L218 AT DOCUMENT

GSM/GPRS+GNSS Module Series

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Shanghai MobiletekCommunication Ltd

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Revision History

Date	Version	Description of chage	Author
2016-9-29	V1.0	Initial	Chen Lei

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1 Introduction

1.1 Overview

This document introduces the supported AT command set of L218 project. The target MP branch is L218 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

Answers and initiates a connection to an incoming call.

2.1.1 Format

Execution command : ATA

2.1.2 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

2.1.3 Response

Execution command : CONNECT

CONNECT <text>

NO CARRIER

ERROR

2.1.4 2.1.5 Note

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

2.2 ATD

Initiates a phone connection, which may be data, facsimile (+FCLASS> 0), 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.

2.2.1 Format

Execution command : ATD<dial string>
Memory dial command : ATD><n>

2.2.2 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 numberis a voice number rather than a fax or datanumber **T** The T modifier is ignored but is includedonly 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

2.2.3 Response

Execution command : CONNECT
CONNECT <text>
NO CARRIER
ERROR
OK

2.2.4 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

The setting of this parameter determines whether or not the DCE echoes characters received from the DTE during command state and online command state.

2.3.1 Format

Execution command : ATE[<value>]

2.3.2 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.

2.3.3 Response

Execution command : OK

2.4 ATH

Terminates a connection.

2.4.1 Format

Execution command : ATH

2.4.2 Response

Execution command : NO CARRIER
OK

2.4.3 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

Request Identification Information.

2.5.1 Format

Execution command : ATI[<value>]

2.5.2 Field

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

2.5.3 Response

Execution command : <text>

2.6 ATL

Set volume of the monitor speaker.

2.6.1 Format

Execution command : ATL[<value>]

2.6.2 Field

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

2.6.3 Response

Execution command : OK

2.6.4 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

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

2.7.1 Format

Execution command : ATO

2.7.2 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

2.7.3 Response

Execution command : CONNECT

CONNECT <text>

NO CARRIER

ERROR

2.8 ATP

Select pulse dialing. (This setting is ignored.)

2.9 ATQ

Set result code suppression mode.

2.9.1 Format

Execution command : ATQ[<value>]

2.9.2 Field

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

2.9.3 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**).

2.9.4 Note

2.9.4.1 Change History

N/A

2.9.4.2 Usage Note

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

2.10 ATS0

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.

2.10.1 Format

Execution command : ATS0=<value>

2.10.2 Field

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

2.10.3 Response

Execution command : OK

2.10.4 Note

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

2.11 ATS3

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).

2.11.1 Format

Execution command : ATS3=<value>

2.11.2 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.

2.11.3 Response

Execution command : OK or ERROR

2.12 ATS4

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).

2.12.1 Format

Execution command : ATS4=<value>

2.12.2 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.

2.12.3 Response

Execution command : OK or ERROR

2.13 ATS5

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.

2.13.1 Format

Execution command : ATS5=<value>

2.13.2 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.

2.13.3 Response

Execution command : OK or ERROR

2.14 ATS6

Pause before blind dialing.

The command is ignored.

2.15 ATS7

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.

2.15.1 Format

Execution command : ATS7=<value>

2.15.2 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.

2.15.3 Response

Execution command : OK or ERROR

2.16 ATS8

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.

2.16.1 Format

Execution command : ATS8=<value>

2.16.2 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.

2.16.3 Response

Execution command : OK or ERROR

2.17 ATS10

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.

2.17.1 Format

Execution command : ATS10=<value>

2.17.2 Field

Type	Short name	Parameter/comment
Integer	value	**1 to 254** Number of tenths of a second of delay.

2.17.3 Response

Execution command : OK or ERROR

2.18 ATT

We do not support.
This setting is ignored.

2.19 ATV

Set DCE response format.

2.19.1 Format

Execution command : ATV[<value>]

2.19.2 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.

2.19.3 Response

Execution command : OK

2.20 ATX

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.

2.20.1 Format

Execution command : ATX[<value>]

2.20.2 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.

2.20.3 Response

Execution command : OK or ERROR

2.21 ATZ

Reset to default configuration

2.21.1 Format

Execution command : ATZ[<value>]

2.21.2 Field

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

2.21.3 Response

Execution command : OK or ERROR

2.22 AT&F

Set to factory-defined configuration

2.22.1 Format

Set command : AT&F[<value>]

2.22.2 Field

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

2.22.3 Response

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

2.23 AT+GMI

Same as AT+CGMI

2.24 AT+GMM

Same as AT+CGMM

2.25 AT+GMR

Same as AT+CGMR

2.26 AT+IPR

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.

2.26.1 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.

2.26.2 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)

2.26.3 Response

Execution command : OK
Read command : +IPR: <rate>
Test command : +IPR: (list of supported <rate>s)

2.27 AT+IFC Set TE-TA Local Data Flow Control

AT+IFC Set TE-TA Local Data Flow Control

Test Command **AT+IFC=?**	Response **+IFC: (0-2),(0-2)** **OK**
Read Command **AT+ IFC?**	Response This parameter setting determines the data flow control on the serial interface for data mode. **OK** Or **Error**
Write Command **AT+IFC=[<dce_by_dte>[,<dte_by_dce>]]**	Response **OK** Or **ERROR**
Reference	Note

Parameters

Parameters are defined below:

Parameters	Description
<dce_by_dte>	Specifies the method will be used by TE at receive of data from TA 0 No flow control 1 Software flow control 2 Hardware flow control
<dte_by_dce>	Specifies the method will be used by TA at receive of data from TE 0 No flow control 1 Software flow control 2 Hardware flow control

批注 [11]: 1112222

Example:

Commands	Response
AT+IFC?	**+IFC: 0, 0** **OK**

2.28 AT+GCAP

Request complete capabilities list.

2.28.1 Format

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

2.28.2 Response

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

3 General commands

3.1 AT+CGMI Request manufacturer identification

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.

3.1.1 Format

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

3.2 AT+CGMM Request model identification

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.

3.2.1 Format

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

3.3 AT+CGMR Request revision identification

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

3.3.1 Format

Command	Possible response(s)

+CGMR	<revision> *+CME ERROR: <err>*
+CGMR=?	

3.4 AT+CGSN Request product serial number identification

Returns the IMEI number of the phone.

3.4.1 Format

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

3.5 AT+CSCS Select TE character set

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.

3.5.1 Format

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

3.5.2 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+CLAC List all available AT commands

Execution command causes the MT to return one or more lines of AT Commands.

Note: This command only returns the AT commands that are available for the user.

3.6.1 Format

Command	Possible response(s)
+CLAC	<AT Command1>[<CR><LF><AT Command2>[…]] *+CME ERROR: <err>*
+CLAC=?	*+CME ERROR: <err>*

3.6.2 Field

<AT Command>:

Defines the AT command including the prefix AT. Text shall not contain the sequence 0<CR> or OK<CR>

3.6.3 Note

3.6.3.1 Change History

The command is available from 09B.1009MP

3.6.3.2 Usage Note

The command only supported in projects with __CLAC_SUPPORT__ option.

3.7 AT+CIMI Request international mobile subscriber identity

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.

3.7.1 Format

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

4 Call Control commands

4.1 AT+CSTA Select type of address

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

4.1.1 Format

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

4.1.2 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

4.1.3 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

Request to hang up the current GSM call.

4.2.1 Format

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

4.2.2 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+CBST Select bearer service type

Selects the bearer service <name> with the data rate <speed>, and the connection element <ce> to be used when data calls are made. Values may also be used during mobileterminated data-call setup, especially in the case of single numbering-scheme calls.

4.3.1 Format

Command	Possible response(s)
+CBST=[<speed>[,<name>[,<ce>]]]	
+CBST?	+CBST: <speed>,<name>,<ce>
+CBST=?	+CBST: (list of supported <speed>s),(list of supported <name>s),(list of supported <ce>s)

4.3.2 Field

<speed>:
0 auto bauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service)
4 2400 bps (V.22bis)
5 2400 bps (V.26ter)
6 4800 bps (V.32)
7 9600 bps (V.32)
12 9600 bps (V.34)
14 14400 bps (V.34)
68 2400 bps (V.110 or X.31 flag stuffing)
70 4800 bps (V.110 or X.31 flag stuffing)
71 9600 bps (V.110 or X.31 flag stuffing)
75 14400 bps (V.110 or X.31 flag stuffing)
134 64000 bps(multimedia)
[NOTE] when <speed> = 4,5,6,7,12,14 , line type = **Analog**
when <speed> =68,70,71,75 , line type = **ISDN**
<name>:
0 data circuit asynchronous (UDI or 3.1 kHz modem)

1 data circuit synchronous (UDI or 3.1 kHz modem)
2 PAD Access (asynchronous) (UDI)
3 Packet Access (synchronous) (UDI)
4 data circuit asynchronous (RDI)
<ce>:
0 transparent
1 non-transparent
2 both, transparent preferred
3 both, non-transparent preferred
Note: the valid parameter might have some differences due to the capability and the configuration of that
project.

4.3.3 Note

<name> = 2 and 3 are not supported
.

4.4 AT+CR Service reporting control

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.

4.4.1 Format

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

4.4.2 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

4.5 AT+CEER Extended error report

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;

4.5.1 Format

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

4.5.2 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.

4.6 AT+CRC Cellular result code

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.

4.6.1 Format

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

4.6.2 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
FAX facsimile (TS 62)
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)
ALT VOICE/FAX alternating voice/fax, voice first (TS 61)
ALT FAX/VOICE alternating voice/fax, fax first (TS 61).
GPRS GPRS network request for PDP context activation

4.7 AT+CSNS Single Numbering Scheme

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.

4.7.1 Format

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

4.7.2 Field

<mode>:
0 voice
1 alternating voice/fax, voice first (TS 61)
2 fax (TS 62)
3 alternating voice/data, voice first (BS 61)
4 data

5 alternating voice/fax, fax first (TS 61)
6 alternating voice/data, data first (BS 61)
7 voice followed by data (BS 81)

4.8 AT+CVHU Voice Hangup Control

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.

4.8.1 Format

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

4.8.2 Field

<mode>:
0 - "Drop DTR" ignored but OK response given. ATH disconnects.
1 - "Drop DTR" and ATH ignored but OK response given.

5 Network Service related commands

5.1 AT+CNUM Subscriber Number

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

5.1.1 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

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.
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.

5.2.1 Format

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

5.2.2 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>]]
<stat>:
0 not registered, MT is not currently searching a new operator to register to
1 registered, home network
2 not registered, but MT is currently searching a new operator to register to
3 registration denied
4 unknown
5 registered, roaming
<lac>: string type; two byte location area code in hexadecimal format (e.g. "00C3" equals 195 in decimal)
<ci>: string type; 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

5.2.3 Note

5.2.3.1 Change History

<Act> is applied from 09A.0920MP

5.2.3.2 Usage Note

N/A

5.3 AT+COPS Operator Selection

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.

5.3.1 Format

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

5.3.2 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>
<oper>: string type
<stat>:
0 unknown
1 available
2 current
3 forbidden
<Act>
0 GSM
2 UTRAN

5.3.3 Note

5.3.3.1 Change History

N/A

5.3.3.2 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

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

5.4.1 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>*

5.4.2 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)
4 fax (facsimile services)
8 short message service
16 data circuit sync
32 data circuit async
64 dedicated packet access
128 dedicated PAD access

5.4.3 Note

5.4.3.1 Change History

N/A

5.4.3.2 Usage Note

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

5.5 AT+CPWD Change Password

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

5.5.1 Format

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

5.5.2 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

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.

5.6.1 Format

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

5.6.2 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

Requests calling line identification restriction.

5.7.1 Format

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

5.7.2 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

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.

5.8.1 Format

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

5.8.2 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+CCUG Closed user group

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.

5.9.1 Format

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

5.9.2 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

5.10 AT+CCFC Call forwarding number and conditions

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

5.10.1 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)

5.10.2 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)
4 fax (facsimile services)
8 short message service
16 data circuit sync
32 data circuit async
64 dedicated packet access
128 dedicated PAD access
<time>:
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

5.11 AT+CCWA Call waiting

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.

5.11.1 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)

5.11.2 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)
4 fax (facsimile 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)

5.12 AT+CHLD Call related supplementary services

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.

5.12.1 Format

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

5.12.2 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)

5.13 AT+CTFR Call deflection

This refers to a service that causes an incoming alerting call to be forwarded to a specified number.

5.13.1 Format

Command	Possible response(s)
+CTFR=<number>[,<type>[,<subaddr>[,<satype>]]]	*+CME ERROR: <err>*
+CTFR=?	

5.13.2 Field

<number>: string type phone number of 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

5.14 AT+CUSD Unstructured supplementary service data

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.

5.14.1 Format

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

5.14.2 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

5.15 AT+CSSN Supplementary service notifications

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.

5.15.1 Format

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

5.15.2 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)

5.16 AT+CLCC List current calls

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

5.16.1 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=?	

5.16.2 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
2 fax
3 voice followed by data, voice mode
4 alternating voice/data, voice mode
5 alternating voice/fax, voice mode
6 voice followed by data, data mode
7 alternating voice/data, data mode
8 alternating voice/fax, fax mode
9 unknown
<mpty>:
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)

5.17 AT+CPOL Preferred operator list

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.

5.17.1 Format

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

5.17.2 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

5.18 AT+CPLS Selection of preferred PLMN list

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

5.18.1 Format

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

5.18.2 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 $EF_{HPLMNwAcT}$

5.19 AT+COPN Read operator name

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.

5.19.1 Format

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

5.19.2 Field

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

5.20 AT+CAEMLPP eMLPP priority Registration and Interrogation

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.

5.20.1 Format

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

5.20.2 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].

5.21 AT+WS46 Select wireless network

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.

5.21.1 Format

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

5.21.2 Field

<n>:
25 3GPP Systems (both GERAN and UTRAN)

6 MT control and status command

6.1 AT+CPAS Phone activity status

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.

6.1.1 Format

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

6.1.2 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

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. (supported only for feature phone)
AT+CFUN = 1 can enter normal mode. (supported only for module solution)
AT+CFUN = 4 can enter flight mode. (supported only for module solution)

6.2.1 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>*

6.2.2 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

6.2.3 Note

6.2.3.1 Change History

N/A

6.2.3.2 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+CPIN Enter PIN

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.

6.3.1 Format

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

6.3.2 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

6.4 AT+CBC Battery Charge

Execution and read command returns battery connection status <bcs> and battery level <bcl> of the ME.

6.4.1 Format

Command	Possible response(s)

+CBC	+CBC: <bcs>,<bcl> *+CME ERROR: <err>*
+CBC=?	+CBC: (list of supported <bcs>s),(list of supported <bcl>s)

6.4.2 Field

<bcs>:
0 MT is powered by the battery
1 MT has a battery connected, but is not powered by it
2 MT does not have a battery connected
3 Recognized power fault, calls inhibited
<bcl>:
0 battery is exhausted, or MT does not have a battery connected
1...100 battery has 1 100 percent of capacity remaining

6.5 AT+CSQ Signal Quality

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

6.5.1 Format

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

6.5.2 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

6.6 AT+CMEC Mobile Termination control mode

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.

6.6.1 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)

6.6.2 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

6.6.3 Note

6.6.3.1 Change History

The command is available from 09B.1009MP

6.6.3.2 Usage Note

N/A

6.7 AT+CIND Indicator control

Displays the value of ME indicators.

6.7.1 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>*

6.7.2 Field

<ind>: integer type value, which shall be in range of corresponding <descr>
<descr> values reserved by the present document and their <ind> ranges:
"battchg" battery charge level (0 5)
"signal" s ignal quality (0 5)
"service" service availability (0 1)
"message" message received (0 1)
"call" call in progress (0 1)
"roam" roaming indicator (0 1)
"call setup" call setup indicator(0 3)
"smsfull" a short message memory storage in the MT has become full(1) or memory locations are available (0)

6.7.3 Note

6.7.3.1 Change History

N/A

6.7.3.2 Usage Note

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

6.8 URC: +CIEV NITZ indicator event

This URC is the result code of an NITZ indicator event.

