MediaTek

AT Command Set

Revision: 0.07

Release Date: Jul. 24. 2005

Legal Disclaimer

BY OPENING OR USING THIS FILE, BUYER HEREBY UNEQUIVOCALLY ACKNOWLEDGES AND AGREES THAT THE SOFTWARE/FIRMWARE AND ITS DOCUMENTATIONS ("MEDIATEK SOFTWARE") RECEIVED FROM MEDIATEK AND/OR ITS REPRESENTATIVES ARE PROVIDED TO BUYER ON AN "AS-IS" BASIS ONLY. MEDIATEK EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. NEITHER DOES MEDIATEK PROVIDE ANY WARRANTY WHATSOEVER WITH RESPECT TO THE SOFTWARE OF ANY THIRD PARTY WHICH MAY BE USED BY, INCORPORATED IN, OR SUPPLIED WITH THE MEDIATEK SOFTWARE, AND BUYER AGREES TO LOOK ONLY TO SUCH THIRD PARTY FOR ANY WARRANTY CLAIM RELATING THERETO. MEDIATEK SHALL ALSO NOT BE RESPONSIBLE FOR ANY MEDIATEK SOFTWARE RELEASES MADE TO BUYER'S SPECIFICATION OR TO CONFORM TO A PARTICULAR STANDARD OR OPEN FORUM.

BUYER'S SOLE AND EXCLUSIVE REMEDY AND MEDIATEK'S ENTIRE AND CUMULATIVE LIABILITY WITH RESPECT TO THE MEDIATEK SOFTWARE RELEASED HEREUNDER WILL BE, AT MEDIATEK'S OPTION, TO REVISE OR REPLACE THE MEDIATEK SOFTWARE AT ISSUE, OR REFUND ANY SOFTWARE LICENSE FEES OR SERVICE CHARGE PAID BY BUYER TO MEDIATEK FOR SUCH MEDIATEK SOFTWARE AT ISSUE.

THE TRANSACTION CONTEMPLATED HEREUNDER SHALL BE CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA, USA, EXCLUDING ITS CONFLICT OF LAWS PRINCIPLES.

Revision History

Revision	Date	Author	Comments
0.0	2004/03/09	Erica Fu	Draft version
0.0.1	2004/06/01	Erica Fu	Add new commands for Phone suite tool
0.0.2	2004/07/05	Erica Fu	Modify +CLAN language code.
0.0.3	2004/09/1	Erica Fu	+CPBF will support only in module solution
0.0.4	2004/10/21	Erica Fu	Update and add NOTE for +EIMG and +EMDY
0.0.5	2004/11/25	Erica Fu	Add Bluetooth chapter
0.0.6	2004/12/06	Erica Fu	Update +EMBT and +CSDF (w04.50)
0.0.7	2005/07/24	YC Chen	Update BT related AT command

Table of contents

1 Introduction

1.1 Overview

This document introduces the supported AT command set of MAUI project.

1.2 References

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

2 V.25ter AT Commands

2.1 ATA

2.1.1 Description

Answers and initiates a connection to an incoming call.

2.1.2 Format

Execution command : ATA

2.1.3 Field

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

2.1.4 Response

Execution command : CONNECT
CONNECT <text>
NO CARRIER
ERROR

2.2 ATD

2.2.1 Description

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.

2.2.2 Format

Execution command : ATD<dial string>

2.2.3 Field

Type	Short name	Parameter/comment

String	dial string	**.0 1 2 3 4 5 6 7 8 9 +.** Valid characters for origination **W** The W modifier is ignored but is included for compatibility reasons only **,** The comma modifier is ignored but is included for compatibility reasons only **;** Informs the Infrared Modem that the number is a voice number rather than a fax or data number **T** The T modifier is ignored but is included only for compatibility purposes **P** The P modifier is ignored but is included only for compatibility purposes
String	text	**28800** Connected with data bit rate of 28800 bits/s (HSCSD) **19200** Connected with data bit rate of 19200 bits/s (HSCSD) **14400** Connected with data bit rate of 14400 bits/s (HSCSD) **9600** Connected with data bit rate of 9600 bits/s **4800** Connected with data bit rate of 4800 bits/s **2400** Connected with data bit rate of 2400 bits/s

2.2.4 Response

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

2.3 ATE

2.3.1 Description

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

2.3.2 Format

Execution command : ATE[<value>]

2.3.3 Field

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

2.3.4 Response

Execution command : OK

2.4 ATH

2.4.1 Description

Terminates a connection.

2.4.2 Format

Execution command : ATH

2.4.3 Response

Execution command : NO CARRIER
OK

2.5 ATI

2.5.1 Description

Request Identification Information.

2.5.2 Format

Execution command : ATI[<value>]

2.5.3 Field

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

2.5.4 Response

Execution command : <text>

2.6 ATL

2.6.1 Description

Set volume of the monitor speaker.

2.6.2 Format

Execution command : ATL[<value>]

2.6.3 Field

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

2.6.4 Response

Execution command : OK

2.7 ATO

2.7.1 Description

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

2.7.2 Format

Execution command : ATO

2.7.3 Field

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

2.7.4 Response

Execution command : CONNECT
CONNECT <text>
NO CARRIER
ERROR

2.8 ATP

2.8.1 Description

Select pulse dialing. (This setting is ignored.)

2.9 ATQ

2.9.1 Description

Set result code suppression mode.

2.9.2 Format

Execution command : ATQ[<value>]

2.9.3 Field

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

2.9.4 Response

Execution command : OK

2.10 ATS0

2.10.1 Description

Automatic answer.

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

2.10.2 Format

Execution command : ATS0=<value>

2.10.3 Field

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

2.10.4 Response

Execution command : OK

2.11 ATS3

2.11.1 Description

Command line termination character

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

2.11.2 Format

Execution command : ATS3=<value>

2.11.3 Field

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

2.11.4 Response

Execution command : OK or ERROR

2.12 ATS4

2.12.1 Description

Response formatting character

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

2.12.2 Format

Execution command : ATS4=<value>

2.12.3 Field

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

2.12.4 Response

Execution command : OK or ERROR

2.13 ATS5

2.13.1 Description

Command line editing character.

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

2.13.2 Format

Execution command : ATS5=<value>

2.13.3 Field

Type	Short name	Parameter/comment

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

2.13.4 Response

Execution command : OK or ERROR

2.14 ATS6

2.14.1 Description

Pause before blind dialing.
The command is ignored.

2.15 ATS7

2.15.1 Description

Connection completion timeout.
This parameter specifies the amount of time, in seconds, that the DCE shall allow between either answering a call (automatically or by the A command) or completion of signaling of call addressing information to network (dialing), and establishment of a connection with the remote DCE. If no connection is established during this time, the DCE disconnects from the line and returns a result code indicating the cause of the disconnection.

2.15.2 Format

Execution command : ATS7=<value>

2.15.3 Field

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

2.15.4 Response

Execution command : OK or ERROR

2.16 ATS8

2.16.1 Description

Comma dial modifier time.
This parameter specifies the amount of time, in seconds, that the DCE shall pause, during signaling of call addressing information to the network (dialing), when a "," (comma) dial modifier is encountered in a dial string.

2.16.2 Format

Execution command : ATS8=<value>

2.16.3 Field

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

2.16.4 Response

Execution command : OK or ERROR

2.17 ATS10

2.17.1 Description

Automatic disconnect delay.

This parameter specifies the amount of time, in tenths of a second, that the DCE will remain connected to the line (off-hook) after the DCE has indicated the absence of received line signal. If the received line signal is once again detected before the time specified in S10 expires, the DCE remains connected to the line and the call continues.

2.17.2 Format

Execution command : ATS10=<value>

2.17.3 Field

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

2.17.4 Response

Execution command : OK or ERROR

2.18 ATT

2.18.1 Description

We do not support.

This setting is ignored.

2.19 ATV

2.19.1 Description

Set DCE response format.

2.19.2 Format

Execution command : ATV[<value>]

2.19.3 Field

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

2.19.4 Response

Execution command : OK

2.20 ATX

2.20.1 Description

The setting of this parameter determines whether or not the DCE transmits particular result codes to the DTE. It also controls whether or not the DCE verifies the presence of dial tone when it first goes off-hook to begin dialing, and whether or not engaged tone (busy signal) detection is enabled. However, this setting has no effect on the operation of the W dial modifier, which always checks for dial tone regardless of this setting, nor on the busy signal detection capability of the W and @ dial modifiers. See Table.

2.20.2 Format

Execution command : ATX[<value>]

2.20.3 Field

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

2.20.4 Response

Execution command : OK or ERROR

2.21 ATZ

2.21.1 Description

Reset to default configuration

2.21.2 Format

Execution command : ATZ[<value>]

2.21.3 Field

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

2.21.4 Response

Execution command : OK or ERROR

2.22 AT&F

2.22.1 Description

Set to factory-defined configuration

2.22.2 Format

Set command : AT&F[<value>]

2.22.3 Field

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

2.22.4 Response

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

2.23 AT+GMI

2.23.1 Description

Same as AT+CGMI

2.24 AT+GMM

2.24.1 Description

Same as AT+CGMM

2.25 AT+GMR

2.25.1 Description

Same as AT+CGMR

2.26 AT+IPR

2.26.1 Description

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

2.26.2 Format

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

2.26.3 Field

Type	Short name	Parameter/comment
Integer	rate	The rate, in bits per second, at which the DTE-DCE interface should operate. Currently, the following rates are supported: 0, 300, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200, 230400, and 460800. If unspecified, or set to zero, automatic detection is selected, and the character format is forced to auto-detect (AT+ICF=0)

2.26.4 Response

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

2.27 AT+ICF

2.27.1 Description

Determines the local serial-port asynchronous character framing.

