Short name	Parameter/comment
Integer	mode	<mode>=0 for START DTMF <mode>=1 for STOP DTMF
String	DTMF digit	This field is only necessary when <mode>=0 It’s a single digit ex: “3” ,”#”

4.10.4 Example

Send DTMF “123”

AT+EVTS=0,”1”

OK

AT+EVTS=1

OK

AT+EVTS=0,”2”

OK

AT+EVTS=1

OK

AT+EVTS=0,”3”

OK

AT+EVTS=1

OK

4.11 AT+CECALL – initiate an eCall

4.11.1 Description

The command is used to trigger an eCall to the network. Based on the configuration selected, it can be used to either trigger a test call, a reconfiguration call, a manually initiated eCall or an automatically initiated eCall.

4.11.2 Format

Command	Possible response(s)
+CECALL=<type_of_eCall>	
+CECALL?	+CECALL: [<type_of_eCall>]
+CECALL=?	+CECALL: (list of supported <type_of_eCall>s)

4.11.3 Field

Type	Short name	Long name	Parameter/comment	
Integer		Type_of_eCall	Test call	0
			Reconfiguration call	1
			Manually initiated eCall	2
			Automatically initiated eCall	3

4.11.4 Note

The feature “ECALL_SUPPORT” should be enabled.

Detail information about eCall, please refer to TS 26.267.

4.11.5 Example

AT%MSD=1 ←enable DSP monitor

OK

AT%EMSDSET=”0D0D0D0D…” ←MSD configuration

OK

AT+CECALL ←initiate an eCall

OK

+EMSDPULL ←PSAP request MSD

+EMSDHACK ←MSD transmission is completed

4.12 AT+FCLASS

4.12.1 Description

This command is used to puts the TA into a particular mode of operation(data, fax, voice etc.).

4.12.2 Format

Command	Possible response(s)
+FCLASS=<n>	
+FCLASS?	<n>
+FCLASS=?	<list of supported <n>s)

4.12.3 Field

<n>:

0 data

1 fax class 1 (TIA-578-A)

2 fax (manufacturer specific)

2.0 fax class 2(ITU-T Recommendation T.32[12] and TIA-592)

4.12.4 Note

4.13 AT+VGR – Receive gain selection

4.13.1 Description

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

4.13.2 Format

Command	Possible response(s)
+VGR=<n>	OK ERROR
+VGR?	<n>

4.13.3 Field

<n>:

Range 0…255. Values larger than 128 indicate a larger gain than nominal. Values less than 128 indicate a smaller gain than nominal. A value of zero implies the use of automatic gain control by the TA.

4.13.4 Note

N/A

4.14 AT+VGT – Transmit gain selection

4.14.1 Description

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

4.14.2 Format

Command	Possible response(s)
+VGT=<n>	OK ERROR
+VGT?	<n>

4.14.3 Field

<n>:

Range 0…255. Values larger than 128 indicate a larger gain than nominal. Values less than 128 indicate a smaller gain than nominal. A value of zero implies the use of automatic gain control by the TA.

4.14.4 Note

N/A

4.15 AT%EMSDTNUM – set Ecall test number

4.15.1 Description

This command is used to set Ecall test number

4.15.2 Format

Command	Possible response(s)
AT%EMSDTNUM=<tnum>	OK ERROR

4.15.3 Field

<tnum>:

Ecall test number.

4.15.4 Note

Need to enable __ECALL_SUPPORT__

4.16 AT%EMSDRNUM – set Ecall Reconfiguration number

4.16.1 Description

This command is used to set Ecall reconfiguration number

4.16.2 Format

Command	Possible response(s)
AT%EMSDRNUM=<rnum>	OK ERROR

4.16.3 Field

<rnum>:

Ecall reconfiguration number.

4.16.4 Note

Need to enable __ECALL_SUPPORT__

5 07.07 AT Commands –Network Service related commands

5.1 AT+CNUM – Subscriber Number (Sec 7.1)

5.1.1 Description

returns the MSISDNs related to the subscriber (this information can be stored in the SIM/UICC or in the MT).

5.1.2 Format

Command	Possible response(s)
+CNUM	+CNUM: [<alpha1>],<number1>,<type1> [<CR><LF>+CNUM: [<alpha2>],<number2>,<type2>] [...]] *+CME ERROR: <err>*
+CNUM=?	

5.2 AT+CREG – Network Registration (Sec 7.2)

5.2.1 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>[,<AcT>]] when <n>=2 and there is a change of the network cell. The value <n>=3 further extends the unsolicited result code with [,<cause_type>,<reject_cause>], when available, when the value <stat> changes.

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. Location information elements <lac>,<ci> and <Act> are returned only when <n>=2 and MT is registered in the network. The parameters [,<cause_type>,<reject_cause>], if available, are returned when <n=3>.

5.2.2 Format

Command	Possible response(s)
+CREG=[<n>]	
+CREG?	+CREG: <n>,<stat>[,<lac>,<ci>[,<Act>]] *+CME ERROR: <err>*
+CREG=?	+CREG: (list of supported <n>s)

5.2.3 Field

<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>,[<Act>]]

3 enable netowrk registration, location inforamtion and cause value information unsolicited result code
+CREG: <state>[,<lac>,<ci>,[<Act>][,<cause_type>,<reject_cause>]]

<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 for "SMS only", home network (applicable only when <AcT> indicates E-UTRAN)

7 registered for "SMS only", roaming (applicable only when <AcT> indicates E-UTRAN)

8 attached for emergency bearer services only (see NOTE 2) (not applicable)

9 registered for "CSFB not preferred", home network (applicable only when <AcT> indicates E-UTRAN)

10 registered for "CSFB not preferred", roaming (applicable only when <AcT> indicates E-UTRAN)

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

<ci>: string type; four byte cell ID in hexadecimal format

<Act>:

0	GSM
2	UTRAN
3	GSM w/EGPRS
4	UTRAN w/HSDPA
5	UTRAN w/HSUPA
6	UTRAN w/HSDPA and HSUPA
7	E-UTRAN

<cause_type>: integer type; indicates the type of <reject_cause>.

0	Indicates that <reject_cause> contains an MM cause value, see 3GPP TS 24.008 [8] Annex G.
1	Indicates that <reject_cause> contains a manufacturer specific cause.

<reject_cause>: integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.

5.2.4 Note

5.2.4.1 Change History

<Act> was applied after 09A.0920MP.

<n>=3 , <state>=6~10 , <cause_type> and <reject_cause> was applied after MOLY.W13.40.

5.2.4.2 Usage Note

N/A

5.3 AT+COPS – Operator Selection (Sec 7.3)

5.3.1 Description

Set command forces an attempt to select and register the GSM/UMTS network operator. If the selected operator is not available, ERROR is returned.

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

Test command returns operator list present in the network.

5.3.2 Format

Command	Possible response(s)
+COPS=<mode>[,<format>,<oper>[,<Act>]]	*+CME ERROR: <err>*
+COPS?	+COPS: <mode>[,<format>,<oper>,<Act>] *+CME ERROR: <err>*
+COPS=?	+COPS: [list of supported (<stat>,long alphanumeric <oper> ,short alphanumeric <oper>,numeric <oper>,[,<Act> [,<lac>]])s] [,,(list of supported <mode>s),(list of supported <format>s)] *+CME ERROR: <err>*

5.3.3 Field

<mode>:

0 automatic (<oper> field is ignored)

1 manual (<oper> field shall be present)

2 deregister from network (disable form 05.48)

3 set only <format> (for read command +COPS?), do not attempt registration/deregistration

<format>:

0 long format alphanumeric <oper>

1 short format alphanumeric <oper>

2 numeric <oper>

3 repot PLMN list result with LAC in <lac>

<oper>: string type

<stat>:

0 unknown

1 available

2 current

3 forbidden

<Act>

0 GSM

2 UTRAN

7 LTE

5.3.4 Note

AT+COPS=3,3 is only support when __PLMN_LIST_WITH_LAC__ is defined.

5.3.4.1 Change History

N/A

5.3.4.2 Usage Note

- **We DO NOT support full set of alphanumeric format of <oper>, since the code size will become very large. If the customer needs the alphanumeric format, the table can be customized in mcu\custom\common\customer_operator_names.c.**

+COPS? response is not alphanumeric format when setting with alphanumeric format

example:

+COPS: 0,0," KG Telecom Co."

If you got +COPS: 0,0,"46688"

This is possibly due to there is no alphanumeric format name mapping to the operator id

---

You can define operator name table in the following file under custom folder.

mcu\custom\common\customer_operator_name.c

Please check if there is operator name mapping in the name table.

If not , Please add your operator name and operator id

There is comment information in the file to guide you .
Please read the guide before modification.
After modification .then 'remake custom'

There are two places shall be modified
1. RMMI_PLMN_NAME_ENTRIES
2. rmmi_plmn_table

- <mode>=2 supported in projects with __NW_DETACH_SUPPORT__ option. (available after W1012)

5.4 AT+CLCK – Facility Lock (Sec 7.4)

5.4.1 Description

Execute command is used to lock, unlock or interrogate a ME or a network facility <fac>.

5.4.2 Format

Command	Possible response(s)
+CLCK=<fac>,<mode>[,<passwd>[,<class>]]	*+CME ERROR: <err>* **when <mode>=2 and command successful:** +CLCK: <status>[,<class1>[<CR><LF>+CLCK: <status>,<class2>[...]]
+CLCK=?	+CLCK: (list of supported <fac>s) *+CME ERROR: <err>*

5.4.3 Field

<fac> : “PF”,"SC","AO","OI","OX","AI","IR","AB","AG","AC","PN","PU","PP","PC”

<mode>:
0 unlock
1 lock
2 query status (only “SC”, “AO”, “OI”, “OX”, “AI”, “IR” support query mode)

<status>:

0 not active

1 active

<passwd>: string type

<classx> is a sum of integers each representing a class of information (default 7):

1 voice (telephony)

2 data (refers to all bearer services)

8 short message service

16 data circuit sync

32 data circuit async

64 dedicated packet access

128 dedicated PAD access

5.4.4 Note

5.4.4.1 Change History

N/A

5.4.4.2 Usage Note

- The <fac> "AB", "AG" and "AC" are applicable only for <mode>=0

5.5 AT+CPWD – Change Password (Sec 7.5)

5.5.1 Description

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

5.5.2 Format

Command	Possible response(s)
+CPWD=<fac>,<oldpwd>,<newpwd>	*+CME ERROR: <err>*
+CPWD=?	+CPWD: list of supported (<fac>,<pwdlength>)s *+CME ERROR: <err>*

5.5.3 Field

<fac>:

"P2" SIM PIN2

refer Facility Lock +CLCK for other values

<oldpwd>, <newpwd>: string type;

<pwdlength>: integer type maximum length of the password for the facility

5.6 AT+CLIP – Calling line identification presentation (Sec 7.6)

5.6.1 Description

Requests calling line identification. Determines if the +CLIP unsolicited result code is activated. When the presentation of the CLI at the TE is enabled (and calling subscriber allows), `+CLIP: <number>,<type>[,<subaddr>,<satype>]` response is returned after every `RING`.

5.6.2 Format

Command	Possible response(s)
`+CLIP=[<n>]`	
`+CLIP?`	`+CLIP: <n>,<m>`
`+CLIP=?`	`+CLIP:` (list of supported `<n>`s)

5.6.3 Field

<n> (parameter sets/shows the result code presentation status to the TE):

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 format specified by <type>

<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)

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

<satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8)

5.7 AT+CLIR – Calling line identification restriction (Sec 7.7)

5.7.1 Description

Requests calling line identification restriction.

5.7.2 Format

Command	Possible response(s)
+CLIR=[<n>]	
+CLIR?	+CLIR: <n>,<m>
+CLIR=?	+CLIR: (list of supported <n>s)

5.7.3 Field

<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

5.8 AT+COLP – Connected line identification presentation (Sec 7.8)

5.8.1 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.

When enabled (and called subscriber allows), +COLP: <number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is returned from TA to TE before any +CR or V.250 [14] responses.

5.8.2 Format

Command	Possible response(s)
+COLP=[<n>]	
+COLP?	+COLP: <n>,<m>
+COLP=?	+COLP: (list of supported <n>s)

5.8.3 Field

<n> (parameter sets/shows the result code presentation status to the TE):

0 disable

1 enable

<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.)

<number>, <type>, <subaddr>, <satype>, <alpha>: refer +CLIP

5.9 AT+COLR – Connected line identification restriction status (Sec 7.31)

5.9.1 Design note

Used to query COLR status in network.

5.9.2 Format

Command	Possible Response(s)
+COLR?	+COLR:<status>
+COLR =?	OK

5.9.3 Field

Type	Short name	Parameter/comment	
Integer	Line_id	0	Not provision
		1	provision
		2	Unknown

5.10 AT+CNAP – Calling name identification presentation (Sec 7.30)

5.10.1 Description

5.10.2 This command refers to the supplementary service CNAP (Calling Name Presentation) according to 3GPP TS 22.096 that enables a called subscriber to get a calling name indication (CNI) of the calling party when receiving a mobile terminated call. Set command enables or disables the presentation of the CNI at the TE. It has no effect on the execution of the supplementary service CNAP in the network. When <n>=1, the presentation of the calling name indication at the TE is enabled and CNI is provided the unsolicited result code. Read command gives the status of<n>, and also triggers an interrogation of the provision status of the CNAP service according 3GPP TS 22.096 (given in <m>). Test command returns values supported as a compound value.

5.10.3 Format

Command	Possible Response(s)
+CNAP?	+CNAP:<n>,<m>
+CNAP=<n>?	OK

5.10.4 Field

<n>: integer type (parameter sets/shows the result code presentation status to the TE)
0 disable
1 enable

<m>: integer type (parameter shows the subscriber CNAP service status in the network)

0 CNAP not provisioned
1 CNAP provisioned
2 unknown (e.g. no network, etc.)

<name>: string type, up to 80 characters long string containing the calling name

<CNI_validity>: integer type
0 CNI valid
1 CNI has been withheld by the originator.
2 CNI is not available due to interworking problems or limitations of originating network.

When CNI is not available (<CNI_validity>=2), <name> shall be an empty string ("").
When CNI has been withheld by the originator, (<CNI_validity>=1) and the CNAP is provisioned with the "override category" option (refer 3GPP TS 22.096 and 3GPP TS 23.096), <name> is provided. Otherwise, TA shall return the same setting for <name> as if the CNI was not available.

5.11 AT+CCUG -- Closed user group (Sec 7.10)

5.11.1 Description

This command allows control of the Closed User Group supplementary service.
Set command enables the served subscriber to select a CUG index, to suppress the Outgoing Access (OA), and to suppress the preferential CUG.

5.11.2 Format

Command	Possible response(s)
+CCUG=[<n>[,<index>[,<info>]]]	
+CCUG?	+CCUG: <n>,<index>,<info>
+CCUG=?	

5.11.3 Field

<n>:
0 disable CUG temporary mode
1 enable CUG temporary mode

<index>:

0...9 CUG index

10 no index (preferred CUG taken from subscriber data)

<info>:

0 no information

1 suppress OA

2 suppress preferential CUG

3 suppress OA and preferential CUG

5.12 AT+CCFC – Call forwarding number and conditions (Sec 7.11)

5.12.1 Description

Sets the call forwarding number and conditions. Registration, erasure, activation, deactivation and status query operations are supported.

5.12.2 Format

Command	Possible response(s)
+CCFC=<reason>,<mode>[,<number>[,<type>[,<class>[,<subaddr>[,<satype>[,<time>]]]]]]	*+CME ERROR: <err>* **when <mode>=2 and command successful:** +CCFC: <status>,<class1>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][<CR><LF>+CCFC: <status>,<class2>[,<number>,<type>[,<subaddr>,<satype>[,<time>]]][...]]
+CCFC=?	+CCFC: (list of supported <reason>s)

5.12.3 Field

<reason>:

0 unconditional

1 mobile busy

2 no reply

3 not reachable

4 all call forwarding (refer 3GPP TS 22.030 [19])

5 all conditional call forwarding (refer 3GPP TS 22.030 [19])

<mode>:

0 disable

1 enable

2 query status

3 registration

4 erasure

<number>: string type phone number of forwarding address in format specified by <type>

<type>: type of address

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

<satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8); default 128

<classx> is a sum of integers each representing a class of information (default 7):

1 voice (telephony)

2 data (refers to all bearer services)

8 short message service

16 data circuit sync

32 data circuit async

64 dedicated packet access

128 dedicated PAD access

<time>:

1...30 when "no reply" is enabled or queried, this gives the time in seconds to wait before call is forwarded

<status>:

0 not active

1 active

5.13 AT+CCWA – Call waiting (Sec 7.12)

5.13.1 Description

This command allows control of the Call Waiting supplementary service. Activation, deactivation and status query are supported. Parameter <n> is used to disable/enable the presentation of an unsolicited result code +CCWA:
<number>,<type>,<class> to the TE when call waiting service is enabled.

5.13.2 Format

Command	Possible response(s)
+CCWA=[<n>[,<mode>[,<class>]]]	*+CME ERROR: <err>* **when <mode>=2 and command successful** +CCWA: <status>,<class1> [<CR><LF>+CCWA: <status>,<class2> [...]]
+CCWA?	+CCWA: <n>
+CCWA=?	+CCWA: (list of supported <n>s)

5.13.3 Field

<n> (sets/shows the result code presentation status to the TE):

0 disable

1 enable

<mode> (when <mode> parameter is not given, network is not interrogated):

0 disable

1 enable

2 query status

<classx> is a sum of integers each representing a class of information (default 7):

1 voice (telephony)

2 data (refers to all bearer services)

8 short message service

16 data circuit sync

32 data circuit async

64 dedicated packet access

128 dedicated PAD access

<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 TS 24.008 [8] subclause 10.5.4.7)

5.14 AT+CHLD – Call related supplementary services (Sec 7.13)

5.14.1 Description

Requests call-related supplementary services. Refers to a service that allows a call to be temporarily disconnected from the ME but the connection to be retained by the network, and to a service that allows multiparty conversation. Calls can be put on hold, recovered, released and added to a conversation.

5.14.2 Format

Command	Possible response(s)
+CHLD=[<n>]	*+CME ERROR: <err>*
+CHLD=?	[+CHLD: (list of supported <n>s)]

5.14.3 Field

<n> (sets/shows the result code presentation status to the TE):

0 Releases all held calls, or sets User-Determined User Busy for a waiting call

1 Releases all active calls and accepts the other (waiting or held) call

1x Releases the specific active call X

2 Places all active calls on hold and accepts the other (held or waiting) call'

2x Places all active calls, except call X, on hold

3 Adds a held call to the conversation

4 Connects two calls and disconnects the subscriber from both calls

5 Activate the Completion of Calls to Busy Subscriber Request. (CCBS)

5.15 AT+CUSD – Unstructured supplementary service data (Sec 7.15)

5.15.1 Description

Allows control of the Unstructured Supplementary Service Data (USSD). Both network- and mobile-initiated operations are supported. This command is used to enable the unsolicited result code +CUSD.

For an USSD response from the network, or a network initiated operation, the format is: +CUSD: <m>[,<str>,<dcs>].

5.15.2 Format

Command	Possible response(s)
+CUSD=[<n>[,<str>[,<dcs>]]]	*+CME ERROR: <err>*
+CUSD?	+CUSD: <n>
+CUSD=?	+CUSD: (list of supported <n>s)

5.15.3 Field

<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)

<str>: string type USSD string

<dcs>: 3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default

15)

<m>:

0 no further user action required

1 further user action required

2 USSD terminated by network

3 other local client has responded

4 operation not supported

5 network time out

Note: we only support m = [0,1,2,4] now, and we use m=4 to represent the USSD ERROR case.

5.16 AT+CSSN – Supplementary service notifications (Sec 7.17)

5.16.1 Description

This command refers to supplementary service related network initiated notifications. The set command enables/disables the presentation of notification result codes from TA to TE.

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.250 [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.

5.16.2 Format

Command	Possible response(s)
+CSSN=[<n>[,<m>]]	
+CSSN?	+CSSN: <n>,<m>
+CSSN=?	+CSSN: (list of supported <n>s),(list of supported <m>s)

5.16.3 Field

<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
4 this is a CUG call (also <index> present)
5 outgoing calls are barred
6 incoming calls are barred
7 CLIR suppression rejected
8 call has been deflected
<index>: refer "Closed user group +CCUG"
<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 forward check SS message received (can be received whenever)

7 call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)

8 call has been connected with the other remote party in explicit call transfer operation (also number and subaddress parameters may be present) (during a voice call or MT call setup)

9 this is a deflected call (MT call setup)

10 sdditional incoming call forwarded

<number>: string type phone number of format specified by <type>

<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)

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

<satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8)

5.17 AT+CLCC – List current calls (Sec 7.18)

5.17.1 Description

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

5.17.2 Format

Command	Possible response(s)
+CLCC	[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>] [<CR><LF>+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>] [...]]] *+CME ERROR: <err>*
+CLCC=?	

5.17.3 Field

<idx>: integer type; call identification number as described in 3GPP TS 22.030 [19] subclause 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)

<mode> (bearer/teleservice):

0 voice

1 data

3 voice followed by data, voice mode

4 alternating voice/data, voice mode

6 voice followed by data, data mode

7 alternating voice/data, data mode

9 unknown

<mpty>:

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

1 call is one of multiparty (conference) call parties

<number>: string type phone number in format specified by <type>

<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)

5.18 AT+CPOL – Preferred operator list (Sec 7.19)

5.18.1 Description

This command is used to edit the SIM preferred list of networks. Execute command writes an entry in the SIM list of preferred operators (EFPLMNsel). 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.

5.18.2 Format

Command	Possible response(s)
+CPOL=[<index>][,<format>[,<oper>[<GSM_AcT>,<GSM_compact_AcT>,<UTRAN_AcT>, <EUTRAN_AcT>]]]	*+CME ERROR: <err>*
+CPOL?	+CPOL: <index1>,<format>,<oper1>[,<GSM_AcT1>,<GSM_Compact_AcT1>,<UTRAN_AcT1> ,<E-UTRAN_AcT1>] [<CR><LF>+CPOL: <index2>,<format>,<oper2>[,<GSM_AcT2>,<GSM_Compact_AcT2>,<UTRAN_AcT2> ,<EUTRAN_AcT2>] [...]] *+CME ERROR: <err>*
+CPOL=?	+CPOL: (list of supported <index>s), (list of supported <format>s) *+CME ERROR: <err>*

5.18.3 Field

<indexn>: integer type; the order number of operator in the SIM/USIM 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)

<GSM_AcT*n*>: GSM access technology:

0 access technology not selected

1 access technology selected

<GSM_Compact_AcT*n*>: GSM access technology:

0 access technology not selected

1 access technology selected

<UTRAN_AcT*n*>: GSM access technology:

0 access technology not selected

1 access technology selected

<E-UTRAN_AcTn>: integer type; E-UTRAN access technology

0 access technology not selected

1 access technology selected

5.19 5.19 AT+CPLS – Selection of preferred PLMN list (Sec 7.20)

5.19.1 Description

This command is used to select one PLMN selector with Access Technology list in the SIM card or active application in the UICC (GSM or USIM), that is used by +CPOL command. Execute command selects a list in the SIM/USIM. Read command returns the selected PLMN selector list from the SIM/USIM. Test command returns the whole index range supported lists by the SIM/USIM

5.19.2 Format

Command	Possible Response(s)
+CPLS=<list>	+CME ERROR: <err>
+CPLS?	+CPLS: <list>
+CPLS=?	+CPLS: <list of supported<lis>s> +CME ERROR: <err>

5.19.3 Field

<list>: integer type

0 User controlled PLMN selector with Access Technology $EF_{PLMNwAcT}$, if not found in the SIM/UICC then PLMN preferred list $EF_{PLMNsel}$ (this file is only available in SIM card or GSM application selected in UICC)

1 Operator controlled PLMN selector with Access Technology $EF_{OPLMNwAcT}$

2 HPLMN selector with Access Technology $EF_{HPLMNwAcT}$

5.20 AT+COPN – Read operator name (Sec 7.21)

5.20.1 Description

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

5.20.2 Format

Command	Possible Response(s)
+COPN	+COPN: <numeric1>,<alpha1> [<CR><LF>+COPN: <numeric2>,<alpha2> [...]] +CME ERROR: <err>
+COPN=?	

5.20.3 Field

<numericn>: string type; operator in numeric format (see +COPS)

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

5.21 AT+CAEMLPP – eMLPP priority Registration and Interrogation (Sec 7.22)

5.21.1 Description

The execute command is used to change the default priority level of the user in the network. The requested priority level is checked against the eMLPP subscription of the user stored on the SIM card or in the active application in the UICC (GSM or USIM) EF_{eMLPP}. If the user doesn't have subscription for the requested priority level an ERROR or +CMEE ERROR result code is returned.

The read command triggers an interrogation of the provision of the maximum priority level which the service subscriber is allowed to use and default priority level activated by the user.

If the service is not provisioned, a result code including the SS-Status (?) parameter is returned.

5.21.2 Format

Command	Possible Response(s)
+CAEMLPP=<priority>	*+CME ERROR: <err>*
+CAEMLPP?	+CAEMLPP: <default_priority>,<max_priority> *+CME ERROR: <err>*
+CAEMLPP=?	

5.21.3 Field

<priority>: integer type parameter which identifies the default priority level to be activated in the network,

values specified in 3GPP TS 22.067 [54]

<default_priority>: integer type parameter which identifies the default priority level which is activated in the network, values specified in 3GPP TS 22.067 [54]

<max_priority>: integer type parameter which identifies the maximum priority level for which the service subscriber has a subscription in the network, values specified in 3GPP TS 22.067 [54].

5.22 AT+WS46 – Select wireless network (Sec 5.9)

5.22.1 Description

Select the cellular network (Wireless Data Service; WDS) to operate with the TA. This command may be used when TA is asked to indicate the networks in which it can operate.

5.22.2 Format

Command	Possible response(s)
+WS46=[<n>]	
+WS46?	<n>
+WS46=?	(list of supported <n>s)

5.22.3 Field

<n>:

25 3GPP Systems (both GERAN and UTRAN)

5.23 AT+EPBSE – Band Selection (Proprietary Command)

5.23.1 Description

To set MS preferred band.

5.23.2 Format

Command	Response
+EEBSE=<gsm_band>,<umts_band>,<lte_band_1_32>,<lte_band_33_64>	
+EEBSE?	+EPBSE: <gsm_band>,<umts_band>,<lte_band_1_32>,<lte_band_33_64>
+EEBSE =?	List of supported bit masks of each band mode +EPBSE: <gsm_band>,<umts_band><lte_band_1_32>,<lte_band_33_64>

5.23.3 Field

<GSM_band>: integer

bit 1 EGSM900
bit 3 DCS1800
bit 4 PCS1900
bit 7 GSM850

0xff Auto selection select All supported bands

<UMTS_band>: integer

bit 0 UMTS BAND I : WCDMA-IMT-2000 bit
1 UMTS BAND II : WCDMA-PCS-1900
bit 2 UMTS BAND III : WCDMA-DCS-1800
bit 3 UMTS BAND IV : WCDMA-AWS-1700
bit 4 UMTS BAND V : WCDMA-CLR-850
bit 5 UMTS BAND VI : WCDMA-800
bit 6 UMTS BAND VII : WCDMA-IMT-E-2600
bit 7 UMTS BAND VIII : WCDMA-GSM-900
bit 8 UMTS BAND IX : WCDMA-1800

bit 9 UMTS BAND X : WCDMA-1700
bit 10 ~ bit 31 also supported for extended UMTS band setting accroiding to device capability.

0xffff Auto selection select All supported bands

<lte_band_1_32>: integer
bitmap for LTE band1 to band 32
0xffffffff Auto selection select All supported bands

<lte_band_33_64>: integer,
bitmap for LTE band 33 to band 64
0xffffffff Auto selection select All supported bands

5.23.4 Example

Set Auto band (select all supported bands)
AT+EPBSE=255, 65535
OK

Set “EURO band” (GSM-900 / DCS-1800 / WCDMA-IMT-2000)
AT+EPBSE=10, 1
OK

5.23.5 Note

5.23.5.1 Change History

The command is available from 09A.09B.W0948MP

5.23.5.2 Usage Note

1. This command is not allowed to set each band mode, GSM or UMTS, as 0, said AT+EPBSE=<gsm_band>,0 or AT+EPBSE=0, <umts_band>.
2. If the band mode is not supported, this command will just ignore the setting
3. After using this command, user should reboot the handset to let the setting become effective if the compile option __DYNAMIC_BAND_SEL__ is not opened

4. If we get 0 in the certain field using AT+EPBSE=? , it means that the field is not supported.

5.24 AT+EOPN – Read Operator name (Proprietary Command)

5.24.1 Description

This command returns the operator name in alphanumeric format when given the numeric format.

5.24.2 Format

Command	Possible response(s)
+EOPN= <format>,<oper_num>	+EOPN: <format>, <oper_alpha> *+CME ERROR: <err>*
+EOPN=?	*+CME ERROR: <err>*

5.24.3 Field

<format> : integer

0 long alphanumeric format

1 short alphanumeric format

<oper_num>: the operator in numeric format

<oper_alpha>: the operator in alphanumeric format

[NOTE] We DO NOT support full set of alphanumeric format of <oper>, since the code size will become very large. If the customer needs the alphanumeric format, the table can be customized in mcu\custom\ps\xxx_bb\customer_operator_names.c.

5.25 AT+ECSQ – Received signal level indication (Proprietary Command, 11AMD/WR8)

5.25.1 Description

Set command to enable +ECSQ unsolicited result code +ECSQ: <rssi>,<ber>,<raw_rssi_in_qdbm>[,<RSCP_in_qdbm>,<EcN0_in_qdbm>], which is to indicate the received signal level.

Active command is to query the current received signal level.

Read command returns the current setting of +ECSQ unsolicited result code.

5.25.2 Format

Command	Possible Response(s)
+ECSQ= <flag>	OK ERROR
+ECSQ?	+ECSQ: <flag>
+ECSQ=?	+ECSQ: (0,1)
+ECSQ	+ECSQ: <rssi>, <ber>, <raw_rssi_in_qdbm>[, <RSCP in qdbm>, <EcN0 in qdbm>]

5.25.3 Field

Type	Short name	Parameter/comment	
Integer	flag	0	Received signal level indication disable
		1	Received signal level indication enable
		2	Received signal level indication enable with **low frequency**.(10% campared to flag=1)
Integer	rssi	0-99	Received signal strength indication. This field is the same as <rssi> in +CSQ, which is translated according to TS 27.007, but not the raw dBm value measured by L1.
Integer	ber	0-255	Bit error rate
Integer	raw_rssi_in_qdbm		Received signal strength raw data in quarter dbm
Intger	RSCP_in_qdbm		RSCP in quarter dbm. Only avaliabe when camp on UMTS network.
Integer	EcN0_in_qdbm		EcN0 in quarter dbm. Only avaliabe when camp on UMTS network.