6.8.1 Format

Unsolicited result code
+CIEV: <ind>,<value1>[,<value2>,…]

6.8.2 Field

<ind>: integer type value
9: NITZ date/time/timezone information
+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

6.8.3 Note

Available after W09.24

6.9 AT+CMER Mobile Termination event reporting

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.

6.9.1 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)

6.9.2 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
0 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.

6.9.3 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.

6.10 AT+CPBS Select Phonebook Memory Storage

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

6.10.1 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)

6.10.2 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" SIM own numbers (MSISDNs) list

6.10.3 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. It would be always 0.
3.

6.11 AT+CPBR Read phonebook entries

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.

6.11.1 Format

Command	**Possible response(s)**
+CPBR=<index1>[,<index2>]	[+CPBR: <index1>,<number>,<type>,<text>[,<hidden>][[...] <CR><LF>+CPBR: <index2>,<number>,<type>,<text>[,<hidden>]]] *+CME ERROR: <err>*
+CPBR=?	+CPBR: (list of supported <index>s),[<nlength>],[<tlength>] *+CME ERROR: <err>*

6.11.2 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>
<hidden>: indicates if the entry is hidden or not
0: phonebook entry not hidden
1: phonebook entry hidden

6.12 AT+CPBF Find Phonebook entries

Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) 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.

6.12.1 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>*

6.12.2 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>

6.13 AT+CPBW Write Phonebook entries

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.

6.13.1 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>*

6.13.2 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

6.14 AT+CCLK Clock

Set command sets the real-time clock of the MT.
Read command returns the current setting of the clock.

6.14.1 Format

Command	Possible response(s)
+CCLK=<time>	*+CME ERROR: <err>*

+CCLK?	+CCLK: <time> *+CME ERROR: <err>*
+CCLK=?	

6.14.2 Field

<time>: string type value; format is "yy/MM/dd,hh:mm:ss",
where characters indicate year (two last digits), month, day, hour, minutes, seconds.

6.15 AT+CALA Alarm

Sets an alarm time in the ME.

6.15.1 Format

Command	**Possible response(s)**
+CALA=<time>[,<n>[,<type>[,<text>[,<recur>]]]]	*+CME ERROR: <err>*
+CALA?	[+CALA: <time>,<n1>,,,<recurr> [<CR><LF>+CALA: <time>,<n2>,,,<recurr> [...]]] *+CME ERROR: <err>*
+CALA=?	OK

6.15.2 Field

<time>: refer +CCLK
<n>: integer type value indicating the index of the alarm.
<type>: integer type. But we don't care about type value.
<text>: string type. But we don't care about text content. MMI doesn't support.
<recurr>: string type value indicating day of weeks for the alarm in one of the following format:
"<1..7>[,<1..7>[…]]" – Sets a recurrent alarm for one or more days in the week. The digits 1 to 7 corresponds to the days in the week, Monday (1), …, Sunday (7). Example: The string "1,2,3,4,5" may be used to set an alarm for all weekdays.
"0" – Sets a recurrent alarm for all days in the week.

6.16 AT+CSIM Generic SIM Access

Set command transmits to the MT the <command> it then shall send as it is to the SIM. In the

same manner the SIM <response> shall be sent back by the MT to the TA as it is. Refer subclause 9.2 for <err> values.

This command allows a direct control of the SIM by an distant application on the TE. The TE shall then take care of processing SIM information within the frame specified by SM/UMTS.

6.16.1 Format

Command	Possible response(s)
+CSIM=<length>,<command>	+CSIM: <length>,<response> +CME ERROR: <err>
+CSIM=?	

6.16.2 Field

<length> : integer type; length of the characters that are sent to TE in <command> or <response> (two times the actual length of the command or response)
<command> : command passed on by the MT to the SIM in the format as described in 3GPP TS 51.011 [28] (hexadecimal character format; refer +CSCS)
<response> : response to the command passed on by the SIM to the MT in the format as described in 3GPP TS 51.011 [28] (hexadecimal character format; refer +CSCS)

6.16.3 Note

1. The command only support when __CSIM__ is defined
2. We support AT+CSIM with limitation:
□□We only support SELECT, STATUS, READ BINARY, UPDATE BINARY, READ RECORD, UPDATE RECORD, GET RESPONSE commands.
□□We don't allow the AT users to select another application, send termination indication or initialization indication. If the user send SELECT by AID, STATUS by initialization or termination, he will get ERROR in return.
3. We support AT+CSIM with GSM CLA, and UICC CLA, but we don't support logical channels other than the default channel.

6.16.4 Example

1. SELECT
(1) (P1 = SELECT MF by file id)
AT+CSIM=14,"00A4000C023F00"
+CSIM: 4, "9000"
OK
2. SELECT
(1) (P1 = SELECT by DF name)

AT+CSIM=42,"00A4040C10A0000000871002FF47700189000001FF"
ERROR
3. READ BINARY
(1) (Pre-condition: SELECT EF_IMSI (P1 = SELECT by path from MF, P2 = return with FCP))
AT+CSIM=20,"00A40804047FFF6F0700"
+CSIM: 64, "621C8202412183026F07A5038001718A01058B036F060580020009880138900 0"
OK
(2) READ BINARY
AT+CSIM=10,"00B0000009"
+CSIM: 22, "0849667914305241049000"
OK
4. UPDATE BINARY
(1) (Pre-condition: SELECT EF_PLMNwAcT(P1 = SELECT by path from MF, P2 = return with FCP))
AT+CSIM=20,"00A40804047FFF6F6000"
+CSIM: 64, "621C8202412183026F60A5038001718A01058B036F060680020087880150900 0"
OK
(2) READ BINARY
AT+CSIM=10,"00B0000087"
+CSIM: 18,
"888888008854F400808025F510808005F221808015F001808005F520808015F52080
8004F401808004F454808004F429808004F430808004F494808004F404808054F050808025F0
1080
8054F5108080FFFFFF0000FFFFFF0000FFFFFF0000FFFFFF0000FFFFFF0000FFFFFF0000F
FFFFF00
00FFFFFF0000FFFFFF0000FFFFFF0000FFFFFF00009000"
OK
(3) UPDATE BINARY
AT+CSIM=20,"00D600000521F3548080"
+CSIM: 4, "9000"
OK

6.17 AT+CRSM Restricted SIM access

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

6.17.1 Format

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

6.17.2 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.

6.17.3 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.

6.17.4 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,
"6F776E6572FFFFFFFFFFFFFFFFFFFFFF06819078303326FFFFFFFFFFFFFF"
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

6.18 AT+CRSL Ringer Sound Level

Set the incoming call ringer sound level.

6.18.1 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>*

6.18.2 Field

<level>: integer type value with manufacturer specific range

6.18.3 Note

6.18.3.1 Change History

6.18.3.2 Usage Note

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

6.19 AT+CLVL Loudspeaker volume level

Sets the volume of the internal speaker in the ME

6.19.1 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>*

6.19.2 Field

<level>: integer type value with manufacturer specific range.

6.19.3 Usage Note

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

6.20 AT+CMUT Mute Control

Enable/Disable the uplink voice muting during a voice call.

6.20.1 Format

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

6.20.2 Field

<n>:
0 mute off
1 mute on

6.20.3 Usage Note

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

6.21 AT+CCWE Call Meter maximum event

Shortly before the ACM (Accumulated Call Meter) maximum value is reached, an unsolicited result code +CCWV will be sent, if enabled by this command. The warning is issued approximately when 30 seconds call time remains. It is also issued when starting a call if less than 30 s call time remains.

6.21.1 Format

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

6.21.2 Field

<mode>:
0 Disable the call meter warning event
1 Enable the call meter warning event

6.22 AT+CLAE Language Event

to enable/disable unsolicited result code +CLAV: <code>. If <mode>=1, +CLAV: <code > is sent from the ME when the language in the ME is changed.

6.22.1 Format

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

6.22.2 Field

<mode>:
0 Disable unsolicited result code +CLAE
1 Enable unsolicited result code +CLAE
<code>: For description see +CLAN.

6.23 AT+CALD Delete alarm

Action command deletes an alarm in the MT.

6.23.1 Format

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

6.23.2 Field

<n>: integer type value indicating the index of the alarm; default is manufacturer specific.

6.24 AT+CTZR Time Zone Reporting

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.

6.24.1 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>*

6.24.2 Field

<onoff>: integer type value indicating:
0 – Disable automatic time zone update via NITZ (default).
1 – Enable automatic time zone update via NITZ.

7 GPRS commands(27.007)

7.1 AT+CGDCONT Define PDP Context

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

7.1.1 Format

Command	Possible response(s)
+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<pd1> [,…[,pdN]]]]]]]]	OK ERROR
+CGDCONT?	+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [<CR><LF>+CGDCONT: <cid>, <PDP_type>, <APN>,<PDP_addr>, <d_comp>, <h_comp>[,<pd1>[,…[,pdN]]] [...]]
+CGDCONT=?	+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>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 <pd1>s)[,…[,(list of supported <pdN>s)]]] [...]]

7.1.2 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)
<pd1>, … <pdN>: zero to N string parameters whose meanings are specific to the <PDP_type>

7.2 AT+CGDSCONT Define Secondary PDP Context

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.

7.2.1 Format

Command	Possible response(s)
+CGDSCONT=[<cid> ,<p_cid> [,<d_comp> [,<h_comp>]]]	OK ERROR
+CGDSCONT?	+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [<CR><LF>+CGDSCONT: <cid>, <p_cid>, <d_comp>, <h_comp> [...]]
+CGDSCONT=?	+CGDSCONT: (range of supported <cid>s), (list of <cid>s for active

	primary contexts),(list of supported <d_comp>s), (list of supported <h_comp>s)

7.2.2 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 contextrelated 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)

7.3 AT+CGQREQ Quality of Service Profile (Requested)

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.

7.3.1 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) […]]

7.3.2 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)

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.

7.4.1 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) […]]

7.4.2 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

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.

7.5.1 Format

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

7.5.2 Field

<state>: indicates the state of PS attachment
0 - detached
1 - attached

7.6 AT +CGACT PDP context activate or deactivate

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

7.6.1 Format

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

7.6.2 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.

7.7 AT +CGCMOD PDP Context Modify

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

7.7.1 Format

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

7.7.2 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

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.

7.8.1 Format

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

7.8.2 Field

<L2P>: a string parameter that indicates the layer 2 protocol to be used between the TE and MT
PPP Point-to-point protocol for a PDP such as IP
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).

7.9 AT+CGPADDR Show PDP address

The execution command returns a list of PDP addresses for the specified context identifiers.
The test command returns a list of defined <cid>s.

7.9.1 Format

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

7.9.2 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

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.

7.10.1 Format

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

7.10.2 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

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.

7.11.1 Format

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

7.11.2 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

The 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.

7.12.1 Format

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

7.12.2 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.

7.12.3 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+CGREG GPRS network registration status

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 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.

7.13.1 Format

Command	Possible response(s)
+CGREG=[<n>]	
+CGREG?	+CGREG:

	<n>,<stat>[,<lac>,<ci>[,<Act>]] *+CME ERROR: <err>*\

7.13.2 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>:
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
<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

7.14 AT+CGSMS Select service for MO SMS messages

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.

7.14.1 Format

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

7.14.2 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)

7.15 AT+EGTP GPRS Transfer Preference (Proprietary Command)

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

7.15.1 Format

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

7.15.2 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.

7.15.3 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.

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

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.

7.16.1 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) […]]

7.16.2 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 insequence 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).

7.16.3 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.

7.17 AT+CGEQREQ 3G Quality of Service Profile (Minimum acceptable)

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.

7.17.1 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>	OK ERROR

[,<Traffic handling priority>]]]]]]]]]]]	
+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) […]]

7.17.2 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 insequence 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).

7.17.3 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.

8 Mobile Termination Errors

8.1 AT+CMEE

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.

8.1.1 Format

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

8.1.2 Field

<n>:
0 disable +CME ERROR: <err> result code and use ERROR instead
1enable +CME ERROR: <err> result code and use numeric <err> values (refer next subclause)
2enable +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 Annex C(27.007)

9.1 AT+FCLASS

Puts the TA in a specific mode of operation. This causes the TA to process information in a manner suitable for that type of information.

9.1.1 Format

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

9.1.2 Field

<n> Mode
0 data
1 fax class 1 (TIA-578-A)
2 fax (manufacturer specific)
2.0 fax class 2 (ITU T T.32 [12] and TIA 592)

9.2 AT+VTS

Allows the transmission of DTMF tones. The command is write-only.
Note: The command is used only during voice calls.

9.2.1 Format

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

9.2.2 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

9.2.3 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 SMS AT Commands(27.005)

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

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.

10.1.1 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)

10.1.2 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

10.1.3 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

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.

10.2.1 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)

10.2.2 Note

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

10.3 AT+CMGF Message Format

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

10.3.1 Format

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

10.3.2 Field

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

10.3.3 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

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.

10.4.1 Format

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

10.4.2 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

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

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

Test command returns supported values as a compound value.

10.6.1 Format

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

10.6.2 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

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

10.7.1 Format

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

10.7.2 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"

10.7.3 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

10.7.4 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

10.7.4.1 Change History

N/A

10.7.4.2 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

10.8 AT+CSAS Save Settings

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.

10.8.1 Format

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

10.8.2 Field

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

10.8.3 Note

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

10.9 AT+CRES Restore Settings

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.

10.9.1 Format

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

10.9.2 Field

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

10.9.3 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

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)

10.10.1 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)

10.10.2 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.

10.10.3 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

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

10.11.1 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)

10.11.2 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

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

10.12.1 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)

10.12.2 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

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.

10.13.1 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-STATUSREPORT:** +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=?	

10.13.2 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

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.

10.14.1 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=?	

10.14.2 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

Execution command confirms correct reception of a new message (SMS-DELIVER or SMSSTATUS-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.

10.15.1 Format

Command	**Possible response(s)**
if text mode (+CMGF=1): +CNMA	*+CMS ERROR: <err>*
+CNMA=?	

10.15.2 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

Execution command confirms correct reception of a new message (SMS-DELIVER or SMSSTATUS-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.

10.16.1 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)

10.16.2 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

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.

10.17.1 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=?	

10.17.2 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

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.

10.18.1 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=?	

10.18.2 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

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.

10.19.1 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=?	

10.19.2 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

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.

10.20.1 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=?	

10.20.2 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

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"

10.21.1 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=?	

10.21.2 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

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"

10.22.1 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=?	

10.22.2 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"

10.22.3 Note

10.22.3.1 Change History

7 "DRAFT" of <stat> is available from 09B.1017MP

10.22.3.2 Usage Note

□□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

Deletes message from preferred message <mem1> (see AT+CPMS) storage location <index>.
If deletion fails, +CMS ERROR is returned.

10.23.1 Format

Command	Possible response(s)
+CMGD=<index>[,<delflag>]	*+CMS ERROR: <err>*
+CMGD=?	+CMGD: (list of supported <index>s)[,(list of supported <delflag>s)]

10.23.2 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.

10.23.3 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

Execution command sends a command message from a TE to the network (SMSCOMMAND).

10.24.1 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=?	

10.24.2 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

Execution command sends a command message from a TE to the network (SMSCOMMAND).

10.25.1 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=?	

10.25.2 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

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.

10.26.1 Format

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

10.26.2 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)

10.26.3 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

To query storage index.

10.27.1 Format

Command	Possible Response(s)
+EQSI=<storage>	+EQSI: <storage>, <begin>, <end>, <used> OK/ERROR
+EQSI=?	+ESUO: (list of supported <storage>s)

10.27.2 Field

<storage>: string type; SM or ME
<begin>: beginning of index
<end>: ending of index
<used>: number of messages in <storage>

10.27.3 Note

10.27.3.1 Change History

10.27.3.2 Usage Note

□□This command is only supported for phone suite. Others can't use this command to do test.

10.28 AT+EMGR(PDU mode) Read Message (for phone suite)

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. It is similar with AT+CMGR (PDU mode). <stat> is different.