2.27.2 Format

Execution command : AT+ICF=[<format>[,<parity>]]
Read command : AT+ICF? Displays the current <format>, <parity> settings.
Test command : AT+ICF=? Shows if the command is supported.

2.27.3 Field

Type	Short name	Parameter/comment
Integer	parity	**0** Auto-detect **1** 8 Data bits, 2 Stop bits **2** 8 Data bits, 1 Parity bit, 1 Stop bit **3** 8 Data bits, 1 Stop bit **Default setting** **4** 7 Data bits, 2 Stop bits **5** 7 Data bits, 1 Parity bit, 1 Stop bit **6** 7 Data bits, 1 Stop bit
Integer	parity	**0** Odd **Default setting** **1** Even **2** Mark **3** Space

2.27.4 Response

Execution command : OK
Read command : +ICF: <format>,<parity>
Test command : +ICF: (list of supported <format>s), (list of supported <parity>s)

2.28 AT+DS

2.28.1 Description

Controls the V.42 bis data compression function, if provided in the TA.

2.28.2 Format

Execution command : AT+DS=[<direction>[,<compression_negotiation>[,<max_dict>[,<max-string>]]]]
Read command : AT+DS? Displays the current <direction>, <compression_negotiation>, <max_dict>, and <max_string> settings.
Test command : AT+DS=? Shows if the command is supported.

2.28.3 Field

Type	Short name	Parameter/comment
Integer	direction	**0** Disable V.42bis **1** Enable V.42bis in transmit direction only **2** Enable V.42bis in receive direction only **3** Enable V.42bis compression in both directions **Default setting**

Integer	compression_ negotiation	**0** Accept connection if compression is negotiated according to direction **Default setting** **1** Disconnect if compression is not negotiated according to direction
Integer	max_dict	**512 to 4096** Maximum dictionary size **1024 Default setting**
Integer	max_string	**6 to 250** Maximum string length **32 Default setting**

2.28.4 Response

Execution command : OK
Read command : +DS: <direction>,<compression_negotiation>,<max-dict>,<max_string>
Test command : +DS: (list of supported <direction>s),(list of supported <compression_negotiation>s),(list of supported <max_dict>s),(list of supported <max_string>s)

2.29 AT+GCAP

2.29.1 Description

Request complete capabilities list.

2.29.2 Format

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

2.29.3 Response

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

3 07.07 AT Commands – General commands

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

3.1.1 Description

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

3.1.2 Format

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

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

3.2.1 Description

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

3.2.2 Format

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

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

3.3.1 Description

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

3.3.2 Format

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

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

3.4.1 Description

Returns the IMEI number of the phone.

3.4.2 Format

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

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

3.5.1 Description

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

3.5.2 Format

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

3.5.3 Field

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

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

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

"PCCP437" PC character set Code Page 437

"UCS2" 16-bit universal multiple-octet coded character set (ISO/IEC10646 [32]); UCS2 character strings are converted to hexadecimal numbers from 0000 to FFFF; e.g. "004100620063" equals three 16-bit characters with decimal values 65, 98 and 99

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

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

3.6.1 Description

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

3.6.2 Format

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

4 07.07 AT Commands – Call Control commands

4.1 AT+CMOD – Call mode (Sec 6.4)

4.1.1 Description

Selects the call mode for future dialing commands or for the next answering command.

4.1.2 Format

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

4.1.3 Field

<mode>:

0	single mode
1	alternating voice/fax (teleservice 61)
2	alternating voice/data (bearer service 61)
3	voice followed by data (bearer service 81)

4.2 AT+CHUP – Hang up call (Sec 6.5)

4.2.1 Description

Request to hang up the current GSM call.

4.2.2 Format

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

4.3 AT+CBST – Select bearer service type (Sec 6.7)

4.3.1 Description

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 mobile-terminated data-call setup, especially in the case of single numbering-scheme calls.

4.3.2 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)

4.3.3 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)

[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)

<ce>:

0	transparent
1	non-transparent
2	both, transparent preferred
3	both, non-transparent preferred

4.4 AT+CRLP – Radio Link Protocol (Sec 6.8)

4.4.1 Description

Sets the radio link protocol parameters.

4.4.2 Format

Command	Possible response(s)
+CRLP=[<iws>[,<mws>[,<T1>[,<N2>[,<ver>[,<T4>]]]]]]	

+CRLP?	+CRLP: <iws>,<mws>,<T1>,<N2>[,<ver1>[,<T4>]] [<CR><LF>+CRLP: <iws>,<mws>,<T1>,<N2>[,<ver2>[,<T4>]] [...]]
+CRLP=?	+CRLP: (list of supported <iws>s),(list of supported <mws>s), (list of supported <T1>s),(list of supported <N2>s)[,<ver1> [,(list of supported <T4>s)]] [<CR><LF>+CRLP: (list of supported <iws>s),(list of supported <mws>s),(list of supported <T1>s),(list of supported <N2>s) [,<ver1>[,(list of supported <T4>s)]] [...]]

4.4.3 Field

<ver>, <ver*x*>: RLP version number in integer format; only support version 0.

<iws>, <mws>, <T1>, <N2>, <T4>: IWF to MS window size, MS to IWF window size, acknowledgement timer T1, retransmission attempts N2, re-sequencing period T4 in integer format. T1 and T4 are in units of 10 ms.

<ver> and <T4> in set command are ignored.

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

4.5.1 Description

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

4.5.2 Format

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

4.5.3 Field

<mode>:
0 disables reporting
1 enables reporting
<serv>:
ASYNC asynchronous transparent
SYNC synchronous transparent
REL ASYNC asynchronous non-transparent
REL SYNC synchronous non-transparent

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

4.6.1 Description

Execution command causes the TA to return one or more lines of information text <report>, which offer the user of the TA an extended report of the reason for
- the failure in the last unsuccessful call setup (originating or answering) or in-call modification;
- the last call release;

4.6.2 Format

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

4.6.3 Field

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

<report>: string type describes cause value.

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

4.7.1 Description

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

4.7.2 Format

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

4.7.3 Field

<mode>:
0 disables extended format
1 enables extended format

<type>:

ASYNC	asynchronous transparent
SYNC	synchronous transparent
REL ASYNC	asynchronous non-transparent
REL SYNC	synchronous non-transparent
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

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

4.8.1 Description

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

4.8.2 Format

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

4.8.3 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)
8	

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

4.9.1 Description

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

4.9.2 Format

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

4.9.3 Field

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

4.10 AT+CSDF – Settings Date Format (Sec 6.22)

4.10.1 Description

Set the date format of the date information presented to the user.

4.10.2 Format

Command	Possible response(s)
+CSDF=[[<mode>] [,<auxmode>]]	*+CME ERROR: <err>*
+CSDF?	+CSDF:<mode>[,<auxmode>] *+CME ERROR: <err>*
+CSDF=?	+CSDF:(list of supported <mode>s) [, (list of supported <auxmode>s)] *+CME ERROR: <err>*

4.10.3 Field

<mode>:
1 DD-MMM-YYYY
8 DD/MM/YYYY
9 MM/DD/YYYY
10 YYYY/MM/DD
11 YYYY-MM-DD
12 MMM DD,YYYY
<auxmode>:
1 yy/MM/dd (default)
2 yyyy/MM/dd

4.11 AT+CSIL – Silence Command (Sec 6.23)

4.11.1 Description

Enable/Disable the silent mode.

4.11.2 Format

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

4.11.3 Field

<mode>:
0 Silent mode off
1 Silent mode on

4.12 AT+CSTF – Settings Time Format (Sec 6.24)

4.12.1 Description

Set time format of the time information presented to the user.

4.12.2 Format

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

4.12.3 Field

<mode>:

1 HH:MM (24 hour clock)

2 HH:MM a.m./p.m.

5 07.07 AT Commands –Network Service related commands

5.1 AT+CNUM – Subscriber Number (Sec 7.1)

5.1.1 Description

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

5.1.2 Format

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

5.2 AT+CREG – Network Registration (Sec 7.2)

5.2.1 Description

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

5.2.2 Format

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

5.2.3 Field

<n>:
0 disable network registration unsolicited result code
1 enable network registration unsolicited result code +CREG: <stat>
2 enable network registration and location information unsolicited result code
+CREG: <stat>[,<lac>,<ci>]

<stat>:

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

5.3 AT+COPS – Operator Selection (Sec 7.3)

5.3.1 Description

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

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

Test command returns operator list present in the network.

5.3.2 Format

Command	Possible response(s)
+COPS=[<mode>[,<format>[,<oper>]]]	+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>)s] [,,(list of supported <mode>s),(list of supported <format>s)] +CME ERROR: <err>

5.3.3 Field

<mode>:
0 automatic (<oper> field is ignored)
1 manual (<oper> field shall be present)
2 deregister from network (disable form 05.48)
3 set only <format> (for read command +COPS?), do not attempt registration/deregistration

<format>:
0 long format alphanumeric <oper>
1 short format alphanumeric <oper>
2 numeric <oper>

<oper>: string type

<stat>:
0 unknown

1 available
2 current
3 forbidden

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

5.4 AT+CLCK – Facility Lock (Sec 7.4)

5.4.1 Description

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

5.4.2 Format

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

5.4.3 Field

<fac> : "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”, “AB”, “AG”, “AC” 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

5.5 AT+CPWD – Change Password (Sec 7.5)

5.5.1 Description

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

5.5.2 Format

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

5.5.3 Field

<fac>:
"P2" SIM PIN2
refer Facility Lock +CLCK for other values

<oldpwd>, <newpwd>: string type;
<pwdlength>: integer type maximum length of the password for the facility

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

5.6.1 Description

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

5.6.2 Format

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

5.6.3 Field

<n> (parameter sets/shows the result code presentation status to the TE):
0 disable
1 enable
<m> (parameter shows the subscriber CLIP service status in the network):
0 CLIP not provisioned
1 CLIP provisioned
2 unknown (e.g. no network, etc.)
<number>: string type phone number of format specified by <type>
<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)

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

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

5.7.1 Description

Requests calling line identification restriction.