5.25.4 Note

<RSCP_in_qdbm> and <EcN0_in_qdbm> are only present when current RAT is UMTS

5.26 AT+ECSQ – Received signal level indication (Proprietary Command, MOLY)

5.26.1 Description

Set command to enable +ECSQ unsolicited result code

+ECSQ:

<sig1>,<sig2>,<rssi_in_qdbm>,<rscp_in_qdbm>,<ecn0_in_qdbm>,<rsrq_in_qdbm>,<rsrp_in_qdbm>,<Act>

which is to indicate the received signal level.

Active command is to query the current received signal level.

Read command returns the current setting of +ECSQ unsolicited result code.

5.26.2 Format

Command	Possible Response(s)
+ECSQ= <flag>	OK ERROR
+ECSQ?	+ECSQ: <flag>
+ECSQ=?	+ECSQ: (0,1)
+ECSQ	+ECSQ: <sig1>,<sig2>,<rssi_in_qdbm>,<rscp_in_qdbm>, <ecn0_in_qdbm>,<rsrq_in_qdbm>,<rsrp_in_qdbm> ,<Act>

5.26.3 Field

Type	Short name	Parameter/comment	
Integer	flag	0	Received signal level indication disable
		1	Received signal level indication enable
		2	Received signal level indication enable with **low frequency**.(10% campared to flag=1)

Integer	Sig1	0-63	This field is the same as <rscp> in +CESQ when camp on GSM service. (255 means invalid value)
		0-96	This field is the same as <rscp> in +CESQ when camp on UMTS service. (255 means invalid value)
		0-97	This field is the same as <rsrp> in +CESQ when camp on LTE service. (255 means invalid value)
Integer	Sig2	0-7	This field is the same as <ber> in +CESQ when camp on GSM service. (99 means invalid value)
		0-49	This field is the same as <ecn0> in +CESQ when camp on UMTS service. (255 means invalid value)
		0-34	This field is the same as <rsrq> in +CESQ when camp on LTE service. (255 means invalid value)
Integer	rssi_in_qdbm		Negative integer. Received signal strength raw data in quarter dbm when camp on GSM network. (1 means invalid value)
Intger	rscp_in_qdbm		Negative integer RSCP in quarter dbm. Only avaliabe when camp on UMTS network. (1 means invalid value)
Integer	ecn0_in_qdbm		Negative integer EcN0 in quarter dbm. Only avaliabe when camp on UMTS network. (1 means invalid value)
Integer	rsrq_in_qdbm		Negative integer RSRQ in quarter dbm. Only avaliabe when camp on LTE network. (1 means invalid value)

Integer	rsrp_in_qdbm		Negative integer RSRP in quarter dbm. Only avaliabe when camp on LTE network. (1 means invalid value)
Integer	Act	0	GSM
		2	UMTS
		7	LTE

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5.27 AT+ERAT – RAT mode and GPRS/EDGE status (Proprietary Command)

5.27.1 Description

To get RAT mode status and GRRS/EDGE status or set RAT mode of MS

5.27.2 Format

Command	Possible Response(s)
+ERAT?	+ERAT : <Act>, <GPRS status>,<RAT mode>,<prefer_rat>
+ERAT=<RAT mode>[,<prefer_rat>]	OK /ERROR

5.27.3 Field

<Act>: Access technology of current PLMN

0 GSM

2 UTRAN

3 GSM w/EGPRS

4 UTRAN w/HSDPA

5 UTRAN w/HSUPA

6 UTRAN w/HSDPA and HSUPA

7 E-UTRAN

255 unknown

<GPRS status>:

0:GPRS

1:EDGE

<RAT mode>: RAT mode setting of MS

0: GSM only

1: UMTS only

2: GSM + UMTS

3: LTE only

4: GSM + LTE

5: UMTS + LTE

6: GSM + UMTS + LTE

<prefer_rat>: prefer rat setting

0: No prefer

1: GSM prefer

2: UMTS prefer

4: LTE prefer

5.27.4 Note

Before WR8 branch(included), <prefer_rat> only support 2 (WCDMA prefer).

5.27.4.1 Change History

The command is available from 09A.0940MP.

The LTE capability was appied after MOLY.W13.40.

5.27.4.2 Usage Note

- This command is not sync with MMI
- <prefer_rat> only applicable when feature option WCDMA_PREFER is true and only for UMTS FDD project. If <prefer_rat> not given, keep the previous prefer setting.

5.28 AT+EGTYPE – GPRS connection type (Proprietary Command)

5.28.1 Description

The set command is used to change the GPRS connection type.

The read command is used to read the current GPRS connection type.

5.28.2 Format

Command	Possible Response (s)
+EGTYPE=<type>	OK ERROR
+EGTYPE?	+EGTYPE: <type> OK
+EGTYPE=?	+EGTYPE: (0-3) OK

5.28.3 Field

Type	Short Name	Parameter / Comment	
Integer	type	0	Set GPRS type to when needed mode. GPRS service will be detached if it was attached.
		1	Set GPRS type to always attach and trigger ATTACH procedure if needed. The GPRS connection type saved in NVRAM will also be changed to always attach.
		2	Set GPRS type to always attach, but don't trigger ATTACH procedure. The GPRS connection type in NVRAM will not be changed.
Type	**Short Name**	**Parameter / Comment**	
		3	The same as type 2. In addition, set FOP flag in the later ATTACH procedure.

5.28.4 Note

Type 2 is supported after W11.20 (MAUI_02931839). Type 3 is supported from R8 modem (MOLY00020455).

5.29 AT+ESSP (Proprietary Command)

5.29.1 Description

This command is to set the ESSP value stored in NVRAM which configures if to query CFU status by modem itself after first camp-on network.

5.29.2 Format

Command	Possible Response(s)

+ESSP=<mode>	OK ERROR
+ESSP?	+ESSP: <mode> OK

5.29.3 Field

< mode>: integer type.

0 – default mode, query when sim replaced

1 – always not query

2 – always query

5.29.4 Note

In Smart Phone platform, modem does not query CFU status on it's own, it is the upper layer(AP)'s responsibility to control the CFU query procedure. In this case, AP will send AT+ESSP=1.

5.30 AT+CCBS – Completion of Calls to Busy Subscriber (Proprietary Command)

5.30.1 Description

The read mode of this command is used to interrogate the CCBS status of current subscriber; the execute mode of this command is used to erase the CCBS entry of specific <ccbs_id> (refer 3GPP TS 22.093).

5.30.2 Format

Command	Possible Response(s)
+CCBS=<ccbs_id>	OK *+CME ERROR: <err>*
+CCBS?	OK *+CME ERROR: <err>*

5.30.3 Field

<ccbs_id>: integer type. Indicate the ccbs id to be erased.

6 07.07 AT Commands –MT control and status command

6.1 AT+CPAS – Phone activity status (Sec 8.1)

6.1.1 Description

Returns the activity status <pas> of the ME. It can be used to interrogate the ME before requesting action from the phone. If the command is executed without the <mode> parameter, only <pas> values from 0 to 128 are returned. If the <mode> parameter is included in the execution command, <pas> values from 129 to 255 may also be returned.

6.1.2 Format

Command	Possible response(s)
+CPAS	+CPAS: <pas> *+CME ERROR: <err>*
+CPAS=?	+CPAS: (list of supported <pas>s) *+CME ERROR: <err>*

6.1.3 Field

<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)

6.2 AT+CFUN – Set Phone Functionality (Sec 8.2)

6.2.1 Description

AT+CFUN = 0 turn off radio and SIM power. (supported only for feature phone with feature option)

AT+CFUN = 1, 1 or AT+CFUN=4,1 can reset the target.

AT+CFUN = 1 can enter normal mode. (supported only for module solution)

AT+CFUN = 4 can enter flight mode. (supported only for module solution)

6.2.2 Format

Command	Possible response(s)

+CFUN=[<fun>[,<rst>]]	*+CME ERROR: <err>*
+CFUN=?	+CFUN: (list of supported <fun>s), (list of supported <rst>s) *+CME ERROR: <err>*

6.2.3 Field

<fun> :1 full functionality

4 disable phone both transmit and receive RF circuits (supported only for module solution)

0 minimal functionality, turn off radio and SIM power.

<rst> : 0 do not reset the MT before setting it to <fun> power level

1 reset the MT before setting it to <fun> power level

6.2.4 Note

AT+CFUN=1, 1 and AT+CFUN=4,1 have the same functionality as AT+EPON.

6.2.4.1 Change History

Before 11AW1128, <rst> is only supported for feature phone.
After MAUI_02971170, both feature phone and modem projects support <rst>.

6.2.4.2 Usage Note

- The supported parameters are subject to change according to different compile directives (options).
- AT+CFUN=1,1 or AT+CFUN=4,1 can only reset the target, not fully compliable with 27.007
- <fun> = 0,1,4 only supported in projects with __ATCFUN_FLIGHTMODE_SUPPORT__ option.

6.3 AT+EFUN – Set functionaliy for multiple SIM project (Proprietary command)

6.3.1 Description

The set command is used to change the dual SIM mode of Gemini modem

6.3.2 Format

Command	Possible Response (s)
+EFUN=<efun_state>	OK / ERROR
+EFUN?	+EFUN: <efun_state> OK

6.3.3 Field

Type	Short Name	Parameter / Comment
Integer	efun_state	Each bit field presents the desire radio state of each SIM slot. If bit is TRUE (1), desire to radio on. If bit is FALSE (0), desire to radio off. e.g. efun_state = 0x02 | 0x04 | 0x08. ➔RequestSIM2/SIM3/SIM4 radio on ➔Other SIMs radio off

6.3.4 Example

- AT+EFUN=1 // SIM1 only
- AT+EFUN=3 // Dual SIM
- AT+EFUN=7 // Triple SIM
- AT+EFUN=15 // Quad SIM

6.3.5 Note

For dual SIM or multiple SIM project, please always send the command to protocol_1.

6.4 AT+CPIN – Enter PIN (Sec 8.3)

6.4.1 Description

Set command sends to the ME 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 ME and an error message, +CME ERROR, is returned to TE. Refer [1] 9.2 for possible <err> values.

If the PIN required is SIM PUK or SIM PUK2, the second pin is required. This second pin, <newpin>, is used to replace the old pin in the SIM.

6.4.2 Format

Command	Possible response(s)
+CPIN=<pin>[,<newpin>]	*+CME ERROR: <err>*
+CPIN?	+CPIN: <code> *+CME ERROR: <err>*

+CPIN=?	

6.4.3 Field

<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 SIM PIN to be given

SIM PUK MT is waiting SIM PUK to be given

PH-SIM PIN MT is waiting phone to SIM card password to be given

PH-FSIM PIN MT is waiting phone-to-very first SIM card password to be given

PH-FSIM PUK MT is waiting phone-to-very first SIM card unblocking password to be given

SIM PIN2 MT is waiting SIM PIN2 to be given

SIM PUK2 MT is waiting SIM PUK2 to be given

PH-NET PIN MT is waiting network personalization password to be given

PH-NET PUK MT is waiting network personalization unblocking password to be given

PH-NETSUB PIN MT is waiting network subset personalization password to be given

PH-NETSUB PUK MT is waiting network subset personalization unblocking password to be given

PH-SP PIN MT is waiting service provider personalization password to be given

PH-SP PUK MT is waiting service provider personalization unblocking password to be given

PH-CORP PIN MT is waiting corporate personalization password to be given

PH-CORP PUK MT is waiting corporate personalization unblocking password to be given

6.5 AT+EPIN1 – Enter PIN1 (Proprietary Command)

6.5.1 Description

This command is used to validate PUK and to define a new PIN code.

6.5.1.1 Format

Command	Possible response(s)
+EPIN1= <puk>,<new_pin>	*+CME ERROR: <err>*
+EPIN1?	+EPIN1: <code> *+CME ERROR: <err>*

+EPIN1=?	

6.5.1.2 Field

<puk>, <new_pin>: string type values

<code> values reserved by the present document:

READY MT is not pending for any password

SIM PIN MT is waiting SIM PIN to be given

SIM PUK MT is waiting SIM PUK to be given

SIM BLOCKED PIN and PUK are blocked

6.5.1.3 Change History

- AT+EPIN1? Is ready in 09A.W0940MP

6.5.1.4 Usage Note

- **Do not use this command during power on process.** During power on process, use AT+CPIN to validate PUK.
- Since this proprietary command is intended for modem project or dual-SIM/mode project . We won't handle such MMI synchronization problem or perform extra error handling
- Only used AT+EPIN1 when SIM card inserted

6.6 AT+EPIN2 – Enter PIN2 (Proprietary Command)

6.6.1 Description

This command is used to validate the PIN2 , or to validate PUK2 and to define a new PIN2 code.

6.6.2 Format

Command	Possible response(s)
+EPIN2=<pin2> or +EPIN2= <puk2>,<newpin2>	*+CME ERROR: <err>*
+EPIN2 ?	+EPIN2: <code> *+CME ERROR: <err>*
+EPIN2=?	

6.6.3 Field

<pin2>, <newpin2>, <puk2>: string type values

<code> values reserved by the present document:

READY	PIN2 is allowed to verified
SIM PUK2	PIN2 is blocked
SIM BLOCKED	PIN2 and PUK2 are blocked

6.6.3.1 Change History

- AT+EPIN2? Is ready in 09A.W0940MP

6.6.3.2 Usage Note

- For feature phone project , MMI will not sync with AT+EPIN2 operation. Ex: AT+EPIN2 to input PUK code fail , the remaining count in MMI might not decrease. Since this proprietary command is intended for modem project or dual-SIM/mode project . We won't handle such MMI synchronization problem.
- To verify PIN2 , suggest to use AT+CPWD="P2","PIN2","PIN2".
- To unblock PIN2, use AT+EPIN2="PUK2","new_PIN2"
- Only used AT+EPIN2 when SIM card inserted and MT has completely boot up.

6.7 AT+EPINC – PIN remaining attempt number (Proprietary Command)

6.7.1 Description

This command queries the number of remaining valid tries for PIN1, PIN2, PUK1, and PUK2

6.7.2 Format

Command	Possible response(s)
+EPINC	+EPINC: <pin1>,<pin2>,<puk1>,<puk2> *+CME ERROR: <err>*
+EPINC ?	+EPINC: <pin1>,<pin2>,<puk1>,<puk2> *+CME ERROR: <err>*
+EPINC=?	

6.7.3 Field

<pin1>, <pin2>,<puk1>,<puk2> are the remaining tries of each type.

6.8 AT+ICCID – Read ICCID of SIM Card (Proprietary Command)

6.8.1.1 Description

This command is used to read SIM card ICCID if SIM inserted. If SIM not inserted, return +CME ERROR: 10

6.8.1.2 Format

Command	Possible Response(s)
+ICCID	<iccid> OK ERROR / +CME ERROR: 10

6.8.1.3 Field

<iccid>: string type

6.8.1.4 Note

This command only availabe in modem only project

6.9 AT+ESIMS – check SIM Status (Proprietary Command)

6.9.1 Description

The read command is only response the SIM inserted status.

The active command is used to trigger SIM reset procedure and response the SIM inserted status.

The execute command is used to enable/disable +ESIMS URC report.

6.9.2 Format

Command	Possible Response (s)
AT+ESIMS?	+ESIMS: <SIM_INSERTED>

Command	Possible Response (s)
	OK
AT+ESIMS	+ESIMS: <SIM_INSERTED> OK
AT+ESIMS=<mode>	OK

6.9.3 Field

Type	Short Name	Parameter / Comment	
Integer	SIM_INSERTED	0	No SIM
		1	Detected
Integer	mode	0	Disable +ESIMS URC
		1	Enable +ESIMS URC

6.9.4 Note

Active and excute mode only applicable for modem only project

6.10 AT+CSQ – Signal Quality (Sec 8.5)

6.10.1 Description

The command returns received signal strength indication <rssi> and channel bit error rate <ber> from the ME.

6.10.2 Format

Command	Possible response(s)
+CSQ	+CSQ: <rssi>,<ber> *+CME ERROR: <err>*
+CSQ=?	+CSQ: (list of supported <rssi>s),(list of supported <ber>s)

6.10.3 Field

<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 TS 45.008 [20] subclause 8.2.4 not known or not detectable

6.11 AT+CMEC – Mobile Termination control mode (Sec 8.6)

6.11.1 Description

Set command selects the equipment, which operates MT keypad, writes to MT display and sets MT indicators. If

operation mode is not allowed by the MT, +CME ERROR: <err> is returned.

Test command returns the modes supported as compound values.

6.11.2 Format

Command	Possible response(s)
+CMEC=[<keyp>[,<disp>[,<ind>]]]	*+CME ERROR: <err>*
+CMEC?	+CMEC: <keyp>,<disp>,<ind>
+CMEC=?	+CMEC: (list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s)

6.11.3 Field

<keyp>:

0 MT can be operated only through its keypad (execute command of +CKPD cannot be used)

1 MT can be operated only from TE (with command +CKPD)

2 MT can be operated from both MT keypad and TE

<disp>:

0 only MT can write to its display (command +CDIS can only be used to read the display)

1 only TE can write to MT display (with command +CDIS)

2 MT display can be written by both MT and TE

<ind>:

0 only MT can set the status of its indicators (command +CIND can only be used to read the indicators)

1 only TE can set the status of MT indicators (with command +CIND)

2 MT indicators can be set by both MT and TE

6.11.4 Note

6.11.4.1 Change History

The command is available from 09B.1009MP

6.11.4.2 Usage Note

N/A

6.12 AT+CIND – Indicator control (Sec 8.9)

6.12.1 Description

Displays the value of ME indicators.

6.12.2 Format

Command	Possible response(s)
+CIND=[<ind>[,<ind>[,...]]]	*+CME ERROR: <err>*
+CIND?	+CIND: <ind>[,<ind>[,...]] *+CME ERROR: <err>*
+CIND=?	+CIND: (<descr>,(list of supported <ind>s)) [,(<descr>,(list of supported <ind>s))[,...]] *+CME ERROR: <err>*

6.12.3 Field

<ind>: integer type value, which shall be in range of corresponding <descr>

<descr> values reserved by the present document and their <ind> ranges:

descr	**description**	**<ind> value**
battchg	battery charge level (0-5)	1
signal	signal quality (0-5)	2
service	service availability (0-1)	3
message	message received (0-1)	4
call	call in progress (0-1)	5
roam	roaming indicator (0-1)	6
smsfull	short message memory storage status (refer to +CIEV)	7
call setup	call setup indicator (0-3)	8

6.12.4 Note

6.12.4.1 Change History

N/A

6.12.4.2 Usage Note

- "call setup" is proprietary defined in MTK solution and only used when BT supported.

6.13 AT+CMER – Mobile Termination event reporting (Sec 8.10)

6.13.1 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.
Test command returns the modes supported as compound values.

6.13.2 Format

Command	**Possible response(s)**
+CMER=[<mode>[,<keyp>[,<disp>[,<ind>[,<bfr>][,<tscrn>]]]]]	*+CME ERROR: <err>*

+CMER?	+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>
+CMER=?	+CMER: (list of supported <mode>s),(list of supported <key>s),(list of supported <disp>s),(list of supported <ind>s),(list of supported <bfr>s), (list of supported <tscrn>s)

6.13.3 Field

<mode>: integer type

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 coses and data when TA is in on-line data mode

<keyp>: integer type

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 pressing, 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>: integer type

2. no display event reporting

<ind>: integer type

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 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)

<tscrn>:

0 no touch screen event reporting

1 touch screen event reporting using result code +CTEV: <action>,<x>,<y>. The <x>,<y> parameters indicate the x, y coordinates on the touch screen device (as specified for +CTSA), and <action> indicates the action performed on the screen (0 for screen released, 1 for screen depressed, 2 for single tap, and 3 for double tap). Only those touch screen events, which are not caused by +CTSA shall be indicated by the TA to the TE.

NOTE 3: When this mode is enabled, corresponding result codes of all touch screen actions should be flushed to the TA regardless of <bfr> setting.

2 touch screen event reporting using result code +CTEV: <action>, <x>, <y>. All touch screen events shall be directed from the TA to the TE.

NOTE 4: When this mode is enabled, corresponding result codes of all touch screen actions should be flushed to the TA regardless of <bfr> setting.

3 Verbose mode. Touch screen event reporting using +CTEV: <action>,<x>,<y>. This is a special mode where intermediate depressed result codes (+CTEV: <x>,<y>,depressed) are generated for each new <x>,<y> coordinate detected while a user is dragging a touch to a new location. All other touch screen actions shall be directed from the TA to the TE normally. Only those touch screen events which are not caused by +CTSA shall be indicated by the TA to the TE.

NOTE 5: When this mode is enabled, corresponding result codes of all touch screen actions should be flushed to the TA regardless of <bfr> setting.

6.13.4 Note

We don't support set command of +CIND to set the values of MT indicators. So behaviors of <ind> 1 and 2 are currently the same.

The +CKEV URC which set by <keyp> parameter only reports when UART setting is SIM1.

<tscrn> parameter take effect after W1021.

6.14 AT+CPBS – Select Phonebook Memory Storage (Sec 8.11)

6.14.1 Description

Selects the phonebook memory storage <storage> that is used by other phonebook commands.

6.14.2 Format

Command	Possible response(s)
+CPBS=<storage>	*+CME ERROR: <err>*
+CPBS?	+CPBS: <storage>[,<used>,<total>] *+CME ERROR: <err>*
+CPBS=?	+CPBS: (list of supported <storage>s)

6.14.3 Field

"ME" MT phonebook

"SM" SIM/UICC phonebook

"LD" last-dialling phonebook

"MC" MT missed calls list

“RC”	MT received calls list.
“DC”	MT dialled calls list
“FD”	SIM/USIM fixdialling-phonebook
“ON”	SIMown numbers (MSISDNs) list

6.14.4 Note

1. Before 10A, We don’t support query <used> field for the storage “LD”, “MC”, “RC”, “DC”. It would be always 0.
2. After 10A(include 10A), We don’t support query <used> field for the storage “LD”, “MC”, “RC”, “DC” in the module(modem) project or NeptuneMMI project. It would be always 0.

6.15 AT+CPBR – Read phonebook entries (Sec 8.12)

6.15.1 Description

Returns phone book entries in location number range <index1>...<index2> from the current phonebook memory storage selected by AT+CPBS. If <index2> is omitted, only location <index1> is returned. Entry fields returned are location number <indexn>, phone number <number> in <indexn>, and text <text> associated with the number.

6.15.2 Format

Command	Possible response(s)
+CPBR=<index1> [,<index2>]	[+CPBR: <index1>,<number>,<type>,<text> [[...] <CR><LF>+CPBR: <index2>,<number>,<type>,<text>]] *+CME ERROR: <err>*

+CPBR=?	+CPBR: (list of supported <index>s),[<nlength>],[<tlength>] *+CME ERROR: <err>*

6.15.3 Field

<index1>, <index2>, <index>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)

<text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

6.16 AT+CPBF – Find Phonebook entries (Sec 8.13)

6.16.1 Description

Execution command returns phonebook entries (from SM and ME) which alphanumeric field start with string <findtext>(Prefix match). Entry fields returned are location number <indexn>, phone number stored there <number> (of format <type>) and text <text> associated with the number.

6.16.2 Format

Command	Possible response(s)
+CPBF=<findtext>	[+CPBF: <index1>,<number>,<type>,<text> [[...] <CR><LF>+CBPF: <index2>,<number>,<type>,<text>]] *+CME ERROR: <err>*
+CPBF=?	+CPBF: [<nlength>],[<tlength>] *+CME ERROR: <err>*

6.16.3 Field

<index1>, <index2>: integer type values in the range of location numbers of phonebook memory

<number>: string type phone number of format <type>

<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)

<findtext>, <text>: string type field of maximum length <tlength>. Only support “IRA”

<nlength>: integer type value indicating the maximum length of field <number>

<tlength>: integer type value indicating the maximum length of field <text>

6.17 AT+CPBW– Write Phonebook entries (Sec 8.14)

6.17.1 Description

Writes phonebook entry in location number <index> in the current phonebook memory storage area, selected with AT+CPBS. If the <number> and <text> parameters are omitted, the entry is deleted. If <index> is omitted but <number> is included, the entry is written to the first free location in the phonebook.

6.17.2 Format

Command	Possible response(s)
+CPBW=[<index>][,<number>[,<type>[,<text>]]]	*+CME ERROR: <err>*
+CPBW=?	+CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>] *+CME ERROR: <err>* *+CME ERROR: <err>*

6.17.3 Field

<index>: integer type values in the range of location numbers of phonebook memory
<number>: string type phone number of format <type>
<type>: type of address
<text>: string type field of maximum length <tlength>;
character set as specified by command Select TE Character Set +CSCS.
"UCS2", and "IRA" are supported.
<nlength>: integer type value indicating the maximum length of field <number>
<tlength>: integer type value indicating the maximum bytes of field <text> after encoding

6.17.4 Note

1. The returned value <tlength> of AT+CPBW=? indicates the maximum bytes of field <text> after encoding. So when AT+CPBW use UCS2 coding scheme to store the field <text> of the entry, users should notice that the maximum length of <text> is <tlength>/2 because of UCS2 encoding(1 character use 2 byte).

6.18 AT+ESLN – Sync Last Number (Proprietary Command)

6.18.1 Description

This command is used to sync call log from NVRAM back to SIM card.

6.18.2 Format

Command	Possible response(s)
+ESLN=?	
+ESLN	*+CME ERROR: <err>*

6.18.3 Field

None

6.18.4 Note

1. We only support this command in the modem load project.
2. Currently, it is used to sync the call log when closing the data card tool in the data card project.

<op>:

0: query EF files information. In this <op>, the valid types are EF_ANR, EF_SNE, and EF_EMAIL

1: read EF files

email length of an entry in the queried EF_EMAIL file

<L_SNE>: max supported second name length of an entry in the queried EF_SNE file

<INDEX1>, <INDEX2>: has different meaning according to the <op> and <type>

<op>=0 (Query) : only <INDEX1> is needed

<INDEX1> : Assume <index1> is N, N-th EF file associated with an EF_ADN

<text>: the alpha string, the encoding is according to the <encode>

s associated with an EF_ADN

<N_EMAIL>: maximum number of entries associated with an EF_EMAIL

<N_SNE>: maximum number of entries associated with an EF_SNE

<N_AAS>: maximum number of entries in the EF_AAS

<L_AAS>: maximum alpha string length of an EF_AAS entry

<N_GAS>: maximum number of entries in the EF_GAS

<L_GAS>: maximum alpha string length of an EF_GAS entry

<N_GRP>: maximum number of groups in an entry of EF_GRP

6.19 AT+CRSM -- Restricted SIM access (Sec 8.18)

6.19.1 Description

Set command transmits to the MT the SIM <command> and its required parameters.

6.19.2 Format

Command	Possible response(s)
+CRSM=<command>[,<fileid> [,<P1>,<P2>,<P3> [,<data>[,<pathid>]]]]	+CRSM: <sw1>,<sw2>[,<response>] *+CME ERROR: <err>*
+CRSM=?	

6.19.3 Field

<command> (command passed on by the MT to the SIM; refer 3GPP TS11.11):

176 READ BINARY

178 READ RECORD

192 GET RESPONSE

214 UPDATE BINARY

220 UPDATE RECORD

242 STATUS

<fileid>: integer type; this is the identifier of a elementary data file on SIM.

<P1>, <P2>, <P3>: integer type; parameters passed on by the MT to the SIM. (For detailed information , please refer 3GPP TS11.11 Section 9.2)
<data>: information which shall be written to the SIM (hexadecimal character format; refer +CSCS)

<pathid>: string type; contains the path of an elementary file on the SIM/UICC in hexadecimal format as
defined in ETSI TS 102 221 [60] (e.g. "7F205F70" in SIM and UICC case). The <pathid> shall only be used in the mode "select by path from MF" as defined in ETSI TS 102 221 [60].

NOTE: Since valid elementary file identifiers may not be unique over all valid dedicated file identifiers the <pathid> indicates the targeted UICC/SIM directory path in case of ambiguous file identifiers. For earlier versions of this specification or if <pathid> is omitted, it could be implementation specific which one will be selected.

<sw1>, <sw2>: integer type; information from the SIM about the execution of the actual command.

<response>: response of a successful completion of the command previously issued (hexadecimal character format)

[Note1]: READ BINARY command is used for transparent EF. READ RECORD is used for linear fixed or cyclic EF

[Note2]:Before using READ BINARY, READ RECORD, UPDATE BINARY, UPDATE RECORD, please use command GET RESPONSE to get the exact length information first.

6.19.4 Note

- <pathid> + <fileid> can be a unique identifier on the SIM/UICC.
- In USIM, the response of STATUS and GET RESPONSE is TLV format, and length is not fixed. So the P3 should be assigned as “00” as 256 bytes, which is the maximum value of response data.

6.19.5 Example

1. Read EF_{SST} (file_idx= 0x6F38 , structure: transparent)

(1) Get RESPONSE first , 3~4 byte is the file size information.(e.g. 000A=10)

at+crsm=192,28472

+CRSM: 144, 0, "0000000A6F38040015005501010000"

OK

at+crsm=176,28472,0,0,10

+CRSM: 144, 0, "FF3FFFFF00003C03000C"

OK

2. Read a EF_{ADN} (file_idx= 0x6F3A , structure: Linear fixed)

(1)GET RESPONSE first , No.15 byte represents the record length (e.g 1E =30)

at+crsm=192,28474

+CRSM: 144, 0, "00001D4C6F3A040011002205020 11E" OK

(2) READ RECORD

at+crsm=178,28474,1,4,30

+CRSM: 144, 0,

"6F776E6572FFFFFFFFFFFFFFFFFFFF068190783033 26FFFFFFFFFFFF"

OK

3. READ $EF_{ImageInstaceDataFiles}$ (with <pathid>) (fIle_idx = 0x4F20(File id would be different if you use other SIM cards), structure: Transparent)

(1) GET RESPONSE first (without AT command example) (2)

READ BINARY AT+CRSM=176,20256,0,0,1,,"7F105F50"

+CRSM: 144, 0, "00" OK

6.20 AT+CTZR – Time Zone Reporting (Sec 8.40)

6.20.1 Description

enables and disables the time zone change event reporting. If the reporting is enabled the MT returns

the unsolicited result code +CTZV: <tz> whenever the time zone is changed.

6.20.2 Format

Command	Possible response(s)
+CTZR=<onoff>	*+CME ERROR: <err>*
+CTZR?	+CTZR: <onoff> *+CME ERROR: <err>*
+CTZR=?	+CTZR: (list of supported <onoff>s) *+CME ERROR: <err>*

6.20.3 Field

<onoff>: integer type value indicating:

0 – Disable automatic time zone update via NITZ (default).

1 – Enable automatic time zone update via NITZ.