10.28.1 Format

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

10.28.2 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"

10.28.3 Note

The command is available from 09B.1017MP

10.28.3.1 Change History

10.28.3.2 Usage Note

□□This command is only supported for phone suite. Others can't use this command to do test.

11 Hardware Testing AT Commands

These AT commands are designed for tools to do factory hardware testing and should be tested **exclusively**. Test only one command/item at the same time.

11.1 AT+CASP Audio Sound Playback

This command handles the Audio Sound Play operation. We use this command to playback one exist audio ring sound. The sound id should refer to the existing ring sound number. You have to make sure the source ID is correct, otherwise it won't have any response.

11.1.1 Format

Execution command : AT+CASP = <op>,<sound_id>[,<style> [, <timeout>]]
Test command : AT+CASP =? Show if the command is supported

11.1.2 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	2	Stop one audio ring sound
			1	Play one audio ring sound
Integer	id	Sound id		
integer	style	Play back style (When op= 1 required)	0	CRESCENDO
			1	INFINITE
			2	ONCE
			3	DESCENDO(NS)
Integer	Timeout	Timeout timer	1-25	Seconds (Apply to all style. no default value: if not given, it will keep playing)

11.1.3 Response

Test command : +CASP: <op>,<sound_id>[,<style>,<timeout>]
Execution command : OK | ERROR | +CME ERROR: <err>
Example1:
at+casp=?
+CASP: <1-2>,<id>[,<0-3>[,<1-25>]]

OK
at+casp=1,151,0,3 (撥放3 秒會停止)
OK
at+casp=1,152,2 (撥一輪once)
OK
at+casp=1,153,3,10 (撥放10 秒會停止)
OK
at+casp=1,5,1 (tone 會一直持續)
OK
at+casp=2,5 (stop the tone)
OK
Note: From W10.05 , we don't support playing ringtone (sound id > 80)

11.2 AT+EADP Set / Get Audio Profile

This Command is used to set and get audio profile command.

11.2.1 Format

Execution command : AT+ EADP = <op>,<mode>,<audio type>,<level>,[<gain>]
Test command : AT+ EADP =? Show if the command is supported

11.2.2 Field

Type	Short name	Long name	Parameter/comment	
integer	Op	operation	Get	0
			Set	1
integer	mode	audio mode	Normal mode	0
			Headset mode	1
			Loud speaker mode	2
integer	type	audio type	Melody	0
			Keytone	1
			Speech	2
			mic	3
			sidetone	4
integer	level	volume level	0-6 (when type = mic or sidetone, volume level = 0)	
integer	gain	gain value	0-255	

11.2.3 Response

Test command : +EADP: (0,1),(0-2),(0-4),(0-6),(0-255)
Execution command : OK
Example:
1. Get Audio mode with Normal Mode , Melody type, volume level is 0.
The return value with gain 40
at+eadp=0,0,0,0
+EADP: 40
OK
2.Set Normal Mode , Melody type, volume level with 0 and gain is 99
at+eadp=1,0,0,0,99
OK
2.Set HeadSet Mode , Mic type, gain is 60
at+eadp=1,1,3,0,60
OK

11.2.4 Note

1. This command is supposed to be executed only from SIM1. Do not execute it when the UART setting is SIM2.
2. AT+EADP is a seldom use AT command before 11AW11.09. 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).
3. After 11AW11.09 this command is default on, but mainly for MTK internal tool. This command together with +EAPS is designed for MediaTek speech tuning tool. For any other usage please take care and make sure you know the right way and right command order.

11.3 AT+EAPS Audio Parameter Setting

This command is used to get/set Audio parameter like Input/output FIR, Speech common para, Speech mode.

11.3.1 Format

Execution command : AT+EAPS=<op>,<para1>,[<para2>,[<para3>]]<setting>
Test command : AT+ EAPS =? Show if the command is supported

11.3.2 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	Operation	0	Get old value
			1	Set New value
integer	para1	Parameter1	0	Input FIR Coeffs
			1	Output FIR Coeffs
			2	FIR output Index
			3	Speech Common Para
			4	Speech mode Para
integer	para2	Parameter2	-	when para1=0/1/4, para2 is a must
integer	para3	Parameter3	-	When para1=0/1, para3 is a must
integer	setting	Setting	-	When op=1, <setting>is a must

11.3.3 Detailed explanation

When para1=0/1, users can set/get Input/Output FIR of handset, Because there are 6 group of FIR parameter, so para2 is a must and it's range is 0~5 to specify which group of FIR to get/set.

And each group of FIR has more than 10 elements, so para3 is to specify which 10 elements users want to get/set.

When para1=4, users can set/get Speech mode para. Also there are 8 groups of Speech mode para. so para2 is a must and it's range is 0~7 to specify which group of Speech mode para to set/get.

11.3.4 Example

- <para2> ↓ ↓<para3>
- AT+EAPS=0,0,0,0

<op>↑ ↑<para1>
<para2> ↓ ↓<para3>(means user want to get first 10 in the array)
+EAPS: 0,0,0,"327.65257.575.65289.290.3.37.494.65253.1723"
<para1> ↑ <setting> ↑(each setting separated by a dot)

11.3.5 Note

1. This command together with +EADP is designed for MediaTek speech tuning tool. For any other usage please take care and make sure you know the right way and right command order.
2. This command is available from 11AW1109.

11.4 AT+EGPIO Set GPIO value

This Command is used to set gpio values to driver.

11.4.1 Format

Execution command : AT+ EGPIO = <type>,<level>
Test command : AT+ EGPIO =? Show if the command is supported

11.4.2 Field

Type	Short name	Long name	Parameter/comment	
Integer	type	Device type	GPIO_LABELID_0	0
			GPIO_LABELID_1	1
			GPIO_LABELID_2	2
			GPIO_LABELID_3	3
			GPIO_LABELID_4	4
			GPIO_LABELID_5	5
			And so on…	
			The number of GPIO depends on different platform.	
integer	level	Device level	on	1
			off	0

11.4.3 Response

Test command : OK
Execution command : OK /ERROR
Example:
1.Set the GPIO value with GPIO type GPIO_LABELID_20 , Device level turn on
at+egpio=20,1
OK

11.4.4 Note

AT+EGPIO 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).

11.5 AT+EADC ADC Channel Indication

When +EADC is enabled, the ADC channel indication is sent as unsolicited result code to DTE.

11.5.1 Format

Execution command : AT+ EADC = <op>
Test command : AT+ EADC =? Show if the command is supported

11.5.2 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	On (enable)	1
			Off (disable)	0

11.5.3 Response

Test command : + EADC: (0,1)
Execution command : OK

11.5.4 Unsolicited result code

+EADC: <ADC0 >,< ADC1 >,< ADC2 >,< ADC3>,< ADC4 >
Description: This is indication report the battery status to AP.

Type	Long name	Parameter/comment		
integer	ADC value	ADC0	Battery voltage	(microvoltage)
		ADC1	Battery temperature	(1/100 C)
		ADC2	AUX voltage	(microvoltage)
		ADC3	Charge current	(micro A)
		ADC4	Charger voltage	(microvoltage)

11.5.5 Note

AT+EADC 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).

11.6 AT+EPWM PWM Testing

This Command is used for engineering mode.
PWM frequency and duty cycle test parameters setting and start/stop operation.

11.6.1 Format

Execution command : AT+ EPWM = <op>,<type>,[<level>],[<freq>,<duty>]
[AT+EPWM = **0**, <type>,<level>]
[AT+EPWM = **1**, <type>,<level>,<freq>,<duty>]
[AT+EPWM = **2**, <type>,<freq>,<duty>]
[AT+EPWM = **3**, <type>]
Test command : AT+ EPWM =? Show if the command is supported

11.6.2 Field

Type	Short name	Long name	Parameter/comment	
integer	op	operation	Get level value	0
			Set level value	1
			Start Test	2
			Stop Test	3
Integer	type		PWM1	0
			PWM2	1
			Alter	2
Integer	level	level	0 - 4	
integer	freq	frequency	in unit of Hz	
Integer	duty	duty cycle	percentage	

Note: PWM type is project-dependent.
Such as LCM backlight, Keypad backlight, and Flashlight LED.

11.6.3 Response

Test command : + EPWM: <item idx>
Execution command : OK
Example1:
(in this example, PWM1 presents keypad backlight, PWM2 presents LCD backlight)
at+epwm=2,0,5,5 (keypad backlight is blinking)
OK
at+epwm=3,0 (keypad backlight stops blinking)
OK
at+epwm=2,1,3,4 (LCD is blinking)

OK
at+epwm=3,1 (LCD stops blinking)
OK
Example2:
1.Start PWM2 testing with frequency=4, duty=6
at+epwm=2,1,4,6
OK
2.Stop PWM2 Testing.
at+epwm=3,1
OK

11.6.4 Note

AT+EGWM 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).

11.7 AT+ESAM Set Audio Mode

This Command is used to set audio mode. We have three audio mode , normal, loud speaker and handset.

11.7.1 Format

Execution command : AT+ ESAM = <mode>
Test command : AT+ ESAM =? Show if the command is supported

11.7.2 Field

Type	Short name	Long name		Parameter/comment
Integer	mode	Audio mode	normal	0
			handset	1
			loudspeaker	2

11.7.3 Response

Test command : + ESAM: (0-2)
Execution command : OK

11.8 AT+ESLT Set Audio Gain Value

This Command is used to set audio sound gain value.

11.8.1 Format

Execution command : AT+ ESLT= <type>,<gain>
Test command : AT+ ESLT =? Show if the command is supported

11.8.2 Field

Type	Short name	Long name	Parameter/comment	
Integer	type	Audio type	call tone	0
			keypad tone	1
			microphone	2
			<reserved>	3
			speech sound	4
			side tone	5
			MP3, Wave, melody, Imelody,midi	6
Integer	Gain	Gain value	0~255	

11.8.3 Response

Test command : + ESLT: (0-6),(0-255)
Execution command : OK
Example:
1. set speech sound gain value 150.
AT+ESLT = 4, 150
OK

11.8.4 Note

AT+ESLT 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).

11.9 AT+EGMR Mobile Revision and IMEI

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.

11.9.1 Format

Execution command : AT+ EGMR = <op>,<type>[,str]

Test command : AT+ EGMR =? Show if the command is supported

11.9.2 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
string	Str	Input/output string		

11.9.3 Response

Test command : + EGMR: (0,1),(0-9)

Execution command : When type = (1-7, 9):

[+EGMR: "str"]

OK

When type = 8 (+EGMR=0,8 to get MMI resource):

+AUDIO: "ver"

+IMAGE: "ver"

+FONT: "ver"

+STR: "ver"

OK

11.9.4 Example

3. read IMEI:
AT+EMGR=0,7
+EGMR: "135790246811220"
OK
4. Write IMEI:
AT+EGMR=1,7,"123451234512345"
OK
AT+EGMR=0,7
+EGMR: "123451234512345"
OK
5. read SV of IMEISV
AT+EGMR=0,9
+EGMR: "78"
OK
6. Write SV
AT+EGMR=1,9,"01"
OK
AT+EGMR=0,9
+EGMR: "01"
OK

11.9.5 Note

<type> = 10, 11, and 12 are only turned on when GEMINI, GEMINI+ with 3 or more SIM, and GEMINI+ with 4 SIM respectively.

11.9.5.1 Change History

<type>=6 is removed from 0BA.0848MP
<type> = 11 and 12 work from 10AW10.50

11.9.5.2 Usage Note

N/A

11.10 AT+ESIMS Check SIM Status

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.

11.10.1 Format

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

11.10.2 Field

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

11.10.3 Note

□□
□□□□□□□□□□□□□□□□□□□

11.11 AT+EDFT GPIO factory testing

This Command is used for GPIO device factory test using. We provide this function for testing with hardware GPIO device functionality test. You have to specify the GPIO device level if need by +EPWM command.

11.11.1 Format

Execution command : AT+ EDFT = <device>,<level>

Test command : AT+ EDTF =? Show if the command is supported

11.11.2 Field

Type	Short name	Long name	Parameter/comment	
Integer	device	GPIO Device	GPIO_DEV_LED_MAINLCD	0
			GPIO_DEV_LED_SUBLCD(reserved)	1
			GPIO_DEV_LED_STATUS_1I	2
			GPIO_DEV_LED_STATUS_2(G)	3
			GPIO_DEV_LED_STATUS_3(B)	4
			GPIO_DEV_LED_KEY	5
			GPIO_DEV_VIBRATOR	6
			GPIO_DEV_FLASHLIGHT	7
			GPIO_DEV_RESERVED1	8
			GPIO_DEV_RESERVED2	9
			GPIO_DEV_RESERVED3	10
			GPIO_DEV_RESERVED4	11
			GPIO_DEV_RESERVED5	12
			GPIO_DEV_RESERVED6	13
			GPIO_DEV_RESERVED7	14
			GPIO_DEV_RESERVED8	15
			GPIO_DEV_RESERVED9	16
			GPIO_DEV_RESERVED10	17
			GPIO_DEV_RESERVED11	18
			GPIO_DEV_RESERVED12	19
			GPIO_DEV_RESERVED13	20
integer	level	Device level	Level 0	OFF
			Level 1-5	1~5

11.11.3 Response

Test command : + EDFT: (0-20),(0,1~5)
OK

Execution command : OK

11.11.4 Note

AT+EDFT 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).

11.12 AT+ESLP Sleep Mode

This Command is used to enable and disable sleep mode in the mobile.

11.12.1 Format

Execution command : AT+ ESLP = <op>
Test command : AT+ ESLP =? Show if the command is supported

11.12.2 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	enable	1
			disable	0

11.12.3 Response

Test command : + ESLP: (0, 1)
Execution command : OK

11.13 AT+EGPO GPO value

This Command is used to set gpo values to driver.

11.13.1 Format

Execution command : AT+ EGPO =<port>,<data>
Test command : AT+ EGPO =? Show if the command is supported

11.13.2 Field

Type	Short name	Long name	Parameter/comment
Integer	data	Data Value	0~254
integer	port	Device Port	0~254

11.13.3 Response

Test command : + EGPO: (0-254),(0-254)

OK

Execution command : OK

11.13.4 Note

AT+EGPO 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).

11.14 AT+ELNVRM NVRAM write protection

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.

11.14.1 Format

Execution command : AT+ ELNVRM = <op>
Test command : AT+ ELNVRM =? Show if the command is supported

11.14.2 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

11.14.3 Response

Test command : +ELNVRM: (1)
Execution command : OK

11.15 AT+ACTTEST PDP context activate or deactivate from EM mode

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

11.15.1 Format

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

11.15.2 Field

<state>: indicates the state of PDP context activation
1 – deactivated
2 – 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

11.16 AT+ECPI Call progress information

To enable/disable call progress information

11.16.1 Format

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

11.16.2 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>], [<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
		2	CLCC_FAX_CALL
		3	CLCC_VFD_VOICE
		4	CLCC_AVD_VOICE
		5	CLCC_AVF_VOICE
		6	CLCC_VFD_DATA
		7	CLCC_AVD_DATA
		8	CLCC_AVF_FAX
string	Number	Calling/called number	
integer	Type	145	International call
		129	National call
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.

11.16.3 Design Notes

11.16.3.1 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)

11.17 AT+ERAT RAT mode and GPRS/EDGE status

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

11.17.1 Format

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

11.17.2 Field

+ERAT : <current RAT>, <GPRS status>, <RAT mode>,<prefer_rat>
<current RAT>: RAT 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
255 unknown
<GPRS status>:
0:GPRS
1:EDGE
<RAT mode>: RAT mode setting of MS
0: GSM only
1: WCDMA only
2: Auto
255: unknown
<prefer_rat>: prefer rat setting
0: No prefer /* Default value */
2: WCDMA prefer /* Applicable when rat_mode=2 */

11.17.3 Note

11.17.3.1 Change History

The command is available from 09A.0940MP

11.17.3.2 Usage Note

□□<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. AT +ECAL – Calibration

Data Download Status Check

11.18 AT+ECAL Calibration data download status

This command is used to query the calibration data download status.