5.7.2 Format

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

5.7.3 Field

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

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

5.8.1 Description

This command refers to the GSM/UMTS supplementary service COLP (Connected Line Identification Presentation) that enables a calling subscriber to get the connected line identity (COL) of the called party after setting up a mobile originated call. The command enables or disables the presentation of the COL at the TE. It has no effect on the execution of the supplementary service COLR in the network.
When enabled (and called subscriber allows), +COLP:
<number>,<type>[,<subaddr>,<satype> [,<alpha>]] intermediate result code is returned from TA to TE before any +CR or V.250 [14] responses.

5.8.2 Format

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

5.8.3 Field

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

0 disable

1 enable

<m> (parameter shows the subscriber COLP service status in the network):

0 COLP not provisioned

1 COLP provisioned

2 unknown (e.g. no network, etc.)

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

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

5.9.1 Description

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

5.9.2 Format

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

5.9.3 Field

<n>:

0 disable CUG temporary mode

1 enable CUG temporary mode

<index>:

0...9 CUG index

10 no index (preferred CUG taken from subscriber data)

<info>:

0 no information

1 suppress OA

2 suppress preferential CUG

3 suppress OA and preferential CUG

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

5.10.1 Description

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

5.10.2 Format

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

5.10.3 Field

<reason>:
0 unconditional
1 mobile busy
2 no reply
3 not reachable
4 all call forwarding (refer 3GPP TS 22.030 [19])
5 all conditional call forwarding (refer 3GPP TS 22.030 [19])

<mode>:
0 disable
1 enable
2 query status
3 registration
4 erasure

<number>: string type phone number of forwarding address in format specified by <type>
<type>: type of address
<subaddr>: string type subaddress of format specified by <satype>
<satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8); default 128

<classx> is a sum of integers each representing a class of information (default 7):
1 voice (telephony)
2 data (refers to all bearer services)
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 (Sec 7.12)

5.11.1 Description

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

5.11.2 Format

Command	Possible response(s)

`+CCWA=[<n>[,<mode>[,<class>]]]`	*`+CME ERROR: <err>`*
	when <mode>=2 and command successful
	`+CCWA: <status>,<class1>`
	`[<CR><LF>+CCWA: <status>,<class2>`
	`[...]]`

`+CCWA?`	`+CCWA: <n>`
`+CCWA=?`	`+CCWA:` (list of supported <n>s)

5.11.3 Field

<n> (sets/shows the result code presentation status to the TE):
0 disable
1 enable
<mode> (when <mode> parameter is not given, network is not interrogated):
0 disable
1 enable
2 query status
<classx> is a sum of integers each representing a class of information (default 7):
1 voice (telephony)
2 data (refers to all bearer services)
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 (Sec 7.13)

5.12.1 Description

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

5.12.2 Format

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

5.12.3 Field

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

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

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

1x Releases the specific active call X

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

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

3 Adds a held call to the conversation

4 Connects two calls and disconnects the subscriber from both calls

5.13 AT+CTFR – Call deflection (Sec 7.14)

5.13.1 Description

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

5.13.2 Format

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

5.13.3 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 (Sec 7.15)

5.14.1 Description

Allows control of the Unstructured Supplementary Service Data (USSD). Both network- and mobile-initiated

operations are supported. This command is used to enable the unsolicited result code +CUSD.

5.14.2 Format

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

5.14.3 Field

<n>:
0 disable the result code presentation to the TE
1 enable the result code presentation to the TE
2 cancel session (not applicable to read command response)

<str>: string type USSD string
<dcs>: 3GPP TS 23.038 [25] Cell Broadcast Data Coding Scheme in integer format (default 0)

<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+CAOC – Advice of Charge (Sec 7.16)

5.15.1 Description

Sets the current call meter value in hexadecimal format. Must be supported on the SIM card.
Enables/Disables the +CCCM unsolicited result code reporting. The unsolicited result code +CCCM: <ccm> is sent when the CCM value changes, but not more that every 10 seconds.

5.15.2 Format

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

5.15.3 Field

<mode>:
0 query CCM value
1 deactivate the unsolicited reporting of CCM value
2 activate the unsolicited reporting of CCM value
<ccm>: string type; three bytes of the current call meter value in hexadecimal format
(e.g. "00001E" indicates decimal value 30)

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

5.16.1 Description

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

When <n>=1 and a supplementary service notification is received after a mobile originated call setup, intermediate result code +CSSI: <code1>[,<index>] is sent to TE before any other MO call setup result codes presented in the present document or in V.250 [14]. When several different <code1>s are received from the network, each of them shall have its own +CSSI result code.

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

5.16.2 Format

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

5.16.3 Field

<n> (parameter sets/shows the +CSSI result code presentation status to the TE):
0 disable
1 enable
<m> (parameter sets/shows the +CSSU result code presentation status to the TE):
0 disable
1 enable
<code1> (it is manufacturer specific, which of these codes are supported):
0 unconditional call forwarding is active
1 some of the conditional call forwardings are active
2 call has been forwarded
3 call is waiting
4 this is a CUG call (also <index> present)
5 outgoing calls are barred
6 incoming calls are barred
7 CLIR suppression rejected
8 call has been deflected
<index>: refer "Closed user group +CCUG"
<code2> (it is manufacturer specific, which of these codes are supported):
0 this is a forwarded call (MT call setup)
1 this is a CUG call (also <index> present) (MT call setup)
2 call has been put on hold (during a voice call)

3 call has been retrieved (during a voice call)
4 multiparty call entered (during a voice call)
5 call on hold has been released (this is not a SS notification) (during a voice call)
6 forward check SS message received (can be received whenever)
7 call is being connected (alerting) with the remote party in alerting state in explicit call transfer operation (during a voice call)
8 call has been connected with the other remote party in explicit call transfer operation (also number and subaddress parameters may be present) (during a voice call or MT call setup)
9 this is a deflected call (MT call setup)
10 sdditional incoming call forwarded

<number>: string type phone number of format specified by <type>
<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)
<subaddr>: string type subaddress of format specified by <satype>
<satype>: type of subaddress octet in integer format (refer TS 24.008 [8] subclause 10.5.4.8)

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

5.17.1 Description

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

5.17.2 Format

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

5.17.3 Field

<idx>: integer type; call identification number as described in 3GPP TS 22.030 [19] subclause 4.5.5.1; this number can be used in +CHLD command operations
<dir>:
0 mobile originated (MO) call
1 mobile terminated (MT) call
<stat> (state of the call):
0 active
1 held
2 dialing (MO call)
3 alerting (MO call)
4 incoming (MT call)
5 waiting (MT call)
<mode> (bearer/teleservice):

0 voice
1 data
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)

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

5.18.1 Description

This command is used to edit the SIM preferred list of networks. Execute command writes an entry in the SIM list of preferred operators (EFPLMNsel). If <index> is given but <oper> is left out, entry is deleted. If <oper> is given but <index> is left out, <oper> is put in the next free location. If only <format> is given, the format of the <oper> in the read command is changed.

5.18.2 Format

Command	Possible response(s)
+CPOL=[<index>][,<format>[,<oper>]]	+CME ERROR: <err>
+CPOL?	+CPOL: <index1>,<format>,<oper1> [<CR><LF>+CPOL: <index2>,<format>,<oper2> [...]] +CME ERROR: <err>
+CPOL=?	+CPOL: (list of supported <index>s), (list of supported <format>s) +CME ERROR: <err>

5.18.3 Field

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

5.19 AT+CAEMLPP – eMLPP priority Registration and Interrogation (Sec 7.21)

5.19.1 Description

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

The read command triggers an interrogation of the provision of the maximum priority level which the service subscriber is allowed to use and default priority level activated by the user.
If the service is not provisioned, a result code including the SS-Status (?) parameter is returned.

5.19.2 Format

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

5.19.3 Field

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

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

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

6 07.07 AT Commands –MT control and status command

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

6.1.1 Description

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

6.1.2 Format

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

6.1.3 Field

<pas>:

0 ready (MT allows commands from TA/TE)

1 unavailable (MT does not allow commands from TA/TE)

2 unknown (MT is not guaranteed to respond to instructions)

3 ringing (MT is ready for commands from TA/TE, but the ringer is active)

4 call in progress (MT is ready for commands from TA/TE, but a call is in progress)

5 asleep (MT is unable to process commands from TA/TE because it is in a low functionality state)

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

6.2.1 Description

We only support full functionality so far.
AT+CFUN = 1, 1 can reset the target.

6.2.2 Format

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

6.2.3 Field

<fun> : 1 full functionality

<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

6.3 AT+CPIN – Enter PIN (Sec 8.3)

6.3.1 Description

Set command sends to the ME a password which is necessary before it can be operated (SIM PIN, SIM PUK, PH-SIM PIN, etc.). If the PIN is to be entered twice, the TA shall automatically repeat the PIN. If no PIN request is pending, no action is taken towards ME and an error message, +CME ERROR, is returned to TE. Refer [1] 9.2 for possible <err> values.