6.21 AT+ESMLCK – SIM-ME-LOCK operation (Proprietary command)

6.21.1 Description

This command is used to operate SIM-ME-LOCK which defined in 3GPP TS 22.022. Operations are ADD, REMOVE, LOCK, UNLOCK

6.21.2 Format

Command	Possible response
+ESMLCK = <cat>, <op> [,<key> [,<data_imsi> [,<data_gid1> [,<data_gid2>]]]]	OK When error occurs : +CME ERROR : <err>
+ESMLCK ?	+ESMLCK: ((list of (<cat>, <state>, <retry_count>, <autolock_count>,<num_of_sets>,<total_size_of_sets>, <key_state>)s),<ef_imsi>,<is_valid_gid1>,<ef_gid1>, <is_valid_gid2>, <ef_gid2>, <digits_of_mnc>) When error occurs : +CME ERROR : <err>
+ESMLCK=?	When command is successful: +ESMLCK: (list of supported <cat>s) When error occurs : +CME ERROR: <err>

6.21.3 Field

<cat> Integer type

0: Network

1: Network subset

2: Service Provider

3: Corporate

4: SIM

<op> Integer type

0: Unlock a category

1: Lock a category

2: Add data for a category

3: Remove data for a category

4: Permanently unlock a category (Disable)

<key> String type

<data_imsi> String type :

Contain needed digits which are a part of IMSI MCC and MNC for N, SP, and C category

MCC, MNC, and HLR for NS category

Whole IMSI for SIM category

<data_gid1> String type

Contain GID1 value in EFGID1

<data_gid2> String type

Contain GID2 value in EFGID2

<state> Integer type

1: locked state,

2: unlocked state,

3: automatic lock state,

4: disabled state

<retry_count> Integer value

<autolock_count> Integer type

<number_of_sets> Integer value

<total_size_of_sets> Integer value

<key_state> Integer type

0: ETSI behavior, key is not set in the phone and is chosen by the user.

1: ALCATEL behavior, key is set in the phone.

<ef_imsi> String type

<is_valid_gid1> Integer type

0: the ef_gid1 behind is invalid

1: the ef_gid1 behind is valid

<ef_gid1> String type

<is_valid_gid2> Integer type

0: the ef_gid2 behind is invalid

1: the ef_gid2 behind is valid

<ef_gid2> String type

<digits_of_mnc> Integer type

6.22.1 Description

When a MT is equipped with multiple card slots, the set command directs the MT to select the SIM/UICC card installed in the indicated card slot in all future actions that require the use of SIM/UICC.

6.22.2 Format

Command	Possible response
+CSUS=[<card slot>]	OK +CME ERROR: <err>
+CSUS=?	+CSUS: <card slot>
+CSUS=?	+CSUS: (number of supported <card slot>s)

6.22.3 Field

<card slot>: integer type.

0 the SIM/UICC card installed in card slot 0

1 the SIM/UICC card installed in card slot 1

2 the SIM/UICC card installed in card slot 2

3 the SIM/UICC card installed in card slot 3

6.23 AT+CRSL –Ringer Sound Level (Sec 8.21)

6.23.1 Description

Set the incoming call ringer sound level.

6.23.2 Format

Command	Possible response(s)
+CRSL=<level>	*+CME ERROR: <err>*
+CRSL?	+CRSL: < level> *+CME ERROR: <err>*
+CRSL=?	+CRSL: (list of supported < level>s) *+CME ERROR: <err>*

6.23.3 Field

<level>: integer type value with manufacturer specific range.(1-7)

6.23.4 Note

6.23.4.1 Change History

6.23.4.2 Usage Note

This command can't be used when UART setting is SIM2

6.24 AT+CLVL –Loudspeaker volume level (Sec 8.23)

6.24.1 Description

Sets the volume of the internal speaker in the ME

6.24.2 Format

Command	Possible response(s)
+CLVL=< level>	*+CME ERROR: <err>*
+CLVL?	+CLVL: < level> *+CME ERROR: <err>*
+CLVL=?	+CLVL: (list of supported < level>s) *+CME ERROR: <err>*

6.24.3 Field

<level>: integer type value with manufacturer specific range.(0-6)

6.24.4 Usage Note

This command can't be used when UART setting is SIM2

7 07.07 AT Commands – GPRS commands

7.1 AT+CGDCONT – Define PDP Context (Sec 10.1.1)

7.1.1 Description

Specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter, <cid>.

7.1.2 Format

Command	Possible response(s)
+CGDCONT=[<cid>[,<PDP_type>[,<APN>[,<PDP_addr>[,<d_comp>[,<h_comp>[,<IPv4AddrAlloc>]]]]]][,<request_type>[,<P-CSCF_discovery>[,<IM_CN_Signalling_Flag_Ind>	OK ERROR
+CGDCONT?	[+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<IPv4AddrAlloc>[,<request_type>[,<P-CSCF_discovery>[,<IM_CN_Signalling_Flag_Ind>]]]]] [<CR><LF>+CGDCONT: <cid>,<PDP_type>,<APN>,<PDP_addr>,<d_comp>,<h_comp>[,<IPv4AddrAlloc>[,<request_type>[,<P-CSCF_discovery>[,<IM_CN_Signalling_Flag_Ind>]]]] [...]]

+CGDCONT=?	+CGDCONT: (range of supported <cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s),(list of supported <IPv4AddrAlloc>s),(list of supported <request_type>s),(list of supported <P-CSCF_discovery>s),(list of supported <IM_CN_Signalling_Flag_Ind>s) [<CR><LF>+CGDCONT: (range of supported <cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s),(list of supported <IPv4AddrAlloc>s),(list of supported <request_type>s),(list of supported <P-CSCF_discovery>s),(list of supported <IM_CN_Signalling_Flag_Ind>s) [...]]

7.1.3 Field

<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>: (Packet Data Protocol type) a string parameter.
IP Internet Protocol (IETF STD 5)

<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)
0 - off (default if value is omitted)

<h_comp>: a numeric parameter that controls PDP header compression
0 - off (default if value is omitted)

<IPv4AddrAlloc>: a numeric parameter that controls how the MT/TA requests to get the IPv4 address information
0 IPv4 Address Allocation through NAS Signalling
1 IPv4 Address Allocated through DHCP

<request_type>: integer type; indicates the type of PDP context activation request for the PDP context, see 3GPP TS 24.301 [83] (subclause 6.5.1.2) and 3GPP TS 24.008 [8] (subclause 10.5.6.17). If the initial PDP context is supported (see subclause 10.1.0) it is not allowed to assign <cid>=0 for emergency bearer services. According to 3GPP TS 24.008 [8] (subclause 4.2.4.2.2 and subclause 4.2.5.1.4) and 3GPP TS 24.301 [83] (subclause 5.2.2.3.3 and subclause 5.2.3.2.2), a separate PDP context must be established for emergency bearer services.
NOTE 4: If the PDP context for emergency bearer services is the only activated context, only emergency calls are allowed, see 3GPP TS 23.401 [82] subclause 4.3.12.9.
0 PDP context is for new PDP context establishment or for handover from a non-3GPP access network (how the MT decides whether the PDP context is for new PDP context establishment or for handover is implementation specific)
1 PDP context is for emergency bearer services
2 PDP context is for new PDP context establishment
3 PDP context is for handover from a non-3GPP access network

<P-CSCF_discovery>: a numeric parameter influences how the MT/TA requests to get the P-CSCF address,

see 3GPP TS 24.229 [89] annex B and annex L.
0 Preference of P-CSCF address discovery not influenced by +CGDCONT
1 Preference of P-CSCF address discovery through NAS Signalling
2 Preference of P-CSCF address discovery through DHCP

<IM_CN_Signalling_Flag_Ind>: a numeric parameter used to indicate to the network whether the PDP
context is for IM CN subsystem-related signalling only or not.
0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only
1 UE indicates that the PDP context is for IM CN subsystem-related signalling only

Note: In our design, except cid 0, user must use AT+CGDCONT=<cid>,… to specify PDP context parameter values before using AT+CGACT=1,<cid> to activate the PDP context.

7.2 AT+CGDSCONT – Define Secondary PDP Context (Sec 10.1.2)

7.2.1 Description

The set command specifies PDP context parameter values for a Secondary PDP context identified by the (local) context identification parameter, <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command.

7.2.2 Format

Command	Possible response(s)
+CGDSCONT=[<cid>,<p_cid>[,<d_comp>[,<h_comp>[,<IM_CN_Signalling_Flag_Ind>]]]]	OK ERROR
+CGDSCON	+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp>,<IM_CN_Signalling_Flag_Ind> [<CR><LF>+CGDSCONT: <cid>,<p_cid>,<d_comp>,<h_comp>,<IM_CN_Signalling_Flag_Ind> [...]]

+CGDSCONT=?	+CGDSCONT: (range of supported <cid>s),(list of <p_cid>s for active primary contexts),(list of supported <d_comp>s),(list of supported <h_comp>s),(list of supported <IM_CN_Signalling_Flag_Ind>s)

7.2.3 Field

<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.

<p_cid>: (Primary PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition which has been specified by use of the +CGDCONT command. The parameter is local to the TE-MT interface. The list of permitted values 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)

<d_comp>: a numeric parameter that controls PDP data compression

0 - off (default if value is omitted)

<h_comp>: a numeric parameter that controls PDP header compression

0 - off (default if value is omitted)

<IM_CN_Signalling_Flag_Ind>: a numeric parameter used to indicate to the network whether the PDP

context is for IM CN subsystem-related signalling only or not.

0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only

1 UE indicates that the PDP context is for IM CN subsystem-related signalling only

7.3 AT+CGQREQ – Quality of Service Profile (Requested) (Sec 10.1.4)

7.3.1 Description

This command allows the TE to specify a Quality of Service Profile that is used when the MT sends an Activate PDP Context Request message to the network.

7.3.2 Format

Command	Possible Response(s)
+CGQREQ=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]	OK ERROR
+CGQREQ?	+CGQREQ: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQREQ: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> […]]
+CGQREQ=?	+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) […]]

7.3.3 Field

<cid>: a numeric parameter which specifies a particular PDP context definition

<precedence>: a numeric parameter which specifies the precedence class

<delay>: a numeric parameter which specifies the delay class

<reliability>: a numeric parameter which specifies the reliability class

<peak>: a numeric parameter which specifies the peak throughput class

<mean>: a numeric parameter which specifies the mean throughput class

7.4 AT+CGQMIN – Quality of Service Profile (Minimum acceptable) (Sec 10.1.5)

7.4.1 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.

7.4.2 Format

Command	Possible Response(s)
+CGQMIN=[<cid> [,<precedence > [,<delay> [,<reliability.> [,<peak> [,<mean>]]]]]]	OK ERROR
+CGQMIN?	+CGQMIN: <cid>, <precedence >, <delay>, <reliability>, <peak>, <mean> [<CR><LF>+CGQMIN: <cid>, <precedence >, <delay>, <reliability.>, <peak>, <mean> […]]
+CGQMIN=?	+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) […]]

7.4.3 Field

<cid>: a numeric parameter which specifies a particular PDP context definition

<precedence>: a numeric parameter which specifies the precedence class

<delay>: a numeric parameter which specifies the delay class

<reliability>: a numeric parameter which specifies the reliability class

<peak>: a numeric parameter which specifies the peak throughput class

<mean>: a numeric parameter which specifies the mean throughput class

7.5 AT+CGATT – PS attach or detach (Sec 10.1.9)

7.5.1 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.250 command state.

7.5.2 Format

Command	Possible Response(s)
+CGATT= [<state>]	OK ERROR
+CGATT?	+CGATT: <state>
+CGATT=?	+CGATT: (list of supported <state>s)

7.5.3 Field

<state>: indicates the state of PS attachment

0 - detached

1 - attached

7.6 AT+CGACT – PDP context activate or deactivate (Sec 10.1.10)

7.6.1 Description

To activate or deactivate the specified PDP context (s).

7.6.2 Format

Command	Possible Response(s)
+CGACT=[<state> [,<cid>]]	OK ERROR +CME: ERROR <cause>
+CGACT?	+CGACT: <cid>, <state> [<CR><LF>+CGACT: <cid>, <state> [...]]
+CGACT=?	+CGACT: (list of supported <state>s)

7.6.3 Field

<state>: indicates the state of PDP context activation

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. If no <cid> is specified, then UE assumes it as 1. The usage of omitted <cid> to activate/deactivate all is not supported.

<cause>: indicate the PDP context activation failure cause, including:
SM reject cause = 3072 + <sm cause>
which <sm cause> is specified at 3GPP 24.008 clause 10.5.6.6(Annex I)
TCM reject cause = 3372 + <tcm cause>
Which <tcm cause> is a enum specified as:
TCM_L4C_INVALID_PARAMETER = 0x00 + TCM_CAUSE_START,
TCM_L4C_NSAPI_NOT_IN_USE,
TCM_L4C_CID_ALREADY_IN_USE,
TCM_L4C_CID_UNEXPECTED,
TCM_L4C_CID_PRIMARY_IS_NOT_ACTIVATED,
TCM_ACL_ACTION_NOT_ALLOWED,
TCM_ACL_SIM_FILE_FULL,
TCM_ACL_ADD_ENTRY_FAILED,
TCM_ACL_DEL_ENTRY_FAILED,
TCM_ACL_SET_ENTRY_FAILED,
TCM_ACL_SIM_READ_FAILED,
TCM_ACL_SIM_WRITE_FAILED,
L4C_CMD_CONFLICT = 3472

Note: In our design, except cid 0, user must use `AT+CGDCONT=<cid>,…` to specify PDP context parameter values before using `AT+CGACT=1,<cid>` to activate the PDP context.

7.7 AT+CGCMOD –PDP Context Modify (Sec 10.1.11)

7.7.1 Description

The execution command is used to modify the specified PDP context (s) with respect to QoS profiles and TFTs.

7.7.2 Format

Command	Possible Response(s)
+CGCMOD=<cid>	OK ERROR
+CGCMOD=?	+CGCMOD: (list of <cid>s associated with active contexts)

7.7.3 Field

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

7.8 AT+CGDATA –Enter data state (Sec 10.1.12)

7.8.1 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.

7.8.2 Format

Command	Possible Response(s)
+CGDATA=[<L2P>[,<cid>[,<chid>]]]	CONNECT ERROR
+CGDATA=?	+CGDATA: (list of supported <L2P>s)

7.8.3 Field

<L2P>: a string parameter that indicates the layer 2 protocol to be used between the TE and MT

M-UPS	manufacturer-specific protocol for Network Driver Interface Specification (NDIS) M-
MBIM	manufacturer-specific protocol for Mobile Broadband Interface Model (MBIM)
M-IPCORE	manufacturer-specific protocol if and only if for LTE project

Other values will result in an ERROR response.

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

<chid>: channel id, a.k.a network interface, a numeric parameter used to specify which channel to be binded. Default chid is the same as cid. In the case of IPv4v6 fallback to IPv4 and IPv6 two PDP context, these two context will be assigned to the same network interface via this AT command.

7.9 AT+CGPADDR –Show PDP address (Sec 10.1.14)

7.9.1 Description

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

The test command returns a list of defined <cid>s.

7.9.2 Format

Command	Possible response(s)
+CGPADDR=<cid>	+CGPADDR: <cid>,<PDP_addr>
+CGPADDR=?	+CGPADDR: (list of defined <cid>s)

7.9.3 Field

<cid>: a numeric parameter which specifies a particular PDP context definition (see the +CGDCONT and +CGDSCONT commands). If no <cid> is specified, an ERROR result code will be returned. Multiple <cid> field is not supported.

<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.

7.10 AT+CGAUTO – Automatic response to network request PDP context activation

(Sec 10.1.15)

7.10.1 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.

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.250 online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

7.10.2 Format

Command	Possible response(s)
+CGAUTO=<n>	OK ERROR
+CGAUTO?	+CGAUTO: <n>

7.10.3 Field

<n>:

0 turn off automatic response for Packet Domain only
1 turn on automatic response for Packet Domain only

For <n> = 0 Packet Domain 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.

7.11 AT+CGANS –Manual response to a network request for PDP context activation

(Sec 10.1.16)

7.11.1 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.

7.11.2 Format

Command	Possible response(s)
+CGANS=[<response>, [<L2P> ,[<cid>]]]	OK ERROR
+CGANS=?	+CGANS: (list of supported <response>s), (list of supported <L2P>s)

7.11.3 Field

<response>: is a numeric parameter which specifies how the request should be responded to.

0 reject the request

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

7.12 AT+CGCLASS –GPRS mobile station class(Sec 10.1.17)

7.12.1 Description

The1 set command is used to set the MT to operate according to the specified GPRS mobile class. If the requested class is not supported, an ERROR or +CME ERROR response is returned. Extended error responses are enabled by the +CMEE command.

The read command returns the current GPRS mobile class.

The test command is used for requesting information on the supported GPRS mobile classes.

7.12.2 Format

Command	Possible response(s)
+CGCLASS=[<class>]	OK ERROR
+CGCLASS?	+CGCLASS:<class>
+CGCLASS=?	+CGCLASS: (list of supported <class>s)

7.12.3 Field

<class>: a string parameter which indicates the GPRS mobile class (in descending order of functionality)

A class A

(highest) B

classB

CG class C in GPRS only mode

CC class C in circuit switched only mode (lowest)

Other values are reserved and will result in an ERROR response to the set command.

If the MT is GPRS attached when the set command is issued with a <class> = CC specified, a detach request shall be sent to the network.

7.12.4 Support Note

On MAUI and 09A branches, after W0918, the test command and the query command can be used while a normal SIM card is inserted. Before this, the +CGCLASS command can be only used while a test SIM is inserted.

7.13 AT+CGEREP – Packet Domain event reporting (Sec 10.1.19)

7.13.1 Description

Set command enables or disables sending of unsolicited result codes(URC), +CGEV： XXX from MT to TE in the case of certain events occurring in the Packet Domain MT or the network.

7.13.2 Format

Command	Possible response(s)
+CGEREP=[<mode>[,<bfr>]]	OK ERROR
+CGEREP?	+CGEREP： <mode>,<bfr>
+CGEREP=?	+CGEREP： (list of supported <mode>s),(list of supported <bfr>s)

7.13.3 Field

<mode>: a numeric parameter

0 disables sending of URC, +CGEV. No codes are forwarded to the TE.

1 eables sending of URC, +CGEV. forward them directly to the TE.

<bfr>: a numeric parameter

0 MT will not buffer any URC. 0 is default value if omitted, and it's the only supported setting.

+CGEV:

For network attachment, the following unsolicited result codes and the corresponding events are defined:

- +CGEV: NW DETACH

  The network has forced a PS detach. This implies that all active contexts have been deactivated. These are not reported separately.

- +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.

For PDP context deactivation, the following unsolicited result codes and the corresponding events are defined:

- +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. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

- +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. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

For PDP context activation, the following unsolicited result codes and the corresponding events are defined:

- +CGEV: ME PDN ACT <cid>
  The mobile termination has activated a context. The <cid> for this context is provided to the TE. The format of the parameters <cid> are found in command +CGDCONT.

For other PDP context handling, the following unsolicited result codes and the corresponding events are defined:

- +CGEV: REJECT <PDP_type>, <PDP_addr>
  A network request for context activation occurred when the MT was unable to report it to the TE with a +CRING unsolicited result code and was automatically rejected. The format of the parameters <PDP_type> and <PDP_addr> are found in command +CGDCONT.
- +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. The format of the parameters <PDP_type>, <PDP_addr> and <cid> are found in command +CGDCONT.

7.14 AT+CGREG – GPRS network registration status (Sec 10.1.20)

7.14.1 Description

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>[,<Act>]] when <n>=2 and there is a change of the network cell. The value <n>=3 further extends the unsolicited result code with [,<cause_type>,<reject_cause>], when available, when the value of <stat> changes.

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. Location information elements <lac>,<ci> and <Act> are returned only when
<n>=2 and MT is registered in the network. The parameters

[,<cause_type>,<reject_cause>], if available, are returned when <n>=3.

7.14.2 Format

Command	Possible response(s)
+CGREG=[<n>]	
+CGREG?	+CGREG: <n>,<stat>[,[<lac>],[<ci>],[<AcT>],[<rac>][,<cause_type>,<reject_cause>]]

7.14.3 Field

<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 GMM cause value information unsolicited result code +CGREG: <stat>[,[<lac>],[<ci>],[<AcT>],[<rac>][,<cause_type>,<reject_cause>]]

<stat>:

0 not registered, MT is not currently searching an operator to register to

1 registered, home network

2 not registered, but MT is currently trying to attach or searching an operator to register to

3 registration denied

4 unknown

5 registered, roaming

6 registered for "SMS only", home network (not applicable)

7 registered for "SMS only", roaming (not applicable)

8 attached for emergency bearer services only (see NOTE 2) (applicable only when <AcT> indicates 2,4,5,6)

9 registered for "CSFB not preferred", home network (not applicable)

10 registered for "CSFB not preferred", roaming (not applicable)

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

<ci>: string type; four byte cell ID in hexadecimal format

<Act>:

0 GSM
2 UTRAN
3 GSM w/EGPRS
4 UTRAN w/HSDPA
5 UTRAN w/HSUPA
6 UTRAN w/HSDPA and HSUPA
7 E-UTRAN (not applicable)

<rac>: string type; one byte routing area code in hexadecimal format

<cause_type>: integer type; indicates the type of <reject_cause>.

0 Indicates that <reject_cause> contains a GMM cause value, see 3GPP TS 24.008 [8] Annex G.

1 Indicates that <reject_cause> contains a manufacturer-specific cause.

<reject_cause>: integer type; contains the cause of the failed registration. The value is of type as defined by <cause_type>.

7.15 AT+CGSMS – Select service for MO SMS messages (Sec 10.1.21)

7.15.1 Description

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

The read command returns the currently selected service or service preference.

The test command is used for requesting information on the currently available services and service preferences.

7.15.2 Format

Command	Possible Response(s)
+CGSMS= <service>	OK ERROR
+CGSMS?	+CGSMS: <service>

7.15.3 Field

<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

7.16 AT+EGTP – GPRS Transfer Preference (Proprietary Command)

7.16.1 Description

This command is to set or to get GPRS transfer preference. It is only available when __MONITOR_PAGE_DURING_TRASFER__ is defined

7.16.2 Format

Command	Possible Response(s)
+EGTP=<state>	OK ERROR
+EGTP?	+EGTP: <state>
	<CR><LF>OK
+EGTP=?	+EGTP: (list of supported <state>s)

7.16.3 Field

<state>: indicates the state of GPRS transfer preference

0 – DATA PREFER

1 – CALL PREFER

Other values are reserved and will result in an ERROR response to the execution command.

7.16.4 Support Note

This command goes along with the feature option: MONITOR_PAGE_DURING_TRANSFER. For feature phone projects, this command is only used for test purposes. The synchronization and simultaneous access from AT and MMI interfaces are not supported. It is only supported in full AT command set.

7.17 AT+CGEQREQ – 3G Quality of Service Profile (Requested)

7.17.1 Description

This command allows the TE to specify a UMTS QoS Profile that is used when the MT sends and Activate PDP Context Request message to the network.

7.17.2 Format

Command	Possible Response(s)
+CGEQREQ=[<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay>[,<Traffic handling priority>]]]]]]]]]]]]	OK ERROR
+CGEQREQ?	+CGEQREQ: <cid>, <Traffic class> ,<Maximum bitrate UL> ,<Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority> [<CR><LF>+CGEQREQ: <cid>, <Traffic class> ,<Maximum bitrate UL> ,<Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL> ,<Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority> […]]

+CGEQREQ=?	+CGEQREQ: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) [<CR><LF>+CGEQREQ: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s),(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) […]]

7.17.3 Field

<cid>: (see +CGDCONT and _CGDSCONT commands) A special form of the set command, +CGEQREQ= <cid> causes the requested profile for context number <cid> to become undefined.

<Traffic class>: a numeric parameter that indicates the type of application for which the UMTS bearer service is optimised.

0 - conversational

1 - streaming

2 - interactive

3 - background

4 - subscribed value

Other values are reserved.

<Maximum bitrate UL>: a numeric parameter that indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …).

<Maximum bitrate DL>: a numeric parameter that indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate UL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested.

<Guaranteed bitrate DL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQREQ=…,32, …). If the parameter is set to '0' the subscribed value will be requested.

<Delivery order>: a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

0 - no

1 - yes

2 - subscribed value.

Other values are reserved.

<Maximum SDU size>: a numeric parameter (1,2,3,…) that indicates the maximum allowed SDU size in octets.

If the parameter is set to '0' the subscribed value will be requested.

<SDU error ratio>: a string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5•10-3

would be specified as '5E3' (e.g. AT+CGEQREQ=…,'5E3',…). '0E0'

means subscribed value.

<Residual bit error ratio>: a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio

in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of 5•10-

3

would be specified as '5E3' (e.g. AT+CGEQREQ=…,'5E3',…). '0E0' means subscribed value.

<Delivery of erroneous SDUs>: a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.

0 - no

1 - yes

2 - no detect

3 - subscribed value

Other values are reserved.

<Transfer delay>: a numeric parameter (0,1,2,…) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. If the parameter is set to '0' the subscribed value will be requested.

<Traffic handling priority>: a numeric parameter (1,2,3,…) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers. If the parameter is set to '0' the subscribed value will be requested.

<PDP_type>: (see +CGDCONT and +CGDSCONT commands).

7.17.4 Support Note

1. It is only supported in R99 or later projects.
2. For the set/execute mode, all parameters must be entered. Part of parameters omitted will be treated as an undefined operation.

7.18 AT+CGEQMIN – 3G Quality of Service Profile (Minimum acceptable)

7.18.1 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/Modify PDP Context Accept message.

7.18.2 Format

Command	Possible Response(s)
+CGEQMIN=[<cid> [,<Traffic class> [,<Maximum bitrate UL> [,<Maximum bitrate DL> [,<Guaranteed bitrate UL> [,<Guaranteed bitrate DL> [,<Delivery order> [,<Maximum SDU size> [,<SDU error ratio> [,<Residual bit error ratio> [,<Delivery of erroneous SDUs> [,<Transfer delay> [,<Traffic handling priority>]]]]]]]]]]]]]	OK ERROR

+CGEQMIN?	+CGEQMIN: <cid>, <Traffic class> ,<Maximum bitrate UL>, <Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL>, <Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling priority> [<CR><LF>+CGEQMIN: <cid>, <Traffic class> ,<Maximum bitrate UL> ,<Maximum bitrate DL> ,<Guaranteed bitrate UL> ,<Guaranteed bitrate DL>, <Delivery order> ,<Maximum SDU size> ,<SDU error ratio> ,<Residual bit error ratio> ,<Delivery of erroneous SDUs> ,<Transfer delay> ,<Traffic handling

	priority> […]]
+CGEQMIN=?	+CGEQMIN: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s) ,(list of supported <Maximum bitrate DL>s), (list of supported <Guaranteed bitrate UL>s), (list of supported <Guaranteed bitrate DL>s) ,(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) [<CR><LF>+CGEQMIN: <PDP_type>, (list of supported <Traffic class>s) ,(list of supported <Maximum bitrate UL>s), (list of supported <Maximum bitrate DL>s) ,(list of supported <Guaranteed bitrate UL >s), (list of supported <Guaranteed bitrate DL >s) ,(list of supported <Delivery order>s) ,(list of supported <Maximum SDU size>s) ,(list of supported <SDU error ratio>s) ,(list of supported <Residual bit error ratio>s) ,(list of supported <Delivery of erroneous SDUs>s) ,(list of supported <Transfer delay>s) ,(list of supported <Traffic handling priority>s) […]]

7.18.3 Field

<cid>: (see +CGDCONT and _CGDSCONT commands) A special form of the set command, +CGEQMIN= <cid> causes the requested profile for context number <cid> to become undefined.

<Traffic class>: a numeric parameter that indicates the type of application for which the UMTS bearer service is optimised.

0 - conversational

1 - streaming

2 - interactive

3 - background

Other values are reserved.

<Maximum bitrate UL>: a numeric parameter that indicates the maximum number of kbits/s delivered to UMTS (up-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …).

<Maximum bitrate DL>: a numeric parameter that indicates the maximum number of kbits/s delivered by UMTS (down-link traffic) at a SAP. As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …).

<Guaranteed bitrate UL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered to UMTS (up-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …).

<Guaranteed bitrate DL>: a numeric parameter that indicates the guaranteed number of kbits/s delivered by UMTS (down-link traffic) at a SAP (provided that there is data to deliver). As an example a bitrate of 32kbit/s would be specified as '32' (e.g. AT+CGEQMIN=…,32, …).

<Delivery order>: a numeric parameter that indicates whether the UMTS bearer shall provide in-sequence SDU delivery or not.

0 - no

1 - yes

Other values are reserved.

<Maximum SDU size>: a numeric parameter (1,2,3,…) that indicates the maximum allowed SDU size in octets.

<SDU error ratio>: a string parameter that indicates the target value for the fraction of SDUs lost or detected as erroneous. SDU error ratio is defined only for conforming traffic. The value is specified as 'mEe'. As an example a target SDU error ratio of 5•10-3 would be specified as '5E3' (e.g. AT+CGEQMIN=…,'5E3',…).

<Residual bit error ratio>: a string parameter that indicates the target value for the undetected bit error ratio in the delivered SDUs. If no error detection is requested, Residual bit error ratio indicates the bit error ratio in the delivered SDUs. The value is specified as 'mEe'. As an example a target residual bit error ratio of 5•10-3 would be specified as '5E3' (e.g. AT+CGEQMIN=…,'5E3',…).

<Delivery of erroneous SDUs>: a numeric parameter that indicates whether SDUs detected as erroneous shall be delivered or not.

0 - no

1 - yes

2 - no detect

Other values are reserved.

<Transfer delay>: a numeric parameter (0,1,2,…) that indicates the targeted time between request to transfer an SDU at one SAP to its delivery at the other SAP, in milliseconds. <Traffic handling priority>: a numeric parameter (1,2,3,…) that specifies the relative importance for handling of all SDUs belonging to the UMTS bearer compared to the SDUs of other bearers.

<PDP_type>: (see +CGDCONT and +CGDSCONT commands).

7.18.4 Support Note

1. It is only supported in R99 or later projects.
2. For the set/execute mode, all parameters must be entered. Part of parameters omitted will be treated as an undefined operation

7.19 AT+CGSDATA – Sending uplink data (Proprietary Command)

7.19.1 Description

This command is used to send uplink data to network.

7.19.2 Format

Command	Possible response(s)
+CGSDATA= <byte>, <cid>	*+CME ERROR: <err>*

7.19.3 Field

<byte> the number of byte sending to network

<cid> the number of PDP context id

example:

at+cgsdata = 500, 1 (sending 500 bytes to cid 1)

7.20 AT+CGPRCO – GPRS Protocol Configuration (Proprietary Command)

7.20.1 Description

This command is used to for NDIS dialup set/get protocol related config options (PDP username, passwd, DNS, Authentication Type, request IPv6 DNS, …). And these protocol configuration will be used in SM PDP context activation to negotiate with GGSN.

.