11.18.1 Format

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

11.18.2 Field

Type	Short name	Parameter/comment	
integer	status	calibration data is not download	0
		calibration data is donwload	1

11.18.3 NOTE

This command is supported from 11B.W12.09

12 STK AT Commands

Please refer to another document Remote_SAT (RSAT). We introduce the STK AT command in detail in that document.

13 Proprietary AT Commands For PS

13.1 AT+EPBSE Band Selection

To set MS preferred band.

13.1.1 Format

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

13.1.2 Field

<GSM_band>
bit 1 EGSM900
bit 3 DCS1800
bit 4 PCS1900
bit 7 GSM850
0xff Auto selection
<UMTS_band>
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
0xffff Auto selection

13.1.3 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

13.1.4 Note

13.1.4.1 Change History

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

13.1.4.2 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.

13.2 AT+EGPAU PPP Authentication

This command is used to set GPRS PPP negotiated authentication protocol.

13.2.1 Format

Execution command : AT+ EGPAU = <op>,<cid> [,<is_chap>]
Test command : AT+ EGPAU =? Show the supported value.

13.2.2 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

13.2.3 Response

Test command : + EGPAU: (0,1), (<cid range>), (0-1)
Execution command : OK

13.3 AT+EPIN1 Enter PIN1

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

13.3.1.1 Format

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

13.3.1.2 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

13.3.1.3 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

13.4 AT+EPIN2 Enter PIN2

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

13.4.1 Format

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

13.4.2 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

13.4.2.1 Change History

□□AT+EPIN2? Is ready in 09A.W0940MP

13.4.2.2 Usage Note

□□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.

13.5 AT+EPINC PIN remaining attempt number

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

13.5.1 Format

Command	Possible response(s)

+EPINC	+EPINC: <pin1>,<pin2>,<puk1>,<puk2> *+CME ERROR: <err>*
+EPINC ?	+EPINC: <pin1>,<pin2>,<puk1>,<puk2> *+CME ERROR: <err>*
+EPINC=?	

13.5.2 Field

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

13.6 AT+ESMSS SMS status change mode

SMS status change mode after +CMGR and +CMGL

13.6.1 Format

Command	**Possible response(s)**
+ESMSS= <mode>	*+CME ERROR: <err>*
+ESMSS ?	+ESMSS : <mode>
+ESMSS=?	+ESMSS : (0-1)

13.6.2 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.

13.6.3 Note

13.6.3.1 Change History

N/A

13.7 AT+EOPN Read Operator name

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

13.7.1 Format

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

13.7.2 Field

<format> : 0 long alphanumeric format
19 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.

13.8 AT+CGSDATA Sending uplink data

This command is used to send uplink data to network.

13.8.1 Format

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

13.8.2 Field

<byte> the number of byte sending to network
example:
at+cgsdata = 500 (sending 500 bytes)

13.9 AT +EQUERY General query command

To query hardware or MS status.

13.9.1 Format

Command	Possible Response(s)
+EQUERY=<op>	OK ERROR
+EQUERY=?	OK

13.9.2 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.

[NOTE] We DO NOT 5,6,7 for M2M.

13.9.3 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

13.10 AT +EIND Indication Control Command

Set command to enable +EIND unsolicited result code . to indicate the readiness of SMS or PHB or AT

13.10.1 Format

Command	Possible Response(s)
+EIND= <flag>	OK ERROR
+EIND?	+EIND: <ind>
+EIND=?	+EIND: (0-4294967295)

13.10.2 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

13.11 AT +ECSQ Received signal level indication

Set command to enable +ECSQ unsolicited result code . to indicate the received signal level.

13.11.1 Format

Command	Possible Response(s)
+ECSQ= <flag>	OK ERROR
+ECSQ?	+ECSQ: <flag>
+ECSQ=?	+ECSQ: (0,1)

Unsolicited result code format: +ECSQ: <rssi>, <ber>,<rssi_in_qdbm>[,<RSCP_in_qdbm>,<EcN0_in_qdbn>]

13.11.2 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(for UMTS)
Integer	rssi	0-255	Received signal strength indication
Integer	ber	0-255	Bit error rate
Integer	RSCP		RSCP In qdbm
	EcN0		EcN0 In qdbm

13.12 AT +EINFO URC Information Control Command

Set command to enable some proprietary unsolicited result code(URC) information report.

13.12.1 Format

Command	Possible Response(s)
+EINFO= <flag>	OK ERROR
+EINFO?	+EINFO: <flag>
+EINFO=?	+EINFO: (0-4294967295)

13.12.2 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 , bit 0 is for +ESMLA (see 15.14 for detail) , bit 1 is for +ECFU (see 15.15 for detail) , bit 4 is for +ESPEECH (see 15.16 for detail)

13.13 AT+ECUSD Proprietary unstructured supplementary service data

This command allows users to input SS string.

13.13.1 Format

Command	Possible response(s)
+ECUSD=<m>,<n>[,<str>[,<dcs>]]]	*+CME ERROR: <err>*

13.13.2 Field

<m>:
1 Execute SS
2 Execute USSD
<m>=2 is specifically used to reply USSD Request from remote and cancel USSD session. Otherwise, we don't distinguish <m>.
<n>:
1 Excute SS/USSD
2 Cancel USSD session (only allowed when <m>=2)
<str>: string type USSD string
<dcs>: 3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 0). This parameter is supposed to be 0x0f. To support other coding scheme needs to turn on specific compile option.

13.13.3 Note

□□This command is responded before actually receiving the execution result from the network. It is responded after FDN checked by PHB to prevent user waiting for a long duration of network response time.
□□This command is only supported in modem load and when the command compile option is turn on.

13.14 AT+ERFTX Proprietary control RF transmitter power

This command allows users to perform RF test or control TX power

13.14.1 Format

Command	Possible response(s)
+ERFTX=<op>,[...]	*+CME ERROR: <err>* *OK*

13.14.2 Field

□□□□□□□□□□□□□□□□□□□□□□
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 number
– <para4>: integer type, indicate _power level‘, acceptable range: +24 ~ -55, unit is dBm

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

AT+ERFTX=1,<para1>,<para2>
• <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)

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AT+ERFTX=2,<type>,[<parameter1>,<parameter2>,…]

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

- No parameter

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- 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>: /* support maximum 4 slot 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
RFTOOL_MULTISLOT_TX_RANDOM_WITH_TSC = 7
<timeslotmask>:
1 : T_ _ _(0001)
2 : _ T_ _(0010)
3 : T T_ _(0011)
4 : _ _ T_(0100)
5 : T _ T_(0101)
6 : _ T T_(0110)
……..
15 :T T T T (1111)
<cs>: slot coding type
0 : CodingSchemeNone;
1 : CodingSchemeCS1;
2 : CodingSchemeCS2;
3 : CodingSchemeCS3;
4 : CodingSchemeCS4;
5 : CodingSchemeMCS0; (used for EDGE)
6 : CodingSchemeMCS1; (used for EDGE)
7 : CodingSchemeMCS2; (used for EDGE)
8 : CodingSchemeMCS3; (used for EDGE)
9 : CodingSchemeMCS4; (used for EDGE)
10 : CodingSchemeMCS5; (used for EDGE)
11 : CodingSchemeMCS6; (used for EDGE)
12 : CodingSchemeMCS7; (used for EDGE)
13 : CodingSchemeMCS8; (used for EDGE)
14 : CodingSchemeMCS9; (used for EDGE)
<isEgprs>:
0 : GSM;
1 : EDGE;
□□□□□□□□□□□□□□□□□□□□□□□□□□
- 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
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- parameters:
<band>: refer to TX section
<arfcn_in>: refer to TX section
□□□□□□

13.15 AT+EBOOT Boot up mode

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.

13.15.1.1 Format

Command	Possible Response(s)
+EBOOT=<mode>	OK/ERROR

13.15.1.2 Field

<mode>
0 Normal boot up
1 Exceptoon boot up

13.15.1.3 Note

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13.16 AT+ICCID Read ICCID of SIM Card

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

13.16.1.1 Format

Command	Possible Response(s)
+ICCID	<iccid>

	OK ERROR / +CME ERROR: 10

13.16.1.2 Field

<iccid>: string type

13.16.1.3 Note

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13.17 AT+EPCT PS Conformance Test Mode

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.

13.17.1.1 Format

Command	Possible Response(s)
+EPCT=?	+EPCT: <list of supported mode> OK
+EPCT?	+EPCT: <mode>,<profile > OK
+EPCT=<mode>[,<profile>]	OK

13.17.1.2 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

13.17.1.3 Note

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- Set handset to CTA mode without special setting □□□□□□□□□□□□
- Set handset to CTA mode with special setting bits(bit 123 on) □□□□□□□□□□□□□□
□□□

13.18 AT+ECHUP Force release specific call by call_id

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.

13.18.1 Format

Command	Possible response(s)

+ECHUP=<call_id>	*OK* *+CME ERROR: <err>*

13.18.2 Field

<call_id>: integer

13.18.3 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.

13.18.4 Change History

The command is available from MAUI.W11.25

14 Proprietary Unsolicited Result code

14.1 URC: +ECSQ

This URC is to report signal strength

14.1.1 Format

Unsolicited result code
+ECSQ: <rssi>,<ber>,<rssi_in_qdbm>[,<RSCP_in_qdbm>,<EcN0_in_qdbm>]

14.1.2 Field

Type	Short name	Parameter/comment	
Integer	rssi	0-255	Received signal strength indication level
Integer	ber	0-255	Bit error rate
Integer	rssi_in_qdbm		Received signal strength 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

14.2 URC: +ESMLA

This URC is to report if Auto personalization(defined in 3GPP TS 22.022) is enabled.

14.2.1 Format

Unsolicited result code
+ESMLA: <is_autolock_enabled>, <autolock_result>

14.2.2 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

14.2.3 Note

Available after W08.45.

14.3 URC: +ECFU

This URC is intended to notify application to show CFU(Call Forwarding Uncondictional) icon.

14.3.1 Format

Unsolicited result code
+ECFU: <status>,<line>

14.3.2 Field

Type	Short name	Parameter/comment	
Integer	status	0	hide CFU icon
		1	show CFU icon
Integer	line	1	Line1
		2	Line2

14.3.3 Note

Available after W09.04 . And it's only supported in modem load .

14.4 URC: +ESPEECH

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 .

14.4.1 Format

Unsolicited result code
+ESPEECH: <on_off>,<rat>,<irho_speech_on_off>

14.4.2 Field

Type	Short name	Parameter/comment	
Integer	on_off	0	Detach speech
		1	Attach speech
Integer	Rat	1	GSM
		2	UMTS
		3	GSM
Integer	irho_speech_on_off	0	Not inter-rat handover
		1	Is inter-rat handover

14.4.3 Note

Available after W09.12 . And it's only supported in modem load .

14.5 URC: +ESCRI

This URC is to notify application the result of AT+ESCRI

14.5.1 Format

Unsolicited result code
+ESCRI: <report_value>

14.5.2 Field

<report_value>: integer
SCRI_REQ_SENT = 0,
SCRI_CS_SESSION_ONGOING = 1,
SCRI_PS_SIGNALLING_ONGOING = 2,
SCRI_NO_PS_DATA_SESSION = 3,
SCRI_REQ_NOT_SENT = 4,
SCRI_NOT_ALLOWED = 5

14.5.3 Note

14.6 URC: +ESIMS

Indicate the SIM is inserted or not and related cause

14.6.1 Format

+ESIMS: <sim_inserted_status>,<cause >

14.6.2 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

14.6.3 Note

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14.7 URC: +EUSIM

Indicate the inserted SIM card is SIM or USIM.
The URC is control by AT+EIND command(The 6th bit).

14.7.1 Format

+EUSIM: <type>

14.7.2 Field

Type	Name	Parameter / Comment	
Integer	type	0	SIM
		1	USIM

14.7.3 Note

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14.8 URC: +ETESTSIM

This URC reports whether current inserted SIM is test SIM during power-on procedure.
There is no query mode for this command.
This URC is supported from W12.23.

14.8.1 Format

Unsolicited result code
+ETESTSIM: <is_test_sim>

16.8.3 Field

Type	Short name	Parameter/comment	
Integer	is_test_sim	0	normal sim
		1	test sim

15 SSL/TLS AT Command

15.1 AT+ECERT Install / retrieve certificate for SSL/TLS

Install or retrieve certificate for SSL/TLS

15.1.1 Format Command

Command	Possible response(s)
+ECERT=<op>[,<path>[,<passwd>]]	OK/ERROR

15.1.2 Field

<op>:
0: install
1: retrieve private key
2: query certificate status
<path>:
Certificate file path which will be installed.
<passwd>:
passwd for certificate installing.
OK means the operation complete and success
ERROR means the operation uncompleted or completed but failed.

15.1.3 Note

Example:
AT+ECERT=0, "z://abc.c", "123" /*install certificate z://abc.c with passwd 123*/
OK
AT+ECERT=1, "z://abc.c" /*retrieve certificate to z://abc.c */
OK
AT+ECERT=2 /*query last certificate state*/
ERROR //the certificate not found

16 GPS AT COMMAND

Overview of GPS AT Commands:

AT Command	Description
AT+EGPSC	Power on/off GPS
AT+EGPSS	Send PMTK Command
AT+EGPSEPO	Set EPO Parameter
AT+ EGPSTS	Set GPS Time Sync Parameter
The following GPS related Commands related to Firmware version(for L218)	
AT+CUSGPSC	Power on/off GPS
AT+CUSGPSS	Send PMTK Command
AT+ CUSGPSEPO	Set EPO Parameter
AT+ CUSGPSG	get GPS power on/off status

16.1 AT+EGPSC Power on/off GPS

Control GPS state -- power on/off GPS reciever.

16.1.1 Format

Command	Possible response(s)
+EGPSC=<state>	OK +CME ERROR: <err>
+EGPSC?	Not Support
+EGPSC=?	Not Support

16.1.2 Field

<state>:
0: power off GPS
1: power on GPS

16.1.3 Note

Example:
AT+EGPSC=1 // Power on GPS
OK // response from AT
AT+EGPSC=0 // Power off GPS
OK // response from AT

16.2 AT+EGPSS Send PMTK Command

Send MTK private GPS command – PMTK command to GPS chip.

16.2.1 Format

Command	Possible response(s)
+EGPSS=”<pmtk>”	OK +CME ERROR: <err>
+EGPSS?	Not Support
+EGPSS=?	Not Support

16.2.2 Field

< pmtk >:
PMTK command string. No „$‘ before the PMTK string.

16.2.3 Note

This Command can be set after GPS power on success, or will return error.
Only support with all in one GPS chip.
Example:
AT+EGPSS="PMTK000*32" // Test Message
OK //response by AT
AT+EGPSS=" PMTK353,1,0,0,0,0*2A" // Configure GNSS Type as GPS only
OK //response by AT

16.3 AT+EGPSEPO Set EPO Parameter

Enable/Disable EPO downloading and aiding features. Set the data account used by EPO downloading.

16.3.1 Format

Command	Possible response(s)
+EGPSEPO=<status>,<data account>	OK +CME ERROR: <err>
+EGPSEPO?	Not Support
+EGPSEPO=?	Not Support

16.3.2 Field

< Status >:
0: Enable EPO
1: Disable EPO
< Data account >:
Network data account is used to access internet and set by command "AT+EGDCONT".
Please refer the detail about "AT+EGDCONT" on chapter 18.1.

16.3.3 Note

Precondition for using EPO feature:
First, set property data account which will be used by EPO.
AT+EGDCONT=0,"IP","cmnet"
Second, activate the network on the device.
AT+ETCPIP=1,0

16.4 AT+EGPSTS Set GPS Time Sync Parameter

Enable/Disable GPS time sync and aiding. Set time sync network data account.