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

6.3.2 Format

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

6.3.3 Field

<pin>, <newpin>: string type values

<code> values reserved by the present document:

READY MT is not pending for any password

SIM PIN MT is waiting SIM PIN to be given

SIM PUK MT is waiting SIM PUK to be given

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

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

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

SIM PIN2 MT is waiting SIM PIN2 to be given

SIM PUK2 MT is waiting SIM PUK2 to be given

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

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

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

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

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

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

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

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

PHONE LOCK MT is waiting phone lock code

6.4 AT+CBC – Battery Charge (Sec 8.4)

6.4.1 Description

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

6.4.2 Format

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

6.4.3 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 (Sec 8.5)

6.5.1 Description

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

6.5.2 Format

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

6.5.3 Field

<rssi>:
0 113 dBm or less
1 111 dBm
2...30 109... 53 dBm
31 51 dBm or greater
99 not known or not detectable
<ber> (in percent):
0...7 as RXQUAL values in the table in TS 45.008 [20] subclause 8.2.4
not known or not detectable

6.6 AT+CKPD – Keypad control (Sec 8.7)

6.6.1 Description

Emulates ME keypad by setting each keystroke as a character in a string <keys>.

6.6.2 Format

Command	Possible response(s)
+CKPD=<keys>[,<time>[,<pause>]]	*+CME ERROR: <err>*
+CKPD=?	

6.6.3 Field

<keys>: string of characters representing keys as listed in the following table

Char	IRA (dec)	Comment (+ some known key symbols)
#	35	hash (number sign)
%	37	percent sign (P)
*	42	star (*)
0... 9	48... 57	number keys
:	58	escape character for manufacturer specific keys
;	59	escape character for string entering
<	60	left arrow
>	62	right arrow
@	64	alpha key (α/ABC)
A/a	65/97	channel A (A)
B/b	66/98	channel B (B)
C/c	67/99	clear display (C/CLR)
D/d	68/100	volume down
E/e	69/101	connection end (END)
F/f	70/102	function (FCN)
L/l	76/108	phone lock (LOCK)
M/m	77/109	menu (MENU)
P/p	80/112	power (PWR)
Q/q	81/113	quiet/mute (MUTE)
R/r	82/114	recall last number (R/RCL/MR)
S/s	83/115	connection start (SEND)
T/t	84/116	store/ memory (STO/M/M+)
U/u	85/117	volume up
V/v	86/118	down arrow
W/w	87/119	pause character
X/x	88/120	auxiliary (AUX)
Y/y	89/121	delete last character (C)
[	91	soft key 1
]	93	soft key 2
^	94	up arrow

<time>, <pause>:
0...255 0... 25.5 seconds

6.7 AT+CIND – Indicator control (Sec 8.9)

6.7.1 Description

Displays the value of ME indicators.

6.7.2 Format

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

6.7.3 Field

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

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

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

6.8.1 Description

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

6.8.2 Format

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

6.8.3 Field

"ME" MT phonebook
"SM" SIM/UICC phonebook
“LD” last-dialling phonebook
“MC” MT missed calls list
“RC” MT received calls list.

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

6.9.1 Description

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

6.9.2 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>

6.9.3 Field

<index1>, <index2>, <index>: integer type values in the range of location numbers of phonebook memory
<number>: string type phone number of format <type>
<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)
<text>: string type field of maximum length <tlength>; character set as specified by command Select TE Character Set +CSCS
<nlength>: integer type value indicating the maximum length of field <number>
<tlength>: integer type value indicating the maximum length of field <text>
<hidden>: indicates if the entry is hidden or not
0: phonebook entry not hidden
1: phonebook entry hidden

6.10 AT+CPBF – Find Phonebook entries (Sec 8.13) [only support for module products]

6.10.1 Description

Execution command returns phonebook entries (from the current phonebook memory storage selected with +CPBS) which alphanumeric field start with string <findtext>. Entry fields returned are location number <indexn>, phone number stored there <number> (of format <type>) and text <text> associated with the number.

6.10.2 Format

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

6.10.3 Field

<index1>, <index2>: integer type values in the range of location numbers of phonebook memory
<number>: string type phone number of format <type>
<type>: type of address octet in integer format (refer TS 24.008 [8] subclause 10.5.4.7)
<findtext>, <text>: string type field of maximum length <tlength>. Only support “IRA”
<nlength>: integer type value indicating the maximum length of field <number>
<tlength>: integer type value indicating the maximum length of field <text>

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

6.11.1 Description

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

6.11.2 Format

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

6.11.3 Field

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

6.12 AT+CCLK – Clock (Sec 8.15)

6.12.1 Description

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

Read command returns the current setting of the clock.

6.12.2 Format

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

6.12.3 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 and time zone.

6.13 AT+CALA – Alarm (Sec 8.16)

6.13.1 Description

Sets an alarm time in the ME.

6.13.2 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

6.13.3 Field

<time>: refer +CCLK,+CSDF

<n>: integer type value indicating the index of the alarm.

<type>: we don't care about type.

<text>: we don't care about text. 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.

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

6.14.1 Description

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

6.14.2 Format

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

6.14.3 Field

<command> (command passed on by the MT to the SIM; refer GSM 51.011 [28]):

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.
<data>: information which shall be written to the SIM (hexadecimal character format; refer +CSCS)
<sw1>, <sw2>: integer type; information from the SIM about the execution of the actual command.
<response>: response of a successful completion of the command previously issued (hexadecimal character format)

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

6.15.1 Description

Set the incoming call ringer sound level.

6.15.2 Format

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

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

6.15.3 Field

<level>: integer type value with manufacturer specific range

6.16 AT+CVIB – Vibrator mode (Sec 8.22)

6.16.1 Description

Enables and disables the vibrator alert function of the ME.

6.16.2 Format

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

6.16.3 Field

<mode>:
0 disable
1 enable

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

6.17.1 Description

Sets the volume of the internal speaker in the ME

6.17.2 Format

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

6.17.3 Field

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

6.18 AT+CMUT – Mute Control (Sec 8.24)

6.18.1 Description

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

6.18.2 Format

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

6.18.3 Field

<n>:
0 mute off
1 mute on

6.19 AT+CACM – Accumulated call meter (Sec 8.25)

6.19.1 Description

Resets the Advice-of-Charge related accumulated call meter value in the SIM file EFACM.

6.19.2 Format

Command	Possible response(s)
+CACM=[<passwd>]	*+CME ERROR: <err>*
+CACM?	+CACM: <acm> *+CME ERROR: <err>*
+CACM=?	

6.19.3 Field

<passwd>: string type; SIM PIN2
<acm>: string type; accumulated call meter value similarly coded as <ccm> under +CAOC

6.20 AT+CAMM – Accumulated call meter maximum (Sec 8.26)

6.20.1 Description

Sets the maximum Advice-of-Charge related accumulated call meter value in the SIM file EFACMmax.

6.20.2 Format

Command	Possible response(s)
+CAMM=[<acmmax>[,<passwd>]]	*+CME ERROR: <err>*

+CAMM?	+CAMM: <acmmax> *+CME ERROR: <err>*
+CAMM=?	

6.20.3 Field

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

6.21 AT+CPUC – Price per unit and currency table (Sec 8.27)

6.21.1 Description

Sets the parameters of Advice-of-Charge related price per unit and currency in SIM file EF_{PUCT}. PUCT information can be used to convert the home units (as used in AT+CAOC, AT+CACM, and AT+CAMM) into currency units.

6.21.2 Format

Command	Possible response(s)
+CPUC=<currency>,<ppu>[,<passwd>]	*+CME ERROR: <err>*
+CPUC?	+CPUC: <currency>,<ppu> *+CME ERROR: <err>*
+CPUC=?	

6.21.3 Field

<currency>: string type; three-character currency code (e.g. "GBP", "DEM");
character set as specified by command Select TE Character Set +CSCS
<ppu>: string type; price per unit; dot is used as a decimal separator (e.g. "2.66")
<passwd>: string type; SIM PIN2

6.22 AT+CCWE – Call Meter maximum event (Sec 8.28)

6.22.1 Description

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.

6.22.2 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>*

6.22.3 Field

<mode>:

0 Disable the call meter warning event

1 Enable the call meter warning event

6.23 AT+CLAN – Set Language (Sec 8.30)

6.23.1 Description

Sets the language in the ME. If the language has been set to .AUTO., the read command returns the current language set from the SIM card. Hence, the .AUTO. code is never returned by the read command.

6.23.2 Format

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

6.23.3 Field

<code>:

“AUTO” – Read language from the active application in the SIM card.
“AUTO” is not returned by the read-command.
Note: When the preferred language from SIM card is not recognized or supported by our MMI, AT+CLAN=”AUTO” will remain current ME setting.

"en" -- English.

"zh-TW" – traditional Chinese. (old version: “TW”)

"zh-CN" – simplified Chinese. (old version: “ZH”)

6.24 AT+CLAE – Language Event (Sec 8.31)

6.24.1 Description

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.

6.24.2 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>*

6.24.3 Field

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

6.25 AT+CSGT – Set Greeting Text (Sec 8.32)

6.25.1 Description

Set the greeting text when power on.

6.25.2 Format

Command	Possible response(s)
+CSGT=<mode>[,<text>]	*+CME ERROR: <err>*
+CSGT?	+CSGT: <text>, <mode> *+CME ERROR: <err>*
+CSGT=?	+CSGT:(list of supported <mode>s), <ltext> *+CME ERROR: <err>*

6.25.3 Field

<text>: string type; A free text that shall be displayed. The text can not include <CR>
<mode>:
0 Turn off greeting text.
1 Turn on greeting text

6.26 AT+CALD –Delete alarm (Sec 8.37)

6.26.1 Description

Action command deletes an alarm in the MT.

6.26.2 Format

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

6.26.3 Field

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

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

6.27.1 Description

enables and disables the time zone change event reporting. If the reporting is enabled the MT returns the unsolicited result code +CTZV: <tz> whenever the time zone is changed.

6.27.2 Format

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

6.27.3 Field

<onoff>: integer type value indicating:

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

1 – Enable automatic time zone update via NITZ.