7.20.2 Format

Command	Possible response(s)
+CGPRCO= <cid>,<user_name>,<passwd>,<DNS1>,<DNS2>,<auth_type>,<req_v6_dns>,<req_v4_dns>	*OK* *+CME ERROR: <err>*
+CGPRCO=?	*+CGPRCO: <list of cids>,<max user_name length>,<max passwd length>*

+CGPRC0?	*+CGPRC0:<cid>,<DNS1>,<DNS2>[,<V6_DNS1>,<V6_DNS2>]* *[…]*

7.20.3 Field

<cid>: a numeric parameter which specifies a particular PDP context definition.

<user_name>: string to specify “User Name”

<passwd>: string to specify “Password”

<DNS1>: string to specify “primary DNS”

<DNS2>: string to specify “secondary DNS”

<auth_type>: a numeric parameter used to indicate authentication type. Default is PAP.

0: PAP

1: CHAP

2: None

3: PAP+CHAP

<req_v6_dns>: a numeric parameter to indicate if request IPv6 DNS or not. Default is Yes.

0: No

1: Yes

<req_v4_dns>: a numeric parameter to indicate if request IPv4 DNS or not. Default is Yes.

0: No

1: Yes

7.20.4 Note

N/A

7.20.5 Change History

N/A

7.21 AT +ACTTEST – PDP context activate or deactivate from EM mode (Proprietary Command)

7.21.1 Description

To activate or deactivate the specified PDP context (s) and get flow control buffer for +CGSDATA.

7.21.2 Format

Command	Possible Response(s)
+ACTTEST=<state> ,<cid>	OK ERROR
+ACTTEST=?	OK

7.21.3 Field

<state>: indicates the state of PDP context activation

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

8 07.07 Mobile Termination Errors

8.1 AT+CMEE (Sec 9.1)

8.1.1 Description

Set command disables or enables the use of result code +CME ERROR: <err> as an indication of an error relating to the functionality of the MT. When enabled, 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.

Test command returns values supported as a compound value.

8.1.2 Format

Command	Possible response(s)
+CMEE=[<n>]	
+CMEE?	+CMEE: <n>
+CMEE=?	+CMEE: (list of supported <n>s)

8.1.3 Field

<n>:

0 disable +CME ERROR: <err> result code and use ERROR instead

1 enable +CME ERROR: <err> result code and use numeric <err> values (refer next subclause)

2 enable +CME ERROR: <err> result code and use verbose <err> values (refer next subclause)

<err> values (numeric format followed by verbose format):

9.2.1 General errors

0 phone failure

1 no connection to phone

2 phone adaptor link reserved

3 operation not allowed

4 operation not supported

5 PH SIM PIN required

6 PH-FSIM PIN required

7 PH-FSIM 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 string too long
25 invalid characters in text string
26 dial string too long
27 invalid characters in dial string
30 no network service
31 network timeout
32 network not allowed - emergency calls only
40 network personalization PIN required
41 network personalization PUK required
42 network subset personalization PIN required
43 network subset personalization PUK required
44 service provider personalization PIN required
45 service provider personalization PUK required
46 corporate personalization PIN required
47 corporate personalization PUK required
48 hidden key required (NOTE: This key is required when accessing hidden phonebook entries.)

100 unknown

9.2.2 GPRS-related errors

9.2.2.1 Errors related to a failure to perform an Attach

103 Illegal MS (#3)

106 Illegal ME (#6)

107 GPRS service not allowed (#7)

111 PLMN not allowed (#11)

112 Location area not allowed (#12)

113 Roaming not allowed in this location area (#13) (Values in parentheses are TS 24.008 cause codes.)

9.2.2.2 Errors related to a failure to Activate a Context

132 service option not supported (#32)

133 requested service option not subscribed (#33)

134 service option temporarily out of order (#34)

149 PDP authentication failure

(Values in parentheses are TS 24.008 cause codes.)

9.2.2.3 Other GPRS errors

150 invalid mobile class

148 unspecified GPRS error

Other values in the range 101-150 are reserved for use by GPRS

9 07.07 Annex C

9.1 AT+VTS (Sec C.2.11)

9.1.1 Description

Allows the transmission of DTMF tones. The command is write-only.

Note: The command is used only during voice calls.

9.1.2 Format

Command	Return
+VTS=<dtmf>	
+VTS=?	(list of supported <tone1>s),(list of supported <tone2>s) ,(list of supported <duration>s)

9.1.3 Field

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

For example: AT+VTS = 9 or AT+VTS = A

You can use multiple command to achieve continuous DTMF tones.

For example : AT+VTS=6;+VTS=2;+VTS=8;+VTS=2

9.1.4 Note

When modem work with application (ex: WM smart phone RIL or ECMT tool) , the application expect the result of AT+VTS is returned immediately . Since user might press keypad to send DTMF very fast, so application would like to send DTMF before the previous DTMF is actually processed in NW (modem shall help to queue the DTMF request if previous is not finished yet). So we will response the result code immediately to prevent blocking the application's DTMF keypad handling.

Currently, we only check if the digit is valid and if there is any call ongoing(ex: dialing , active exist). If yes,

then we will return "OK". But please notice the "OK" doesn't imply that the DTMF is really processed successfully in

NW. ex: it might fail due to MS doesn't have user connection yet. Or it might be fail due to there is no response from

NW. Or it might be fail due to there is no speech channel (ex: data call)

If __VTS_LATE_RESPONSE__ is turned on, “OK” is printed when SEND DTMF is acknowledged by network

10 07.05 SMS AT Commands

Please refer to 27.005 Sec 3.1 Parameter Definition to see more details of the parameter fields in each command.

10.1 AT+CSMS – Select Message Service (Sec 3.2.1)

10.1.1 Description

Selects the message service and returns the type of messages supported by the ME. If chosen service is not supported by the ME (but supported by the TA), +CME ERROR is returned.

10.1.2 Format

Command	Possible response(s)
+CSMS=<service>	+CSMS: <mt>,<mo>,<bm> *+CMS ERROR: <err>*
+CSMS?	+CSMS: <service>,<mt>,<mo>,<bm>
+CSMS=?	+CSMS: (list of supported <service>s)

10.1.3 Field

<service>:

0 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]

1 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]
the requirement of <service> setting 1 is mentioned under corresponding command descriptions)

<mt>, <mo>, <bm>:

0 type not supported

1 type supported

10.1.4 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT.

10.2 AT+CPMS – Preferred Message Storage (Sec 3.2.2)

10.2.1 Description

Selects memory storage spaces to be used for reading, writing, etc. If chosen storage is not appropriate for the ME (but is supported by the TA), +CME ERROR is returned.

10.2.2 Format

Command	Possible response(s)
+CPMS=<mem1>	+CPMS: <used1>,<total1>,<used2>,<total2>,<used3>,<total3> *+CMS ERROR: <err>*
+CPMS?	+CPMS: <mem1>,<used1>,<total1>,<mem2>,<used2>,<total2>, <mem3>,<used3>,<total3> *+CMS ERROR: <err>*
+CPMS=?	+CPMS: (list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s)

10.2.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.3 AT+CMGF – Message Format (Sec 3.2.3)

10.3.1 Description

Sets the input and output format to be used by the TA.

10.3.2 Format

Command	Possible response(s)
+CMGF=[<mode>]	
+CMGF?	+CMGF: <mode>
+CMGF=?	+CMGF: (list of supported <mode>s)

10.3.3 Field

<mode>:

0 PDU mode (default when implemented)

1 text mode

10.3.4 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.4 AT+CSCA – Service Center Address (Sec 3.3.1)

10.4.1 Description

Updates the SMCS address, through which mobile-originated SMSs are transmitted. In text mode, the setting is used by send (AT+CMGS) and write (AT+CMGW) commands. In PDU mode, the setting is used by the same commands, but only when the length of the SMCS address (coded into <pdu> parameter) equals zero.

10.4.2 Format

Command	Possible response(s)
+CSCA=<sca>[,<tosca>]	
+CSCA?	+CSCA: <sca>,<tosca>
+CSCA=?	

10.4.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.5 AT+CSMP – Set Text Mode Parameters (Sec 3.3.2)

10.5.1 Description

Setting Text Mode Parameters. 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. It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0... 255) or define the absolute time of the validity period termination (<vp> is a string). The format of <vp> is given by

<fo>.

10.5.2 Format

Command	Possible response(s)
+CSMP=[<fo>[,<vp>[,<pid>[,<dcs>]]]]	
+CSMP?	+CSMP: <fo>,<vp>,<pid>,<dcs>
+CSMP=?	

10.5.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.6 AT+CSDH – Show Text Mode Parameters (Sec 3.3.3)

10.6.1 Description

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

Test command returns supported values as a compound value.

10.6.2 Format

Command	Possible response(s)
+CSDH=[<show>]	
+CSDH?	+CSDH: <show>
+CSDH=?	+CSDH: (list of supported <show>s)

10.6.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.7 AT+CSCB – Select Cell Broadcast Message Types (Sec 3.3.4)

10.7.1 Description

Selects which types of CBMs are to be received by the ME.

10.7.2 Format

Command	Possible response(s)
+CSCB=[<mode>[,<mids>]]	
+CSCB?	+CSCB: <mode>,<mids>
+CSCB=?	+CSCB: (list of supported <mode>s)

10.7.3 Field

<mode>:

0 message types specified in <mids> and <dcss> are accepted

1 message types specified in <mids> and <dcss> are not accepted

<mids>: We support **10** message identifiers at most.
string type: all different possible combinations of CBM message identifiers (refer <mid>) (default is empty string);
e.g. "0,1,5,320-478,922"

<dcss>: string type; all different possible combinations of CBM data coding schemes (refer <dcs>) (default is empty string);e.g. “0-3,5”

10.7.4 Note1

For <mids> of <mode>=0, our design is to open the <mids> from user input and close other <mids>.
In the following case, user input <mode>=0 and <mids>=2. So open channel 2 and close other channel (channel 1).
AT+CSCB?
+CSCB: 0,**"1"**,"1"

OK
AT+CSCB=**0**,**"2"**,"2"

OK AT+CSCB?
+CSCB: 0,**"2"**,"1,2" OK

In the following case, user input <mode>=0 without <mids>. So don’t open any channel and close other channel (channel 1).
AT+CSCB?

+CSCB: 0,**"1"**,"1"

OK AT+CSCB=**0**
OK AT+CSCB?
+CSCB: 0,**""**,"1" OK

For <dcss> of <mode>=0, our design is to **increase** the <dcss> from user input.
In the following case, user input <mode>=0 and <dcss>=2. So **increase** language 2.
AT+CSCB?
+CSCB: 0,"1",**"1"**

OK AT+CSCB=**0**,"2",**"2"**
OK
AT+CSCB?
+CSCB: 0,"2",**"1,2"**

OK

In the following case, user input <mode>=0 without <dcss>. So don't **increase** any language.
AT+CSCB?

+CSCB: 0,"1",**"1"**

OK AT+CSCB=**0**
OK AT+CSCB?
+CSCB: 0,"",**"1"**

OK

10.7.5 Note2

For <mids> of <mode>=1, our design is to close all <mids> no matter with <mids> or not. In the following case, user input <mode>=1. So close all channel.
AT+CSCB?
+CSCB: 0,**"2"**,"1,2"

OK AT+CSCB=**1**,"2","2"
OK
AT+CSCB?

+CSCB: 1,**""**,"1" OK

In the following case, user input <mode>=1 without <mids>. Also close all channel.
AT+CSCB?
+CSCB: 0,**"1"**,"1"

OK AT+CSCB=**1**
OK AT+CSCB?
+CSCB: 1,**""**,"1" OK

For <dcss> of <mode>=1, our design is to **decrease** the <dcss> from user input.
In the following case, user input <mode>=1 and <dcss>=2. So **decrease** language 2.
AT+CSCB?
+CSCB: 0,"2",**"1,2"**

OK
AT+CSCB=**1**,"2",**"2"**
OK
AT+CSCB?
+CSCB: 1,"",**"1"**

OK

In the following case, user input <mode>=1 without <dcss>. So don't **decrease** any language.
AT+CSCB?
+CSCB: 0,"1",**"1"**

OK
AT+CSCB=**1**
OK
AT+CSCB?
+CSCB: 1,"",**"1"**

OK

10.7.5.1 Change History

N/A

10.7.5.2 Usage Note

- <mid> 3GPP TS 23.041 CBM Message Identifier in integer format
- <dcs> depending on the command or result code: 3GPP TS 23.038 SM Data Coding Scheme (default 0), or Cell Broadcast Data Coding Scheme in integer format
- We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT
- We will sync with MMI after using this command

10.8 AT+CSAS – Save Settings (Sec 3.3.5)

10.8.1 Description

Execution command saves active message service settings to a non-volatile memory. Settings specified in commands Service Centre Address +CSCA, Set Message Parameters +CSMP and Select Cell Broadcast Message Types +CSCB (if implemented) are saved. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be saved.

10.8.2 Format

Command	Possible response(s)
+CSAS[=<profile>]	*+CMS ERROR: <err>*
+CSAS=?	+CSAS: (list of supported <profile>s)

10.8.3 Field

<profile>:

0...255 manufacturer specific profile number where settings are to be stored

10.8.4 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.9 10.9 AT+CRES – Restore Settings (Sec 3.3.6)

10.9.1 Description

Execution command restores message service settings from non-volatile memory to active memory. A TA can contain several profiles of settings. Settings specified in commands Service Centre Address +CSCA, Set Message Parameters +CSMP and Select Cell Broadcast Message Types +CSCB (if implemented) are restored. Certain settings may not be supported by the storage (e.g. (U)SIM SMS parameters) and therefore can not be restored.

10.9.2 Format

Command	Possible response(s)
+CRES[=<profile>]	*+CMS ERROR: <err>*
+CRES=?	+CRES: (list of supported <profile>s)

10.9.3 Field

<profile>:
0...255 manufacturer specific profile number where settings are to be stored

10.9.4 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.10 AT+CNMI – New Message Indications to TE (Sec 3.4.1)

10.10.1 Description

Selects the procedure how the reception of new messages from the network is indicated to the TE when TE is active (DTR signal is ON). IF TE is inactive (DTR signal OFF), message reception is carried out as specified in GSM 03.38. This command enables the unsolicited result codes +CMT, +CMTI, +CBM, and +CDS. (Please refer to 07.07 for more detail)

10.10.2 Format

Command	Possible response(s)
+CNMI=[<mode>[,<mt>[,<bm>[,<ds>[,<bfr>]]]]]	*+CMS ERROR: <err>*
+CNMI?	+CNMI: <mode>,<mt>,<bm>,<ds>,<bfr>

+CNMI=?	+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)

10.10.3 Field

<mode>

0 disable unsolicited result code

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>

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: <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> (text mode enabled; about parameters in italics, refer command Show Text Mode Parameters +CSDH)

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)

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>:

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)

<bfr>:

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.

10.10.4 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.11 AT+CMGL(Text mode) – List Message (Sec 3.4.2)

10.11.1 Description

Returns messages with status value <stat> from returned message in preferred storage to the TE.

10.11.2 Format

Command	Possible response(s)
+CMGL[=<stat>]	**if text mode (+CMGF=1), command successful and SMS-SUBMITs and/or SMS-DELIVERs:** +CMGL: <index>,<stat>,<oa/da>,[<alpha>],[<scts>][,<*tooa/toda*>, <*length*>]<CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<da/oa>,[<alpha>],[<scts>][,<*tooa/toda*>, <*length*>]<CR><LF><data>[...]] **if text mode (+CMGF=1), command successful and SMS-STATUS-REPORTs:** +CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> [<CR><LF> +CMGL: <index>,<stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> [...]] **if text mode (+CMGF=1), command successful and SMS-COMMANDs:** +CMGL: <index>,<stat>,<fo>,<ct>[<CR><LF> +CMGL: <index>,<stat>,<fo>,<ct>[...]] **if text mode (+CMGF=1), command successful and CBM storage:** +CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages> <CR><LF><data>[<CR><LF> +CMGL: <index>,<stat>,<sn>,<mid>,<page>,<pages> <CR><LF><data>[...]] **otherwise:** *+CMS ERROR: <err>*
+CMGL=?	+CMGL: (list of supported <stat>s)

10.11.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.12 AT+CMGL(PDU mode) – List Message (Sec 4.1)

10.12.1 Description

Returns messages with status value <stat> from returned message in preferred storage to the TE.

10.12.2 Format

Command	Possible response(s)
+CMGL[=<stat>]	**if PDU mode (+CMGF=0) and command successful:** +CMGL: <index>,<stat>,[<alpha>],<length><CR><LF><pdu> [<CR><LF>+CMGL:<index>,<stat>,[<alpha>],<length><CR><LF><pdu> [...]] **otherwise:** *+CMS ERROR: <err>*
+CMGL=?	+CMGL: (list of supported <stat>s)

10.12.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.13 AT+CMGR(Text mode) – Read Message (Sec 3.4.3)

10.13.1 Description

Returns messages with location value <index> from preferred message storage <mem1> to the TE. If the status of the message is .received unread., the status in the storage changes to .received read.. If reading fails, +CMS ERROR is returned.

10.13.2 Format

Command	Possible response(s)

+CMGR=<index>	**if text mode (+CMGF=1), command successful and SMS-DELIVER:** +CMGR: <stat>,<oa>,[<alpha>],<scts>*[,<tooa>,<fo>,<pid>,<dcs>,* *<sca>,<tosca>,<length>]*<CR><LF><data> **if text mode (+CMGF=1), command successful and SMS-SUBMIT:** +CMGR: <stat>,<da>,[<alpha>]*[,<toda>,<fo>,<pid>,<dcs>,[<vp>],* <sca>,<tosca>,<length>]<CR><LF><data> **if text mode (+CMGF=1), command successful and SMS-STATUS-REPORT:** +CMGR: <stat>,<fo>,<mr>,[<ra>],[<tora>],<scts>,<dt>,<st> **if text mode (+CMGF=1), command successful and SMS-COMMAND:** +CMGR: <stat>,<fo>,<ct>*[,<pid>,[<mn>],[<da>],[<toda>],<length>* *<CR><LF><cdata>]* **if text mode (+CMGF=1), command successful and CBM storage:** +CMGR: <stat>,<sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> **otherwise:** *+CMS ERROR: <err>*
+CMGR=?	

10.13.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.14 AT+CMGR(PDU mode) – Read Message (Sec 4.2)

10.14.1 Description

Returns messages with location value <index> from preferred message storage <mem1> to the TE. If the status of the message is .received unread., the status in the storage changes to .received read.. If reading fails, +CMS ERROR is returned.

10.14.2 Format

Command	Possible response(s)
+CMGR=<index>	**if PDU mode (+CMGF=0) and command successful:** +CMGR: <stat>,[<alpha>],<length><CR><LF><pdu> **otherwise:** *+CMS ERROR: <err>*

+CMGR=?	

10.14.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.15 AT+CNMA(Text mode) – New Message Acknowledgement to ME/TA (Sec 3.4.4)

10.15.1 Description

Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE. This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1.

10.15.2 Format

Command	Possible response(s)
if text mode (+CMGF=1): +CNMA	*+CMS ERROR: <err>*
+CNMA=?	

10.15.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.16 AT+CNMA(PDU mode) – New Message Acknowledgement to ME/TA (Sec 4.6)

10.16.1 Description

Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1.

10.16.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CNMA[=<n>[,<length>[<CR>***PDU is given***<ctrl-Z/ESC>]]]	*+CMS ERROR: <err>*
+CNMA=?	**if PDU mode (+CMGF=0):** +CNMA: (list of supported <n>s)

10.16.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.17 AT+CMGS(Text mode) – Send Message (Sec 3.5.1)

10.17.1 Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery.

10.17.2 Format

Command	Possible response(s)
if text mode (+CMGF=1): +CMGS=<da>[,<toda>]<CR> ***text is entered***<ctrl-Z/ESC>	**if text mode (+CMGF=1) and sending successful:** +CMGS: <mr>[,<scts>] **if sending fails:** *+CMS ERROR: <err>*
+CMGS=?	

10.17.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.18 AT+CMGS(PDU mode) – Send Message (Sec 4.3)

10.18.1 Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery.

10.18.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CMGS=<length><CR> ***PDU is given***<ctrl-Z/ESC>	**if PDU mode (+CMGF=0) and sending successful:** +CMGS: <mr>[,<ackpdu>] **if sending fails:** *+CMS ERROR: <err>*
+CMGS=?	

10.18.3 Note

1. We don’t support “+CMS ERROR” when AT command set is SLIM_AT or ULC_AT

10.19 AT+CMSS(Text mode) – Send Message from Storage(Sec 3.5.2)

10.19.1 Description

Execution command sends message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery.

10.19.2 Format

Command	Possible response(s)
+CMSS=<index>[,<da>[,<toda>]]	**if text mode (+CMGF=1) and sending successful:** +CMSS: <mr>[,<scts>] **if sending fails:** *+CMS ERROR: <err>*
+CMSS=?	

10.19.3 Note

1. We don’t support “+CMS ERROR” when AT command set is SLIM_AT or ULC_AT

10.20 AT+CMSS(PDU mode) – Send Message from Storage(Sec 4.7)

10.20.1 Description

Execution command sends message with location value <index> from message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery.

10.20.2 Format

Command	Possible response(s)

+CMSS=<index>[,<da>[,<toda>]]	**if PDU mode (+CMGF=0) and sending successful:** +CMSS: <mr>[,<ackpdu>] **if sending fails:** *+CMS ERROR: <err>*
+CMSS=?	

10.20.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.21 AT+CMGW(Text mode) – Write Message to Memory (Sec 3.5.3)

10.21.1 Description

Execution command stores a message to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given, support 'stored unsent' and "stored sent"

10.21.2 Format

Command	Possible response(s)
if text mode (+CMGF=1): +CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR> ***text is entered***<ctrl-Z/ESC>	+CMGW: <index> *+CMS ERROR: <err>*
+CMGW=?	

10.21.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.22 AT+CMGW(PDU mode) – Write Message to Memory (Sec 4.4)

10.22.1 Description

Execution command stores a message to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given, support 'stored unsent' and "stored sent"

10.22.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CMGW=<length>[,<stat>]<CR>***PDU is given*** <ctrl-Z/ESC>	+CMGW: <index> *+CMS ERROR: <err>*
+CMGW=?	

10.22.3 Field

<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 "DRAFT"

10.22.4 Note

10.22.4.1 Change History

7 "DRAFT" of <stat> is available from 09B.1017MP

10.22.4.2 Usage Note

- 7 "DRAFT" of <stat> is only supported for phone suite. Others can't use this command to do test.
- We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT
-

10.23 AT+CMGD – Delete Message (Sec 3.5.4)

10.23.1 Description

Deletes message from preferred message <mem1> (see AT+CPMS) storage location <index>. If deletion fails, +CMS ERROR is returned.

10.23.2 Format

Command	Possible response(s)
+CMGD=<index>[,<delflag>]	*+CMS ERROR: <err>*

+CMGD=?	+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]

10.23.3 Field

<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.

10.23.4 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.24 AT+CMGC(Text mode) – Send Command (Sec 3.5.5)

10.24.1 Description

Execution command sends a command message from a TE to the network (SMS-COMMAND).

10.24.2 Format

Command	Possible response(s)
if text mode (+CMGF=1): +CMGC=<fo>,<ct>[,<pid>[,<mn>[,<da>[,<toda>]]]]<CR> ***text is entered***<ctrl-Z/ESC>	**if text mode (+CMGF=1) and sending successful:** +CMGC: <mr>[,<scts>] **if sending fails:** *+CMS ERROR: <err>*
+CMGC=?	

10.24.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.25 AT+CMGC(PDU mode) – Send Command (Sec 4.5)

10.25.1 Description

Execution command sends a command message from a TE to the network (SMS-COMMAND).

10.25.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CMGC=<length><CR> ***PDU is given***<ctrl-Z/ESC>	**if PDU mode (+CMGF=0) and sending successful:** +CMGC: <mr>[,<ackpdu>] **if sending fails:** *+CMS ERROR: <err>*
+CMGC=?	

10.25.3 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.26 AT+CMMS – More Message to Send (Sec 3.5.6)

10.26.1 Description

Set command controls the continuity of SMS relay protocol link. When feature is enabled (and supported by network) multiple messages can be sent much faster as link is kept open. Test command returns supported values as a compound value.

10.26.2 Format

Command	Possible response(s)
+CMMS=[<n>]	
+CMMS?	+CMMS: <n>
+CMMS=?	+CMMS: (list of supported <n>s)

10.26.3 Field

<n>:

0 disable

2 enable (if the time between the response of the latest message send command and

the next send command exceeds 1-5 seconds (the exact value is up to ME implementation), ME shall close the link but TA shall not switch automatically back to <n>=0)

10.26.4 Note

1. We don't support "+CMS ERROR" when AT command set is SLIM_AT or ULC_AT

10.27 AT+EQSI – Query storage index (Proprietary command)

10.27.1 Description

To query storage index.

10.27.2 Format

Command	Possible Response(s)
+EQSI=<storage>	+EQSI: <storage>, <begin>, <end>, <used> OK/ERROR
+EQSI=?	+ESUO: (list of supported <storage>s)

10.27.3 Field

<storage>: string type; SM or ME

<begin>: beginning of index

<end>: ending of index

<used>: number of messages in <storage>

10.27.4 Note

10.27.4.1 Change History

10.27.4.2 Usage Note

This command is only supported for phone suite. Others can't use this command to do test.

10.28 AT+ESMSS – SMS status change mode (Proprietary command)

10.28.1 Description

SMS status change mode after +CMGR and +CMGL

10.28.2 Format

Command	Possible response(s)
+ESMSS= <mode>	*+CME ERROR: <err>*
+ESMSS ?	+ESMSS : <mode>
+ESMSS=?	+ESMSS : (0-1)

10.28.3 Field

<mode>

0 Unchange – SMS status remains as “REC UNREAD” after +CMGR or +CMGL

1 Change – SMS status changes from “REC UNREAD” to “REC READ” after +CMGR or +CMGL.

10.28.4 Note

10.28.4.1 Change History

N/A

10.28.4.2 Usage Note

The command only supported in projects without __SMS_STORAGE_BY_MMI__ option from 09B.0952MP.

10.29 AT+EMGS – Send SMS (Proprietary command)

10.29.1 Description

This command is the same as AT+CMGS but in different format. In +CMGS, we have to input 2nd part after <CR> and end with <ctrl-z>. In +EMGS, we use 1 line command (use “,” instead of <CR> to separate 2 parts) and end with <CR>.

10. 29.2 Format

Command	Possible Response(s)

If text mode (+CMGF=1): +EMGS=<da>[,<toda>],text is entered <CR> **If PDU mode (+CMGF=0):** +EMGS=<length>,pdu is given <CR>	**if text mode (+CMGF=1) and sending successful:** +CMGS: <mr>[,<scts>] **if PDU mode (+CMGF=0) and sending successful:** +CMGS: <mr>[,<ackpdu>] +CMS ERROR: <err>

1029.3 Field

Please refer to AT+CMGS

10.30 AT+EMGW – Write SMS (Proprietary command)

10.30.1 Description

This command is the same as AT+CMGW but in different format. In +CMGW, we have to input 2nd part after <CR> and end with <ctrl-z>. In +EMGW, we use 1 line command (use "," instead of <CR> to separate 2 parts) and end with <CR>.

10.33.2 Format

Command	Possible Response(s)
If text mode (+CMGF=1): +EMGW=<da>,[<toda>],[<stat>],text is entered <CR> **If PDU mode (+CMGF=0):** +EMGW=<length>,[<stat>], pdu is given <CR>	+CMGW: <index> +CMS ERROR: <err>

10.30.3 Field

Please refer to AT+CMGW

11 Proprietary STK AT Commands

Please refer to another document Remote_SAT (RSAT). We introduce the STK AT command in detail in that
document.

12 Other Proprietary AT Commands

12.1 AT+EGPAU – PPP Authentication

12.1.1 Description

This command is used to set GPRS PPP negotiated authentication protocol.

12.1.2 Format

Execution command : AT+ EGPAU = <op>,<cid> [,<is_chap>]

Test command : AT+ EGPAU =?Show the supported value.

12.1.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	Read	0
			Write	1
Integer	cid	Context id	Please refer to the value in test command response.	
Integer	is_chap	Negotiation protocol	PAP	0
			CHAP	1
			NONE	2
			PAP_CHAP (for SP)	3

12.1.4 Response

Test command : + EGPAU: (0-1), (<cid range>), (0-2)

+ EGPAU: (0-1), (<cid range>), (0-3) ←for SmartPhone project

Execution command : OK

12.2 AT+EQUERY – general query command

12.2.1 Description

To query hardware or MS status.

12.2.2 Format

Command	Possible Response(s)
+EQUERY=<op>	OK ERROR
+EQUERY=?	OK

12.2.3 Field

Type	Short name	Parameter/comment	
integer	op	0	Query SMS stats to write SMS to inbox
		1	Query charger status
		2	Query clam status
		3	Query if sms ready
		4	Query if phb ready
		5	Query if open compile option __SMS_STORAGE_BY_MMI__ and __GEMINI__ (for phone suite).
		6	Query the PHB System module version. When defined __PHB_STORAGE_BY_MMI__, the version is 2. Else, the version is 1.
		7	Query the SMS System module version. When defined __SMS_STORAGE_BY_MMI__, the version is 2. Else, the version is 1.

12.2.4 Example

```
AT+EQUERY=0
+CMGW: (0-3)   // SMS support writing SMS to inbox

OK

AT+EQUERY=1
+CHAR: 1       // charger is plug-in

OK
```

```
AT+EQUERY=2
+CLAM: 0            // clam is closed

OK

AT+EQUERY=5
+EQMO: 1            // #if defined(__SMS_STORAGE_BY_MMI__) &&
defined(__GEMINI__)


OK


AT+EQUERY=6
+EPBV: 2            // #if defined(__PHB_STORAGE_BY_MMI__)


OK


AT+EQUERY=7
+ESMSV: 2           // #if defined(__SMS_STORAGE_BY_MMI__)


OK
```


12.3 AT+EIND – Indication Control Command

12.3.1 Description

Set command to enable +EIND unsolicited result code . to indicate the readiness of SMS or PHB or AT

12.3.2 Format

Command	Possible Response(s)
+EIND= <flag>	OK ERROR
+EIND?	+EIND: <ind>
+EIND=?	+EIND: (0-4294967295)

12.3.3 Field

Type	Short name	Parameter/comment	
Integer	flag	Bit 0	Any value(0~4294967295) that bit 0 is 1 e.g. 1,3,5..
		Bit 1	Any value(0~4294967295) that bit 1 is 1 e.g. 2,3,6..
		Bit 2	Any value(0~4294967295) that bit 2 is 1 e.g. 4,5,..
		Bit 3	Any value(0~4294967295) that bit 3 is 1 e.g. 8,9..
		Bit 7	Any value(0~4294967295) that bit 7 is 1 e.g. 128,129,130..
Integer	ind	1	SMS_READY
		2	PHB_READY
		4	file change for PLMN files
		8	file change for EONS files
		16	Invalid SIM
		128	AT_READY

12.4 12.4 AT+EINFO – URC Information Control Command

12.4.1 Description

Set command to enable some proprietary NW info and cell info unsolicited result code(URC) information report.