16.4.1 Format

Command	Possible response(s)
+ EGPSTS=<status>,<data account>	OK +CME ERROR: <err>
+ EGPSTS?	Not Support
+ EGPSTS=?	Not Support

16.4.2 Field

< Status >:
0: Enable GPS time sync
1: Disable GPS time sync
< Data account >:
Network data account is used to access internet and set by command "AT+EGDCONT".
Please refer the detail about "AT+EGDCONT" on chapter 18.1.

16.4.3 Note

Precondition for using time sync feature:
First, set property data account which will be used by time sync.
AT+EGDCONT=0,"IP","cmnet"
Second, activate the network on the device.
AT+ETCPIP=1,0

16.5 AT+CUSGPSC Power on/off GPS

Control GPS state -- power on/off GPS reciever. GPS_UART NMEA output only.

16.5.1 Format

Command	Possible response(s)
+CUSGPSC=<state>	OK +CME ERROR: <err>
+CUSGPSC?	Not Support
+CUSGPSC=?	Not Support

16.5.2 Field

<state>:
0: power off GPS
1: power on GPS

16.5.3 Note

Example:
AT+CUSGPSC=1 // Power on GPS

OK // response from AT
AT+CUSGPSC=0 // Power off GPS
OK // response from AT

16.6 AT+CUSGPSS Send PMTK Command

Send MTK private GPS command – PMTK command to GPS chip.

16.6.1 Format

Command	Possible response(s)
+CUSGPSS=”<pmtk>”	OK +CME ERROR: <err>
+CUSGPSS?	Not Support
+CUSGPSS=?	Not Support

16.6.2 Field

< pmtk >:
PMTK command string. No „$‘ before the PMTK string.

16.6.3 Note

This Command can be set after GPS power on success, or will return error.
Only support with all in one GPS chip.
Example:
AT+CUSGPSS="PMTK000*32" // Test Message
OK //response by AT
AT+CUSGPSS=" PMTK353,1,0,0,0,0*2A" // Configure GNSS Type as GPS only
OK //response by AT

16.7 AT+CUSGPSEPO Set EPO Parameter

Enable/Disable EPO downloading and aiding features. Set the data account used by EPO downloading.

16.7.1 Format

Command	Possible response(s)
+CUSGPSEPO=<status>,<data account>	OK

	+CME ERROR: <err>
+CUSGPSEPO?	Not Support
+CUSGPSEPO=?	Not Support

16.7.2 Field

< Status >:
0: Enable EPO
1: Disable EPO
< Data account >:
Network data account is used to access internet and set by command "AT+EGDCONT".
Please refer the detail about "AT+EGDCONT" on chapter 18.1.

16.7.3 Note

Precondition for using EPO feature:
First, set property data account which will be used by EPO.
AT+EGDCONT=0,"IP","cmnet"
Second, activate the network on the device.
AT+ETCPIP=1,0

16.8 AT+CUSGPSG Get GPS status

Get GPS power on off status.

16.8.1 Format

Command	**Possible response(s)**
+ CUSGPSG=<status>,<data account>	OK +CME ERROR: <err>
+ CUSGPSG?	Not Support
+ CUSGPSG=?	Not Support

16.8.2 Field

< Status >:
0: Enable GPS time sync
1: Disable GPS time sync
< Data account >:
Network data account is used to access internet and set by command "AT+EGDCONT".

Please refer the detail about "AT+EGDCONT" on chapter 18.1.

16.8.3 Note

Precondition for using time sync feature:

First, set property data account which will be used by time sync.

AT+EGDCONT=0,"IP","cmnet"

Second, activate the network on the device.

AT+ETCPIP=1,0

17 BT Connection Manager AT Command

17.1 AT+EBTPWR Power on/off BT

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.

17.1.1 Format

Command	Possible response(s)
+EBTPWR=?	+EBTPWR: （0-1）/ERROR
+EBTPWR=<op>	OK /*ERROR*

17.1.2 Field

<op>: integer
0 power on
1 power off
Example
AT+EBTPWR=0//power on bt
OK

17.2 AT+EBTNAME Read/Write BT device local name

The command is used to read or write BT device local name. The max invalid length of the device name is 54.

17.2.1 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

17.2.2 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

17.3 AT+EBTADDR Read/Write BT device local address

The command is used to read or write BT device local address. This CMD should only sent to Target when BT is power off.

17.3.1 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

17.3.2 Field

<address>: BT addr 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

17.4 AT+EBTINQ Inquiry BT devices

The command is used to inquiry BT devices.

17.4.1 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

17.4.2 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/assignednumbers/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

17.5 AT+EBTINQC Cancel inquiry BT devices

The command is used to cancel inquiry BT devices. Should be sent only when it's inquring.

17.5.1 Format

Command	Possible response(s)	Description
+EBTINQC=?	OK/ERROR	Show if the command is supported
+EBTINQC	OK /ERROR	cancel inquiry BT devices

17.5.2 Field

Example
AT+EBTINQC // cancel inquiry BT devices
OK

17.6 AT+EBTVISB Set BT visiable

The command is used to set BT visiable .

17.6.1 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

17.6.2 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

17.7 AT+EBTRNAME Read remote BT device name

The command is used to read remote BT device name.

17.7.1 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

17.7.2 Field

< device name >: BT name string ,no need use " " double quotes.
<address>: BT addr 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

17.8 AT+EBTPAIR PAIR BT device

The command is used to pair BT device.

17.8.1 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

17.8.2 Field

<address>: BT addr 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

17.9 AT+EBTPAIRCNF Allow or disallow BT pair

The command is used to allow or disallow BT pair.

17.9.1 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

17.9.2 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

17.10 AT+EBTRP Read remote BT device support profiles

The command is used to read remote BT device support profiles which we support also.

17.10.1 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

17.10.2 Field

<address>: BT addr 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

17.11 AT+EBTSENM Read/Write security mode, encryption mode

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.)

17.11.1 Format

Command	Possible response(s)	Description
+EBTSENM=?	+EBTSENM：（0-4），(0-2）	Show if the command is supported

	OK/ERROR	
+EBTSENM?	+EBTSENM:<sec-mod> ， <enc-mod> OK /ERROR	Read security mode and encryption mode
+EBTSENM=<sec-mod> ， <encmod>	OK / *ERROR*	Write security mode and encryption mode

17.11.2 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

17.12 AT+EBTOPAD Get device list

The command is used to operate device list.

17.12.1 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

17.12.2 Field

<address>: BT addr 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

17.13 AT+EBTSTATE Query connect manger and profile status

The command is used to query BT connect manger and profile status.

17.13.1 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

17.13.2 Field

<address>: BT addr 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

17.14 AT+EBTENSNIFF Set or get SNIFF mode level

The command is used to read or set BT sniff level.

17.14.1 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

17.14.2 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

17.15 AT+EBTRSSI Read BT device signal level

The command is used to read BT device signal level. Only we can get the valid RSSI value when the <address> is connected.

17.15.1 Format

Command	Possible response(s)	Description
+EBTRSSI=?	OK/ERROR	Show if the command is supported
+EBTRSSI=<address>	+EBTRSSI:<signal > OK /ERROR	Read BT signal

17.15.2 Field

<address>: BT addr 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

17.16 AT+EBTPACT (De)Active BT profiles

The command is used to (de)active BT profiles.

17.16.1 Format

Command	Possible response(s)	Description
+EBTPACT=?	+EBTPACT ： （ 0-18446744073709551615） OK/ERROR	Show if the command is supported
+EBTPACT=<profile-bitmap>	+EBTPACT:< profilebitmap > OK / *ERROR*	(de)active BT profiles

17.16.2 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

17.17 AT+EBTCONN Connect BT profile

The command is used to connect BT profile.

17.17.1 Format

Command	Possible response(s)	Description
+EBTCONN=?	+EBTCONN：（0-1），，（0-4294967295），（0-1）	Show if the command is supported

	OK/ERROR	
+EBTCONN=<n>,<address>,<profile>,<role>	OK / *ERROR*	Write BT address

17.17.2 Field

<address>: BT addr 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

17.18 URC: Pair indication +EBTPAIR

The command is used to notify other device want to pair local BT, and may be need input password or pin code.

17.18.1 Format

Unsolicited result code
+EBTPAIR:<address>,<name>,<enable 16digitspin>[,<password>]

17.18.2 Field

<address>: BT addr 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

17.19 URC: Pair indication +EBTINQ

The command is used to notify other BT device are found.
It should be output after command AT+EBTINQ.

17.19.1 Format

Unsolicited result code
+EBTTINQ:<address>,<name>

17.19.2 Field

<address>: BT addr 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

17.20 URC: Inquiry completed indication +EBTIND

The command is used to notify that the inquiring is completed.

17.20.1 Format

Unsolicited result code
+EBTIND:<result>,<is cancelled>

17.20.2 Field

<result>: integer
0 failed
1 successful
<is cancelled>：integer
0 not be cancelled
1 be cancelled
Example
+EBTIND:1,0

17.21 URC: Passive pair response +EBTPAIRRES

The command is used to notify the response of passive pairring.

17.21.1 Format

Unsolicited result code
+EBTPAIRRES:<result>,<isfirst>,[address]

17.21.2 Field

<result>: integer
0 failed
1 successful
<is first>：integer
0 not the first
1 be first
<address>: BT addr 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

17.22 URC: Notify profile connected +EBTCONN

The command is used to notify BT profile connected.

17.22.1 Format

Unsolicited result code
+EBTCONN:<result>,<address>,<profile id>

17.22.2 Field

<result>: integer
0 failed
1 successful
<address>: BT addr 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

17.23 URC: Notify all supported profiles are (de)active +EBTPRFAC

The command is used to notify all supported profiles are deactived or actived.

17.23.1 Format

Unsolicited result code
+EBTPRFAC:<state>

17.23.2 Field

<state>: integer
0 all deactived
1 all actived

17.24 URC: Notify profile connected +EBTDISC

The command is used to notify BT connections are disconnected.

17.24.1 Format

Unsolicited result code
+EBTDISC:<n>,<address>[,<profileid>,<passive>]

17.24.2 Field

<n>: integer
1 one connection is disconnected
2 all connections are disconnected
<address>: BT addr 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.
<passive> :integer
0 not passive disconnect
1 passive disconnected
Example
+EBTDISC:1,1234565B0102,32,0
+EBTDISC:2,1234565B0102

17.25 URC: Notify visiablity is changed +EBTVISB

The command is used to notify BT visiablity is changed.

17.25.1 Format

Unsolicited result code
+EBTVISB:3,<is because AT>

17.25.2 Field

< is because AT >: integer
0 not because receive AT+EBTVISB
1 because receive AT+EBTVISB
Example
+EBTVISB:3,0

17.26 URC: Notify BT is Reset +EBTRST

The command is used to notify BT is reset.

17.26.1 Format

Unsolicited result code
+EBTRST:1

17.26.2 Field

Example
+EBTRST:1

17.27 URC: Notify bond profile fail + EBTPRFBND

The command is used to notify BT bond profile fail.

17.27.1 Format

Unsolicited result code
+EBTPRFBND:<profile-id>,0

17.27.2 Field

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.
Example
+EBTPRFBND:10,0

17.28 URC: Notify BT devices need connect our profile +EBTPRFAU

The command is used to notify other BT devices need connect our profile .

17.28.1 Format

Unsolicited result code
+EBTPRFAU:<Profileid>,<address>,<name>

17.28.2 Field

<address>: BT addr 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

17.29 URC: Notify profile connected +EBTPRFCN

The command is used to notify BT profile connected.

17.29.1 Format

Unsolicited result code
+EBTPRFCN:<profile>,<ret>

17.29.2 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

17.30 URC: Notify profile disconnected +EBTPRFDSCN

The command is used to notify BT profile disconnected.

17.30.1 Format

Unsolicited result code
+EBTPRFCN:<profile>,<address>

17.30.2 Field

<profile id>:integer, see BT Profile SPEC for profile UUID.
Example:
4353, it means 0x1101, SPP Profile.
<address>: BT addr 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

18 BT SPP Profile AT Command

Currently, SPP profile has no AT CMD. But with AT+EBTCONN we can connect SPP Server or be connected as a Server.

19 BT OPP Profile AT Command

19.1 AT+EOPPPUSH OPP client push files

The command is used by OPP client to push files to specified OPP server.

19.1.1 Format

Command	Possible response(s)	Description
+EOPPPUSH=<address>,<file1>[,<file2>[,...,[<file5>]]]	OK/ERROR	Max 5 files can be sent in this command

19.1.2 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.

19.2 URC: Notify when send finish +EOPPPUSH

The command is used to notify when OPP push transaction is finished.

19.2.1 Format

Unsolicited result code
+EOPPPUSH:<result>,<Total_files>,<address>,<file>

19.2.2 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"

19.3 AT+EOPPABORT Abort current OPP transaction with one device

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.

19.3.1 Format

Command	Possible response(s)	Description
+EOPPABORT=<address>	OK/ERROR	

19.3.2 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**".**

19.4 URC: Notify when OPP server receive OPP client send request +EOPPRECV

The command is used to notify when OPP server receive OPP client send requset.

19.4.1 Format

Unsolicited result code
+EOPPRECV: <address>,<device_name>,<obj_name>,<MIME>

19.4.2 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?

19.5 AT+EOPPACCEPT OPP server decide whether accept push request by OPP client

The command is used by OPP server to determine whether it accept an object by OPP client.

19.5.1 Format

Command	Possible response(s)	Description
+EOPPACCEPT= <result>, <address>,<path>	OK/ERROR	

19.5.2 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".**

19.6 URC: Notify when OPP server receive finish +EOPPACCEPT

The command is used to notify when OPP server complete receiving one object

19.6.1 Format

Unsolicited result code
+EOPPACCEPT: <result>,<address>,<obj_name>

19.6.2 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"

20 BT PBAP Profile AT Command

20.1 AT+EPBPLIST PBAP client get PBH list

The command is used by PBAP client to get PBH list

20.1.1 Format

Command	Possible response(s)	Description
+EPBPLIST=<address>, <folder>,[<MaxListCount>, [<ListStartOffset>, [<searchattr>,<searchval>]]]	OK/ERROR	Query PBH list

20.1.2 Field

< address >: PBAP server BT address string ,no need use " " double quotes ， length should be 12 characters.
<folder>: folder name, 1-10
telecom/pb 1
telecom/ich 2
telecom/och 3
telecom/mch 4
telecom/cch 5
SIM1/telecom/pb 6
SIM1/telecom/ich 7
SIM1/telecom/och 8
SIM1/telecom/mch 9
SIM1/telecom/cch 10
<MaxListCount>: maximum number of entries that PBAP client can handle. <ListStartOffset>: offset to
the first entry of PHB. default value is 0.
<searchattr>: 1-3; 1: name; 2:Number; 3:sound;
<searchval>: key word string. Double quotes required. should be UTF8 encoded
Example：
AT+EPBPLIST= 1234565b0102,1,200,0
It means ： query PBH list from "234565b0102" max list item is 200, offset is 0.
AT+EPBPLIST= 1234565b0102,1,200,0,1,”a”
It means ： query PBH list from "234565b0102" max list item is 200, offset is 0. server only

return contact whose name contains "a".

20.2 URC: Notify when finish pulling list +EPBPLIST

The command is used to notify when PBAP Client finish pulling list

20.2.1 Format

Unsolicited result code
+EPBPLIST: <result>,<address>,<path>

20.2.2 Field

<result>: bool, 1 succeed, 0 fail
<address>: PBAP server BT address
<path>: full file path of list vCard file. with double quote"" and UTF8 encoded
Example
+EPBPLIST: 1, 1234565B0102,"Z:/@pbap/list.vcd"
It means: get PHB list from device "1234565B0102" succeed

20.3 AT+EPBAPENTRY PBAP client pull vCard entry

The command is used by PBAP client to get phonebook entry. It will return vCard 2.1 file.