7 07.07 AT Commands – GPRS commands

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

7.1.1 Description

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

7.1.2 Format

Command	Possible response(s)
+CGDCONT=[<cid> [,<PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp> [,<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)]]] [...]]

7.1.3 Field

<cid>:
(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.

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

<APN>: (Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.
If the value is null or omitted, then the subscription value will be requested.

<PDP_address>: a string parameter that identifies the MT in the address space applicable to the PDP.
If the value is null or omitted, then a value may be provided by the TE during the PDP startup procedure or, failing that, a dynamic address will be requested.
The read form of the command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using the +CGPADDR command.

<d_comp>: a numeric parameter that controls PDP data compression (applicable for SNDCP only)
0 - off (default if value is omitted)

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

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

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

7.2.1 Description

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

7.2.2 Format

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

7.2.3 Field

<cid>: (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value = 1) is returned by the test form of the command.

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

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

IP Internet Protocol (IETF STD 5)

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

0 - off (default if value is omitted)

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

0 - off (default if value is omitted)

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

7.3.1 Description

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

7.3.2 Format

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

7.3.3 Field

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

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

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

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

7.4.1 Description

This command allows the TE to specify a minimum acceptable profile which is checked by the MT against the negotiated profile returned in the Activate PDP Context Accept message.

7.4.2 Format

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

7.4.3 Field

<cid>: a numeric parameter which specifies a particular PDP context definition
<precedence>: a numeric parameter which specifies the precedence class
<delay>: a numeric parameter which specifies the delay class
<reliability>: a numeric parameter which specifies the reliability class
<peak>: a numeric parameter which specifies the peak throughput class
<mean>: a numeric parameter which specifies the mean throughput class

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

7.5.1 Description

The execution command is used to attach the MT to, or detach the MT from, the Packet Domain service. After the command has completed, the MT remains in V.250 command state.

7.5.2 Format

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

7.5.3 Field

<state>: indicates the state of PS attachment

0 - detached

1 - attached

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

7.6.1 Description

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

7.6.2 Format

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

7.6.3 Field

<state>: indicates the state of PDP context activation

0 - deactivated

1 - activated

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

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

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

7.7.1 Description

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

7.7.2 Format

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

7.7.3 Field

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

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

7.8.1 Description

The execution command causes the MT to perform whatever actions are necessary to establish communication between the TE and the network using one or more Packet Domain PDP types.

7.8.2 Format

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

7.8.3 Field

<L2P>: a string parameter that indicates the layer 2 protocol to be used between the TE and MT
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 (Sec 10.1.14)

7.9.1 Description

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

7.9.2 Format

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

7.9.3 Field

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

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

7.10 AT+CGAUTO – Automatic response to a network request for PDP context activation (Sec 10.1.15)

7.10.1 Description

The set command disables or enables an automatic positive response (auto-answer) to the receipt of a Request PDP Context Activation message from the network.

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

When the +CGAUTO=1 command is received, the MT shall attempt to perform a PS attach if it is not already attached. Failure will result in ERROR or, if enabled, +CME ERROR being returned to the TE. Subsequently, when the MT announces a network request for PDP context activation by issuing the unsolicited result code RING or +CRING to the TE, this is followed by the intermediate result code CONNECT. The MT then enters V.250 online data state and follows the same procedure as it would after having received a +CGANS=1 with no <L2P> or <cid> values specified.

7.10.2 Format

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

7.10.3 Field

<n>:

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

For <n> = 0 Packet Domain network requests are manually accepted or rejected by the +CGANS command.
For <n> = 1 Packet Domain network requests are automatically accepted according to the description above.

7.11 AT+CGANS –Manual response to a network request for PDP context activation (Sec 10.1.16)

7.11.1 Description

The execution command requests the MT to respond to a network request for Packet Domain PDP context activation which has been signaled to the TE by the RING or +CRING: unsolicited result code. The <response> parameter allows the TE to accept or reject the request.

7.11.2 Format

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

7.11.3 Field

<response>: is a numeric parameter which specifies how the request should be responded to.
0 reject the request
1 accept and request that the PDP context be activated
<L2P>: a string parameter which indicates the layer 2 protocol to be used (see +CGDATA command).
<cid>: a numeric parameter which specifies a particular PDP context definition

7.12 AT+CGREG – GPRS network registration status (Sec 10.1.19)

7.12.1 Description

The set command controls the presentation of an unsolicited result code +CGREG: <stat> when <n>=1 and there is a change in the MT's GPRS network registration status, or code +CGREG: <stat>[,<lac>,<ci>] 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> and <ci> are returned only when <n>=2 and MT is registered in the network.

7.12.2 Format

Command	Possible response(s)
+CGREG=[<n>]	
+CGREG?	+CGREG: <n>,<stat>[,<lac>,<ci>] *+CME ERROR: <err>*

7.12.3 Field

<n>:
0 disable network registration unsolicited result code
1 enable network registration unsolicited result code +CGREG: <stat>
2 enable network registration and location information unsolicited result code +CGREG:

<stat>:
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; two byte cell ID in hexadecimal format

7.13 AT+CGSMS – Select service for MO SMS messages (Sec 10.1.20)

7.13.1 Description

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

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

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

7.13.2 Format

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

7.13.3 Field

<service>: a numeric parameter which indicates the service or service preference to be used
0 Packet Domain
1 circuit switched
2 Packet Domain preferred (use circuit switched if GPRS not available)
3 circuit switched preferred (use Packet Domain if circuit switched not available)

8 07.07 Mobile Termination Errors

8.1 AT+CMEE (Sec 9.1)

8.1.1 Description

Set command disables or enables the use of result code +CME ERROR: <err> as an indication of an error relating to the functionality of the MT. When enabled, MT related errors cause +CME ERROR: <err> final result code instead of the regular ERROR final result code. ERROR is returned normally when error is related to syntax, invalid parameters, or TA functionality.

Test command returns values supported as a compound value.

8.1.2 Format

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

8.1.3 Field

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

<err> values (numeric format followed by verbose format):
9.2.1 General errors
0 phone failure
1 no connection to phone
2 phone adaptor link reserved
3 operation not allowed
4 operation not supported
5 PH SIM PIN required
6 PH-FSIM PIN required
7 PH-FSIM PUK required
10 SIM not inserted
11 SIM PIN required
12 SIM PUK required
13 SIM failure
14 SIM busy
15 SIM wrong
16 incorrect password
17 SIM PIN2 required
18 SIM PUK2 required
20 memory full

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

9 07.07 Annex C

9.1 AT+FCLASS (Sec C.2.1)

9.1.1 Description

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.

9.1.2 Format

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

9.1.3 Field

<n> Mode

0 data

1.0 fax class 1 (ITU T T.31 [11])

2 fax (manufacturer specific)

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

9.2 AT+VTS (Sec C.2.11)

9.2.1 Description

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

9.2.2 Format

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

9.2.3 Field

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

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

10 07.05 SMS AT Commands

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

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

10.1.1 Description

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

10.1.2 Format

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

10.1.3 Field

<service>:
0 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]
1 3GPP TS 23.040 [3] and 3GPP TS 23.041 [4]
the requirement of <service> setting 1 is mentioned under corresponding command descriptions)
<mt>, <mo>, <bm>:
0 type not supported
1 type supported

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

10.2.1 Description

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

10.2.2 Format

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

+CPMS=?	+CPMS: (list of supported <mem1>s),(list of supported <mem2>s), (list of supported <mem3>s)

10.3 AT+CMGF – Message Format (Sec 3.2.3)

10.3.1 Description

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

10.3.2 Format

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

10.3.3 Field

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

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

10.4.1 Description

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

10.4.2 Format

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

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

10.5.1 Description

Setting Text Mode Parameters. Set command is used to select values for additional parameters needed when SM is sent to the network or placed in a storage when text format message mode is selected. It is possible to set the validity period starting from when the SM is received by the SMSC (<vp> is in range 0...

255) or define the absolute time of the validity period termination (<vp> is a string). The format of <vp> is given by <fo>.

10.5.2 Format

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

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

10.6.1 Description

Set command controls whether detailed header information is shown in text mode result codes. Test command returns supported values as a compound value.

10.6.2 Format

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

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

10.7.1 Description

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

10.7.2 Format

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

10.7.3 Field

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

<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"

10.8 AT+CSAS – Save Settings (Sec 3.3.5)

10.8.1 Description

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

10.8.2 Format

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

10.8.3 Field

<profile>:

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

10.9 AT+CRES – Restore Settings (Sec 3.3.6)

10.9.1 Description

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

10.9.2 Format

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

10.9.3 Field

<profile>:

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

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

10.10.1 Description

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

10.10.2 Format

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

10.10.3 Field

<mode>
0 disable unsolicited result code
1 Discard indication and reject new received message unsolicited result codes
when TA-TE link is reserved (e.g. in on-line data mode). Otherwise forward them directly to the TE.
<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.
1 If CBM is stored into ME/TA, indication of the memory location is routed to the TE using unsolicited result code: +CBMI: <mem>,<index>
2 New CBMs are routed directly to the TE using unsolicited result code:
+CBM: <length><CR><LF><pdu> (PDU mode enabled); or
+CBM: <sn>,<mid>,<dcs>,<page>,<pages><CR><LF><data> (text mode enabled)
If ME supports data coding groups which define special routing also for messages other than class 3 (e.g. (U)SIM specific messages), ME may choose not to route messages of such data coding schemes into TE (indication of a stored CBM may be given as defined in <bm>=1).
3 Class 3 CBMs are routed directly to TE using unsolicited result codes defined in <bm>=2. If CBM storage is supported, messages of other classes result in indication as defined in <bm>=1.