12.4.2 Format

Command	Possible Response(s)
+EINFO= <flag>[,<type>,<n>]	OK ERROR

+EINFO?	+EINFO: <flag>
+EINFO=?	+EINFO: (0-4294967295)

12.4.3 Field

Type	Short name	Parameter/comment	
Integer	flag	Bit 0	Any value(0~4294967295) that bit 0 is 1 e.g. 1,3,5..
		Bit 1	Any value(0~4294967295) that bit 1 is 1 e.g. 2,3,6..
		Bit 2	Any value(0~4294967295) that bit 2 is 1 e.g. 4,5,..
		Bit 3	Any value(0~4294967295) that bit 3 is 1 e.g. 8,9..
		Bit 7	Any value(0~4294967295) that bit 7 is 1 e.g. 128,129,130..

Currently , flag bit and its URC mapping are listed as below.

Bit	URC
Bit 1	+ESMLA (see section 9.2 for detail)
Bit 2	+ECFU (see section 4.4 for detail)
Bit 3	+ECELLINFO(see section 11.2 for detail)
Bit 4	+ENWINFO(see section 11.3 for detail)
Bit 5	+ESPEECH (see section 3.3 for detail)
Bit 6	+STKPCI
Bit 7	+ECIPH (see section 13.8 for detail)
Bit 8	+EMMRRS (for multiple SIM project only)
Bit 9	+EPKTFI
Bit 10	+EWARNIN
Bit 11	+STKCTRL

<type> integer type

The type of NW info to be operated. This field is only used when Bit 3 of <flag> is 1.

Range: 0 ~ 15

<n> integer type

This field is only used when Bit 3 of <flag> is 1.

0:enable

1:disable

2:unchanged

12.4.4 Get Neighboring and Network information from URC

Use AT+EINFO to enable URC for EM Network information and Neighbor Cell information . Interpret the EM Network or Neighbor Cell information raw data from the URC with the corresponding structure definition (see section 13.10 for the corresponding structure name of the EM INFO raw data and section 13.9 for the corresponding structure name of the Neighbor Cell INFO raw data)

12.4.5 Example

"AT+EINFO=4" is to enable +ECELLINFO URC

"AT+EINFO=8,2,1" is to enable +ENWINFO URC type 2 (RR_EM_CHANNEL_DESCR_INFO, see section 13.10)

12.5 AT+EBOOT – Boot up mode

12.5.1.1 Description

This command is used to set the boot up mode for modem. If boot up in exception mode, modem will perform silent boot up, such as bypass PIN check when it has been verified before.

12.5.1.2 Format

Command	Possible Response(s)
+EBOOT=<mode>	OK/ERROR

12.5.1.3 Field

<mode>

0 Normal boot up

1 Exceptoon boot up

12.5.1.4 Note

- The command is applicable for modem project only
- Must use this command before the first AT+CFUN/AT+EFUN execution during boot up.

12.6 AT+EPCT – PS Conformance Test Mode

12.6.1.1 Description

For the following cases that our handset behavior needs to be adjusted to meet test requirement of CTA/FTA/IOT

- CTA/FTA/IOT lab equipment is not capable with Spec
- Our handset make some changes for real network for better performance or some other reason.
- In one kind of test, CTA for example, there maybe two cases that need exclusive behavior of handset. Just like case A need handset send some signal to network, But Case B actual need handset do not send those signal to network.

12.6.1.2 Format

Command	Possible Response(s)
+EPCT=?	+EPCT: <list of supported mode> OK
+EPCT?	+EPCT: <mode>,<profile > OK
+EPCT=<mode>[,<profile>]	OK

12.6.1.3 Field

<mode>: integer type.

Availabe test mode defined in **ps_em_enum.h**.

```
typedef enum
{
   PS_CONF_TEST_NONE,
   PS_CONF_TEST_CTA,
   PS_CONF_TEST_FTA,
```

```
    PS_CONF_TEST_IOT,
    PS_CONF_TEST_OPERATOR,
    PS_CONF_TEST_FACTORY,
    PS_CONF_TEST_END
} ps_conf_test_mode_enum;
```

<profile>: integer type. Specific test profile under the <mode>

Availabe test profile defined in **ps_em_enum.h**. Following is the subset of available test profile.

```
/* CTA Items */
#define CTA_INTEGRITY_CHECK_BIT_FOR_MM        0x00000001
#define CTA_TL1_BIT_FOR_TL1                   0x00000002
#define CTA_K1297_BIT_FOR_RRCE                0x00000004
#define CTA_SNCONFLICT_BIT_FOR_RLC_RRCE       0x00000008
#define CTA_CFQUERY_BIT_FOR_SS                0x00000010

#define CTA_PLMN_LOCK_BIT_FOR_CSCE            0x00000020
#define CTA_OPEN_MEAS_BIT_FOR_CSCE            0x00000040
#define CTA_DISABLE_DPA_BIT_FOR_RRCE          0x00000080
#define CTA_OPEN_INVALID_INTRA_CELL_REPORT__BIT_FOR_MEME    0x00000100
#define CTA_AUTO_ADJUST_BIT_FOR_RRCE          0x00000200
#define CTA_DISABLE_UPA_BIT_FOR_RRCE          0x00000400
#define CTA_RELEASE_ADAPTION_BIT_FOR_RRCE     0x00000800

/* FTA Items */
#define FTA_TEST_ANITE    0x00000001
#define FTA_TEST_CRTUG    0x00000002
#define FTA_TEST_CRTUW    0x00000004
#define FTA_TEST_ANRITSU  0x00000008
#define FTA_TEST_CMW500   0x00000010
```

12.6.1.4 Note

- Example:
  - Set handset to CTA mode without special setting ➔AT+EPCT=1
  - Set handset to CTA mode with special setting bits(bit 123 on) ➔AT+EPCT=1,7
    - 7 = 0000 0111(bit 1/2/3 set to 1 means on)

12.7 AT+ECHUP – Force release specific call by call_id

12.7.1 Description

This command is used to force release specific call by call_id. If disconnect call can not be complete in time, it is allowed to use this command to force release the call.

12.7.2 Format

Command	Possible response(s)
+ECHUP=<call_id>	*OK* *+CME ERROR: <err>*

12.7.3 Field

<call_id>: integer

12.7.4 Note

- Note that it required to disconnect call by AT+CHLD before using AT+ECHUP, MODEM does not allow disconnect call by AT+ECHUP only.

12.7.5 Change History

The command is available from MAUI.W11.25

12.8 AT+EOPS – Enhanced Operator Selection

12.8.1 Description

This command is similar to +COPS, with additional support for specified ARFCN.
Set command forces an attempt to select and register the GSM/UMTS network operator. If the selected operator is not available, ERROR is returned.
This command also provides semi-auto selection, which can trigger one manual selection procedure but keep the selection mode in automatic.

Read command returns the current mode, the currently selected operator. EOPS can get current PLMN under both registed and limited service while COPS can only get current PLMN under registerd service
Test command returns operator list present in the network.

12.8.2 Format

Command	Possible response(s)

+EOPS=<mode>[,<format>,<oper>[,<Act>[,<arfcn>]]]	*OK* *+CME ERROR: <err>*
+EOPS?	+EOPS: <mode>,<format>,<oper>,<act> *+CME ERROR: <err>*
+EOPS=?	+EOPS: (0, 1) *+CME ERROR: <err>*

12.8.3 Field

<mode>: integer type

0 automatic (<oper> field is ignored)

1 or 4 manual (<oper> field shall be present)

5 semi-automatic (<oper> field shall be present)

<format>: integer type

0 long format alphanumeric <oper>

1 short format alphanumeric <oper>

2 numeric <oper>

<oper>: string type;

<format> of +COPS 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 3GPP TS 24.008 [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 3)(network code digit 2)(network code digit 1)

<stat>:

0 unknown

1 available

2 current

3 forbidden

<AcT>: access technology selected

0 GSM

2 UTRAN

7 LTE

<arfcn>: interger type range

0~0xFFFFFFFF Valid arfcn value

GSM: band900：0～124，975～1023 band1800：512～885
band1900：512～810
band850：128～251

UTRAN TD-SCDMA:

Band A: 10054~10121

Band E: 11504~11996

Band F: 9404~9596

UTRAN FDD:

Band 1: 10562~10838

band 2: 9662 ~ 9938, 412, 437, 462, 487, 512, 537, 562, 587, 612, 637, 662, 687

band 3: 1162 ~ 1513

band 4: 1537 ~ 1738, 1887, 1912, 1937, 1962, 1987, 2012, 2037, 2062, 2087

band 5: 4357 ~ 4458, 1007, 1012, 1032, 1037, 1062, 1087

band 6: 4387 ~ 4413, 1037, 1062

band 7: 2237 ~ 2563, 2587, 2612, 2637, 2662, 2687, 2712, 2737, 2762, 2787, 2812, 2837, 2862, 2887, 2912

band 8: 2937 ~ 3088 band 9: 9237 ~ 9387

band 10: 3112 ~ 3388, 3412, 3437, 3462, 3487, 3512, 3537, 3562, 3587, 3612, 3637, 3662, 3687

band 11: 3712 ~ 3787

band 12: 3842 ~ 3903, 3932, 3957, 3962, 3987,
3992 band 13: 4017 ~ 4043, 4067, 4092
band 14: 4117 ~ 4143, 4167,
4192 band 15: reserved
band 16:
reserved band
17: reserved
band 18:
reserved
band 19: 712 ~ 763, 787, 812,
837 band 20: 4512 ~ 4638
band 21: 862 ~
912 band 22: 4662
~ 5038

LTE:

0~46589, if not supported, modem will ignore

F
D
D:

Band 1:
0~599
Band 2:
600~1199
Band 3:
1200~1949
Band 4:
1950~2399
Band 5:
2400~2649
Band 6:
2650~2749
Band 7:
2750~3449
Band 8:
3450~3799
Band 9:
3800~4149
Band10:

4150~4749

Band11:
4750~4949

Band12: 5010~5179
Band13: 5180~5279
Band14: 5280~5379
Band17: 5730~5849
Band18: 5850~5999
Band19: 6000~6149
Band20: 6150~6449
Band21: 6450~6599
Band22: 6600~7399
Band23: 7500~7699
Band24: 7700~8039
Band25: 8040~8699
Band26: 8690~9039
Band27: 9040~9209
Band28: 9210~9659
Band29: 9660~9769
Band30: 9770~9869
Band31: 9870~9919
Band32: 9920~10359

TDD:
Band33: 36000~36199
Band34: 36200~36349
Band35: 36350~36949
Band36: 36950~37549
Band37: 37550~37749
Band38: 37750~38249
Band39: 38250~38649
Band40: 38650~39649
Band41: 39650~41589
Band42: 41590~43589
Band43: 43590~45589
Band44: 45590~46589

12.8.4 Note

Currently 3G operator selection with specified ARFCN only support TD-SCDMA.
The command format for <mode> 5 is all the same as mode 1 or 4, but the execution result will not cause change of selection mode. This selection mode is related to the operator H3G.

12.8.5 Change History

<mode> 5 is only supported in some branch/projects, by customer request.

12.8.6 Usage Note

N/A

12.9 AT+ESUO – Set UART owner

12.9.1 Description

To set UART owner.

12.9.2 Format

Command	Possible Response(s)
+ESUO=<mode>	OK/ERROR
+ESUO?	+ESUO: <owner>, <default owner>
+ESUO=?	+ESUO: (list of supported <owner>s)

12.9.3 Field

<mode>:
3: switch UART owner to DT (Unused)
4: switch UART owner to ATCI
5: switch UART owner to ATCI_2
6: switch UART owner to ATCI_3
7: switch UART owner to ATCI_4
…
n: switch UART owner to ATCI_(n-3)

<owner>:
3: DT (Unused)
4: ATCI

5: ATCI_2
6: ATCI_3
7: ATCI_4
…
n: ATCI_(n-3)

<default owner>: the default uart setting owner
4: ATCI
5: ATCI_2
6: ATCI_3
7: ATCI_4
...
n: ATCI_(n-3)

12.9.4 Example

AT+ESUO=?
+ESUO: (3-4) (support
DT) OK
AT+ESUO=?
+ESUO: (3-5) (support DT & dual
SIM) OK
AT+ESUO=?
+ESUO: (3-6) (support DT & 3
SIM) OK
AT+ESUO=?
+ESUO: (3-7) (support DT & 4
SIM) OK

12.10 AT+EGMR – Mobile Revision and IMEI

12.10.1 Description

This command is used to get mobile revision and IMEI for Engineer mode and factory test using.
The set operation only apply for IMEI, Serial Number and SV.
Setting new IMEI needs to reboot the target, then IMEI can take effect.
After reboot, then MMI *#06# and MM will know the update.

12.10.2 Format

Execution command : AT+ EGMR = <op>,<type>[,str]

Test command : AT+ EGMR =? Show if the command is supported

12.10.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	get	0
			Set	1
integer	type	Revision type	Baseband chipset (only for op= 0)	0
			DSP code (only for op= 0)	1
			DSP patch (only for op= 0)	2
			MCU software (only for op= 0)	3
			MS board(hardware) (only for op= 0)	4
			Serial Number	5
			Melody revision (only for op= 0)	6
			SIM1 IMEI	7
			MMI resource ver. (only for op= 0)	8
			SV (Software Version in IMEISV: 2 digit	9
			SIM2 IMEI	10
			SIM3 IMEI	11
			SIM4 IMEI	12
			Release Flavor	13
			DSP label	14
			DSP build time	15
string	Str	Input/output string		

12.10.4 Response

Test command :

+ EGMR: (0,1),(0-9)	Feature phone project before 08BW08.46
+EGMR: (0,1),(0-5,7-9)	Non-Gemini project
+EGMR: (0,1),(0-5,7-12)	Gemini project
+EGMR: (0,1),(0-5,7-9,13-15)	Non-Gemini MOLY project after W13.50
+EGMR: (0,1),(0-5,7-15)	Gemini MOLY project after W13.50

Execution command : When type = (1-7, 9):

*+EGMR:
“str”+

O
K

When type = 8 (+EGMR=0,8 to get MMI resource):

+AUDIO:
“ver”

+IMAGE:
“ver”

+FONT: “ver”

+STR: “ver”

OK

12.10.5 Example

1. **read IMEI:**

   AT+EMGR=0,7

   +EGMR: "135790246811220"

   OK

2. **Write IMEI:**

   AT+EGMR=1,7,"123451234512345"

   OK

   AT+EGMR=0,7

   +EGMR: "123451234512345"

   OK

3. **read SV of IMEISV**

   AT+EGMR=0,9

   +EGMR: "78"

   OK

4. **Write SV**

   AT+EGMR=1,9,"01"

   OK

   AT+EGMR=0,9

   +EGMR: "01"

   OK

5. **Read DSP Label**

   AT+EGMR=0,14

   +EGMR: "DSPMOLY.W13.50.LTE.p4"

OK

6. **Read DSP Build time**

AT+EGMR=0,15

+EGMR: "2013/11/28 2:7:33"

OK

12.10.6 Note

<type> = 10, 11, and 12 are only turned on when GEMINI, GEMINI+ with 3 or more SIM, and GEMINI+ with 4 SIM respectively.

12.10.6.1 Change History

<type>=6 is removed from 0BA.0848MP

<type> = 11 and 12 work from 10AW10.50

<type> = 14 and 15 are add in MOLY from W13.50

12.10.6.2 Usage Note

N/A

12.11 AT+ESLP – Sleep Mode

12.11.1 Description

This Command is used to enable and disable sleep mode in the mobile.

12.11.2 Format

Execution command : AT+ ESLP = <op>

Test command : AT+ ESLP =? Show if the command is supported

12.11.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	enable	1
			disable	0

12.11.4 Response

Test command : + ESLP: (0, 1)

Execution command : OK

12.12 AT+ELNVRM – NVRAM write protection

12.12.1 Description

This command is used to lock the operation of NVRAM for write protection.

Only the files with attribute NVRAM_ATTR_WRITEPROTECT will be affected, such as IMEI.

12.12.2 Format

Execution command : AT+ ELNVRM = <op>

Test command : AT+ ELNVRM =? Show if the command is supported

12.12.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	Lock disable(reserved)	0
			Lock enable	1
			Temp disable(reserved)	2
			Lock OTP	3

12.12.4 Response

Test command : +ELNVRM: (1)

Execution command : OK

12.13 AT+ECAL – Calibration Data Download Status Check

12.13.1 Description

This command is used to query the calibration data download status.

.

12.13.2 Format

Command	Possible Response(s)
+ECAL?	+ECAL: <status> OK
+ECAL	
+ECAL=?	OK

12.13.3 Field

Type	Short name	Parameter/comment

integer	status	calibration data is not download	0
		calibration data is donwload	1

12.13.4 NOTE

This command is supported from 11B.W12.09

12.14 AT+ERFTX – Control RF transmitter power

12.14.1 Description

This command allows users to perform RF test or control TX power

12.14.2 Format

Command	Possible response(s)
+ERFTX=<op>,[...]	*+CME ERROR: <err>* *OK*

12.14.3 Field

- **UMTS RF test: <op>=0**

  AT+ERFTX=0,<para1>,<para2>,<para3>,<para4>

  - <para1>: integer type
    - 0: request UE WCDMA TX output power for possible next desired TX signal measurement (with <para2/3/4>)
    - 1: to stop WCDMA TX power output (without any other parameters)
  - <para2>: integer type, indicate 'band', acceptable range is 1~10
    - Except 7
    - MT6268 solution supports band 1/2/4/5/6/8
  - <para3>: integer type, indicate 'channel (TX frequency)', unit is UL UARFCN numb er
  - <para4>: integer type, indicate 'power level', acceptable range: +24 ~ -55, unit is dBm

- **RF TX power reduction:**

  <op>=1

AT+ERFTX=1,<para1>,<para2>,<para3>

- <para1>: integer type, 2G L1 reduction level (unit: 1/8 dB)
  - 0 ~ 255 (0 dB ~ 32 dB)
- <para2>: integer type, 3G L1 reduction level (unit: 1/8 dB)
  - 0 ~ 255 (0 dB ~ 32 dB)
- <para3>: integer type, 4G L1 reduction level (unit: 1/8 dB)
  - 0 ~ 255 (0 dB ~ 32 dB)

➢ **GSM RF test: <op>=2**

AT+ERFTX=2,<type>,*<parameter1>,<parameter2>,…+

- <type>=0 RF test GSM stop
  - No parameter

- <type>=1 RF test GSM TX
  - parameters:

<arfcn>:

PGSM900: 1..124

EGSM900: 0..124, 975..1023

RGSM900: 0..124, 955..1023

DCS1800: 512..885

PCS1900: 512..810

GSM450: 259..293

GSM480: 306..340

GSM850: 128..251

<afc>: 0..8191

<band>:

L1_PGSM900 0x01

L1_EGSM900 0x02

L1_RGSM900 0x04

L1_DCS1800 0x08

L1_PCS1900 0x10

L1_GSM450 0x20

L1_GSM480 0x40

L1_GSM850 0x80

(Actually permitted bands are configured by *BAND_SUPPORT* in make file)

<tsc>: BSIC (int8), also for TSC = BSIC&0x7 (0~7)

<pcl>:
GSM400, GSM850, GSM900: 5~19
DCS1800, PCS1900: 0~15

<pattern>: RFTOOL_NB_TX_RANDOM_WITH_TSC =
0
RFTOOL_NB_TX_ALL_ONES_WITHOUT_TSC = 1
RFTOOL_AB_TX_RANDOM_WITH_SYNC_SEQ = 2
RFTOOL_CONT_TX_ALL_ZEROS = 3
RFTOOL_CONT_TX_ALL_ONES = 4
RFTOOL_CONT_TX_ALTERNATE_BITS = 5
RFTOOL_CONT_TX_PSEUDO_RANDOM = 6

- <type>=2 RF test GSM RX
  - parameters:
    <arfcn>: refer to TX section
    <gain>: different in each chip. Usually: -160~320 (unit: 1/8 dB)
    <band>: refer to TX section
    <pattern>:
    RFTOOL_NB_RX_CONTINUE = 0
    RFTOOL_NB_RX_BURST = 1

- <type>=3 RF test GSM power scan
  - parameters:
    <band>: refer to TX section
    <arfcn_in>: refer to TX section

➢ **RF TX power reduction by band: <op>=3**

AT+ERFTX=3,<rat>,<para1>,<para2>, … <paraX>

- <rat>=1 ➔2G TX reduction
  - <para1>,…,<para32> ➔Reduction level 0~255

Compose to an triple array **Gsm_tx_reduction[band][modulation][multi_timeslot]**

- 1st dimension: [band]

0: FrequencyBand850

1: FrequencyBand900

2: FrequencyBand1800

3: FrequencyBand1900

- 2nd dimension: [modulation]
  - 0: GMSK
  - 1: 8PSK
- 3rd dimension: [multi_timeslot]
  - 0: 1T
  - 1: 2T
  - 2: 3T
  - 3: 4T

Example:

Gsm_tx_reduction[1][0][3]=64 →band 900, GMSK, 4T reduction level 64 (8 dbm)

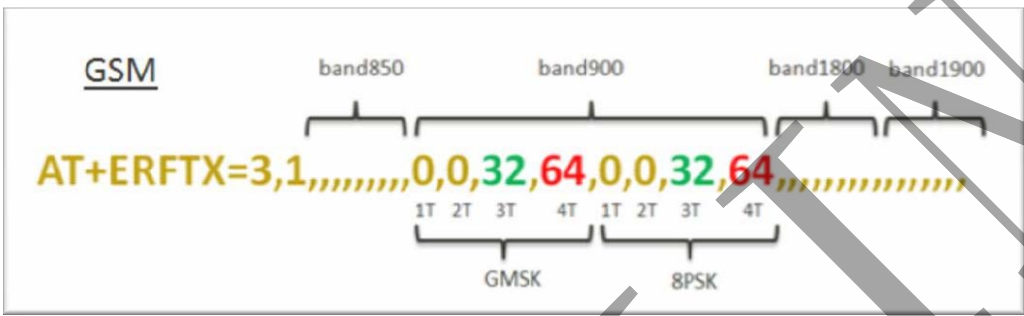
- <rat>=2 →3G TX reduction
  - <para1>,…,<para40> →Reduction level 0~255
    - Compose to an double array umts_tx_reduction[20][2]
      - 1st level: band
        - UMTS BAND I : WCDMA-IMT-2000
        - UMTS BAND II : WCDMA-PCS-1900
        - UMTS BAND III : WCDMA-DCS-1800
        - UMTS BAND IV : WCDMA-AWS-1700
        - UMTS BAND V : WCDMA-CLR-850
        - UMTS BAND VI : WCDMA-800
        - UMTS BAND VII : WCDMA-IMT-E-2600
        - UMTS BAND VIII : WCDMA-GSM-900
        - UMTS BAND IX : WCDMA-1800
        - UMTS BAND X : WCDMA-1700
      - 2nd level: WCDMA and HSPA
- <rat>=3 →4G TX reduction
  - <para1>,<para2>,<para3>,<para4>
    - para1: band: 1~64
    - para2: integer, 4G L1 reduction level (unit: 1/8 dB): 0 ~ 255 (0 dB ~ 32 dB)
    - para3: reserved
    - para4: reserved

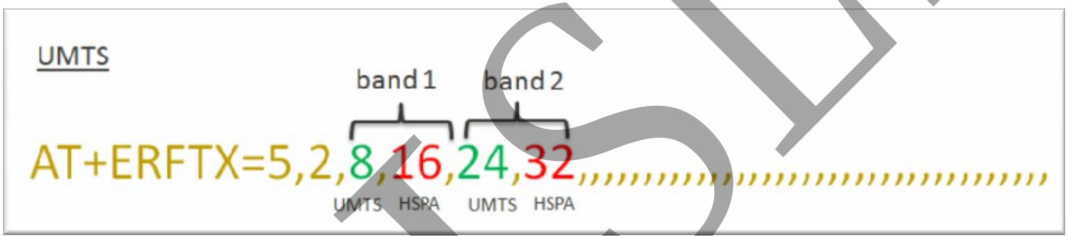
➢ **RF TX power reduction by band: <op>=5**

AT+ERFTX=5,<rat>,<para1>,<para2>, … <paraX>

Parameters same as <op>=3

- <op>=3 : expect given reduction level are the same for one band
  - E.g. **AT+ERFTX=3,1,,,,,,,,,32,32,32,32,32,32,32,32,,,,,,,,,,,,,,,**
- <op>=5: reduction level can be arbitrary
  - E.g. **AT+ERFTX=5,1,,,,,,,,,32,16,64,128,32,16,64,128,,,,,,,,,,,,,,,**





- **Reset RF TX power reduction: <op>=4**

  AT+ERFTX=4

  Reset all reduction level to 0. Same as AT+ERFTX=1,0,0,0

- **LTE RF test: <op>=6**

  AT+ERFTX=6,<type>,<para1>*,<para2>,…,<para11>+

  - <type>=0, force TX power
    - <para1>: on/off (boolean)
      - 0 : off
      - 1: on
    - <para2>: band (uint8)
    - <para3>: ul_bandwidth (uint8)
    - <para4>: ul_freq (uint16)
    - <para5>: duplex_mode (boolean)
    - <para6>: tdd_cfg (uint8)
    - <para7>: tdd_sp_sf_cfg (uint8)

- <para8>: vrb_start (uint8)
- <para9>: vrb_len (uint8)
- <para10>: mcs (uint8)
- <para11>: tx_power (int16)

➢ **LTE RF test: <op>=7**

AT+ERFTX=7,<band>,<dl_earfcn>

- <band>: integer (1~255),
  - Indicate the band number (e.g. <band> = 1 means band 1)
- <dl_earfcn>: integer (0~65535)
  - Indicate the E-UTRA Absolute Radio Frequency Channel Number in downlink.

URC:

- +erxrssi: <rssi0_dBm>, <rssi1_dBm>
  - <rssi0_dBm>: integer
    - Indicate the RSSI of RX0
  - <rssi1_dBm>: integer
    - Indicate the RSSI of RX1

12.15 AT+ENBR – get neighboring cell information

12.15.1 Design note

This command is used to get 2G/3G neighboring cell information.

12.15.2 Format

Command	Possible Response(s)
+ENBR	(2G) +ENBR: 1,<rssi>,<cid>,<lac> (3G) +ENBR: 2,<rssi>,<psc>

12.15.3 Field

Type	Short name	Parameter/comment
Integer	rssi	Receive signal strength

Integer	cid	Cell id
Integer	lac	Location area code
Integer	psc	Primary synchronization code

12.16 AT+EPSB – get packet switch bearer capability

12.16.1 Design note

This command is used to query the modem capability of PS service.

12.16.2 Format

Command	Possible Response(s)
+EPSB?	+EPSB: <bearer>

+EPSB	+EPSB: <bearer>

12.16.3 Field

Type	Short name	Parameter/comment
Integer	bearer	A bit mask indicate the corresponding access technology supported or not. GPRS: 0x01 EDGE: 0x02 WCDMA: 0x04 TD-SCDMA: 0x08 HSDPA: 0x10 HSUPA: 0x20 HSPA+: 0x40 LTE FDD: 0x80 LTE TDD: 0x100

12.16.4 Note

This command only returns the modem software capability, but not the hardware capability. In other words, this command can't be used to query the eFUSE status, so please be noted when modem has utilized eFUSE to change the hardware capability.

12.17 AT+EAUTH – Authentication

12.17.1.1 Description

This command is used to perform SIM authentication.

12.17.1.2 Format

Command	Possible Response(s)
+EAUTH:<rand>,<authentication>	+EAUTH: <sw1>,<sw2>[,<response>]

12.17.1.3 Field

<rand>: 16 bytes hex string. (32 character)

<authentication>:16 bytes hex string. (32 character)

<sw1>,<sw2> : integer, status word

<response>: hex string, max length 256 bytes(512 character)

12.18 AT+ETSTLP – TST Logging Port setting

12.18.1 Description

This command is used to change the TST logging port.

12.18.2 Format

Command	Possible Response(s)
+ETSTLP=<tst_port_ps>,<tst_port_l1>,<logging_mode>	OK/ERROR

12.18.3 Field

Type	Short name	Parameter/comment
integer	tst_port_ps	0: UART 1 1: UART 2 2: USB port 1 3: USB port 2 4: Dual Talk port
integer	tst_port_l1	0: UART 1 1: UART 2 2: USB port 1 3: USB port 2 4: Dual Talk port
integer	logging_mode	0: not changed (default) 1: USB logging 2: SD logging

12.18.4 Example

AT+ETSTLP=4,4, 1←enable USB logging for dual talk project

OK

AT+ETSTLP=4,4, 2←enable SD logging for dual talk project

OK

AT+ETSTLP=0,0←set logging port to UART1

OK

12.18.5 NOTE

- This command is only supported in modem load or the option __AT_ETSTLP_SUPPORT__ is turned on.
- The parameter <logging_mode> is only meaningful when `tst_port_ps` and `tst_port_l1` are 4.

12.19 AT+EPOF – Power off modem

12.19.1 Design note

This command is used to power off modem but will not cut off power, so that AP side can power on modem by AT+EPON to save some time. This is a existing command, the only different is that it will not call driver API to cut off power, this part is implement in UEM.

12.19.2 Format

Command	Possible Response(s)
+EPOF	OK
+EPOF=?	OK

12.19.3 Note

For dual SIM or multiple SIM project, please always send the command to protocol_1.

12.20 AT+EPON – Reset modem

12.20.1 Design note

This command is used to reboot modem by trigger watch dog reset.

12.20.2 Format

Command	Possible Response(s)
+EPON	OK
+EPON=?	OK

12.21 AT%EMSD – enable/disable DSP monitor

12.21.1 Description

This command is used to enable/disable DSP to monitor eCall related signal

12.21.2 Format

Command	Possible Response(s)
%EMSD=<Monitor_DSP>	OK/ERROR

12.21.3 Field

Type	Short name	Parameter/comment
integer	<Monitor_DSP>	0: DSP stop Monitor "eCall related signal" 1: DSP start monitor "eCall related signal"

12.21.4 Note

Enable DSP monitor before eCall is initiated. After eCall is terminated, disable DSP monitor

12.21.5 Example

AT%EMSD=1 ←enable DSP monitor
OK
AT%EMSDSET="0D0D0D…" ←configurate MSD
OK
AT+ECALL ←initate an eCall
OK
ATH
OK
AT%EMSD=0 ←disable DSP monitor

12.22 AT%EMSDSET – MSD configuration

12.22.1 Description

This command is used to configurate MSD data(a minimum set of emergency related data)

12.22.2 Format

Command	Possible Response(s)
%EMSDSET=<MSD data>	OK/ERROR

12.22.3 Field

Type	Short name	Parameter/comment
String	<MSD data>	Hexstring, maximum length is 280 bytes

12.22.4 Note

Refer to TS 26.267, maximum size of MSD is 140 bytes. This command is sent before eCall is initiated.