20.3.1 Format

Command	Possible response(s)	Description
+EPBPENTRY = <address>,<folder>,<object>,[<filter>]	OK/ERROR	Download PHB entry

20.3.2 Field

<address>: PBAP server BT address string ,no need use " " double quotes ， length should be 12 characters.
<folder>: folder name, 1-10
telecom/pb 1
telecom/ich 2
telecom/och 3
telecom/mch 4

telecom/cch 5
SIM1/telecom/pb 6
SIM1/telecom/ich 7
SIM1/telecom/och 8
SIM1/telecom/mch 9
SIM1/telecom/cch 10
<object>: object name, 1-10, max 64 uint16. double quotes required.
<filter>: 32 bit filter. Indicate the attributes contained in the requested vCard objects. Refer to PBAP Spec *Table 5.2 Attribute Mask*. Default value will only filter out PHOTO (0xFFF7). If given filter is 0, we'll use default filter.
Example:
AT+ EPBPENTRY=1234565b0102,1,"001.vcf", 0xFFF7
It means : get phonebook entry "001.vcf" from "1234565b0102", associated photo not required.

20.4 URC: Notify when finish pulling list +EPBPDL

The command is used to notify when PBAP Client finish pulling list

20.4.1 Format

Unsolicited result code
+ EPBPDL: <result>,<address>,<path>

20.4.2 Field

<result>: bool, 1 succeed, 0 fail
<address>: PBAP server BT address
<path>: full file path to store returned vcard file.
Example
+ EPBPDL: 1, 1234565B0102,"Z:/@pbapc/temp.vcf"
It means: get PHB list from device "1234565B0102" fail

20.5 AT+EPBPDLCH PBAP client download call history

The command is used by PBAP client to download one category of call history. It will return vCard 2.1 file.

20.5.1 Format

Command	**Possible response(s)**	**Description**

+EPBPDLCH=<address>,<folder>,[<MaxListCount>,<ListStartOffset>,<filter>]	OK/ERROR	Download call history

20.5.2 Field

<path>: full file path to store returned vcard file. Double quotes required
<address>: PBAP server BT address string ,no need use " " double quotes ， length should be 12 characters.
<folder>: folder name, 2-10. 6 is not valid
telecom/ich 2
telecom/och 3
telecom/mch 4
telecom/cch 5
SIM1/telecom/ich 7
SIM1/telecom/och 8
SIM1/telecom/mch 9
SIM1/telecom/cch 10
<MaxListCount>: maximum number of entries that PBAP client can handle.
<ListStartOffset>: offset to the first entry of CH. Default value is 0.
<filter>: 32 bit filter. Indicate the attributes contained in the requested vCard objects. Refer to
PBAP Spec *Table 5.2 Attribute Mask*. Default value will select
FN/N/TEL/X-IRMC-CALLDATETIME
(0x10000083). If given filter is 0, we'll use default filter.
Example：
AT+EPBPLIST= 1234565b0102, 2, 30
It means ： query Incoming call history from "1234565b0102", max list item is 300, offset is 0.

20.6 URC: Notify when finish pulling list +EPBPDLCH

The command is used to notify when PBAP Client finish pulling list

20.6.1 Format

Unsolicited result code
+EPBPDLCH: <result>,<address>,<path>

20.6.2 Field

<result>: bool, 1 succeed, 0 fail
<address>: PBAP server BT address
Example
+EOPPRECV: 0, 1234565B0102,”Z:/@pbapc/call_history.vcf”
It means: get CH list from device "1234565B0102" fail

21 BT A2DP AVRCP AT Command

21.1 AT+EBTA2DP

The command is used to play or pause a2dp audio file.

21.1.1 Format

Command	Possible response(s)	Description
+EBTA2DP=<play/pause>, <bt addr>,<"file name">,<sample rate>,<stereo>	+EBTA2DP:<result> result: 0 fail 1 success	Play/pause a2dp audio file

21.1.2 Field

<play/pause> (0,1).play:1,pause:0.
<bt addr>:" 0x0-0xFFFFFFFFFFFF"
<"file name">: string type
<sample rate >: (32000, 44100,48000).
<stereo>:(0,1)
Example:
AT+EBTA2DP=1, DB4BDD130018,
" 005A003A005C006300730030003100 2E0061006D0072io file.f
+EBTA2DP:1
It means : start paly a2dp audio file, bt addr is DB4BDD130018, file name is cs01.amr, sample rate is 32000, not a stereo.
AT+EBTA2DP=0
+EBTA2DP:1
It means : pause play a2dp audio file.

21.2 URC: +EBTAVRCP

The command is used to notify when bluetooth handset press button.

21.2.1 Format

Unsolicited result code
+EBTAVRCP: <command>,<key event>

21.2.2 Field

<command>:
Paly 0x44
Pause 0x46
Forward 0x4B
Backward 0x4C
<key event>：key down: 0, key up: 1
Example
+EBTAVRCP:75,0
+EBTAVRCP:75,1
It means: Bluetooth headset need to play previous audio file.

22 BT HFP Profile AT Command

22.1 AT+EHFCLCC

The command is used to query current call info from AG.

22.1.1 Format

Command	Possible response(s)	Description
+EHFCLCC?	OK/ERROR	

22.1.2 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.

22.2 URC: Notify when call state changed finish +EHFCIEV

The command is used to notify when call state changed.

22.2.1 Format

Unsolicited result code
+EHFCIEV:<state>, <phb_num>,<call index>

22.2.2 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

22.3 AT+EHFATA

The command is used to accept an incoming call from AG/HF.

22.3.1 Format

Command Possible response(s) Description
+EHFATA=<role> OK/ERROR Only support HF now.

22.3.2 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

22.4 AT+EHFATD

The command is used to start phone connection by AG/HF.

22.4.1 Format

Command	Possible response(s)	Description
+EHFATD= <role>,<type>[,<number>]	OK/ERROR	Only support HF and dial with phone number now.

22.4.2 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

22.5 AT+EHFCHUP

The command is used by AG/HF to terminate the current call.

22.5.1 Format

Command	Possible response(s)	Description
+EHFCHUP=<role>	OK/ERROR	Only support HF now.

22.5.2 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

22.6 AT+EHFCHLD

The command is used by AG/HF to release/hold/retrieve/swap call.

22.6.1 Format

Command	Possible response(s)	Description
+EHFCHLD=<role>,<act>[,<index>]	OK/ERROR	Only support HF now.

22.6.2 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

22.7 AT+EHFVTS

The command is used to transmit DTMF codes by HF.

22.7.1 Format

Command	Possible response(s)	Description
+EHFVTS=<digit>	OK/ERROR	

22.7.2 Field

<digit>: U8, digit should one of "*# 0-9"
Example
[precondition]
[Case]
AT+EHFVTS=*//play tone
[Result]
OK

22.8 AT+EHFRVC

The command is used to (Remote audio volume control) set or sync volume among HF/AG.

22.8.1 Format

Command	Possible response(s)	Description
+EHFRVC=<role>,<act>,<vol>	OK/ERROR	Only supported HF

22.8.2 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

22.9 URC: Notify when call state changed finish +EHFVGS

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.

22.9.1 Format

Unsolicited result code
+EHFVGS:<value>

22.9.2 Field

<state>: int
0-15(0, means mute. And 15 means the maximum volume)
Example
[precondition]
+EHFVGS: 12

22.10 URC: Notify when call state changed finish +EHFCME

The command is used to notify when HFP AT CMD execute failed.

22.10.1 Format

Unsolicited result code
+EHFCME:<result>

22.10.2 Field

<state>: U8

0-255(255 means ok, other means fail)

Example

[precondition]

+EHFCME: 100

23 GATT AT Command

23.1 AT+GATSREG (De)Register GATT Server

(De)Register GATT Server with user_id..

23.1.1 Format

Command	Possible response(s)
+GATSREG=<op>,<user_id>	+GATSREG:<op>,<result>,<user_id> OK / ERROR

23.1.2 Field

< op >:
0 deregister
1 register
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<result>:
0 SUCCESS
Other un-success
OK / ERROR: at argument error will return ERROR, other will return OK.

23.1.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.1.4 Example:

AT+GATSREG=1,"AFAF123BC" //register a gatt server with user id "AFAF123BC"
+GATSREG=1,0, AFAF123BC
OK

23.2 AT+GATSCON: (Dis)Connect GATT Server to another device

(Dis)Connect GATT Server.

23.2.1 Format

Command	Possible response(s)
+GATSCON=<op>,<user_id>,<addr>,<direct>	+GATSCON: <op>,<result>,<user_id>,<addr>,<conn_id> OK / ERROR

23.2.2 Field

< op >:
0 disconnet
1 connect
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<addr>:
BT Address string, needn‘t use "" double quotes, length should be 12.
<direct>:
0: non-direct
1: direct
<result>:
0 SUCCESS
Other un-success
<conn_id>:
The id of this connection.
OK / ERROR: at argument error will return ERROR, other will return OK.

23.2.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.2.4 Example:

AT+GATSCON=1,"AFAF123BC",1234565b0102,1 // connect server to another device whose LAP is 0x123456, UAP is 0x5b, NAP is 0x0102.
+GATSCON: 1,0, AFAF123BC,1234565b0102,2

OK

23.3 URC +GATSCON: indicate server a connection's status

Notify server a connection's status.

23.3.1 Format

URC
+GATSCON: <op>,<result>,<user_id>,<addr>,<conn_id>

23.3.2 Field

<op>:
0: disconnect
1: connect
<result>:
0: Success
Other: un-success
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0'~'9','a'~'f','A'~'F' }
Max length of it is 32.
<addr>:
Address of peer. HEX value.
<conn_id>:
The id of this connection.

23.3.3 Note

23.3.4 Example:

+GATSCON: 1,0,1809, 1234565b0102,33

23.4 AT+GATSS Add/remove a service

Add or remove a service to or from a GATT Server.

23.4.1 Format

Command	Possible response(s)
+GATSS=<op>,<user_id>,<uuid>,<num_handles>,<is_primary>,<inst>	+GATSS: <op>,<result>,<user_id>,<uuid>,<inst>,<is_primary>,<service_handle> OK / ERROR

23.4.2 Field

< op >:
0 remove
1 add
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<uuid>:
The uuid of service, a string with hex value, max len is 32, min len is 4.
<num_handles>:
Number of handles of this service. Dec format.
<is_primary>
0: not primary
1: primary
<inst>
Instance id of this uuid. Dec format.
<result>:
0: Success
Other: un-success
<service_handle>:
Service handle of this service. Dec format.
OK / ERROR: at argument error will return ERROR, other will return OK.

23.4.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.4.4 Example:

AT+GATSS=1,"aabb230","0123456789abcdefa",4,1,254
+GATSS: 1,0, aabb230, 0123456789abcdefa,254,1,32765
OK

23.5 AT+GATSI Add/remove a include service

Add or remove an include service to or from service.

23.5.1 Format

Command	Possible response(s)
+GATSI=<op>,<user_id>,<service_handle>,<inc_service_handle>	+GATSI: <op>,<result>,<user_id>,<service_handle>,<inc_service_handle> OK/ERROR

23.5.2 Field

<op>:
0 remove
1 add
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<service_handle>:
Service handle of this service. Dec format.
< inc_service_handle >:
Service handle of this include service. Dec format.
<result>:
0: Success
Other: un-success
OK / ERROR: at argument error will return ERROR, other will return OK.

23.5.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.5.4 Example:

AT+GATSI=1,"aabb230",1199,19900
+GATSI: 1,0, aabb230,1199,19900
OK

23.6 AT+GATSC Add/remove a characteristic to/from an existed service

Add or remove an include service to or from service.

23.6.1 Format

Command	Possible response(s)
+GATSC=<op>,<user_id>,<service_handle>,<char_uuid>,<inst>,<prop>,<permission>	+GATSC: <op>,<result>,<user_id>,<service_handle>,<char_uuid>,<inst>,<char_handle> OK/ERROR

23.6.2 Field

<op>:
0 remove
1 add
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<service_handle>:
Service handle of this service. Dec format.
<char_uuid>:
The uuid of characteristic, a string with hex value, max len is 32, min len is 4.
<inst>
Instance id of this uuid. Dec format.
<prop>
prop of this characteristic. Dec format. (0 - 4294967295)
<permission>
permission of this characteristic. Dec format. (0 - 4294967295)
<result>:
0: Success
Other: un-success
< char_handle>:
Characteristic handle of this Characteristic . Dec format.
OK / ERROR: at argument error will return ERROR, other will return OK.

23.6.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.6.4 Example:

AT+GATSC=1," aabb230",0099,"0123456789abcdef",2,12313,4444
+GATSC: 1,0, aabb230,99, "0123456789abcdef",2,9980
OK

23.7 AT+GATSD Add/remove a descriptor to/from an existed service

Add or remove an descriptor to or from an existed characteristic.

23.7.1 Format

Command	Possible response(s)
+GATSD=<op>,<user_id>,<service_handle>,<desc_uuid>,<inst>,<permission>	+GATSD: <op>,<result>,<user_id>,<service_handle>,<desc_uuid>,<inst>,<desc_handle> OK/ERROR

23.7.2 Field

<op>:
0 remove
1 add
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<service_handle>:
Handle of characteristic . Dec format.
<desc_uuid>:
The uuid of descriptor, a string with hex value, max len is 32, min len is 4.
<inst>
Instance id of the descriptor uuid. Dec format.
<permission>
permission of this descriptor. Dec format. (0 - 4294967295)

<result>:
0: Success
Other: un-success
<desc_handle>:
Handle of this descriptor. Dec format.
OK / ERROR: at argument error will return ERROR, other will return OK.

23.7.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.7.4 Example:

AT+GATSD=1," aabb230",99,"0123456789abcdef",2,12313
+GATSD: 1,0, aabb230,99, 0123456789abcdef,2,9999
OK

23.8 AT+GATSST Start/stop a service

Start or stop a service.

23.8.1 Format

Command	Possible response(s)
+GATSST=<op>,<user_id>,<service_handle>,<transport>	+GATSST: <op>,<result>,<user_id>,<service_handle> OK/ERROR

23.8.2 Field

<op>:
0 stop
1 start
<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<service_handle>:
Handle of service . Dec format.
<transport>
transport to start service.

0 : LE,
1 : BREDR,
2 : Dual
<result>:
0: Success
Other: un-success
OK / ERROR: at argument error will return ERROR, other will return OK.

23.8.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.8.4 Example:

AT+GATSST=1," aabb230",99,1
+GATSST: 1,0, aabb230,9987
OK

23.9 AT+GATSIND Send an indication to a client

send an indication to a client.

23.9.1 Format

Command	Possible response(s)
+GATSIND=<user_id>,<conn_id>,<attr_handle>,<need_confirm>,<value>	+GATSIND: <result>,<user_id>,<conn_id>,<attr_handle>,<need_confirm> OK/ERROR

23.9.2 Field

<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<conn_id>:
The id of this connection.
<attr_handle>:
Handle of attrbuite. Dec format.
<need_confirm>:

Need client confirm or not. 0: no, 1: yes.
<value>
The value need to be notify . Hex format.
<result>:
0: Success
Other: un-success
OK / ERROR: at argument error will return ERROR, other will return OK.

23.9.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.9.4 Example:

AT+GATSIND="1806",1,1321,0,"abcdefghigk"
+GATSIND:0,1806,1,1321,1
OK

23.10 AT+GATSRSP Send response to a client

send response to a client.

23.10.1 Format

Command	Possible response(s)
+GATSRSP=<user_id>,<result>,<conn_id>,<trans_id>,<attr_handle>,<value>	+GATSRSP: <result>,<user_id>,<conn_id>,<attr_handle>,<need_confirm> OK/ERROR

23.10.2 Field

<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<result>:
Result of response for client request. 0-255
<conn_id>:
The id of this connection.
<trans_id>:

id of the current transaction. 0 - 255.
<attr_handle>:
Handle of attrbuite. Dec format.
<value>
The value need to be notified . Hex format.
<result>:
0: Success
Other: un-success
<need_confirm>:
Need client confirm or not. 0: no, 1: yes.
OK / ERROR: at argument error will return ERROR, other will return OK.

23.10.3 Note

Each GATT Server AT can only send after the prior AT return OK/ERROR.