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

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

10.11.1 Description

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

10.11.2 Format

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

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

10.12.1 Description

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

10.12.2 Format

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

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

10.13.1 Description

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

10.13.2 Format

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

10.14 AT+CMGR(PDU mode) – Read Message (Sec 4.2)

10.14.1 Description

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

10.14.2 Format

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

10.15 AT+CNMA(Text mode) – New Message Acknowledgement to ME/TA (Sec 3.4.4)

10.15.1 Description

Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE. This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1.

10.15.2 Format

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

10.16 AT+CNMA(PDU mode) – New Message Acknowledgement to ME/TA (Sec 4.6)

10.16.1 Description

Execution command confirms correct reception of a new message (SMS-DELIVER or SMS-STATUS-REPORT) which is routed directly to the TE This acknowledgement command (causing ME to send RP-ACK to the network) shall be used when +CSMS parameter <service> equals 1.

10.16.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CNMA[=<n>[,<length>[<CR>***PDU is given***<ctrl-Z/ESC>]]]	*+CMS ERROR: <err>*
+CNMA=?	**if PDU mode (+CMGF=0):** +CNMA: (list of supported <n>s)

10.17 AT+CMGS(Text mode) – Send Message (Sec 3.5.1)

10.17.1 Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery.

10.17.2 Format

Command	Possible response(s)
if text mode (+CMGF=1): +CMGS=<da>[,<toda>]<CR> ***text is entered***<ctrl-Z/ESC>	**if text mode (+CMGF=1) and sending successful:** +CMGS: <mr>[,<scts>] **if sending fails:** *+CMS ERROR: <err>*
+CMGS=?	

10.18 AT+CMGS(PDU mode) – Send Message (Sec 4.3)

10.18.1 Description

Execution command sends message from a TE to the network (SMS-SUBMIT). Message reference value <mr> is returned to the TE on successful message delivery.

10.18.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CMGS=<length><CR> ***PDU is given***<ctrl-Z/ESC>	**if PDU mode (+CMGF=0) and sending successful:** +CMGS: <mr>[,<ackpdu>] **if sending fails:** *+CMS ERROR: <err>*
+CMGS=?	

10.19 AT+CMSS(Text mode) – Send Message from Storage(Sec 3.5.2)

10.19.1 Description

Execution command sends message with location value <index> from preferred message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery.

10.19.2 Format

Command	Possible response(s)
+CMSS=<index>[,<da>[,<toda>]]	**if text mode (+CMGF=1) and sending successful:** +CMSS: <mr>[,<scts>] **if sending fails:** *+CMS ERROR: <err>*
+CMSS=?	

10.20 AT+CMSS(PDU mode) – Send Message from Storage(Sec 4.7)

10.20.1 Description

Execution command sends message with location value <index> from message storage <mem2> to the network (SMS-SUBMIT or SMS-COMMAND). If new recipient address <da> is given for SMS-SUBMIT, it shall be used instead of the one stored with the message. Reference value <mr> is returned to the TE on successful message delivery.

10.20.2 Format

Command	Possible response(s)
+CMSS=<index>[,<da>[,<toda>]]	**if PDU mode (+CMGF=0) and sending successful:** +CMSS: <mr>[,<ackpdu>] **if sending fails:** *+CMS ERROR: <err>*
+CMSS=?	

10.21 AT+CMGW(Text mode) – Write Message to Memory (Sec 3.5.3)

10.21.1 Description

Execution command stores a message to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given, support ‘stored unsent’ and “stored sent”

10.21.2 Format

Command	Possible response(s)
if text mode (+CMGF=1): +CMGW[=<oa/da>[,<tooa/toda>[,<stat>]]]<CR> ***text is entered***<ctrl-Z/ESC>	+CMGW: <index> *+CMS ERROR: <err>*
+CMGW=?	

10.22 AT+CMGW(PDU mode) – Write Message to Memory (Sec 4.4)

10.22.1 Description

Execution command stores a message to memory storage <mem2>. Memory location <index> of the stored message is returned. By default message status will be set to 'stored unsent', but parameter <stat> allows also other status values to be given, support ‘stored unsent’ and “stored sent”

10.22.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CMGW=<length>[,<stat>]<CR>***PDU is given*** <ctrl-Z/ESC>	+CMGW: <index> *+CMS ERROR: <err>*
+CMGW=?	

10.23 AT+CGMD – Delete Message (Sec 3.5.4)

10.23.1 Description

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

10.23.2 Format

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

10.23.3 Field

<delflag>: an integer indicating multiple message deletion request as follows:

0 (or omitted) Delete the message specified in <index>

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

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

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

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

10.24 AT+CMGC(Text mode) – Send Command (Sec 3.5.5)

10.24.1 Description

Execution command sends a command message from a TE to the network (SMS-COMMAND).

10.24.2 Format

Command	Possible response(s)
if text mode (+CMGF=1): +CMGC=<fo>,<ct>[,<pid>[,<mn>[,<da>[,<toda>]]]]<CR> ***text is entered***<ctrl-Z/ESC>	**if text mode (+CMGF=1) and sending successful:** +CMGC: <mr>[,<scts>] **if sending fails:** *+CMS ERROR: <err>*
+CMGC=?	

10.25 AT+CMGC(PDU mode) – Send Command (Sec 4.5)

10.25.1 Description

Execution command sends a command message from a TE to the network (SMS-COMMAND).

10.25.2 Format

Command	Possible response(s)
if PDU mode (+CMGF=0): +CMGC=<length><CR> ***PDU is given***<ctrl-Z/ESC>	**if PDU mode (+CMGF=0) and sending successful:** +CMGC: <mr>[,<ackpdu>] **if sending fails:** *+CMS ERROR: <err>*
+CMGC=?	

10.26 AT+CMMS – More Message to Send (Sec 3.5.6)

10.26.1 Description

Set command controls the continuity of SMS relay protocol link. When feature is enabled (and supported by network) multiple messages can be sent much faster as link is kept open.

Test command returns supported values as a compound value.

10.26.2 Format

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

10.26.3 Field

<n>:

0 disable

2 enable (if the time between the response of the latest message send command and the next send command exceeds 1-5 seconds (the exact value is up to ME implementation), ME shall close the link but TA shall not switch automatically back to <n>=0)

11 Proprietary 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

11.1.1 Description

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.

11.1.2 Format

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

11.1.3 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)

11.1.4 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
```

11.2 AT+CEMS – Engineer Mode

11.2.1 Description

This Command is used to command to turn on the engineer mode so that any indication will pass to as unsolicited result code to TA.

11.2.2 Format

Execution command : AT+ CEMS = <mode>
Read command : AT+ CEMS? Return the item id list
Test command : AT+ CEMS =? Show if the command is supported

11.2.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	mode	mode	Off	0
			on	1
			MMI Factory mode – Off	2
			MMI Factory mode – On	3

11.2.4 Response

Read command : + CEMS: <mode>
OK
It only reflects AT's setting (+CEMS: 0 and +CEMS: 1)
Set command with mode=2 and 3 won't affect Read command's value.

Test command : + CEMS: (0-3)
Execution command : OK

11.2.5 Unsolicited result code

+BATS: <status>
Description: This is indication report the battery status to MMI.

Type	Short name	Long name	Parameter/comment	
Integer	status	Battery status	PMIC_VBAT_STATUS	0
			PMIC_CHARGER_IN	1
			PMIC_CHARGER_OUT	2
			PMIC_OVERVOLPROTECT	4
			PMIC_OVERBATTEMP	5
			PMIC_OVERCHARGECURRENT	6
			PMIC_CHARGE_COMPLETE	7
			PMIC_LOW_BATTERY	8
			PMIC_LOW_BATTERY_POWER_OFF	9
			PMIC_INVALID_BATTERY	10

+GPIOS: <device>,<status>
Description: This is indication report the GPIO device status to MMI.

Type	Short name	Long name	Parameter/comment	
Integer	device	gpio device	EXT_DEV_NONE	0
			EXT_DEV_HANDFREE	1
			EXT_DEV_EARPHONE	2
			EXT_DEV_CARKIT	3
			EXT_DEV_KEY_1	4
			EXT_DEV_KEY_2	5
			EXT_DEV_UART	6
			EXT_DEV_CALM_OPEN	8
			EXT_DEV_CALM_CLOSE	9
integer	status	device status	Off	0
			On	1

11.3 AT+EADP – Set / Get Audio Profile

11.3.1 Description

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

11.3.2 Format

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

11.3.3 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	

11.3.4 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
```

11.4 AT+EGPIO – Set GPIO value

11.4.1 Description

This Command is used to set gpio values to driver.

11.4.2 Format

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

11.4.3 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

11.4.4 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

11.5 AT+EADC – ADC Channel Indication

11.5.1 Description

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

11.5.2 Format

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

11.5.3 Field

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

11.5.4 Response

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

11.5.5 Unsolicited result code

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

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

11.6 AT+ELCD – LCD Parameter Testing

11.6.1 Description

This command is used to test LCD parameters and save/retrieve LCD testing parameters.