12.22.5 Example

AT%EMSD=1 ←enable DSP monitor
OK
AT%EMSDSET="0D0D0D…" ←configurate MSD
OK
AT+ECALL ←initate an eCall
OK

12.23 AT%EMSDPUSH – trigger a MSD transmission

12.23.1 Description

IVS(In-Vehicle System) can trigger the MSD trasmission after eCall is established. In this case, the IVS asks the PSAP to request a MSD transmission.

12.23.2 Format

Command	Possible Response(s)
%EMSDPUSH	OK/ERROR

12.23.3 Note

IVS,MSD and PSAP are defined in TS 26.267.

12.23.4 Example

…
AT+CECALL ←initiate an eCall
OK

AT%EMSDPUSH ←ask PSAP to request a MSD transmission

OK

…

12.24 AT+ESPN – Read SIM SPN

12.24.1.1 Description

This command is used to read SIM card's SPN file.

12.24.1.2 Format

Command	Possible Response(s)
AT+ESPN?	+ESPN: <spn> OK ERROR // No valid SPN

12.24.1.3 Field

<spn>: string type, service provider name

12.25 AT+CAPL – Abort PLMN List search

12.25.1 Description

The set command is used to abort PLMN List

search. Only active command is supported.

12.25.2 Format

Command	Possible Response(s)
+CAPL	OK ERROR

12.25.3 Field

None

12.25.4 Note

This command is only applicable when a AT+COPS=? is onging. Otherwise, ERRPR is returned.

12.26 AT+PACSP – PLMN Auto mode in CSP

12.26.1 Description

This command is used to enable/disable +PACSPx URC.

Not support for read/active commad.

12.26.1.1 Format

Command	Possible response(s)
+PACSP=<mode>	OK +CME ERROR: <err>

12.26.1.2 Field

<mode>: integer type value

0 : Disable +PACSP URC

1: Enable +PACSP URC

12.27 AT+ESWLA – SoftwareLA and debugging utility

12.27.1 Description

Set command can enable SoftwareLA, force ASSERT target, enable or disable memory

leakage check .

12.27.2 Format

Command	Possible response(s)
+ESWLA=<op>	OK ERROR

12.27.3 Field

Type	Short name	Parameter/comment	
Integer	Op	0	Force ASSERT target
		1	Enable SoftwareLA
		2	Disable memory leakage check
		3	Enable memory leakage check

12.27.4 Note

op 1 is only supported in __MTK_INTERNAL__.

op 2 and 3 are only supported when KAL_DEBUG_LEVEL is RICH_DEBUG_KAL

12.28 AT+EALT – Loop Back Testing

12.28.1 Description

This Command is used to turn on/off the loop back test.

12.28.2 Format

Execution command : AT+ EALT = <op>

Test command : AT+ EALT =? Show if the command is supported

12.28.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	on	1
			off	0

12.28.4 Response

Test command : + EALT: (0,1)

Execution command : OK

[NOTE] The command can be used to test Headset Loop Back as well, +ESAM should be set first:

AT+ESAM=1

OK
AT+EALT=1
OK

12.28.5 Note

RAT+EALT is a seldom use AT command. In order to save code size (ROM size) , we default disable the command in low cost projects (LOW_COST_SUPPORT is defined). If you need this command, please ask PM to enable this command support (update L4 library).

12.29 AT+ESAM – Set Audio Mode

12.29.1 Description

This Command is used to set audio mode. We have three audio mode , normal, loud speaker and handset.

12.29.2 Format

Execution command : AT+ ESAM = <mode>

Test command : AT+ ESAM =? Show if the command is supported

12.29.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	mode	Audio mode	normal	0
			handset	1
			loudspeaker	2

12.29.4 Response

Test command : + ESAM: (0-2)

Execution command : OK

13 Other Proprietary Unsolicited Result code

13.1 UnsolicitedResult Code : +ESMLA

13.1.1 Description

This URC is to report if Auto personalization(defined in 3GPP TS 22.022) is enabled.

13.1.2 Format

Unsolicited result code
+ESMLA: <is_autolock_enabled>, <autolock_result>

13.1.3 Field

Type	Short name	Parameter/comment	
Integer	is_autolock_enabled	0	autolock is disabled
		1	autolock is enabled
Integer	autolock_result	0	autolock is failed
		1	autolock is successful

13.1.4 Note

Available after W08.45.

13.2 UnsolicitedResult Code : +ECFU

13.2.1 Description

This URC is intended to notify application to show CFU(Call Forwarding Uncondictional) icon.

13.2.2 Format

Unsolicited result code
+ECFU: <status>,<line>

13.2.3 Field

Type	Short name	Parameter/comment	
Integer	status	0	hide CFU icon
		1	show CFU icon
Integer	line	1	Line1
		2	Line2

13.2.4 Note

Available after W09.04 . And it's only supported in modem load .

13.3 UnsolicitedResult Code : +ESPEECH

13.3.1 Description

This URC is to notify application to attach the speech for voice call (user connection). It's defined

in spec 24.008 section5 call control .

13.3.2 Format

Unsolicited result code
+ESPEECH: <on_off>,<rat>,<irho_speech_on_off>

13.3.3 Field

Type	Short name	Parameter/comment	
Integer	on_off	0	Detach speech
		1	Attach speech
Integer	Rat	1	GSM
		2	UMTS
Integer	irho_speech_on_off	0	Not inter-rat handover
		1	Is inter-rat handover

13.3.4 Note

Available after W09.12 . And it's only supported in modem load .

13.4 Unsolicited Result Code: +ESIMS

13.4.1 Description

Indicate the SIM is inserted or not and related cause

13.4.2 Format

+ESIMS: <sim_inserted_status>,<cause >

13.4.3 Field

<sim_inserted_status>: integer

0 SIM not presented

1 SIM presented

<cause>: integer

0	SIM_CARD_REMOVED,
1	SIM_ACCESS_ERROR,
2	// Reserved for other use
3	// Reserved for other use
4	// Reserved for other use
5	SIM_ACCESS_PROFILE_ON
6	SIM_ACCESS_PROFILE_OFF
7	DUALSIM_DISCONNECTED
8	DUALSIM_CONNECTED
9	SIM_VSIM_ON
10	SIM_VSIM_OFF
11	SIM_PLUG_OUT
12	SIM_PLUG_IN
13	SIM_RECOVERY_START
14	SIM_RECOVERY_END

13.4.4 Note

- Only applicable in modem project

13.5 Unsolicited Result Code: +EUSIM

13.5.1 Description

Indicate the inserted SIM card is SIM or USIM.
The URC is control by AT+EUSIM=<mode> command.

<mode>=1 enable the +EUSIM URC
<mode>=0 disable the +EUSIM URC

13.5.2 Format

+EUSIM: <type>

13.5.3 Field

Type	Name	Parameter / Comment	
Integer	type	0	SIM
		1	USIM

13.5.4 Note

- Only applicable in modem project

13.6 UnsolicitedResult Code : +ECIPH

13.6.1 Description

This URC is to report ciphering Indicator information.

13.6.2 Format

Unsolicited result code
+ECIPH: <sim_cipher_ind>,<mm_connection>,<cs_cipher_on>,<ps_cipher_on>

13.6.3 Field

Type	Short name	Parameter/comment

Integer	sim_cipher_id	0	do not show cipher indication
		1	show cipher indication
Integer	mm_connection	0	no connection
		1	has connection
Integer	cs_cipher_on	0	no cipher
		1	Cipher
		255	Unknown
Integer	ps_cipher_on	0	no cipher
		1	Cipher
		255	Unknown

13.6.4 Note

This URC is controlled by +EINFO (refer to section 12.4 for detail).

13.7 UnsolicitedResult Code : +ECELLINFO

13.7.1 Description

This URC is to notify application the neighboring cell information.

13.7.2 Format

Unsolicited result code
+ECELLINFO:<is_valid>,<rat>,<cell_info>

13.7.3 Field

Type	Short name	Parameter/comment	
Integer	is_valid	0	the data is invalid
		1	the data is valid
Integer	rat	1	GSM
		2	UMTS
Integer	cell_info	Cell information raw data. Refer to related structure defined in **nbr_public_struct.h** to interpret these raw data. GSM: gas_nbr_cell_info_struct UMTS: uas_nbr_cell_info_struct	

13.7.4 Note

N/A

13.8 UnsolicitedResult Code : +ENWINFO

13.8.1 Description

This URC is to notify application the Network information.

13.8.2 Format

Unsolicited result code
+ENWINFO: <type>,<nw_info>

13.8.3 Field

Type	Short name	Parameter/comment
Integer	type	Refer to 13.10.4
Integer	nw_info	network information binary data. Refer to **em_public_struct.h** to interpret these raw data.

13.8.4 Network information type

Name	Type	Structure
RR_EM_CELL_SELECT_PARA_INFO	0	rr_em_cell_select_para_info_struct
RR_EM_CHANNEL_DESCR_INFO	1	rr_em_channel_descr_info_struct
RR_EM_CTRL_CHANNEL_DESCR_INFO	2	rr_em_ctrl_channel_descr_info_struct
RR_EM_RACH_CTRL_PARA_INFO	3	rr_em_rach_ctrl_para_info_struct
RR_EM_LAI_INFO	4	rr_em_lai_info_struct
RR_EM_RADIO_LINK_COUNTER_INFO	5	rr_em_radio_link_counter_info_struct
RR_EM_MEASUREMENT_REPORT_INFO	6	rr_em_measurement_report_info_struct
RR_EM_CA_LIST_INFO	7	rr_em_ca_list_info_struct

RR_EM_CONTROL_MSG_INFO	8	rr_em_control_msg_info_struct
RR_EM_SI2Q_INFO_STRUCT_INFO	9	rr_em_si2q_info_struct
RR_EM_MI_INFO_STRUCT_INFO	10	rr_em_mi_info_struct
RR_EM_BLK_INFO	11	rr_em_blk_info_struct
RR_EM_TBF_INFO	12	rr_em_tbf_status_struct
RR_EM_GPRS_GENERAL_INFO	13	rr_em_gprs_general_info_struct
RRM_EM_IR_PROGRESS_STATUS_IND_STRUCT_INFO	14	rrm_em_ir_progress_status_ind_struct
RRM_EM_IR_PARAMETER_STATUS_IND_STRUCT_INFO	15	rrm_em_ir_parameter_status_ind_struct
RRM_EM_IR_RESELECT_STATUS_IND_STRUCT_INFO	16	rrm_em_ir_reselect_status_ind_struct
RRM_EM_IR_3G_NEIGHBOR_MEAS_STATUS_IND_STRUCT_INFO	17	rrm_em_ir_3g_neighbor_meas_status_ind_struct
CC_EM_CHANNEL_INFO	18	cc_em_channel_info_struct
CC_EM_CALL_INFO	19	cc_em_call_info_struct
SS_EM_INFO	20	ss_em_info_struct
MM_EM_INFO	21	mm_em_info_struct
MMRR_EM_PLMN_INFO_STRUCT_INFO	22	mmrr_plmn_info_struct
UEM_EM_BATTERY_INFO	23	uem_em_battery_info
GMM_EM_INFO	24	gmm_em_info_struct
TCM_EM_EXT_PDP_INFO	25	tcm_em_pdp_info_struct
TCM_EM_INT_PDP_INFO	26	tcm_em_pdp_info_struct
TCM_EM_CONTEXT_INFO	27	tcm_mmi_em_info_struct
SNDCP_EM_INFO	28	sndcp_em_info_struct
LLC_EM_INFO	29	llc_em_info_struct
PPP_EM_INFO	30	ppp_em_info_struct

SM_EM_INFO	31	sm_em_info_struct
FLC_EM_INFO	32	flc_em_info_struct
UAS_3G_GENERAL_STATUS_IND_STRUCT_INFO	45	csce_em_3g_general_status_ind_struct
SIBE_EM_3G_SIB_IND_STRUCT_INFO	46	sibe_em_sib_status_ind_struct
CSCS_EM_SERV_CELL_IND_STRUCT_INFO	47	csce_em_serv_cell_s_status_ind_struct
CSCE_EM_NEIGH_CELL_IND_STRUCT_INFO	48	csce_em_neigh_cell_s_status_ind_struct
CSCE_EM_R_STATUS_IND_STRUCT_INFO	49	csce_em_cell_r_status_ind_struct
CSCE_EM_H_STATUS_IND_STRUCT_INFO	50	csce_em_cell_h_status_ind_struct
CSCE_EM_MEAS_RULE_STATUS_IND_STRUCT_INFO	51	csce_em_meas_rule_status_ind_struct
CSCE_EM_INFO_MULTIPLE_PLMN_STRUCT_INFO	52	csce_em_info_multiple_plmn_struct
MEME_EM_INFO_UMTS_CELL_STATUS_STRUCT_INFO	53	meme_em_info_umts_cell_status_struct
MEME_EM_INFO_GSM_CELL_STATUS_STRUCT_INFO	54	meme_em_info_gsm_cell_status_struct
MEME_EM_INFO_EVENT_TYPE_1_PARAMETER_STRUCT_INFO	55	meme_em_info_event_type_1_parameter_struct
MEME_EM_INFO_EVENT_TYPE_2_PARAMETER_STRUCT_INFO	56	meme_em_info_event_type_2_parameter_struct
MEME_EM_INFO_EVENT_TYPE_3_PARAMETER_STRUCT_INFO	57	meme_em_info_event_type_3_parameter_struct
MEME_EM_INFO_EVENT_TYPE_4_PARAMETER_STRUCT_INFO	58	meme_em_info_event_type_4_parameter_struct
MEME_EM_INFO_EVENT_TYPE_5_PARAMETER_STRUCT_INFO	59	meme_em_info_event_type_5_parameter_struct
MEME_EM_INFO_EVENT_TYPE_6_PARAMETER_STRUCT_INFO	60	meme_em_info_event_type_6_parameter_struct
MEME_EM_3G_BLER_IND_STRUCT_INFO	61	meme_em_periodic_bler_report_ind
URR_EM_TGPS_STATUS_IND_STRUCT_INFO	62	urr_em_tgps_status_ind_struct
URR_EM_INFO_UMTS_SRNC_ID_INFO	63	urr_umts_srnc_id_struct
UAS_3G_TDD128_HANDOVER_SEQUENCE_IND_STRUCT_INFO	64	rrce_em_3g_handover_sequence_ind_stuct
UL2_EM_ADM_POOL_STATUS_IND_STRUCT_INFO	67	ul2_em_adm_pool_status_ind_struct

UL2_EM_PS_DATA_RATE_STATUS_IND_STRUCT_INFO	68	ul2_em_ps_data_rate_status_ind_struct
UL2_EM_HSDSCH_RECONFIG_STATUS_IND_STRUCT_INFO	69	ul2_em_hsdsch_reconfig_status_ind_struct
UL2_EM_URLC_EVENT_STATUS_IND_STRUCT_INFO	70	ul2_em_urlc_event_status_ind_struct
UL2_EM_3G_BLER_IND_STRUCT_INFO	71	ul2_em_periodic_bler_report_ind

13.8.5 Example

Here is an example for interpret RR_EM_CELL_SELECT network information URC.

NW Info URC

+ENWINFO: 0,060003 // 0: RR_EM_CELL_SELECT_PARA_INFO

Pseudo code uint8 data[3];

```
rr_em_cell_select_para_info_struct *nw_info;

data[0] = 0x06;
data[1] = 0x00;
data[2] = 0x03;

nw_info = (rr_em_cell_select_para_info_struct*) data;
printf("crh=%d, ms_txpwr=%d, rxlev_access_min=%d",
        nw_info->crh, nw_info-> ms_txpwr, nw_info-> rxlev_access_min);
```

Output

crh=6, ms_txpwr=0, rxlev_access_min=3

13.8.6 Note

N/A

13.9 UnsolicitedResult Code : +CSSU

13.9.1 Note

For standard URC "+CSSU: <code2> defined in 27.007.

We define some proprietary <code2> .

They were intended for FTA test 31.2.1.7.1.1 when MT call is a forwarded call by:

11: Call Forwarded
12: Call Forwarded Unconditional
13: Call Forwarded Conditional
14: Call Busy Forwarded
15: Call Forwarded on No Reply
16: Call Forwarded on Not Reachable

13.10 UnsolicitedResult Code : +CIEV

13.10.1 Description

This URC is the result code of an indicator event.

13.10.2 Format

Unsolicited result code
+CIEV: <ind>,<value1>[,<value2>,…]

13.10.3 Field

<ind>: integer type value

7: SMS storage full indication (enable this URC with AT+CMER=0,0,0,1)

+CIEV: 7,<satus>

<status>: integer

0 sms storage available

1 sms SIM and ME storage full

2 sms SIM storage full

3 sms ME storage full

9: NITZ date/time/timezone information (enable this URC with AT+CTZR=1)

+CIEV: 9,<UT>,<TZ>[,<DST>]

<UT> , Universal Time , String type

"YY/MM/DD,HH:MM:SS"

<TZ>: Local Time Zone, Integer type

ex: +4 or -4

<DST>: Daylight Saving Time , Integer type

1: Summer time

0: Winter time

ex: +CIEV: 9,"09/05/16,16:56:00",-28,1

10: NITZ network name information (enable this URC with AT+CTZR=1)

+CIEV: 10,<plmn_id>,<full_name>,<short_name>,<is_full_name_hex_str>,<is_short_name_hex_str>

<plmn_id>,<full_name>,<short_name>: string type

<is_full_name_hex_str>: integer type

0: <full_name> is ASCII string, such as "AABB"

1: <full_name> is hex decimal string in UCS2(big-endian) format, such as "0065006500660066"

<is_short_name_hex_str>: integer type

0: <short_name> is ASCII string, such as "AB"

1: <short_name> is hex decimal string in UCS2(big-endian) format, such as "00650066"

ex: +CIEV: 10,"00101",”AABB”,”00650066”,0,1

13.10.4 Note

Available after W09.24

13.11 UnsolicitedResult Code : +EMSDPULL

This URC means PSAP is in PULL mode to request MSD data.

13.11.1 Format

Unsolicited result code
+EMSDPULL

13.11.2 Field

13.11.3 Note

Detail information about Pull mode, please refer to TS 26.267.

13.11.4 Example

…

AT+CECALL ←initiate eCall

OK

+EMSDPULL ←PSAP request MSD

…

13.12 UnsolicitedResult Code : +EMSDHACK

This URC indicates that MSD transmission is successful or failed.

13.12.1 Format

Unsolicited result code
+EMSDHACK: <result>

13.12.2 Field

Type	Short name	Parameter/comment
Integer	<result>	Result of a MSD transmission 0: failed 1: successful

13.12.3 Note

13.12.4 Example

…

AT+CECALL ←initiate eCall

OK

+EMSDPULL ←PSAP request MSD

…

+EMSDHACK:1 ←MSD transmission is successful

Indicate that MS is originating a call. .

14 TCP/IP TOOLKIT

14.1 AT+ZIPDNS

14.1.1 Description

DNS service to get ip address with domain name.

14.1.2 Format

Execution command :
AT+ZIPDNS=0,<domain name>

+ZIPDNS:<ip>,<domain name>
OK/ERROR

14.1.3 Field

<ip>:Ip address string
<domain name>:Domain name string

14.1.4 Example

AT+ZIPDNS=0,www.google.com
+ZIPDNS:"74.125.128.104",www.google.com
OK

14.2 AT+ZIPCFG

14.2.1 Description

The set command specifies parameter values of PS call.

14.2.2 Format

Execution command :
AT+ZIPCFG=<APN>[,<Username>,<Password>]
OK/ERROR

Read command :
AT+ ZIPCFG?
+ ZIPCFG: <APN>[,<User name>,<Password>]

14.2.3 Field

<APN>: The Access Point Name.
<User name>:Usernanme when start a call
<Password>:Password when start a call

14.2.4 Example

AT+ZIPCFG=cmwap,company,companypasswd
OK

AT+ZIPCFG?
+ZIPCFG: cmwap, company, companypasswd
OK

14.3 AT+ZIPCALL

14.3.1 Description

The set command activate or deactivate PS call.

14.3.2 Format

Execution command :
AT +ZIPCALL =<State>
+ ZIPCALL:[SP]< State >[,<IP address>]
ERROR

Read command :

AT + ZIPACLL?

+ZIPCALL: [SP]< State >[,<IP address>]

Test command :

AT + ZIPACLL=?

+ZIPCALL: (list of supported <State>s) OK

14.3.3 Field

< State >: Socket call connection state.

0：Disconnected

1：Connected

2，Connecting (should not be used to set)

3，Disconnecting (should not be used to set)

<IP address>: The IP address when connect to Network successful.

14.3.4 Example

Command: AT+ZIPCALL=1
Response: OK
+ZIPCALL: 1, 1.1.72.120
Command: AT+ZIPCALL?
Response: +ZIPCALL: 1, 1.1.72.120
OK
Command: AT+ZIPCALL=0
Response: OK
+ZIPCALL: 0, 0.0.0.0
Command: AT+ZIPCALL?
Response: +ZIPCALL: 0
OK

14.4 AT+ZIPOPEN

14.4.1 Description

The set command create TCP/UDP socket connection.

14.4.2 Format

Execution command :

AT +ZIPOPEN=<Socket id>,<Type>, <Remote IP>,<Remote port>[,< Local port>]

+ZIPSTAT: <Socket id>,<Status>

OR

ERROR

Read command :

AT +ZIPOPEN?

+ZIPOPEN: <Socket id>,<Type>, <Remote IP >,<Remote port>

[+ZIPOPEN: <Socket id>,<Type>, <Remote IP >,<Remote port>

[...]]

OR

+ZIPOPEN:0

Test command :

AT +ZIPOPEN=?

+ZIPOPEN:(range of supported <Socket id>s), (range of supported <Type>) [,(range of supported <Remote port>)]

14.4.3 Field

<Socket id>: Socket Connection indication

0：Invalid Socket id

1～5：Valid Socket id

<Type>: The protocal type of socket connection

0：TCP

1：UDP

<Remote IP >: IP address or Domainname of Romote server.

<Remote port>：Server port of Romote server, range: 1-65535

<Local port>：Local port，range: 1-65535

<Status>: State of Socket Connection

0：Socket connection is closed.

1：Socket connection is open, both send data and receive data normally.

2：Socket connection is open, receive data narmal, but send buffer is full.

3，Socket connection is opening.

4，Socket connection is closing.

14.4.4 Example

Command: AT+ZIPOPEN=1, 1, 192.232.33.10, 21
Response: OK
+ZIPSTAT: 1, 1
Command: AT+ZIPOPEN?
Response: +ZIPOPEN :(1, 1, 21, 192.232.33.10)
+ZIPOPEN :(5, 1, 21, 192.232.33.10)
OK

14.5 AT+ZIPCLOSE

14.5.1 Description

The set command close TCP/UDP socket connection.

14.5.2 Format

Execution command :
AT +ZIPCLOSE =<Socket id>
+ZIPSTAT: <Socket id>,<Status>
OR
ERROR

Read command :
AT +ZIPCLOSE?
+ZIPCLOSE:[SP][(<Socket1 state>)[,(< Socket2 state>)[,(< Socket3 state>)[,(< Socket4 state>)[,(<Socket5 state>)]]]]]
OR
+ZIPCLOSE:0

Test command :
AT +ZIPCLOSE=?
+ZIPCLOSE:(range of < Socket id>)

14.5.3 Field

<Socket id>: Socket Connection indication
0：Invalid Socket id
1～5：Valid Socket id
<Status>: State of Socket Connection
0：Socket connection closed.
1：Socket connection open, both send data and receive data normally.
2：Socket connection open, receive data narmal, but send buffer is full.
3，Socket connection opening.
4，Socket connection closing.

14.5.4 Example

Command: AT+ZIPCLOSE=1
Response: OK
+ZIPSTAT: 1, 0
Command: AT+ZIPCLOSE?
Response: +ZIPCLOSE: (Socket1, 0),(Socket2, 0),(Socket3, 0),(Socket4, 0), (Socket5, 0)
OK

14.6 AT+ZIPSEND

14.6.1 Description

The command send TCP/UDP data by socket.

14.6.2 Format

Execution command :
AT +ZIPSEND=<Socket id>, <Data>
+ZIPSEND: <Socket id>,<Size>
OR
ERROR

Read command :

AT +ZIPSEND?

+ZIPSEND: <Socket id>,<Size> [+ZIPSEND: <Socket id>,<Size>[...]]

(For all opened Socket)

14.6.3 Field

<Socket id>: Socket Connection indication

0：Invalid Socket id

1～5：Valid Socket id

<Data>: The data lenth can be 1024 Bytes at most. And the data should be encoded.

Eg: "48656C6C6F21" means "Hello!".

14.6.4 Example

Command: AT+ZIPSEND=1,32302D46696C
Response: OK
+ZIPSEND: 1, 6
Command: AT+ZIPSEND?
Response: +ZIPSEND: 1, 6
OK

14.7 AT+ZIPRECV

14.7.1 Description

The URC is used to recv TCP/UDP data by socket. The data lenth can be 1024 Bytes at

most.

14.7.2 Format

Unsolicited result code :
+ZIPRECV: <Socket id>,<Remote IP >,<Remote port>,<Data len>,<Data>

14.7.3 Field

<Socket id>: Socket Connection indication

0：Invalid Socket id

1～5：Valid Socket id

<Remote port>：Server port of Romote server, range: 1-65535

<Local port>：Local port，range: 1-65535

<Data len>: The leath of received data, should less than 1024Bytes.

<Data>: data should be encoded. Eg: “48656C6C6F21” indicate to “Hello!”.

14.7.4 Example

Response: +ZIPRECV: 1, 192.232.33.10, 21, 42,
3232302D46696C655A696C6C6120536572766572207665727369 6F6E20302E392E323220626574610D0A

14.8 AT+ZIPSTAT

14.8.1 Description

The command get socket status.

14.8.2 Format

Execution command :
AT +ZIPSTAT=<Socket id>
+ZIPSTAT: <Socket id>,< Status >

Unsolicited result code :

+ZIPSTAT: <Socket id>,< Status >

Test command :

AT + ZIPSTAT=?
+ ZIPSTAT:(range of < State>)

14.8.3 Field

<Socket id>: Socket Connection indication

0：Invalid Socket id

1～5：Valid Socket id

Status>: State of Socket Connection

0：Socket connection closed.

1：Socket connection open, both send data and receive data normally.

2：Socket connection open, receive data narmal, but send buffer is full.

3，Socket connection opening.

4，Socket connection closing.

14.8.4 Example

Command: AT+ZIPSTAT=3
Response: +ZIPSTAT: 3, 0
OK

15 BT Connection Manager AT Command

15.1 AT+EBTPWR – Power on/off BT

15.1.1 Description

The command is used to power on or off BT. The power on command could only be sent when BT is power off. And the power off command could only be sent when BT is power on.

15.1.2 Format

Command	Possible response(s)
+EBTPWR=?	+EBTPWR: （0-1）/ERROR
+EBTPWR=<op>	OK */ERROR*

15.1.3 Field

<op>: integer
0 power on
1 power off

Example
AT+EBTPWR=0//power on bt
OK

15.2 AT+EBTNAME – Read/Write BT device local name

15.2.1 Description

The command is used to read or write BT device local name. The max invalid length of the device name is 54.

15.2.2 Format

Command	Possible response(s)	Description
+EBTNAME=?	OK/ERROR	Show if the command is supported
+EBTNAME?	+EBTNAME:<device name> OK /ERROR	Read BT local name
+EBTNAME=<device name>	OK / *ERROR*	Write BT local name

15.2.3 Field

< device name >: BT name string ,no need use " " double quotes.

Example

```
AT+EBTNAME?//Read BT local name
+EBTNAME：mydevice
OK

AT+EBTNAME=mydevice1  // write BT local name
OK
```

15.3 AT+EBTADDR – Read/Write BT device local address

15.3.1 Description

The command is used to read or write BT device local address. This CMD should only sent to Target when BT is power off.

15.3.2 Format

Command	Possible response(s)	Description
+EBTADDR=?	OK/ERROR	Show if the command is supported
+EBTADDR?	+EBTADDR:<address > OK /ERROR	Read BT address
+EBTADDR=<address>	OK / *ERROR*	Write BT address

15.3.3 Field

<address>: BT address string ,no need use " " double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

Example

```
AT+EBTADDR?//Read BT local addr
+EBTADDR：1234565b0102
OK

AT+EBTADDR=1234565b0102 // write BT local addr
OK
```

15.4 AT+EBTINQ – Inquiry BT devices

15.4.1 Description

The command is used to inquiry BT devices.

15.4.2 Format

Command	Possible response(s)	Description
+EBTINQ=?	+EBTINQ：（0-255），（0-255）（0-255）（0-4294967295）OK/ERROR	Show if the command is supported
+EBTINQ?	+EBTADDR: <interval>,<polltime>,<device number>,<Cod> OK /ERROR	Get inquiry parameters
+EBTINQ=<interval>,<polltime>,<device number>,<Cod>	OK / *ERROR*	Set inquiry parameters
+EBTINQ	OK/ERROR	Start to inquiry

15.4.3 Field

<interval>: integer , should greater than poll time. （Note：Current the parameter does not work， because of BT stack already have itself timer）

<polltime>: integer , the max seconds number for inquring.

<device number>: integer

<Cod>: integer (ref: https://www.bluetooth.org/en-us/specification/assigned-numbers/baseband)

Example

```
AT+EBTINQ=60,10,5,16720412  // Cod: 16720412 = 0xFF221C means Major Service Class ALL & Major Device Class Phone ALL
OK
AT+EBTINQ?
+EBTINQ:60,10,5, 16720412
```

```
OK
AT+EBTINQ
OK
+EBTINQ:1234565b0101 ,devicename1
+EBTINQ:1234565b0102 ,devicename2
+EBTINQ:1234565b0103 ,devicename3
+EBTINQ:1234565b0104 ,devicename4
+EBTINQ:1234565b0105 ,devicename5
```

15.5 AT+EBTINQC – Cancel inquiry BT devices

15.5.1 Description

The command is used to cancel inquiry BT devices. Should be sent only when it's inquring.

15.5.2 Format

Command	Possible response(s)	Description
+EBTINQC=?	OK/ERROR	Show if the command is supported
+EBTINQC	OK /ERROR	cancel inquiry BT devices

15.5.3 Field

Example

```
AT+EBTINQC   // cancel inquiry BT devices
OK
```

15.6 AT+EBTVISB – Set BT visiable

15.6.1 Description

The command is used to set BT visiable .