23.10.4 Example:

AT+GATSRSP="1806",1,0,2,9999,"aaaaaaaaaaaaaaaaaaaa:"
+GATSRSP: 0,1806,1, 9999,0
OK/ERROR

23.11 URC +GATRREQ: Indicate server that a client has a read request

Notify server a client's read request.

23.11.1 Format

URC
+GATRREQ: <user_id>,<conn_id>,<trans_id>,<addr>,<attr_handle>,<is_long>,<offset>

23.11.2 Field

<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0'~'9','a'~'f','A'~'F' }
Max length of it is 32.

<conn_id>:
The id of this connection.
<trans_id>:
id of the current transaction. 0 - 255.
<addr>:
Address of peer. HEX value.
<attr_handle>:
Handle of attrbuite. Dec format.
<is_long>:
Tell server that the request is one of several requests.
<offset>:
Offset of the request. 0 – 65535

23.11.3 Note

23.11.4 Example:

+GATRREQ: 2202,3,4, 1234565b0102,10010,1,9980

23.12 URC +GATWREQ: indicate server that a client has a write request

Notify server a client's write request.

23.12.1 Format

URC
+GATWREQ: <user_id>,<conn_id>,<trans_id>,<addr>,<attr_handle>,<value>,<need_rsp>,<is_prepare>,<offset>

23.12.2 Field

<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0'~'9','a'~'f','A'~'F' }
Max length of it is 32.
<conn_id>:
The id of this connection.

<trans_id>:
id of the current transaction. 0 - 255.
<addr>:
Address of peer. HEX value.
<attr_handle>:
Handle of attribute. DEC format.
<value>
The value need to be write. Hex format.
<need_rsp>
Whether client need server‘s response. 1 yes, 0 no.
<is_prepare>
Whether or not server execute request immediately. 1 no, 2 yes..
<offset>:
Offset of the request. 0 – 65535

23.12.3 Note

23.12.4 Example:

+GATWREQ: 2202,3,4, 1234565b0102,10010,ABABABABABABABABABA,1,1,0

23.13 URC +GATEWREQ: indicate server that a client ask server to exec or cancel the write request indicated (trans_id) before

Notify server to execute the request.

23.13.1 Format

URC
+GATEWREQ: <user_id>,<conn_id>,<trans_id>,<addr>,<cancel>

23.13.2 Field

<user_id>:
User id of gatt server, or the name of the gatt server.
A Hex value string, each char of it should in set { _0‘~‘9‘,‘a‘~‘f‘,‘A‘~‘F‘ }
Max length of it is 32.
<conn_id>:

The id of this connection.
<trans_id>:
id of the current transaction. 0 - 255.
<addr>:
Address of peer. HEX value.
<cancel>:
To execute the transaction or cancel it. 1 cancel, 0 exec.

23.13.3 Note

23.13.4 Example:

+GATEWREQ: 2202,3,4, 1234565b0102,1
OR

24 Audio AT Command

These commands are supported only on L216 project.

24.1 AT+EECHO Echo Cancellation

The command is used to activate or deactivate echo cancelation. This command should only sent to target before a call setup

24.1.1 Format

Command	Possible response(s)
+EECHO=?	+EECHO: (list of supported <status>) OK / ERROR
+EECHO?	+EECHO:<status> OK /ERROR
+EECHO =<status>	OK / *ERROR*

24.1.2 Field

<status >: integer
0 Deactivate echo cancellation
1 activate Echo cancellation
Example
AT+EECHO=?
+EECHO: (0,1)
OK
AT+EECHO? //Shows the current configuration
+EECHO: 1
OK
AT+EECHO=0 //Deactivate echo cancellation
OK
AT+EECHO?
+EECHO: 0 //Echo cancellation is deactivated
OK
AT+EECHO=1 //Activate echo cancellation
OK
Note: EECHO setting will be saved to NVRAM

24.2 AT+ ENOISE Noise Cancellation

The command is used to activate or deactivate noise cancelation. This command should only sent to target before a call setup

24.2.1 Format

Command	Possible response(s)
+ENOISE=?	+ENOISE:(list of supported <Receive>s), (list of supported <Transmit>s) OK /ERROR
+ENOISE?	+ENOISE:<Receive>,<Transmit> OK /ERROR
+ENOISE=<Receive>,<Transmit>	OK / *ERROR*

24.2.2 Field

<Receive>: integer
0 OFF
1 ON
<Transmit>: integer
0 OFF
1 ON
Example
AT+ENOISE=?
+ENOISE: (0-1),(0-1)
OK
AT+ENOISE? //Shows the current configuration
+ENOISE:1,1
OK
AT+ENOISE=0,0 // Disable uplink and downlink noise suppression
OK
AT+ENOISE=1,1 //Enable uplink and downlink noise suppression
OK
AT+ENOISE=0,1 //Enable uplink and disable downlink noise suppression
OK
Note: ENOISE setting will be saved to NVRAM

24.3 AT+ESST Set Side Tone

The command is used to set side tone.

24.3.1 Format

Command	Possible response(s)
+ESST=?	+ESST: (list of supported <level>s) OK /ERROR
+ESST?	+ESST: <level> OK /ERROR
+ESST=<level>	OK /ERROR

24.3.2 Field

< level >: integer
0-255: Side tone value (side tone gain from 0 o 255)
0 : disable Side tone
Example
AT+ESST=?
+EST: (0-255)
OK
AT+ESST? //Shows the current value
+EST: 8
OK
AT+ESST=240 //Set side tone gain to 240
OK
AT+ESST=0 //Disable side tone
OK
Note: Side tone level will not be saved to NVRAM

24.4 AT+ EPAU Play Audio File

The command is used to play audio file .

24.4.1 Format

Command	Possible response(s)
+EPAU=<mode>[,<volume>] ,<audio_file>	OK /ERROR

[,<style>] [,<output path>]	

24.4.2 Field

<mode>: integer type
1 Start playing
2 Stop playing
<volume>: integer which defines the sound level (0-6). The smaller the lower.
<audio_file> : string type
Indicates the path and midi filename to be played.
This is a must when <mode> is 1
<style> :integer type
1 INFINITE
2 ONCE
<output_path> integer type
4 earphone
5 loudspeaker
Example
To play a file:
AT+ EPAU =1, 3,"005A003A005C00630073003000310002E006D00690064", 2, 5 // Play file"Z:\cs01.mid" in volumn 3 for loudspeaker,
OK
To stop playing immediately:
AT+ EPAU =2 //stop playing
OK

24.5 AT+ EPCLK Configure PCM Digital Audio

The command is used to configure PCM digital audio.

24.5.1 Format

Command	Possible response(s)
+EPCLK=?	(list of supported <BitClk>s) OK /ERROR
+EPCLK?	+EPCLK:<BitClk> OK /ERROR
+EPCLK=<state><sync_type><BitClk>	OK /ERROR

24.5.2 Field

<state>:PCM state
0 off
1 on
<sync_type>
0 short sync
1 long sync
<BitClk> : PCM bit clock
0 256 kHz
1 512 kHz
2 1024 kHz
3 2048 kHz
Example
AT+ EPCLK=?
+ EPCLK: (0-1),(0-1), (0-3)
AT+ EPCLK? //Shows the current configuration
+ EPCLK:0, 1,1 // PCM state clk sync type
OK
AT+ EPCLK =1,1,0 //Turn to PCM .
// sync type to long sync
//set pcm bclk 256Khz
OK
AT+ EPCLK?
+ EPCLK: 1,0,0 //pcm is on and short sync bclk 256
OK
Note: This configuration will not be saved to NVRAM

24.6 AT+ EARST Reset audio setting to factory setting

The command is used to recover audio setting to factory setting.

24.6.1 Format

Command	Possible response(s)
+EARST	OK /ERROR

24.6.2 Field

Example
AT+ EARST

OK //Recover audio parameters to factory settingNote: Setting Recovery won't be valid unless reset modem

24.6.3 Note

Make module have another chance to camp on network . For example, whenever a car, with a module on it, is into an area that is without service of SIM1's operator, the module may activate SIM2 while deactivating SIM1, possibly getting service of SIM2's operator.

25 NVRAM AT Command

These commands are supported only on L216 project.

25.1 AT+ENVGETLID Query LID

Query LID according to custom NVRAM name.

25.1.1 Format

Command	Possible response(s)
+ENVGETLID=<”NVRAM name”>	+ENVGETLID:<LID>,<total records>,<record size> OK /ERROR

25.1.2 Field

<"NVRAM name">:string type.
NVRAM name
<LID>:short integer type.
NVRAM LID.
<total records>:short integer type.
Number of total records.
<record size>:short integer type.
Each record size.
Example
AT+ ENVGETLID=?
+ENVGETLID:<"NVRAM name">
OK
AT+ENVGETLID="tstconfig"
+ENVGETLID:180,1,1
OK

25.1.3 Note

About how to custom NVRAM name , please refer to <M2M_NVRAM(Common AT command).pptx> on the DMS.

25.2 AT+ENVREAD Read NVRAM

Read specified NVRAM.

25.2.1 Format

Command	Possible response(s)
+ENVREAD=?	+EREADNV:(0-65535),(1-255) OK /ERROR
+EREADNV=<LID>,<record index>	+EREADNV:<record size>,<raw data> OK /ERROR

25.2.2 Field

<LID>:short integer type.
NVRAM LID.
<record index>:short integer type
Record index.
<record size>:short integer type.
Each record size.
<raw data>:string type, hex value.
Raw data read from NVRAM.
Example
AT+ENVREAD=?
+ENVREAD:(0-65535),(1-255)
OK
AT+ENVREAD=189,1
+EREADNV:1,"00"
OK

25.2.3 Note

N/A

25.3 AT+ENVWRITE Write NVRAM

Write specified NVRAM.

25.3.1 Format

Command	Possible response(s)
+ENVWRITE=?	+ENVWRITE:(0-65535),(0-255),<"raw data"> OK /ERROR
+ENVWRITE=<LID>,<record index>,<raw data>	OK /ERROR

25.3.2 Field

<LID>:short integer type.
NVRAM LID.
<record index>:short integer type
Record index.
<raw data>:string type, hex value.
Raw data read from NVRAM.
Example
AT+ENVWRITE=?
+ENVWRITE:(0-65535),(0-255),<"raw data">
OK
AT+ENVWRITE=189,1,"11"
OK
AT+ENVWRITE=189,0 // if record index is 0, it will reset this NVRAM to be default value.
OK

25.3.3 Note

N/A

26 Compatible AT commands

Overview of Compatible AT Commands:

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
AT+CIPQSEND	Select Data Transmitting Mode(no action)
AT+SPEAKER	Speaker and MIC select
AT+SIDET	Change the side tone gain level

26.1 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

26.2 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

26.3 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.

26.4 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**

26.5 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	Response
1)If single IP connection (AT+CIPMUX=0) **AT+CIPSTART=<mode>,<IP address or domain name>,<port>**	**OK**
2)If multi-IP connection (AT+CIPMUX=1) **AT+CIPSTART=<id>,<mode>, < IP address or domain name >,<port>**	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

26.6 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	Response
1) If single IP connection (AT+CIPMUX=0) **AT+CIPSEND=<length>** 2) If multi IP connection (AT+CIPMUX=1) **AT+CIPSEND=<id>[,<length>]**	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

26.7 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

26.8 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.

26.9 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

26.10 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.

26.11 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**

26.12 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

26.13 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

26.14 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.

26.15 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

26.16 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**

27 HTTP AT Commands

27.1 AT+HTTPPARA Set http parameter

The command is used to set http parameter.

Format

Command	Possible response(s)	Description
+HTTPPARA=<para>,<value>	OK/ERROR	

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.baidu.com //set http url parameter

[Result]
OK

[Case 2]
AT+HTTPPARA=port,80 //set port //can ignore

[Result]
OK

27.2 AT+HTTPSETUP HTTP link establishment

The command is used to create HTTP link.

Format

Command	Possible response(s)	Description
+HTTPSETUP	OK/ERROR	The correct destination address and port can be established successfully.

Field

null

Example

[precondition]

[Case 1]
AT+HTTPSETUP //creating HTTP link

[Result]
OK

27.3 AT+HTTPACTION Sending HTTP request

The command is used to send HTTP request.

Format

Command	Pos sible	Description
+HTTPACTION=<mode>,[<length>],[<string>]	OK/ERROR	

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,GET http://www.baidu.com HTTP/1.1\r\nHOST: www.baidu.com\r\n\r\n

[Result]
OK

27.4 AT+HTTPCLOSE Close HTTP link

The command is used to close HTTP link

Format

Command	Possible response(s)	Description
+HTTPCLSOE	OK/ERROR	

Field

null

Example

[precondition]

[Case 1]
AT+HTTPCLOSE //close HTTP link

[Result]
OK

28 AUDIO AT Commands

28.1 AT+ZAUDREC Audio function

The command is used to audio function.

Format

Format	return	status
AT+ZAUDREC=<Mode>[,<Filename>]	<CR><LF>OK<CR><LF>	success
	<CR><LF>ERROR<CR><LF>	failed
AT+ZAUDREC?	+ZAUDREC:<Files_number>,<File_name1>,<len1> ,<File_name2>,<len2> <CR><LF>OK<CR><LF>	success
AT+ZAUDREC=?	+ZAUDREC: (0-6) <CR><LF><OK><CR><LF>	success

Field

Mode	0	Start record
	1	stop record
	2	Play record
	3	Stop play record
	4	Delete record
	5	Start record in call
	6	Stop record in call
< Filename >	Record file name, do not need suffix，suffix is wav，if mode is 0、2、4、5 时，this field is valid，if 0、2、5do not have this field，default name is rec	
<Files_number>	File number	
<len>	File size	

Example

[precondition]

[Case 1]

AT+zaudrec = 0 [, "rec"]

[Result]
OK

[Case 2]
AT+zaudrec = 1

[Result]
OK

[Case 3]
AT+zaudrec = 2 [, "rec"]

[Result]
OK

[Case 4]
AT+zaudrec = 3

[Result]
OK

[Case 5]
AT+zaudrec = 4, "rec"

[Result]
OK

[Case 6]
AT+zaudrec = 5, "rec"

[Result]
OK

[Case 7]
AT+zaudrec = 6

[Result]

OK

[Case 8]
AT+zaudrec?

[Result]
+zaudrec: 1, rec.wav, 66332

29 FTP AT Commands

29.1 AT+FTPPORT Set FTP Control Port

The command is used to set ftp control port.

Format

Format	return
AT+FTPPORT=?	**OK**
AT+FTPPORT?	**+FTPPORT: <value>** **OK**
AT+FTPPORT= **<value>**	**OK**

Field

<value> The value of FTP Control port, from 1 to 65535. Default value is 21

Example

[precondition]

[Case 1]
AT+FTPPORT=21

[Result]
OK

29.2 AT+FTPMODE Set Active or Passive FTP Mode

The command is used to set ftp mode active or passive.