11.6.2 Format

Execution command : AT+ ELCD = <op>,<lcd>,[<type>,[“ *value1*.*value2*.*value.3*”s]]

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

11.6.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	Gets number of parameters for the specified LCD operation function. (need to specify the function type)	0
			Test the value of the function (need to specify the function type)	1
			Get the saved value of all functions	2
			Save the parameter values of all functions	3
Integer	Lcd	Lcd type	MAIN	0
			SUB	1
integer	type	function type	bias function	0
			contrast function	1
			line rate function	2
			temperature compensation function	3

11.6.4 Response

Test command : + ELCD: (0-3)

Execution command : OK

Example1:

1.Get the main LCD, bias function parameters number

```
at+elcd=0,0,0
+ELCD: 3 (depend on each project)
OK
```

2.test with main LCD type, bias function, and the value is 8, 8, 8.(The number of parameters of each function is project-dependent and can be query by <op>==0. In this case, number is 3)

```
at+elcd=1,0,0,"8.8.8"
OK
```

3.Get the saved <bias>, <contrast>, <line rate> and <temperature compensation> parameter values, each set of function is separate be comma. (Here we see each function has 3 parameter number, which is project-dependent and can be query by <op>==0)

```
at+elcd=2,0
+ELCD: "0.0.0","0.0.0","0.0.0","0.0.0"
OK
```

```
  4.save <bias>, <contrast>, <line rate> and <temperature compensation> parameter
  values with main LCD , each set of function is separate be comma.
  (The number of parameters of each function is project-dependent and can be query
  by <op>==0)
at+elcd=3,0,"1.4.6","4.5.6","2.4.7","8.7.6"
OK

  5. Get the saved <bias>, <contrast>, <line rate> and <temperature compensation>
  parameter values
  at+elcd=2,0
+ELCD: "1.4.6","4.5.6","2.4.7","8.7.6"
OK
```

11.7 AT+EPWM -- PWM Testing

11.7.1 Description

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

11.7.2 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

11.7.3 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.

11.7.4 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
```

11.8 AT+ELCM – LCM Testing

11.8.1 Description

This Command is used to turn on/off the LCM RGBW test .We have four different color for testing. The color type normal is to start/stop this test.
Note. AT+ELCM=4 should be the first command to do LCM testing.

11.8.2 Format

Execution command : AT+ ELCM = <color>
Test command : AT+ ELCM =? Show if the command is supported

11.8.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	color	Color type	R(red)	0
			G(green)	1
			B(blue)	2
			W(white)	3
			Normal(start/stop)	4

11.8.4 Response

Test command : + ELCM: (0-4)
Execution command : OK

Example:

```
AT+ELCM=4  //start
OK
```

```
AT+ELCM=0 //red
OK
AT+ELCM=1 //green
OK
At+ELCM=2 //blue
OK
At+ELCM=3 //white
OK
AT+ELCM=4 //stop
OK
```

11.9 AT+EKPD – Keypad Event Report

11.9.1 Description

This command is used for Keypad Testing.
After +EKPD is turned on, pressing each key will cause a unsolicited keypad event report to DTE.
From MMI screen, one can see which keys are not yet been tested. When all keys are tested, then MMI will show “PASS” and then back to normal screen.

11.9.2 Format

Execution command : AT+ EKPD = <op>
Read command : AT+ EKPD? Return the current setting of on/off
Test command : AT+ EKPD =? Show if the command is supported

11.9.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	on	1
			off	0

11.9.4 Response

Read command : + EKPD: <op>
OK
Test command : + EKPD: (0,1)
Execution command : OK

11.9.5 Unsolicited result code

+EKPDS: <status **>,<** code **>**
Description: This is indication report the keypad event to MMI.

Type	Short name	Long name	Parameter/comment	
integer	status	Key status	Key Press	0
			Key Release	1
integer	code	Key code	“0”-“9”	0-9
			“*”	10
			“#”	11
			“U/u”	12

			"D/d"	13
			"V/v"	14
			"^"	15
			"<"	16
			">"	17
			"M/m"(reserved)	18
			"F/f" (reserved)	19
			"["	20
			"]"	21
			"S/s"	22
			"E/e"	23
			"P/p" (reserved)	24

Example:

AT+EKPD = 1;

After push key "1" and release, the following key event will report as follow.

+EKPD: 0,1

+EKPD:1,1

11.10 AT+EALT – Loop Back Testing

11.10.1 Description

This Command is used to turn on/off the loop back test.

11.10.2 Format

Execution command : AT+ EALT = <op>

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

11.10.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	on	1
			off	0

11.10.4 Response

Test command : + EALT: (0,1)

Execution command : OK

[NOTE] The command can be used to test Headset Loop Back as well, +ESAM should be set first:

AT+ESAM=1

OK

AT+EALT=1

OK

11.11 AT+ESAM – Set Audio Mode

11.11.1 Description

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

11.11.2 Format

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

11.11.3 Field

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

11.11.4 Response

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

11.12 AT+ESLT – Set Audio Gain Value

11.12.1 Description

This Command is used to set audio sound gain value.

11.12.2 Format

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

11.12.3 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, I-melody, midi	6
Integer	Gain	Gain value	0~255	

11.12.4 Response

Test command : + ESLT: (0-6),(0-255)
Execution command : OK

Example:

```
1. set speech sound gain value 150.
AT+ESLT = 4, 150

OK
```

11.13 AT+EGMR – Mobile Revision and IMEI

11.13.1 Description

This command is used to get mobile revision and IMEI for Engineer mode and factory test using.
The set operation only apply for IMEI, Serial Number and SV.
Setting new IMEI needs to reboot the target, then IMEI can take effect.
After reboot, then MMI *#06# and MM will know the update.

11.13.2 Format

Execution command : AT+ EGMR = <op>,<type>[,str]
Test command : AT+ EGMR =? Show if the command is supported

11.13.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	get	0
			Set	1
integer	type	Revision type	Baseband chipset (only for op= 0)	0
			DSP code (only for op= 0)	1
			DSP patch (only for op= 0)	2
			MCU software (only for op= 0)	3
			MS board(hardware) (only for op= 0)	4
			Serial Number	5
			Melody revision (only for op= 0)	6
			IMEI	7
			MMI resource ver. (only for op= 0)	8
			SV (Software Version in IMEISV: 2 digit)	9
string	Str	Input/output string		

11.13.4 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

11.13.5 Example

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

11.14 AT+ESIMS – Query SIM Status

11.14.1 Description

This Command is used to query SIM status .It will return the value to see if SIM is detected or not.

11.14.2 Format

Read command : AT+ ESIMS ? Show if the command is supported

11.14.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	detected	1
			No SIM	0

11.14.4 Response

Read command : + ESIMS: (0/1)

11.15 AT+EDFT – GPIO factory testing

11.15.1 Description

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.

11.15.2 Format

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

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

11.15.3 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_1(R)	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

11.15.4 Response

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

Execution command : OK

11.16 AT+ESLP – Sleep Mode

11.16.1 Description

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

11.16.2 Format

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

11.16.3 Field

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

11.16.4 Response

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

11.17 AT+EGPO – GPO value

11.17.1 Description

This Command is used to set gpo values to driver.

11.17.2 Format

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

11.17.3 Field

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

11.17.4 Response

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

11.18 AT+ELSM – LCM Backlight

11.18.1 Description

This Command is used to enable/disable the LCM backlight sleep mode.

11.18.2 Format

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

11.18.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	Op	Operation	Enable	1
			disable	0

11.18.4 Response

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

11.19 AT+ELNVRM – NVRAM write protection

11.19.1 Description

This command is used to lock the operation of NVRAM for write protection.
Only the files with attribute NVRAM_ATTR_WRITEPROTECT will be affected, such as IMEI.

11.19.2 Format

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

11.19.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	Lock disable(reserved)	0
			Lock enable	1
			Temp disable(reserved)	2

11.19.4 Response

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

11.20 AT+ESDP – Set MMI Default Profile

11.20.1 Description

This Command is used to engineering mode with set MMI default profile set operation. We provide customer to customize the mobile before the time to the market. We support the change of wallpaper, ring tone, Home City, Theme, and short cut selection as they want. The query command only query the valid range of each category not for query the current setting. The set operation only apply when reboot.

11.20.2 Format

Execution command : AT+ ESDP = <op>,<cat>,<param1>,<param2>,<param3>
Test command : AT+ ESDP =? Show if the command is supported

11.20.3 Field

Type	Short name	Long name	Parameter/comment		
Integer	op	operation	Query command	0	
			set	1	
integer	cat	category	Wall paper	0	
			Ring tone	1	
			Home City	2	
			Theme	3	
			Select Short Cut	4	
integer	param1		Wall paper Home City Theme Select Short Cut	default	0
			Ring tone(profile)	profile1(eg.general)	0
				Profile2(eg.meeting)	1
				Profile3(eg.outdoor)	2
				Profile4(eg.Indoor)	3
				profile1(eg.Headset)	4
integer	param2		Wall paper Home City Theme Select Short Cut	default	0
			Ring tone(type))	Power on	0
				(reserved)	1
Integer	param3		Wall paper(index)	Start from **1**, maximum is project dependent	
			Ring tone(index)	Start from **1**, maximum is project dependent	
			Home(index)	Start from **1**, maximum is project dependent	
			Theme(index)	Start from **1**, maximum is project dependent	
			Select Short Cut(index list)	“a. b. c. d. e. f. g. h. i. j” (each a,b,c should present as integer)	

[NOTE]

1. Depend on each project, when set Ring tone, <param1> ProfileID might map to different profile name. Such as general, meeting…etc.
1. Depend on each project, the range of <param3>, might have different maximum value. If <param3> is larger than the maximum value in SET command. No action will take effect.

11.20.4 Response

Test command : + ESDP: <0-1>,<0-4>
OK

Execution command : +ESDP: <param1>,<param2>
OK

Example:

1. we want to query the wall paper set value

```
AT+ESDP = 0,0<CR>
+ESDP: 0, 0
OK
we can set wall paper with index 5 using
AT+ESDP = 1, 0, 0, 0, 5
OK
```

2. we can set ring tone by using query first then set.