15.6.2 Format

Command	Possible response(s)	Description
+EBTVISB=?	+EBTVISB：（0-1）,(0-255) OK/ERROR	Show if the command is supported
+EBTVISB=<n>,[<time>]	OK / *ERROR*	Set BT visiable

15.6.3 Field

<n>: integer
0 unvisiable
1 visiable

<times>:integer , visiable time ,seconds (0~255)
0 visiable forever
1~255 visiable time seconds

Example

```
AT+EBTVISB=0//unvisiable
OK
AT+EBTVISB=1,0 // visiable forever
OK
AT+EBTVISB=1,60  //visable 60s
OK

AT+EBTNAME=1234565b0102 // write BT local addr
OK
```

15.7 AT+EBTRNAME – Read remote BT device name

15.7.1 Description

The command is used to read remote BT device name.

15.7.2 Format

Command	Possible response(s)	Description
+EBTRNAME=?	OK/ERROR	Show if the command is supported
+EBTRNAME=<address>	+EBTRNAME:<devicenmae > OK /ERROR	remote BT device name

15.7.3 Field

< device name >: BT name string ,no need use “ ” double quotes.

<address>: BT address string ,no need use “ ” double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

Example

```
AT+EBTRNAME=1234565B0102 //Read remote BT device name
+EBTRNAME：Yourdevidename1
OK
```

15.8 AT+EBTPAIR – PAIR BT device

15.8.1 Description

The command is used to pair BT device.

15.8.2 Format

Command	Possible response(s)	Description
+EBTPAIR=?	+EBTPAIR: ,(0-255) OK/ERROR	Show if the command is supported
+EBTPAIR=<address> , <timeout>	+EBTPAIR:<address>,<name>,<enable 16digitspin>[,<password>] OK / *ERROR*	pair BT device

15.8.3 Field

<address>: BT address string ,no need use “ ” double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<timeout>: integer , time in seconds for pairing timeout.

The value should between 1 and 20. 0 means 20s. Value larger than 20 will be treat as 20.

<name>：BT name string ,no need use “ ” double quotes.

< enable 16digitspin>: integer
0 not enable the 16digits pin
1 enable the 16 digits pin

<password>:String

Example
AT+EBTPAIR=1234565b0102,60 //pair device ,and timeout is 60s
+EBTPAIR：1234565b0102,devicename,0,123456

OK

15.9 AT+EBTPAIRCNF –Allow or disallow BT pair

15.9.1 Description

The command is used to allow or disallow BT pair.

15.9.2 Format

Command	Possible response(s)	Description
+EBTPAIRCNF=?	+EBTPAIRCNF: (0-1), OK/ERROR	Show if the command is supported
+EBTPAIRCNF=<n>[,<password>]	OK / *ERROR*	allow or disallow BT pair

15.9.3 Field

<n>: integer
0 disallow BT pair
1 allow BT pair

<password>: string ， need use “ ” double quotes

Example
AT+EBTPAIRCNF=1,”123456” // allow pair and password is 123456

OK

15.10 AT+EBTRP – Read remote BT device support profiles

15.10.1 Description

The command is used to read remote BT device support profiles which we support also.

15.10.2 Format

Command	Possible response(s)	Description
+EBTRP=?	OK/ERROR	Show if the command is supported
+EBTRP=<address>	+EBTRP:<profile_bitmap> OK / *ERROR*	read remote BT device support profiles

15.10.3 Field

<address>: BT address string ,no need use " " double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<profile_bitmap> integer ,uint64 ,one bit is a profile support or not.
0 :not support ,1 supported
Example : profile_bitmap value is 1 ,
0x0000000000000001 means profile 1 supported ,others not supported.

bit 1 : SPP Profile, UUID = 0x1101.
bit 2 – bit 64 : All reserved.

Example

AT+EBTRP=1234565b0102 // read remote BT support profiles
+EBTRP: 1
OK

15.11 AT+EBTSENM – Read/Write security mode, encryption mode

15.11.1 Description

The command is used to read or write BT security and encryption mode. Currently we only support security mode setting. Note that the value of queried value of security mode is decide by BT Stack, may not be the same with setting value.)

15.11.2 Format

Command	Possible response(s)	Description
+EBTSENM=?	+EBTSENM: （0-4），（0-2） OK/ERROR	Show if the command is supported
+EBTSENM?	+EBTSENM:<sec-mod> , <enc-mod> OK /ERROR	Read security mode and encryption mode
+EBTSENM=<sec-mod> , <enc-mod>	OK / *ERROR*	Write security mode and encryption mode

15.11.3 Field

< sec-mod >: integer
0- Sec_mode0_off
1- Sec_mode1_non-secure
2- Sec_mode2_service
3- Sec_mode3_link
4- Sec_mod_unknown

< enc-mod >
0- hci_enc_mode_off
1- hci_enc_mode_pt_to_pt
2- hci_enc_mode_pt_to_pt_and_bcast

Example

```
AT+EBTSENM=0,0 // write mode
OK
AT+EBTSENM?//read mode
+EBTSENM: 0,0
OK
```

15.12 AT+EBTOPAD – Get device list

15.12.1 Description

The command is used to operate device list.

15.12.2 Format

Command	Possible response(s)	Description
+EBTOPAD=?	+EBTOPAD: (0-4), OK/ERROR	Show if the command is supported
+EBTOPAD=<n>,<address>	+EBTOPAD:<index>,<address > OK /ERROR	get device list

15.12.3 Field

<address>: BT address string ,no need use " " double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<n> :integer
0 delete
1 locate
2 delete all
3 most recently used
4 return total list

<index> :integer

Example

```
AT+EBTOPAD=0,1234565b0102
OK
AT+EBTOPAD=3
+EBTOPAD:1,1234565b0102
OK
AT+EBTOPAD=4
+EBTOPAD:1,1234565b0102
+EBTOPAD:2,1234565b0103
+EBTOPAD:3,1234565b0104
+EBTOPAD:4,1234565b0105
OK
```

15.13 AT+EBTSTATE – Query connect manger and profile status

15.13.1 Description

The command is used to query BT connect manger and profile status.

15.13.2 Format

Command	Possible response(s)	Description
+EBTSTATE=?	+EBTSTATE : , (0-4294967295) OK/ERROR	Show if the command is supported
+EBTSTATE	+EBTSTATE: <CM state> OK /ERROR	Query BT connect manger state
+EBTSTATE=<address>,<profile>	+EBTSTATE: <profile state> OK / *ERROR*	Query Profile state

15.13.3 Field

<address>: BT address string ,no need use “ ” double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<profile>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.

<CM state>:integer
1 START, BT is powering on.
2 READY, BT powered on, stand by for working.
3 PAIRING,
4 INQUIRING,
5 CONNECTING,
6 CONNECTED,
7 NUKNOWN,

<profile state>:integer
1 START, Reserved.
2 IDLE, APP for this profile not activated.
3 ACTIVATE, APP for this profile activated.
4 AUTHORIZING, authorizing for connection.

5 DISCONNECTING, disconnecting for connection.
6 DEACTIVATING, deactivating for profile APP.

Example

```
AT+EBTSTATE=1234565b0102,1 //query profile state
+EBTSTATE:2
OK
AT+EBTSTATE// query cm state
+EBTSTATE:2
OK
```

15.14 AT+EBTENSNIFF – Set or get SNIFF mode level

15.14.1 Description

The command is used to read or set BT sniff level.

15.14.2 Format

Command	Possible response(s)	Description
+EBTENSNIFF=?	+EBTENSNIFF：（0-1），（0-4） OK/ERROR	Show if the command is supported
AT+EBTENSNIFF=<op>,[<level>]	+EBTENSNIFF:<level > OK / *ERROR*	Read/Write BT sniff level

15.14.3 Field

<op>: integer
0 write
1 read

<level>:integer
0 reserved.
1 reserved.
2 reserved.
3 reserved.

Example

```
AT+EBTENSNIFF=0,0// set
OK
AT+EBTENSNIFF=1 // read
+EBTENSNIFF:0
OK
```

15.15 AT+EBTRSSI – Read BT device signal level

15.15.1 Description

The command is used to read BT device signal level. Only we can get the valid RSSI value when the <address> is connected.

15.15.2 Format

Command	Possible response(s)	Description
+EBTRSSI=?	OK/ERROR	Show if the command is supported
+EBTRSSI=<address>	+EBTRSSI:<signal > OK /ERROR	Read BT signal

15.15.3 Field

<address>: BT address string ,no need use “ ” double quotes， length should be 12 characters

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<signal>:integer

Example

```
AT+EBTRSSI=1234565b0102
+EBTRSSI:32
OK
```

15.16 AT+EBTPACT – (De)Active BT profiles

15.16.1 Description

The command is used to (de)active BT profiles.

15.16.2 Format

Command	Possible response(s)	Description
+EBTPACT=?	+EBTPACT : （0-18446744073709551615） OK/ERROR	Show if the command is supported
+EBTPACT=<profile-bitmap>	+EBTPACT:< profile-bitmap > OK / *ERROR*	(de)active BT profiles

15.16.3 Field

<profile_bitmap> integer ,uint64 ,one bit is a profile support or not.
0 :not support ,1 supported
Example : profile_bitmap value is 3 ,
0x0000000000000011 means profile 1 ,2 supported ,others not supported.

bit 1 : SPP Profile, UUID = 0x1101.
bit 2 – bit 64 : All reserved.

Example
AT+EBTPACT=1
+EBTPACT: 1
OK

15.17 AT+EBTCONN – Connect BT profile

15.17.1 Description

The command is used to connect BT profile.

15.17.2 Format

Command	Possible response(s)	Description
+EBTCONN=?	+EBTCONN: (0-1),,(0-4294967295),(0-1) OK/ERROR	Show if the command is supported
+EBTCONN=<n>,<address>,<profile>,<role>	OK / *ERROR*	Write BT address

15.17.3 Field

<address>: BT address string ,no need use " " double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<n>: integer
0 Disconnect
1 Connect

<profile>:integer, see BT Profile SPEC for profile UUID. Example:
4353, it means 0x1101, SPP Profile.

<role>:integer,profile role.
1 server
0 client

Example
AT+EBTCONN=1,1234565b0102,32,1
OK
+EBTCONN:1,1234565b0102,32,1

15.18 AT+EHFGAUDIO –Set or get BT audio path

15.18.1 Description

The command is used to set or get BT audio path.

15.18.2 Format

Command	Possible response(s)	Description
+EHFGAUDIO?	+EHFGAUDIO: (0-1) OK/ERROR	Get BT audio path
+EHFGAUDIO=<n>	OK / *ERROR*	Set BT audio path

15.18.3 Field

<n>: integer
0 Remote BT audio device
1 Local audio device

15.19 Unsolicited result code: Pair indication +EBTPAIR

15.19.1 Description

The command is used to notify other device want to pair local BT, and may be need input password or pin code.

15.19.2 Format

Unsolicited result code
+EBTPAIR:<address>,<name>,<enable 16digitspin>[,<password>]

15.19.3 Field

<address>: BT address string ,no need use “ ” double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<name>：BT name string ,no need use “ ” double quotes.

< enable 16digitspin>: integer
0 not enable the 16digits pin
0 enable the 16 digits pin

<password>:String

Example
+EBTPAIR:1234565b0102 ,devicename,0,123456

15.20 Unsolicited result code: Pair indication +EBTINQ

15.20.1 Description

The command is used to notify other BT device are found.
It should be output after command AT+EBTINQ.

15.20.2 Format

Unsolicited result code
+EBTTINQ:<address>,<name>

15.20.3 Field

<address>: BT address string ,no need use “ ” double quotes， length should be 12 charators

Example：

1234565b0102

It means ： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<name>：BT name string ,no need use “ ” double quotes.

Example

```
+EBTINQ:1234565b0102 ,devicename
```

15.21 Unsolicited result code: Inquiry completed indication +EBTIND

15.21.1 Description

The command is used to notify that the inquiring is completed.

15.21.2 Format

Unsolicited result code
+EBTIND:<result>,<is cancelled>

15.21.3 Field

<result>: integer

0 failed

1 successful

<is cancelled>： integer

0 not be cancelled

1 be cancelled

Example

```
+EBTIND:1,0
```

15.22 Unsolicited result code: Passive pair response +EBTPAIRRES

15.22.1 Description

The command is used to notify the response of passive pairing.

15.22.2 Format

Unsolicited result code
+EBTPAIRRES:<result>,<isfirst>,[address]

15.22.3 Field

<result>: integer
0 failed
1 successful

<is first>: integer
0 not the first
1 be first

<address>: BT address string ,no need use " " double quotes， length should be 12 charators
Example:
1234565b0102
It means : LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

Example
+EBTPAIRRES:1,0,1234565B0102

15.23 Unsolicited result code: Notify profile connected +EBTCONN

15.23.1 Description

The command is used to notify BT profile connected.

15.23.2 Format

Unsolicited result code
+EBTCONN:<result>,<address>,<profile id>

15.23.3 Field

<result>: integer
0 failed
1 successful

<address>: BT address string ,no need use " " double quotes， length should be 12 charators

Example：
1234565b0102
It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.

Example
+EBTCONN:1,1234565B0102,32

15.24 Unsolicited result code: Notify all supported profiles are (de)active +EBTPRFAC

15.24.1 Description

The command is used to notify all supported profiles are deactivated or actived.

15.24.2 Format

Unsolicited result code
+EBTPRFAC:<state>

15.24.3 Field

<state>: integer
0 all deactivated
1 all actived

15.25 Unsolicited result code: Notify profile connected +EBTDISC

15.25.1 Description

The command is used to notify BT connections are disconnected.

15.25.2 Format

Unsolicited result code
+EBTDISC:<n>,<address>[,<profileid>,<passive>]

15.25.3 Field

<n>: integer
1 one connection is disconnected
2 all connections are disconnected

<address>: BT address string ,no need use “” double quotes， length should be 12 characters
Example：
1234565b0102
It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.

<passive> :integer
0 not passive disconnect
1 passive disconnected

Example
+EBTDISC:1,1234565B0102,32,0
+EBTDISC:2,1234565B0102

15.26 Unsolicited result code: Notify visibility is changed +EBTVISB

15.26.1 Description

The command is used to notify BT visibility is changed.

15.26.2 Format

Unsolicited result code
+EBTVISB:3,<is because AT>

15.26.3 Field

< is because AT >: integer
0 not because receive AT+EBTVISB
1 because receive AT+EBTVISB

Example
+EBTVISB:3,0

15.27 Unsolicited result code: Notify BT is Reset +EBTRST

15.27.1 Description

The command is used to notify BT is reset.

15.27.2 Format

Unsolicited result code
+EBTRST:1

15.27.3 Field

Example
```
+EBTRST:1
```

15.28 Unsolicited result code: Notify bond profile fail + EBTPRFBND

15.28.1 Description

The command is used to notify BT bond profile fail.

15.28.2 Format

Unsolicited result code
+EBTPRFBND:<profile-id>,0

15.28.3 Field

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.

Example
```
+EBTPRFBND:10,0
```

15.29 Unsolicited result code: Notify BT devices need connect our profile +EBTPRFAU

15.29.1 Description

The command is used to notify other BT devices need connect our profile .

15.29.2 Format

Unsolicited result code
+EBTPRFAU:<Profileid>,<address>,<name>

15.29.3 Field

<address>: BT address string ,no need use “ ” double quotes， length should be 12 charators

Example：

1234565b0102

It means ： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

<name>：BT name string ,no need use “ ” double quotes.

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.

Example
+EBTPRFAU:3,1234565B0102,devicename

15.30 Unsolicited result code: Notify profile connected +EBTPRFCN

15.30.1 Description

The command is used to notify BT profile connected.

15.30.2 Format

Unsolicited result code
+EBTPRFCN:<profile>,<ret>

15.30.3 Field

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.

<ret>:integer
0 failed
1 successful

Example
+EBTPRFCN:3,1

15.31 Unsolicited result code: Notify profile disconnected +EBTPRFDSCN

15.31.1 Description

The command is used to notify BT profile disconnected.

15.31.2 Format

Unsolicited result code
+EBTPRFCN:<profile>,<address>

15.31.3 Field

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.

<address>: BT address string ,no need use " " double quotes， length should be 12 charators

Example：

1234565b0102

It means： LAP is 0x123456, UAP is 0x5b, NAP is 0x0102

Example

+EBTPRFDSCN:3,1234565B0102

16 BT OPP Profile AT Command

16.1 AT+EOPPPUSH – OPP client push files

16.1.1 Description

The command is used by OPP client to push files to specified OPP server.

16.1.2 Format

Command	Possible response(s)	Description
+EOPPPUSH=<address>,<file1>[,<file2>[,...,[<file5]]]	OK/ERROR	Max 5 files can be sent in this command

16.1.3 Field

< address >: OPP server BT address string ,no need use " " double quotes， length should be 12 characters.
<file1>: First file to send. User must give full file path. "" double quotes are required.
<file2>…<file5>: optional files to send. Must use "" double quotes. If you send several files and some file paths are not valid, we'll try to send valid file paths. Valid file path count will be reported in URC +EOPPPUSH
file path should use utf-8 encoding

Example：

AT+EOPPPUSH = 1234565b0102, "Z:/AAA/bbb.file","Z:/cc.file"
It means ： send to device with BT address "1234565b0102". Send 2 local files: Z:/AAA/bbb.file, Z:/cc.file

If you input 3 file path and only 2 is valid, we'll try to send two correct files. Total valid files will be returned as URC "EOPPPUSH" filed.

16.2 Unsolicited result code: Notify when send finish +EOPPPUSH

16.2.1 Description

The command is used to notify when OPP push transaction is finished.

16.2.2 Format

Unsolicited result code
+EOPPPUSH:<result>,<Total_files>,<address>,<file>

16.2.3 Field

<result>: uint 8, 0 succeed, others are error code.
Example: 0b0000000000000101: file 1 and file 3 are successfully sent.

<total_files> : total valid file path. This param is used to notify user how many valid files in AT+EOPPPUSH command. They should expect same amount of +EOPPPUSH URC for this AT command.

<address>: OPP server BT address string ,no “ ” double quotes， length should be 12 characters.

<file>: indicates the file name for this URC

Example
+EOPPPUSH:1,5,1234565B0102,”Z:/aaa.txt”

16.3 AT+EOPPABORT – Abort current OPP transaction with one device

16.3.1 Description

The command is used by OPP client/server to abort OPP transaction with one device. If OPP client is sending multiple objects to server, this command will only abort current sending object.

16.3.2 Format

Command	Possible response(s)	Description
+EOPPABORT=<address>	OK/ERROR	

16.3.3 Field

< address >: address string ,no need use “ ” double quotes， length should be 12 characters.

Example：

AT+EABOART=1234565b0102

It means： abort OPP transaction with BT address “1234565b0102”.

16.4 Unsolicited result code: Notify when OPP server receive OPP client send request +EOPPRECV

16.4.1 Description

The command is used to notify when OPP server receive OPP client send requset.

16.4.2 Format

Unsolicited result code
+EOPPRECV: <address>,<device_name>,<obj_name>,<MIME>

16.4.3 Field

<device_name>: OPP client BT name string, with double quote"". UTF8 encoded
<address>: OPP client BT address
<obj_name>: object name, max 128 chars. with double quotes"". UTF8 encoded.
<MIME>: MIME string, max 80 chars. with double quote""

Example
+EOPPRECV: 1234565B0102, "My BT device", "aa.txt", "text/plain"
It means: device "My BT device" with address "1234565B0102" want to send "aa.txt", which MIME type is "text/plain". Do you want to accept it?

16.5 AT+EOPPACCEPT – OPP server decide whether accept push request by OPP client

16.5.1 Description

The command is used by OPP server to determine whether it accept an object by OPP client.

16.5.2 Format

Command	Possible response(s)	Description
+EOPPACCEPT= <result>,<address>,<path>	OK/ERROR	

16.5.3 Field

< address >: address string ,no need use " " double quotes， length should be 12 characters.
<result>: bool, 1 means accept, 0 means reject;
<path>: full file path to store this object. Double quotes required

Example：

AT+EOPPACCEPT= 1, 1234565b0102,"Z:/aa.txt"

It means ： Accept object send by client with BT address "1234565b0102" and store it as "Z:/aa.txt".

16.6 Unsolicited result code: Notify when OPP server receive finish +EOPPACCEPT

16.6.1 Description

The command is used to notify when OPP server complete receiving one object

16.6.2 Format

Unsolicited result code
+EOPPACCEPT: <result>,<address>,<obj_name>

16.6.3 Field

<address>: OPP client BT address
<obj_name>: object name, max 128 chars. with double quote"" and UTF8 encoded

Example
+EOPPRECV: 1234565B0102, "aa.txt"
It means: finish receiving "aa.txt" from device "1234565B0102"

17 BT HFP Profile AT Command

17.1 AT+EHFCLCC

17.1.1 Description

The command is used to query current call info from AG.

17.1.2 Format

Command	Possible response(s)	Description
+EHFCLCC?	OK/ERROR	

17.1.3 Field

None

Example

There should be a BT connection between HF and AG, and please refer to NOTE for details.

AT+EHFCLCC?

[Result]
OK
+EHFCIEV:2,075526630099,1

NOTE:
The precondition should be,
1> Power on BT by “at+ebtpwr=0”
After power on successfully, the HF(M2M) will receive
+EBTPRFAC:1

OK

2> Require a BT connection between the HF(M2M) and AG(smart phone):
Use Smartphone to initial a BT connection, and HF will receive

+EBTPAIR:65727146FEE1,,0,360695

And HF needs to send “at+ebtpaircnf=1”to setup the BT connection .
Then HF will receive
OK
It means BT connection full established. And the command for HFP will run properly.

17.2 Unsolicited result code: Notify when call state changed finish +EHFCIEV

17.2.1 Description

The command is used to notify when call state changed.

17.2.2 Format

Unsolicited result code
+EHFCIEV:<state>, <phb_num>,<call index>

17.2.3 Field

<state>: int

0, call complete

1, outgoing call

2, incoming call

4, call setup

8, current call is hold

<phb_num>: string

Example

[precondition]

+EHFCIEV: 0, 075526630099, 1

17.3 AT+EHFATA

17.3.1 Description

The command is used to accept an incoming call from AG/HF.

17.3.2 Format

Command	Possible response(s)	Description
+EHFATA=<role>	OK/ERROR	Only support HF now.

17.3.3 Field

< role>: bool

0, accept incoming call by AG. Current role is AG, AT+ATA

1, accept incoming call by HF.

Example
[precondition]

[Case 1]
Only one incoming call
AT+EHFATA=1//accept the incoming call
[Result]

+EHFCIEV:2,075526630099,1//incoming call
at+ehfata=1
OK

+EHFCIEV:4,075526630099,1//incoming call actived

[Case 2]
One active/held call and incoming call
AT+EHFATA=1//accept the incoming call, put the active call on held(if any)
[Result]
+EHFCIEV:4,13243764932,1//active call

+EHFCIEV:2,075526630099,2//incoming call
at+ehfata=1
OK

+EHFCIEV:4,13243764932,1

+EHFCIEV:2,075526630099,2

+EHFCIEV:8,13243764932,1//held

+EHFCIEV:4,075526630099,2//active

[Case 3]
One active, one hold call, and there is an incoming call
AT+EHFATA=1// Terminate all active calls (if any), and accept the incoming call
[Result]
+EHFCIEV:8,13243764932,1//hold

+EHFCIEV:4,10010,2//active call

+EHFCIEV:2,075526630099,3
at+ehfata=1
OK

+EHFCIEV:0,10010,2

+EHFCIEV:8,13243764932,1

+EHFCIEV:2,075526630099,3

+EHFCIEV:8,13243764932,1

+EHFCIEV:4,075526630099,3

17.4 AT+EHFATD

17.4.1 Description

The command is used to start phone connection by AG/HF.

17.4.2 Format

Command	Possible response(s)	Description
+EHFATD= <role>,<type>[,<number>]	OK/ERROR	Only support HF and dial with phone number now.

17.4.3 Field

<role>:

0, Initial an outgoing call by AG

1, Initial an outgoing call by HF

<type>:

0, dial with string

1, redial last number

2, dial with memory(dial with phone number stored in AG phonebook)

<number>:

String with “0~9” or phone number index in AG phonebook.

When type is 0, use phone number string, and when type is 2, use phone number index.

Example

[precondition]

[Case 1]

AT+EHFATD=1,0,”075526630099”//initial an outgoing call

[Result]

at+ehfatd=1,0, 075526630099

OK

+EHFCIEV:1, 075526630099,1

[Case 2]
AT+EHFATD=1,2,1//initial an outgoing call with the first phone number in AG phonebook
[Result]

at+ehfatd=1,2,1
OK

+EHFCIEV:1,13243764932,1

17.5 AT+EHFCHUP

17.5.1 Description

The command is used by AG/HF to terminate the current call.

17.5.2 Format

Command	Possible response(s)	Description
+EHFCHUP=<role>	OK/ERROR	Only support HF now.

17.5.3 Field

< role>:
0, terminate call connection by AG
1, terminate call connection by HF.

Example

[precondition]

[Case]
AT+EHFCHUP=1//hangup current call
[Result]
+EHFCIEV:2,075526630099,2
at+ehfchup=1
OK

+EHFCIEV:0,075526630099,2

17.6 AT+EHFCHLD

17.6.1 Description

The command is used by AG/HF to release/hold/retrieve/swap call.

17.6.2 Format

Command	Possible response(s)	Description
+EHFCHLD=<role>,<act>[,<index>]	OK/ERROR	Only support HF now.

17.6.3 Field

<role>:
0, act from AG
1, act from HF
<act>[,<index>]
0, releases all held calls
1, release all active calls and accepts the other (waiting or held)call
1,x, release the specific active call x
2, place all active calls on hold and accept the (waiting or held) call
2,x, place all active calls, except call x, on hold
3, add a held call to conference call
4, swap/retrieve

<index>: int
1~127

Example

[precondition]

[Case 1]
AT+EHFCHLD=1, 0// release all held calls

[Result]
+EHFCIEV:2,075526630099,1
at+ehfchld=1,0
OK

+EHFCIEV:0,075526630099,1

[Case 2]
AT+EHFCHLD=1, 1// release all active calls and accepts the other (waiting or //held)call, supported in multiple call.

[Result]
+EHFCIEV:2,075526630099,1
at+ehfchld=1,1
OK

+EHFCME:100

+EHFCIEV:2,075526630099,1
[Case 3]
AT+EHFCHLD=1, 1,x// release the specific active call x, only supported in //conference call

[Result]
+EHFCIEV:2,075526630099,1
at+ehfchld=1,1,1
OK

+EHFCME:100

+EHFCIEV:2,075526630099,1

[Case 4]
AT+EHFCHLD=1, 2// place all active calls on hold and accept the (waiting or held) call, //only supported in multiple call

[Result]
+EHFCIEV:2,075526630099,1

at+ehfchld=1,2
OK

+EHFCIEV:2,075526630099,1

+EHFCIEV:4,075526630099,1

[Case 5]
AT+EHFCHLD=1, 2,x// place all active calls, except call x, on hold, only //supported in conference call

[Result]
+EHFCIEV:2,075526630099,1
at+ehfchld=1,2,1
OK

+EHFCME:100

+EHFCIEV:2,075526630099,1

[Case 6]
AT+EHFCHLD=1, 3// add a held call to conference call

[Result]
+EHFCIEV:2,075526630099,1
at+ehfchld=1,3
OK

+EHFCIEV:2,075526630099,1

[Case 7]
AT+EHFCHLD=1, 4// swap the active/held call

[Result]
+EHFCIEV:2,075526630099,1
at+ehfchld=1,4
OK

+EHFCIEV:2,075526630099,1

+EHFCIEV:4,075526630099,1

17.7 AT+EHFVTS

17.7.1 Description

The command is used to transmit DTMF codes by HF.

17.7.2 Format

Command	Possible response(s)	Description
+EHFVTS=<digit>	OK/ERROR	

17.7.3 Field

<digit>: U8, digit should one of “*# 0-9”

Example

[precondition]

[Case]
AT+EHFVTS=*//play tone

[Result]

OK

17.8 AT+EHFRVC

17.8.1 Description

The command is used to (Remote audio volume control) set or sync volume among HF/AG.

17.8.2 Format

Command	Possible response(s)	Description
+EHFRVC=<role>,<act>,<vol>	OK/ERROR	Only supported HF

17.8.3 Field

<role>: bool
0, action from AG
1, action from HF
<act>: int
0, set the volume of AG speaker
1, set the volume of AG mic
<vol>: int 0-15

Example

[precondition]

[Case]
AT+EHFRVC=1,0,15//set the volume of AG speaker

[Result]
OK

17.9 Unsolicited result code: Notify when call state changed finish +EHFVGS

17.9.1 Description

The command is used to notify when the volume of speaker in AG changed, and will the volume of HF speaker will sync with this.

17.9.2 Format

Unsolicited result code
+EHFVGS:<value>

17.9.3 Field

<state>: int

0-15(0, means mute. And 15 means the maximum volume)

Example

[precondition]
+EHFVGS: 12

17.10 Unsolicited result code: Notify when call state changed finish +EHFCME

17.10.1 Description

The command is used to notify when HFP AT CMD execute failed.

17.10.2 Format

Unsolicited result code
+EHFCME:<result>

17.10.3 Field

<state>: U8 0-255(255 means ok, other means fail)

Example:

[precondition]
+EHFCME: 100

18 HTTP AT Commands

18.1 AT+HTTPPARA– Set http parameter

18.1.1 Description

The command is used to set http parameter.

18.1.2 Format

Command	Possible response(s)	Description
+HTTPPARA=<para>,<value>	OK/ERROR	

18.1.3 Field

<para>: string
url, target path
port, target port

<value>:
Corresponding to the value of url, the <para> parameter is the maximum of 128 bytes, url supports domain name resolution, the default value of port is 80

Example

[precondition]

[Case 1]
AT+HTTPPARA=url,www.hao123.com/index.jsp //set http url parameter

[Result]
OK

[Case 2]
AT+HTTPPARA=port,8080 //set port

[Result]
OK

18.2 AT+HTTPSETUP–HTTP link establishment

18.2.1 Description

The command is used to create HTTP link.

18.2.2 Format

Command	Possible response(s)	Description
+HTTPSETUP	OK/ERROR	The correct destination address and port can be established successfully.

18.2.3 Field

Example

[precondition]

[Case 1]
AT+HTTPSETUP //creating HTTP link

[Result]
OK

18.3 AT+HTTPACTION–sending HTTP request

18.3.1 Description

The command is used to send HTTP request.

18.3.2 Format

Command	Possible response(s)	Description
+HTTPACTION=<mode>,[<length>],[<string>]	OK/ERROR	

18.3.3 Field

<mode>: int
0, HTTP GET request
1, HTTP HEAD request
2,HTTP POST request
99,OTHER request
<length>:
Maxium 2048,length of HTTP POST request body.
<string>:
Value of HTTP POST request body OR other request content.