Format

Format	return
AT+FTPMODE=?	**OK**
AT+ FTPMODE?	**+ FTPMODE: <value>** **OK**
AT+FTPMODE =<value>	**OK**

Field

<value>
0 Active FTP mode
1 Passive FTP mode

Example

[precondition]

[Case 1]
AT+FTPMODE=1

[Result]
OK

29.3 AT+FTPTYPE Set the Type of Data to Be Transferred

The command is used to set the Type of Data to Be Transferred

Format

Format	return
AT+ FTPTYPE=?	**OK**
AT+ FTPTYPE?	**+ FTPTYPE: <value>** **OK**
AT+ FTPTYPE=<value>	**OK**

Field

<value>
"A" For FTP ASCII sessions
"I" For FTP Binary sessions

Example

[precondition]

[Case 1]
AT+**FTPTYPE** ="A"

[Result]
OK

29.4 AT+FTPPUTOPT Set FTP Put Type

The command is used to set FTP Put Type

Format

Format	return
AT+ FTPPUTOPT=?	**OK**
AT+ FTPPUTOPT?	**+FTPPUTOPT: <value>** **OK**
AT+FTPPUTOPT =<value>	**OK**

Field

<value>
"APPE" For appending file
"STOU" For storing unique file
"STOR" For storing file

Example

[precondition]

[Case 1]
AT+ **FTPPUTOPT** ="STOU"

[Result]
OK

29.5 AT+FTPREST Set Resume Broken Download

The command is used to set Resume Broken Download

Format

Format	return
AT+ FTPREST=?	**OK**
AT+ FTPREST?	**+ FTPREST: <value>** **OK**

AT+ FTPREST =<value>	**OK**

Field

<value>
Broken point to be resumed

Example

[precondition]

[Case 1]
AT+ **FTPREST** =100

[Result]
OK

29.6 AT+FTPSERV Set FTP Server Address

The command is used to set FTP Server Address

Format

Format	return
AT+ FTPSERV **=?**	**OK**
AT+ FTPSERV**?**	**+** FTPSERV**: <value>** **OK**
AT+FTPSERV **=<value>**	**OK**

Field

<value>
32-bit number in dotted-decimal notation (i.e.xxx.xxx.xxx.xxx) or alphanumeric ASCII text string up to 49 characters if DNS is available

Example

[precondition]

[Case 1]
AT+FTPSERV="182.150.28.206"

[Result]
OK

29.7 AT+FTPUN set FTP User Name

The command is used to set FTP User Name

Format

Format	return
AT+ FTPUN=?	**OK**
AT+ FTPUN?	**+ FTPUN: <value>** **OK**
AT+ FTPUN =<value>	**OK**

Field

<value>
Alphanumeric ASCII text string up to 49 characters.

Example

[precondition]

[Case 1]
AT+ **FTPUN** ="cd_ftp"

[Result]
OK

29.8 AT+FTPPW Set FTP Password

The command is used to Set FTP Password

Format

Format	return
AT+ FTPPW =?	**OK**
AT+ FTPPW?	**+ FTPPW: <value>** **OK**

AT+ FTPPW =<value>	**OK**

Field

<value>

Alphanumeric ASCII text string up to 49 characters.

Example

[precondition]

[Case 1]
AT+ **FTPPW** ="cd_ftp"

[Result]
OK

29.9 AT+FTPGETNAME Set Download File Name

The command is used to set the Type of Data to Be Transferred

Format

Format	return
AT+ FTPGETNAME =?	**OK**
AT+ FTPGETNAME?	**+ FTPGETNAME: <value>** **OK**
AT+FTPGETNAME=<value>	**OK**

Field

<value>

Alphanumeric ASCII text string up to 99 characters

Example

[precondition]

[Case 1]
AT+ **FTPGETNAME** ="test.txt"

[Result]

OK

29.10 AT+FTPGETPATH Set Download File Path

The command is used to Set Download File Path

Format

Format	return
AT+ FTPGETPATH =?	**OK**
AT+ FTPGETPATH?	**+ FTPGETPATH: <value>** **OK**
AT+FTPGETPATH=<value>	**OK**

Field

<value>

Alphanumeric ASCII text string up to 99 characters

Example

[precondition]

[Case 1]
AT+ **FTPGETPATH** ="/"

[Result]
OK

29.11 AT+ FTPPUTNAME Set Upload File Name

The command is used to set Upload File Name

Format

Format	return
AT+ FTPPUTNAME=?	**OK**
AT+ FTPPUTNAME?	**+ FTPPUTNAME: <value>** **OK**
AT+FTPPUTNAME=<value>	**OK**

Field

<value>
Alphanumeric ASCII text string up to 99 characters

Example

[precondition]

[Case 1]
AT+ **FTPPUTNAME** ="deng.txt"

[Result]
OK

29.12 AT+FTPPUTPATH Set Upload File Path

The command is used to set Upload File Path

Format

Format	return
AT+ FTPPUTPATH =?	**OK**
AT+ FTPPUTPATH?	**+ FTPPUTPATH: <value>** **OK**
AT+FTPPUTPATH=<value>	**OK**

Field

<value>
Alphanumeric ASCII text string up to 99 characters

Example

[precondition]

[Case 1]
AT+ **FTPPUTPATH** ="/"

[Result]
OK

29.13 AT+FTPGET Download File

The command is used to download File

Format

Format	return
AT+ FTPGET =?	**OK**
AT+FTPGET=<mode>[,<reqlength>]	If mode is 1 and it is a successful FTP get session: **OK** **+FTPGET:1,1** If data transfer finished: **+FTPGET:1,0** If mode is 1 and it is a failed FTP get session: **OK** **+FTPGET:1,<error>** If mode is 2: **+FTPGET:2,<cnflength>** **012345678…** **OK**

Field

<mode>

1 For opening FTP get session

2 For reading FTP download data.

<reqlength>

Requested number of data bytes (1-1460)to be read

<cnflength>

Confirmed number of data bytes to be read, which may be less than <length>. 0 indicates that no data can be read.

<error>

61 Net error

62 DNS error

63 Connect error

64 Timeout

65 Server error

66 Operation not allow

70 Replay error

71 User error

72 Password error

73 Type error

74 Rest error

75 Passive error
76 Active error
77 Operate error
78 Upload error
79 Download error
80 File error
86 Manual quit

Timeout：60 seconds

Example

[precondition]

[Case 1]
AT+ **FTPGET** =1

[Result]
OK

+FTPGET:1,1

[Case 2]
AT+FTPGET=2,1024

+FTPGET: 2,50
01234567890123456789012345678901234567890123456789
OK

+FTPGET:1,0

29.14 AT+FTPPUT Set Upload File

The command is used to set Upload File

Format

Format	return
AT+ FTPPUT =?	**OK**
AT+FTPPUT=<mode>[,<reqlength>]	If mode is 1 and it is a successful FTP get session: **OK**

	+FTPPUT:1,1,<maxlength> If mode is 1 and it is a failed FTP get session: **OK** **+FTPPUT:1,<error>** If mode is 2 and <reqlength> is not 0 **+FTPPUT:2,<cnflength>** **…… //Input data** **OK** If mode is 2 and <reqlength> is 0, it will respond OK, and FTP session will be closed **OK** If data transfer finished. **+FTPPUT:1,0**

Field

<mode>

1 For opening FTP put session

2 For writing FTP upload data.

<reqlength>

Requested number of data bytes(0-<maxlength>) to be transmitted

<cnflength>

Confirmed number of data bytes to be transmitted

<maxlength>

The max. length of data can be sent at a time. It depends on the network status.

<error> See "AT+FTPGET"

Timeout：60 seconds

Example

[precondition]

[Case 1]
AT+ **FTPPUT** =1

[Result]
OK

+ **FTPPUT**:1,1

[Case 2]
AT+ **FTPPUT**=2,1024

[intdata]
01234567890123456789012345678901234567890123456789
ctrl+z

[Result]
+ **FTPPUT**:1,0
OK

29.15 AT+FTPSCONT Save FTP Application Context

The command is used to **save FTP Application Context**

Format

Format	return
AT+ FTPSCONT=?	**OK**
AT+ FTPSCONT?	**+FTPSERV: <value> +FTPPORT: <value> +FTPUN: <value> +FTPPW: <value> +FTPMODE: <value> +FTPTYPE: <value> +FTPPUTOPT: <value> +FTPREST: <value> +FTPGETNAME: <value> +FTPGETPATH: <value> +FTPPUTNAME: <value> +FTPPUTPATH: <value> +FTPTIMEOUT: <value> +FTPCID: <value> OK**
AT+ FTPSCONT=<value>	

Field

<value>

1 save ftp application context to file

2 read ftp context to system

Example

[precondition]

[Case 1]
AT+ FTPSCONT?

[Result]

+FTPSERV: <182.150.28.206>
+FTPPORT:<2100>
+FTPUN: <cd_ftp>
+FTPPW:<cd_ftp>
+FTPMODE:<1>
+FTPTYPE:<I>
+FTPPUTOPT:<STOU>
+FTPREST:<0>
+FTPGETNAME:<deng1.txt>
+FTPGETPATH:</>
+FTPPUTNAME:<deng1.txt>
FTPPUTPATH:</>
FTPCID:<0>
OK

[Case 2]
AT+ FTPSCONT=1

[Result]
OK

[Case 3]
AT+ FTPSCONT=2

[Result]
OK

29.16 AT+FTPDELE Delete Specified File in FTP Server

The command is used to delete Specified File in FTP Server

Format

Format	return
AT+ FTPDELE=?	**OK**
AT+ FTPDELE	**OK**

Field

The file to be deleted is specified by the "AT+FTPGETNAME" and"AT+FTPGETPATH" commands.

Example

[precondition]

[Case 1]
AT+ FTPDELE

[Result]
OK

29.17 AT+FTPSIZE Get the Size of Specified File in FTP Server

The command is used to **get the Size of Specified File in FTP Server**

Format

Format	return
AT+ FTPSIZE =?	**OK**
AT+ FTPSIZE	If successed: **OK** **+FTPSIZE:1,0,<size>** If failed:

	OK **+FTPSIZE:1,<error>,<0>**

Field

<error> See "AT+FTPGET"

<**size**> The file size. Unit: byte

The file is specified by the "AT+FTPGETNAME" and "AT+FTPGETPATH" commands.

Example

[precondition]

[Case 1]
AT+ **FTPSIZE**

[Result]
OK
+FTPSIZE: 1,0,300

29.18 AT+FTPSTATE Get the FTP State

The command is used to get the FTP State

Format

Format	return
AT+ FTPSTATE =?	**OK**
AT+ FTPSTATE	**+FTPSTATE: <state>** **OK**

Field

<state>

0 idle

1 in the FTP session, including FTPGET, FTPPUT, FTPDELE and FTPSIZE operation.

Example

[precondition]

[Case 1]
AT+ **FTPSTATE**

[Result]
+FTPSTATE: 0
OK

29.19 AT+FTPMKD Make Directory on the Remote Machine

The command is used to make Directory on the Remote Machine

Format

Format	return
AT+ FTPMKD=?	**OK**
AT+ FTPMKD	**OK** If success: **OK** **+FTPMKD: 1,0** If failed: **OK** **+FTPMKD: 1,<error>**

Field

<error> See "AT+FTPGET"
The created folder is specified by the "AT+FTPGETPATH" command.

Example

[precondition]

[Case 1]
AT+ FTPMKD

[Result]
OK
+FTPMKD: 1,0

29.20 AT+FTPRMD Remove Directory on the Remote Machine

The command is used to remove Directory on the Remote Machine

Format

Format	return

AT+ FTPRMD=?	**OK**
AT+ FTPRMD	If success: **OK** **+FTPRMD: 1,0** If failed: **OK** **+FTPRMD: 1,<error>**

Field

<error> See "AT+FTPGET"

The removed folder is specified by the "AT+FTPGETPATH" command.

Example

[precondition]

[Case 1]
AT+ **FTPRMD**

[Result]
OK
+FTPRMD: 1,0

29.21 AT+FTPLIST Set the Type of Data to Be Transferred

The command is used to set the Type of Data to Be Transferred

Format

Format	return
AT+ FTPLIST=?	**OK**
AT+ FTPLIST?	**+ FTPLIST: <value>** **OK**
AT+FTPLIST=<mode>[,<reqlength>]	If mode is 1 and it is a successful FTP get session: **OK** **+FTPLIST: 1,1** If data transfer is finished: **+FTPLIST: 1,0** If mode is 1 and it is a failed FTP get session: **OK**

	+FTPLIST: 1,<error> If mode is 2: +FTPLIST: 2,<cnflength> **012345678…** **OK**

Field

<mode>

1 For opening FTP get file list session

2 For reading FTP file list

<reqlength> Requested number of data bytes (1-1460) to be read

<cnflength> Confirmed number of data bytes to be read, which may be less than <reqlength>. 0 indicates that no data can be read.

<error> See “AT+FTPGET”

Example

[precondition]

[Case 1]
AT+ FTPLIST =1

[Result]
OK

+ FTPLIST:1,1

[Case 2]
AT+ FTPLIST=2,1024

+FTPLIST: 2,50
2016/08/25 19:20 <DIR> .
2016/08/25 19:20 <DIR> ..
2015/11/04 16:39 <DIR> .android
2016/09/06 18:37 1,164 .bash_history
2015/10/28 15:39 <DIR> .config
2016/01/12 18:06 360 .gitconfig
2016/07/25 17:11 <DIR> .oracle_jre_usage
2016/07/27 17:23 <DIR> .ssh
2016/07/07 13:32 <DIR> .VirtualBox
2015/12/16 16:16 4,425 aaa
2016/03/10 15:36 16,740 aaa.txt

2016/03/16 16:21 10,425 aaaaaffdf.txt
2016/04/26 19:07 <DIR> AppData
2016/03/18 10:21 12,065 bing.txt

OK

+FTPLIST:1,0

29.22 AT+FTPGETTOFS Download File and Save in File System

The command is used to download File and Save in File System

Format

Format	return
AT+ FTPGETTOFS=?	**OK**
AT+ FTPGETTOFS?	**+FTPGETTOFS: <status>, <filename>**
AT+FTPGETTOFS=<loc>,<filename>	**OK**

Field

<status> the process status of downloading and saving File to File System through FTP
0 not in the process
1 during the process

<loc> file saved in ROM or SD card.
0 saved in ROM
1 saved in SD card

<filename> file name. Alphanumeric ASCII text string up to 64 characters

Example

[precondition]

[Case 1]
at+ftpgettofs=0,"aa.txt"

[Result]
OK
+FTPGETTOFS: 0,174125

29.23 AT+FTPPUTFRMFS Upload File from File System.

The command is used to upload File from File System.

Format

Format	return
AT+ FTPPUTFRMFS =?	**OK**
AT+ FTPPUTFRMFS?	**+ FTPPUTFRMFS: <filename>** **OK**
AT+FTPPUTFRMFS=<filename>	If it is a successful FTP put session: **OK** If data transfer finished. **+FTPPUTFRMFS: 0,<totalLength>** If it is a failed FTP put session: **OK** **+FTPPUTFRMFS: <error>**

Field

<filename> file name. Alphanumeric ASCII text string up to 64 characters

Example

[precondition]

[Case 1]
AT+ **FTPPUTFRMFS** ="deng1.txt"

[Result]
OK
+FTPPUTFRMFS: 0,552

29.24 AT+FTPQUIT Quit Current FTP Session

The command is used to quit Current FTP Session

Format

Format	return

AT+ FTPQUIT=?	**OK**
AT+ FTPQUIT	**OK**

Field

null

Example

[precondition]

[Case 1]
AT+ **FTPQUIT**

[Result]
OK

29.25 AT+SAPBR Set the info about ftp and active ftp pdp context

The command is used to set the info about ftp and active ftp pdp context

Format

Format	return
AT+ SAPBR =?	**OK**
AT+ SAPBR?	**+ SAPBR: <value>** **OK**
AT+SAPBR=<cmd_type>,<cid>[,<ConParamTag>,<ConParamValue>]	**OK** **If<cmd_type> = 2** **+SAPBR:** **<cid>,<Status>,<IP_Addr>** **OK** **If <cmd_type>=4** **+SAPBR:** **<ConParamTag>,<ConParamValue>** **OK**

Field

<cmd_type>
0 Close bearer
1 Open bearer
2 Query bearer
3 Set bearer parameters
4 Get bearer parameters
<cid> Bearer profile identifier
<Status>
0 Bearer is connecting
1 Bearer is connected
2 Bearer is closing
3 Bearer is closed
<ConParamTag> Bearer parameter
"CONTYPE" Type of Internet connection. Value refer to
<ConParamValue_ConType>
"APN" Access point name string: maximum 64
characters
"USER" User name string: maximum 32 characters
"PWD" Password string: maximum 32 characters
"PHONENUM" Phone number for CSD call
"RATE" CSD connection rate. For value refer to
<ConParamValue_Rate>
<ConParamValue> Bearer paramer value
<ConParamValue_Rate>
0 2400
1 4800
2 9600
3 14400
<IP_Addr> The IP address of bearer

Example

[precondition]

[Case 1]
at+sapbr=3,1,"apn","cmnet"

[Result]
OK

[Case 2]
at+sapbr=1,1

[Result]
OK