Example

[precondition]

[Case 1]
AT+HTTPACTION=0 //send HTTP GET request

[Result]
OK
+HTTPRECV:
HTTP/1.1 200 OK
Date: Fri, 11 Sep 2015 05:21:54 GMT
Content-Type: image/jpeg
Content-Length: 6
Connection: close
ETag: "2815057560"
Last-Modified: Wed, 09 Sep 2015 01:33:59 GMT
Expires: Fri, 11 Sep 2015 05:22:54 GMT
Cache-Control: max-age=60
Lfy: st01.i6
Accept-Ranges: bytes

123456
[Case 2]

AT+HTTPACTION=1 //send HTTP HEAD request

[Result]
OK
+HTTPRECV:
HTTP/1.1 200 OK
Date: Fri, 11 Sep 2015 05:25:57 GMT
Content-Type: image/jpeg
Content-Length: 24794
Connection: close
ETag: "2815057560"
Last-Modified: Wed, 09 Sep 2015 01:33:59 GMT
Expires: Fri, 11 Sep 2015 05:26:57 GMT
Cache-Control: max-age=60
Lfy: cq02.i4
Accept-Ranges: bytes

[Case 3]
AT+HTTPACTION=2,6,123456 //send HTTP POST request

[Result]
OK
+HTTPRECV:
HTTP/1.1 200 OK
Date: Fri, 11 Sep 2015 05:25:57 GMT
…

[Case 4]
AT+HTTPACTION=99,66,POST /index.jsp HTTP/1.1\r\nHost: localhost:8080\r\nConnect: close\r\n\r\n //send other request

[Result]
OK
…

18.4 AT+HTTPCLOSE–close HTTP link

18.4.1 Description

The command is used to close HTTP link.

18.4.2 Format

Command	Possible response(s)	Description
+HTTPCLSOE	OK/ERROR	

18.4.3 Field

null

Example

[precondition]

[Case 1]
AT+HTTPCLOSE //close HTTP link

[Result]
OK

18.5 +HTTPRECV–reporting Data received from the active HTTP link

18.5.1 Description

The command is used to reporting Data received from the active HTTP link.

18.5.2 Format

Command	Possible response(s)	Description
+HTTPCLSOE		

18.5.3 Field

null

Example

[precondition]

Null

18.6 +HTTPCLOSED–reporting HTTP link closed

18.6.1 Description

The command is used to reporting the active HTTP link closed.

18.6.2 Format

Command	Possible response(s)	Description
+HTTPCLOSED:HTTP Link Close		

18.6.3 Field

null

Example

[precondition]

null

19 FTP AT Commands

19.1 +FTPSRV–set FTP parameters

19.1.1 Description

The command is used to set the FTP username、password of the user and the server address、server port、transfer mode of FTP server.

19.1.2 Format

Command	Possible response(s)	Description
+FTPSRV=?	+FTPSRV: (),(),(),(),() OK	
+FTPSRV?	+FTPSERV:" username","password","ip","port","type" OK	
+FTPSRV=<username>,<password>,<ip>,<port>,<type>	OK/ERROR	

19.1.3 Field

< username >: string
<password>:string
<ip>:string
<port>:string 0~65535
<type>:string
"A":ASCII
"I":binary

Example

[precondition]

[Case]
AT+FTPSRV="mobiletek","123456","198.1.1.50","2112","I"
[Result]
OK

19.2 +FTPMODE–set FTP mode

19.2.1 Description

The command is used to set the FTP mode.

19.2.2 Format

Command	Possible response(s)	Description
+FTPMODE=?	+FTPMODE: (0,1) OK	
+ FTPMODE?	+FTPSERV:0/1 OK	

+ FTPMODE =<mode>	OK/ERROR	The command set don't work now.Currently only support passive mode

19.2.3 Field

< mode >: int
<0>: active mode
<1>: passive mode

Example

[precondition]

[Case]
AT+FTPSRV="1"
[Result]
OK

19.3 +FTPPUTNAME–set FTP upload file name

19.3.1 Description

The command is used to set the FTP upload file name,the file must exist in the modem .

19.3.2 Format

Command	Possible response(s)	Description
+ FTPPUTNAME =?	+FTPPUTNAME: () OK	
+ FTPPUTNAME?	+FTPPUTNAME:"filename" OK	
+ FTPPUTNAME =<filename>	OK/ERROR	

19.3.3 Field

< filename >: string

Example

[precondition]

[Case]
AT+ FTPPUTNAME ="fileone"
[Result]
OK

19.4 +FTPPUTPATH–set FTP upload file path

19.4.1 Description

The command is used to set the FTPupload file path,the path is in the modem , the path must start with "/" and end with "/".

19.4.2 Format

Command	Possible response(s)	Description
+ FTPPUTPATH =?	+FTPGETPATH: () OK	
+ FTPPUTPATH?	+FTPGETPATH:"filepath" OK	
+ FTPPUTPATH =<filepath>	OK/ERROR	

19.4.3 Field

< filepath >: string

Example

[precondition]

[Case]

AT+ FTPPUTPATH =" /dirone/"

[Result]

OK

19.5 +FTPREST–set FTP parameters

19.5.1 Description

The command is used to set the FTP breakpoint transport offset nodes.

19.5.2 Format

Command	Possible response(s)	Description
+FTPREST=?	+ FTPREST: () OK	
+ FTPREST?	+ FTPREST:" offset" OK	
+ FTPREST =<offset>,	OK/ERROR	

19.5.3 Field

< offset >: int

Example

[precondition]

[Case]

AT+ FTPREST =0

[Result]

OK

19.6 +FTPGETNAME–set FTP load file name

19.6.1 Description

The command is used to set the FTP load file name,the file must exist in the server.

19.6.2 Format

Command	Possible response(s)	Description
+FTPGETNAME=?	+ FTPGETNAME: () OK	
+ FTPGETNAME?	+ FTPGETNAME:”filename” OK	
+ FTPGETNAME =<filename>	OK/ERROR	

19.6.3 Field

< filename >: string

Example

[precondition]

[Case]

AT+ FTPGETNAME =”filename”

[Result]

OK

19.7 +FTPGETPATH–set FTP load file path

19.7.1 Description

The command is used to set the FTPload file path,the path must exist in the server,the path must start with “/” and end with ”/”.

19.7.2 Format

Command	Possible response(s)	Description
+FTPGETPATH=?	+ FTPGETPATH: () OK	
+ FTPGETPATH?	+ FTPGETPATH:” filepath” OK	
+ FTPGETPATH =<filepath>	OK/ERROR	

19.7.3 Field

< filepath >: string

Example

[precondition]

[Case]

AT+ FTPGETPATH =”/dirone/”

[Result]

OK

19.8 +FTPGET–active PDP setup load link

19.8.1 Description

The command is used to active the PDP,setup the FTP load socket connection and load file.

19.8.2 Format

Command	Possible response(s)	Description
+FTPGET=?	+FTPGET: (1-3),()	
+ FTPGET =<num>,<offset>	OK/ERROR	

19.8.3 Field

< num >: int

<1>:active PDP

<2>:setup the load socket connection and load file

<offset>:int

The breadpoint continuingly offset .Currently not support.

Example

[precondition]

[Case]

AT+ZIPCFG=cmnet,,

OK

AT+FTPMODE=1

OK

+EIND: 2

AT+FTPPUTNAME="file.txt"

OK

AT+FTPPUTPATH="/h/"

OK

AT+FTPCID=2

OK

AT+FTPREST=0

OK

AT+FTPGETNAME="file.txt"

OK

AT+FTPSRV="yijing","123456","198.246.1.50",2122,"I"

OK
AT+FTPGETPATH="/f/"

OK

AT+FTPGET=1

OK
AT+FTPGET=2

Create Dir OK

OK
FTPDATA:512,1111111111111111111111111111111111111111111111111111111111
2222222222222222222222222222222222222222222222222222222222
3333333333333333333333333333333333333333333333333333333333
4444444444444444444444444444444444444444444444444444444444
5555555555555555555555555555555555555555555555555555555555
6666666666666666666666666666666666666666666666666666666666
7777777777777777777777777777777777777777777777777777777777
8888888888888888888888888888888888888888888888888888888888

FTPDATA:126,9999999999999999999999999999999999999999999999999999999999
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

FTPDATA:0,

GET FILE SIZE:638

AT+FTPQUIT=1

OK

19.9 +FTPPUT–active PDP setup upload link

19.9.1 Description

The command is used to active the PDP,setup the FTP upload socket connection and upload file.

19.9.2 Format

Command	Possible response(s)	Description
+FTPPUT=?	+ FTPPUT: () OK	
+FTPPUT=<num>,<offset>	OK/ERROR	

19.9.3 Field

< num >:int

<1>:active PDP

<2>:setup upload socket connect and upload file

<offset>:int

The breadpoint continuingly offset .Currently not support.

Example

[precondition]

[Case]

```
AT+ZIPCFG=cmnet,,

OK
AT+FTPMODE=1

OK

+EIND: 2
AT+FTPPUTNAME="file.txt"

OK
AT+FTPPUTPATH="/h/"

OK
AT+FTPCID=2

OK
AT+FTPREST=0

OK
AT+FTPGETNAME="file.txt"

OK
AT+FTPSRV="yijing","123456","198.246.1.50",2122,"I"

OK
AT+FTPGETPATH="/f4/"

OK
AT+FTPPUT=1

OK

+ZIPCALL: 1,10.65.106.151

OK
AT+FTPPUT=2,1024

OK
File Size Is:638 bytes
FTPSENDDATA:400,1111111111111111111111111111111111111111111111111111111111111111
2222222222222222222222222222222222222222222222222222222222222222
3333333333333333333333333333333333333333333333333333333333333333
4444444444444444444444444444444444444444444444444444444444444444
5555555555555555555555555555555555555555555555555555555555555555
6666666666666666666666666666666666666666666666666666666666666666
7777777777777777
FTPSENDDATA:238,7777777777777777777777777777777777777777777777
8888888888888888888888888888888888888888888888888888888888888888
9999999999999999999999999999999999999999999999999999999999999999
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
FTP TRANSFER COMPLETE!
AT+FTPQUIT=1

OK
```

19.10 +FTPQUIT–close FTP connection

19.10.1 Description

The command is used to close the ftp socket connection.

19.10.2 Format

Command	Possible response(s)	Description
+FTPQUIT=?	+FTPQUIT: (1-3),() OK	
+ FTPQUIT =<num>	OK/ERROR	

19.10.3 Field

< num >: int

Example

[precondition]

[Case]

AT+FTPQUIT=1

[Result]

OK

19.11 +FTPLOCAL–manage FTP file

19.11.1 Description

The command is used to manase FTP file.

19.11.2 Format

Command	Possible response(s)	Description
+ FTPLOCAL =<num>	OK/ERROR	

19.11.3 Field

< num >: int

<0>:get the mode system store information

<1>:find the file in the modem

<2>:delete the file in the modem

Note:the file is the AT+FTPPUTPATH and AT+ FTPPUTNAME set .

Example

[precondition]

[Case]

AT+ FTPLOCAL =0

[Result]

SerialNumber:807469056

TotalClusters:400

FreeClusters:221

FreeChains:0

OK

20 Compatible AT commands

Overview of Compatible AT Command.

AT Command	Description
AT+CIPMUX	Start up multi-IP connection
AT+CSTT	Start task and set APN, user name, password
AT+CIICR	Bring up wireless connection with GPRS or CSD
AT+CIFSR	Get local IP address
AT+CIPSTART	Start up TCP or UDP connection
AT+CIPSEND	Send data through TCP or UDP connection
AT+CIPCLOSE	Close TCP or UDP connection
AT+CIPSHUT	Deactivate GPRS PDP context
AT+CIPSTATUS	Query current connection status
AT+CIPRXGET	Get data from network manually
AT+CALM	Alert sound mode
AT+GSN	Request TA Serial Number Identification (IMEI)
AT+CIPHEAD	Add an IP Head at the Beginning of a Package Received (no effection)
AT+CIPQSEND	Select Data Transmitting Mode(no action)
AT+SPEAKER	Speaker and MIC select
AT+SIDET	Change the side tone gain level
AT+NETLIGHT	Net light Flashing control
AT+GSMBUSY	Reject Incoming Call
AT+SJDR	Jamming detection control
AT+CGMSCLASS	Change GPRS multi-slot class

20.1 AT+CIPMUX Start Up Multiple IP Connection

This command is used to start Up Multiple IP Connection or single IP Connection.

Test Command **AT+CIPMUX=?**	Response **+CIPMUX: (0,1)** **OK**
Read Command **AT+ CIPMUX?**	Response **+ CIPMUX: <multiple>** **OK** Or **Error**

Write Command **AT+CIPMUX=<multiple>**	Response **OK** Or **ERROR**
Reference	Note Only in IP initial state, AT+CIPMUX=1 is effective; Only when multi IP connection and GPRS application are both shut down, AT+CIPMUX=0 is effective.

Parameters are defined below:

Parameters	Description
<multiple>	0 Single IP connection 1 Multiple IP connection

20.2 AT+CSTT Start Task and Set APN, USER NAME, PASSWORD

This command is used to Start Task and Set APN, USER NAME, PASSWORD.

Test Command **AT+CSTT=?**	Response **+CSTT:"APN","USER","PWD"** **OK**
Read Command **AT+CSTT?**	Response **+CSTT: <APN>,<user name>,<password>** **OK**
Write Command **AT+CSTT=<APN>,<user name>,<password>**	Response **OK** Or **ERROR**
Execution Command **AT+CSTT**	Response **OK** Or **ERROR**

Reference	Note
	The write command and execution command of this command is valid only at the state of IP INITIAL. After this command is executed, the state will be changed to IP START.

Parameters are defined below:

Parameters	Description
<APN>	A string parameter which indicates the GPRS access point name
<user name>	A string parameter which indicates the GPRS user name
<password>	A string parameter which indicates the GPRS password

20.3 AT+CIICR Bring Up Wireless Connection with GPRS or CSD

This command is used to Bring Up Wireless Connection with GPRS or CSD..

Test Command **AT+CIICR=?**	Response **OK**
Execution Command **AT+CIICR**	Response **OK** Or **ERROR**
Reference	Note 1. Max Response Time 85 seconds 2. AT+CIICR only activates moving scene at the status of IP START, after operating this Command is executed, the state will be changed to IP CONFIG. 3. After module accepts the activated operation, if it is activated successfully, module state will be changed to IP GPRSACT, and it responds OK, otherwise it will respond ERROR.

20.4 AT+CIFSR Get local IP address

This command is used to get local IP address..

Test Command **AT+CIFSR=?**	Response **OK**

Execution Command **AT+CIFSR**	Response **<IP address>** **OK** Or **ERROR**
Reference	Note local IP Address can be obtained by AT+CIFSR, if module hasn't valid IP, it will respond ERROR.

Parameters are defined below:

Parameters	Description
<IP address>	A string parameter which indicates the IP address assigned, for example: **10.112.208.9**

20.5 AT+CIPSTART Start TCP or UDP Connection

This command is used to start TCP or UDP Connection.

Test Command **AT+CIPSTART=?**	Response 1) If AT+CIPMUX=0 **+CIPSTART:("TCP","UDP"),"(0,255).(0,255).(0,255).(0,255)","(1-65535)"** **+CIPSTART:("TCP","UDP"),"DOMAIN NAME","(1-65535)"** **OK** 2) If AT+CIPMUX=1 **+CIPSTART:(0-5),("TCP","UDP"),"(0,255).(0,255).(0,255).(0,255)","(1-65535)"** **+CIPSTART: (0-5),("TCP","UDP"),"DOMAIN NAME","(1-65535)"** **OK**
Write Command 1)If single IP connection (AT+CIPMUX=0) **AT+CIPSTART=<mode>,<IP address or domain name>,<port>** 2)If multi-IP connection (AT+CIPMUX=1) **AT+CIPSTART=<id>,<mode>,< IP address or domain name >,<port>**	Response **OK** Or **ERROR** If already connected, will return: **OK** **[<n>,]ALREADY CONNECT**

Reference	Note
	This command allows establishment of a TCP/UDP connection only when the state is IP INITIAL or IP STATUS when it is in single state. In multi-IP state, the state is in IP STATUS only. So it is necessary to process "AT+CIPSHUT" before user establishes a TCP/UDP connection with this command when the state is not IP INITIAL or IP STATUS. When module is in multi-IP state, before this command is executed, it is necessary to process "AT+CSTT, AT+CIICR, AT+CIFSR".

Parameters are defined below:

Parameters	Description
<id>	0..5 A numeric parameter which indicates the connection number
<mode>	A string parameter which indicates the connection type "TCP" Establish a TCP connection "UDP" Establish a UDP connection
<IP address or domain name >	A string parameter which indicates remote server IP address, or domain name.
<port>	Remote server port
<state>	A string parameter which indicates the progress of connecting IP INITIAL CONNECT OK In Multi-IP state: IP INITIAL CONNECT OK

20.6 AT+CIPSEND Send data through TCP or UDP connection

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

Test Command **AT+CIPSEND=?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND: (1-1460)** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND: (0-5),(1-1460)** **OK**
Read Command **AT+CIPSEND?**	Response 1) For single IP connection (+CIPMUX=0) **+CIPSEND: <size>** **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPSEND: <n>,<size>** **OK**

Write Command 1) If single IP connection (AT+CIPMUX=0) **AT+CIPSEND=<length>** 2) If multi IP connection (AT+CIPMUX=1) **AT+CIPSEND=<id>[,<length>]**	Response If single IP is connected (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: When +CIPQSEND=0 **SEND OK** When +CIPQSEND=1 **DATA ACCEPT:<length>** If sending fails: **SEND FAIL** If multi IP connection is established (+CIPMUX=1) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: **<n>,SEND OK** If sending fails: **<id>,SEND FAIL**
Execution Command **AT+CIPSEND** response"**>**", then type data for send, tap CTRL+Z to send, tap ESC to cancel the operation	Response This Command is used to send changeable length data. If single IP connection is established (+CIPMUX=0) If connection is not established or module is disconnected: If error is related to ME functionality: **+CME ERROR <err>** If sending is successful: **SEND OK** If sending fails: **SEND FAIL**
Reference	Note This Command can only be used in single IP connection mode (+CIPMUX=0) and to send data on the TCP or UDP connection that has been established already. Ctrl-Z is used as a termination symbol. ESC is used to cancel sending data. There are at most **<size>** bytes which can be sent at a time.

Parameters are defined below:

Parameters	Description
<id>	0-5 A numeric parameter which indicates the connection number
<size>	1-1460 A numeric parameter which indicates the data length sent one time

20.7 AT+CIPCLOSE Close TCP or UDP connection

This command is used to Close TCP or UDP Connection.

Test Command **AT+CIPCLOSE=?**	Response 1) For single IP connection (+CIPMUX=0) **OK** 2) For multi IP connection (+CIPMUX=1) **+CIPCLOSE: (0-5)** **OK**
Write Command If multi-IP connection (AT +CIPMUX=1) **AT+CIPCLOSE=<id>**	Response For multi IP connection (+CIPMUX=1) **<id>, CLOSE OK**
Execution Command **AT+CIPCLOSE**	Response For single IP connection only (+CIPMUX=0): If close is successfully: **CLOSE OK** If close fails: **ERROR**
Reference	Note This command only closes connection at the status of TCP/UDP which returns **CONNECTING** or **CONNECT OK**, otherwise it will return **ERROR**, after the connection is closed, the status is IP CLOSE in single IP mode.

Parameters are defined below:

Parameters	Description
<id>	0-5 A numeric parameter which indicates the connection number

20.8 AT+CIPSHUT Deactivate GPRS PDP Context

This command is used to deactivate GPRS PDP Context

Test Command **AT+CIPSHUT=?**	Response **OK**

Execution Command **AT+CIPSHUT**	Response If close is successful: **SHUT OK** If close fails: **ERROR** Or
Reference	Note If this command is executed in multi-connection mode, all of the IP connection will be shut. User can close GPRS PDP context by **AT+CIPSHUT**. After it is closed, the status is **IP INITIAL**. If "**+PDP: DEACT**" URC is reported which means the GPRS is released by the network, then user still needs to execute "**AT+CIPSHUT**" command to make PDP context come back to original state.

20.9 AT+CIPSTATUS Query Current Connection Status

This command is used to Query Current Connection Status.

Test Command **AT+CIPSTATUS=?**	Response **OK** Or **+CIPSTATUS:(0-5)** **OK**
Write Command If multi IP connection mode (AT+CIPMUX=1) **AT+CIPSTATUS=<id>**	Response **+CIPSTATUS: <id>,<bearer>, <TCP/UDP>, <IP address>, <port>,<client state>** **OK**
Execution Command **AT+CIPSTATUS**	Response 1）If in single-IP mode (AT+CIPMUX=0) **+CIPSTATUS: 0,<bearer>, <TCP/UDP>, <IP address>, <port>, <client state>** **OK** 2) If in multi-IP mode (AT+CIPMUX=1) **+CIPSTATUS: 0,<bearer>, <TCP/UDP>, <IP address>, <port>, <client state>** **...** **+CIPSTATUS: 5,<bearer>, <TCP/UDP>, <IP address>, <port>, <client state>** **OK**
Reference	Note

Parameters are defined below:

Parameters	Description
<id>	0-5 A numeric parameter which indicates the connection number
<bearer>	0-1 GPRS bearer, default is 0
<client state>	INITIAL CONNECTED CLOSED

20.10 AT+CIPRXGET Get Data from Network Manually

This command is used to Get Data from Network Manually.

Test Command **AT+CIPRXGET=?**	Response If single IP connection (+CIPMUX=0) **+CIPRXGET: (list of supported <mode>s),** **(list of supported <REQ length>)** **OK** If multi IP connection (+CIPMUX=1) **+CIPRXGET: (list of supported <mode>s),** **(list of supported <id>s),** **(list of supported <REQ length>)** **OK**
Read Command **AT+CIPRXGET?**	Response **+CIPRXGET: <mode>** **OK**

Write Command	Response
1) If single IP connection (+CIPMUX=0) **AT+CIPRXGET=<mode>[,<REQ length >]** 2) If multi IP connection (+CIPMUX=1) **AT+CIPRXGET=<mode>[,<id>,<REQ length >]**	**OK** Or **ERROR** **1)For single IP connection** If “AT+CIPSRIP=1” is set, IP address and port are contained. if <mode>=1 +CIPRXGET: 1[,<IP ADDRESS>:<PORT>] if <mode>=2 +CIPRXGET: 2,<REQ length>,<CNF length>[,<IP ADDRESS>:<PORT>] 1234567890… OK if <mode>=3 +CIPRXGET: 3,<REQ length>,<CNF length>[,<IP ADDRESS>:<PORT>] 5151… OK 2)For multi IP connection if <mode>=1 +CIPRXGET: 1[,<id>,<IP ADDRESS>:<PORT>] if <mode>=2 +CIPRXGET: 2,<id>,<REQ length>,<CNF length>[,<IP ADDRESS>:<PORT>] 1234567890… OK if <mode>=3 +CIPRXGET: 3,<id>,<REQ length>,<CNF length>[,<IP ADDRESS>:<PORT>] 5151… OK If error is related to ME functionality: **+CME ERROR: <err>**
Reference	Note To enable this function, parameter <mode> must be set to 1 before connection.

Parameters are defined below:

Parameters	Description
<mode>	0 Disable getting data from network manually, the module is set to normal mode, data will be pushed to TE directly. 1 Enable getting data from network manually. 2 The module can get data, but the length of output data can't exceed 1460 bytes at a time. 3 Similar to mode 2, but in HEX mode, which means the module can get 730 bytes maximum at a time.
<id>	A numeric parameter which indicates the connection number
<REQ length>	Requested number of data bytes (1-1460 bytes)to be read
<CNF length>	Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read.

20.11 AT+CALM Alert sound mode

This command is used to set alert sound mode.

Test Command **AT+CALM=?**	Response **+CALM: (0-1)** **OK**
Read Command **AT+CALM?**	Response **+ CALM: <mode>** **OK** Or **Error**
Write Command **AT+CALM=<mode>**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<mode>	0 Normal mode 1 Silent mode (all sounds from ME are prevented)

Example:

Commands	Response
AT+CALM=?	**+CALM: (0-1)** **OK**
AT+CALM?	**+CALM: 1** **OK**

20.12 AT+GSN Request TA Serial Number Identification (IMEI)

This command is used to request TA Serial Number Identification (IMEI).

Test Command **AT+GSN=?**	Response **OK**
Execution Command **AT+GSN**	Response **<IMEI>** **OK** Or **Error**
Reference	Note

20.13 AT+CIPHEAD Add an IP Head at the Beginning of a Package Received

This command is used to add an IP Head at the Beginning of a Package Received.

Test Command **AT+CIPHEAD=?**	Response **+CIPHEAD: (0-1)** **OK**

Read Command **AT+CIPHEAD?**	Response **+ CIPHEAD: <mode>** **OK** Or **Error**
Write Command **AT+CIPHEAD=<mode>**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<mode>	0 Normal mode, Not add IP header 1 No effect also

20.14 AT+CIPQSEND Select Data Transmitting Mode

This command is used to select Data Transmitting Mode.

Test Command **AT+CIPQSEND=?**	Response **+CIPQSEND: (0-1)** **OK**
Read Command **AT+CIPQSEND?**	Response **+ CIPQSEND: <n>** **OK** Or **Error**
Write Command **AT+CIPQSEND=<n>**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<n>	0 Normal mode, 1 No effect also.

20.15 AT+SPEAKER Speaker and MIC select

This command is used to select speaker and MIC.

This command is used to select speaker and MIC.Test Command **AT+SPEAKER=?**	Response **+SPEAKER: (0-1), (0-1)** **OK**
Read Command **AT+SPEAKER?**	Response **+ SPEAKER: <speaker channel>,<MIC channel>** **OK** Or **Error**
Write Command **AT+SPEAKER=<speaker channel>,<MIC channel>**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<speaker channel>	0 speaker channel 0 1 speaker channel 1
<MIC channel>	0 MIC channel 0 1 MIC channel 1

20.16 AT+SIDET Change the side tone gain level

This command is used to change the side tone gain level.

Test Command **AT+SIDET=?**	Response **+SIDET: (0-1), (0-16)** **OK**
Read Command **AT+SIDET?**	Response **+ SIDET: <channel 0 level>,<channel 1 level>** **OK** Or **Error**
Write Command **AT+SIDET=<channel number>,<channel n level>**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<channel number>	0 channel number 0 1 channel number 1
<channel n level>	0 -16 channel level (**n** refer to **<channel number>**)

Example:

Commands	Response
AT+SIDET=?	**+SIDET: (0-1),(0-16)** **OK**
AT+SIDET=1,11	**OK**

20.17 AT+NETLIGHT Net light Flashing control

This command is used to control NETLIGHT PIN.

Test Command **AT+NETLIGHT=?**	Response **+NETLIGHT: (0-1)** **OK**
Read Command **AT+NETLIGHT?**	Response **+NETLIGHT: <mode>** **OK** Or **Error**
Write Command **AT+NETLIGHT=< mode >**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<mode>	**0** enable NETLIGHT flashing **1** forbid NETLIGHT flashing

20.18 AT+GSMBUSY Reject Incoming Call

This command is used to Reject Incoming Call silently..

Test Command **AT+GSMBUSY=?**	Response **+GSMBUSY: (0-1)** **OK**

Read Command **AT+GSMBUSY?**	Response **+GSMBUSY: <mode>** **OK** Or **Error**
Write Command **AT+GSMBUSY=<mode>**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<mode>	0 Enable incoming call 1 Reject incoming call

20.19 AT+SJDR Jamming detection control

This command is used to control jamming detection function.

Test Command **AT+SJDR=?**	Response **+SJDR: (0-1),(-128-127)** **OK**
Read Command **AT+SJDR?**	Response **+SJDR: <status>,<mode>,<threshold>** **OK** Or **Error**

Write Command **AT+SJDR=<mode>,** **[<threshold>[,<display>]]**	Response **OK** Or **ERROR**
Reference	Note

Parameters are defined below:

Parameters	Description
<status>	0 Jamming not detected 1 Jamming detected
<mode>	0 Disable jamming detection 1 Enable jamming detection
<threshold>	threshold value ,unit: dBm, default is -42 dBm -128-127 Threshold value as **<threshold>**,value from -128 to 127

20.20 AT+CGMSCLASS Change GPRS Multi-slot Class

This command is used to change GPRS Multi-slot Class.

Test Command **AT+CGMSCLASS=?**	Response **+CGMSCLASS: (2,4,8,9,10,12)** **OK**
Read Command **AT+ CGMSCLASS?**	Response **+CGMSCLASS: <class>** **OK**
Write Command **AT+CGMSCLASS=<class>**	Response
Reference	Note

Parameters are defined below:

Parameters	Description
<class>	**2,4,8,9,10,12** Multi-slot Class

21 TTS AT commands

Overview of TTS AT Command.

AT Command	Description
AT+ZTTS	broad tts audio
AT+ZTTSP	set TTS broad parameter
^AUDEND	auto reported of tts

21.1 AT+ZTTS broad tts audio

This command is used to broad tts audio.

Test Command **AT+ZTTS=?**	Response **+ZTTS: (0,2)** **OK**
Read Command **AT+ ZTTS?**	Response **OK**
Write Command **AT+ZTTS=<op>,<string>**	Response **OK** Or **ERROR**
Reference	Note The string must be GBK or UCS2 code.the format must be HEX,length 2000 is the most.the language just support Chinese now.

Parameters are defined below:

Parameters	Description
<op>	0 stop broadding tts audio 1 broadding tts audio by GBK code 2 broadding tts audio by UCS2 code

<string>	GBK or UCS2 code, the format must be HEX,length 2000 is the most.

21.2 AT+CSTT set TTS broad parameter

This command is used to set TTS broad parameter.

Test Command **AT+ZTTSP=?**	Response **+ZTTSP:(1-3),(1-3)** **OK**
Read Command **AT+ZTTSP?**	Response **+ZTTSP:<vol><speed>** **OK**
Write Command **AT+ZTTSP=<vol>,<speed>**	Response **OK** Or **ERROR**

Parameters are defined below:

Parameters	Description
<vol>	volume of synthetic voice
<speed>	speed of synthetic voice

21.3 ^AUDEND auto reported of TTS .

This command is used to auto reported of tts.

	Response **^AUDEND:<type>,<end_type>**

Parameters are defined below:

Parameters	Description
<type>	2 tts
<end_type>	1 the tts audio is end of broad 2 tts audio stop broad by hand -1 audio error

22 Compatible Unsolicited result code

Compatible unsolicited result codes are listed below:

URC Information	Description
+RECV FROM: <id>,<size>	Received data in multi-IP mode from socket id.
+RECV FROM: <size>	Received data in single-IP mode
<id>,CONNECT OK	Connected ok in multi-IP mode of socket id.
CONNECT OK	Connected ok in single-IP mode
<id>,ALREADY CONNECT	Already connected in multi-IP mode of socket id.
ALREADY CONNECT	Already connected in single-IP mode
<id>,SEND OK	Send data ok in multi-IP mode of socket id.
SEND OK	Send data ok in single-IP mode
<id>,CLOSED	Close socket successful in multi-IP mode of socket id.
CLOSED	Close socket successful in single-IP mode
+USJDR: <status>	If jamming detected,Parameter **<status>** please refer to AT+SJDR.