```
AT+ESDP = 0, 1<CR>
+ESDP: 0-4, 0
OK

(Then set ring tone 7 in general profile for power on type.)
AT+ESDP = 1, 1, 0, 0, 7
OK
```

3. Set Home City

```
AT+ESDP =0,2,0,0
+ESDP: 0, 0

OK
AT+ESDP =1,2,0,0,35
OK
```

4. Set Theme

```
AT+ESDP =0,3
+ESDP: 0, 0

OK
AT+ESDP =1,3,0,0,7
OK
AT+ESDP=1,3,0,0,5
OK
```

5. Set shortcut

```
AT+ESDP =0,4
+ESDP: 0, 0

OK
at+esdp=1,4,0,0,"1.2.3.4.5.6.7.8.9.10"
OK
```

11.21 AT+ESLCD – Set Main LCD Contrast Default Value

11.21.1 Description

This command is used to set Main LCD contrast default value into NVRAM user data items. This command

will apply a positive or negative offset to the value of each level. Reboot is needed.
.

11.21.2 Format

Execution command : AT+ ESLCD = <sign>,<value>
Test command : AT+ ESLCD=? Show if the command is supported

11.21.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	sign		negative	0
			positive	1
integer	value		0-254	

11.21.4 Response

Test command : + ESLCD: (0,1), (0-254)
OK
Execution command : OK

11.22 AT+ESHW – Set Hardware Default Value

11.22.1 Description

This command is used to set PWM and LCD hardware default value.

11.22.2 Format

Execution command : AT+ ESHW = <op>,<type>[,<value>s]
Test command : AT+ ESHW=? Show if the command is supported

11.22.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	get	0
			set	1
integer	type	type	PWM1	1
			PWM2	2
			Alter	3
			Main LCD contract value	4
			Sub LCD contract value	5
Integer	value	PWM value	When <op> =1, **TEN** <value>s is needed. <freq1>,<duty1>,<freq2>,<duty2>,<freq3>,<duty3>,<freq4>,<duty4><freq5>,<duty5>	
		Lcd contract value	When <op>=1, **Fifteen** <value>s is needed	

11.22.4 Response

Test command : + ESHW=(0,1),(1-5)
OK

Execution command : OK

Example:

```
at+eshw=0,1          /* get PWM1 default value */
(255,10),(255,25),(255,30),(255,45),(255,60)

OK
at+eshw=0,2          /* get PWM2 default value */
(255,20),(20000,40),(20001,60),(20000,80),(20000,100)

OK
at+eshw=0,3          /* get PWM3(Alter) default value */
(250,20),(250,40),(250,60),(250,80),(250,100)

OK
at+eshw=0,4          /* get Main LCD contract default value */
126,127,128,129,130,131,132,133,134,135,136,137,138,139,140

OK
at+eshw=0,5          /* get Sub LCD contract default value */
20,22,24,26,28,30,32,34,36,38,40,42,44,46,48

OK
/* set Main LCD contract default value */
at+eshw=1,4,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140
OK
at+eshw=0,4
126,127,128,129,130,131,132,133,134,135,136,137,138,139,140
OK
/* set PWM1 contract default value */
at+eshw=1,1,250,20,250,40,250,60,250,80,250,100
OK
at+eshw=0,1
(250,20),(250,40),(250,60),(250,80),(250,100)
OK
```

11.23 AT+ETEST – Read Autotest Report

11.23.1 Description

The action command reads auto test report.
The set command restore factory setting. (Same as MMI: Setting-> Factory Restore)

11.23.2 Format

Action command : AT+ ETEST
Set command: AT+ ETEST=<phone lock code>
Test command : AT+ ETEST=? Show if the command is supported

11.23.3 Response

Action command : [+ETEST: <test item>, <result>]
Set command: OK / ERROR
Test command : OK

11.23.4 Field

Type	Short name	Parameter/comment	
integer	Test item	The number of test items	
integer	result	0	untested
		1	Fail
		2	Pass
String	Phone_lock_code	Password of Phone lock	

11.24 AT +ACTTEST – PDP context activate or deactivate from EM mode

11.24.1 Description

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

11.24.2 Format

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

11.24.3 Field

<state>: indicates the state of PDP context activation
0 - deactivated
1 - activated
Other values are reserved and will result in an ERROR response to the execution command.
<cid>: a numeric parameter which specifies a particular PDP context definition

12 Bluetooth through AT commands

12.1 Physical UART configuration of Bluetooth

According to Hardware, the Bluetooth UART port is defined In custom\app\bt_user_config.c.
Also, the GPIO reset, power and disconnect setting is also defined in the file.

According to these settings, AT parser can communicate with BT through the UART port and control the GPIOs.

12.2 AT+EMBT – Bluetooth Engineer Mode

12.2.1 Description

This command is perform Bluetooth Engineer Mode function, such as entering test mode, or set Factory BT address and BT name.

12.2.2 Format

Execution command : AT+ EMBT= <mode> [, <name>, <addr>] [,<level>]
Test command : AT+ EMBT=? Show if the command is supported

12.2.3 Response

Execution command : OK
Test command : +EMBT: (0-4)
OK

12.2.4 Field

Type	Short name	Parameter/comment	
integer	result	0	Factory set BT name and address
		1	BT module enter test mode
		2	BT module enter test mode
		3	BT module power on/off
		4	BT module GPIO reset high/low
String	Name	Bluetooth friendly name	
string	Addr	Bluetooth address	
Integer	level	Range:(0,1) - the level of RESET and POWER	

12.2.5 Example

```
AT+EMBT=1
OK          //(BT module now is in test mode)
AT+EMBT=3,1
OK          //(BT module power-on)
AT+EMBT=3,0
OK          //(BT module power-off)
AT+EMBT=4,1
```

```
OK          //(Set BT module RESET as high)
AT+EMBT=4,0
OK          //(Set BT module RESET as low)

AT+EMBT=0, EVBoard, 1234565b0101 //[Note] <name> and <addr> are without double quotes.
OK
```

12.3 WAKEOK – Wake up OK Indication

12.3.1 Description

The indication sent by BT chip will be used to response to our +CWUP in order to indicate that it is awake and ready for accept command. After receiving the indication, if there is any BT string need to be sent, ATCI will write they to UART.

12.4 +CRREG – Request for device registration

12.4.1 Description

Host must wait for this command before registering devices, thereafter, devices may be registered at any time.

12.5 +CCFG – configuration request

12.5.1 Description

When the Bluetooth is initially turned on, the firmware will request configurations data from the host using this command.

12.6 +CINQRES – Inquiry Response

12.6.1 Description

The remote named string and Bluetooth address for that name are passed to the host when a response is received.

12.6.2 Format

+CINQRES=<remote name>, <Bluetooth address>

12.6.3 Response

none

12.6.4 Field

Type	Short name	Parameter/comment
Hex String	Remote name	Remote name of Bluetooth device

Hex String	Bluetooth address	address of Bluetooth device

12.7 +CINQCFM – Inquiry Confirmation

12.7.1 Description

Indication of end of the inquiry with the resultant reason.

12.7.2 Format

+CINQCFM=<status>

12.7.3 Response

none

12.7.4 Field

Type	Short name	Parameter/comment	
integer	status	0	Inquiry complete
		1	Inquiry cancelled
		2	Maximum number of responses received

12.8 +CPINREQ – Pin Code Request

12.8.1 Description

Pin code request of Bluetooth address from remote device

12.8.2 Format

+CPINREQ=<bd_addr>

12.8.3 Response

none

12.8.4 Field

Type	Short name	Parameter/comment
Hex String	Bd_addr	address of Bluetooth device

12.9 +CPINCFM – Pin Code Confirmation

12.9.1 Description

Indication of end of the pin code request with the resultant reason.

12.9.2 Format

+CPINCFM=<status>

12.9.3 Response

none

12.9.4 Field

Type	Short name	Parameter/comment	
integer	status	0	Pairing complete
		1	Pairing timed out
		2	Pairing cancelled
		3	Pairing failed
		4	Pairing not finished

12.10 +CRFCSTAT – RFComm Status

12.10.1 Description

confirmation of RFComm status with the resultant reason.

12.10.2 Format

+CRFCSTAT=<bd_addr>,<status>

12.10.3 Response

none

12.10.4 Field

Type	Short name	Parameter/comment	
Hex String	Bd_addr	address of Bluetooth device	
integer	status	0	Connection complete
		1	Connection timed out
		2	Connection cancelled
		3	Connection disconnected
		4	Abnormal disconnection
		5	Remote refusal to connect
		6	Connection service not supported
		7	Connection failed

12.11 +CSCOSTAT – SCO link status

12.11.1 Description

confirmation of SCO link status with the resultant reason.

12.11.2 Format

+CSCOSTAT=<status>

12.11.3 Response

none

12.11.4 Field

Type	Short name	Parameter/comment	
integer	status	0	SCO Connection complete
		1	SCO Connection timed out
		2	SCO Connection cancelled
		3	SCO Connection disconnected
		4	SCO abnormal disconnection
		5	SCO Remote refusal to connect
		6	SCO Connection service not supported
		7	SCO Connection failed

12.12 +VGS – Volume Level Indication

12.12.1 Description

The indication gives the current volume level of the headset.

12.12.2 Format

+VGS=<volume level>

12.12.3 Response

none

12.12.4 Field

Type	Short name	Parameter/comment
integer	Volume level	Volume level of headset

12.13 +CKPD – Button press indication

12.13.1 Description

The indication gives the button that user presses with button value.

12.13.2 Format

+CKPD=<button>

12.13.3 Response

none

12.13.4 Field

Type	Short name	Parameter/comment
integer	Button	Button pressed

12.14 +CPROFILE – Current Profile Indication

12.14.1 Description

Indication of the current profile..

12.14.2 Format

+CPROFILE=<status>

12.14.3 Response

none

12.14.4 Field

Type	Short name	Parameter/comment	
integer	status	0	Reserved
		1	Audio Gateway
		2	Dial-up Networking
		3	Serial Prot Profile
		4	Hands Free Profile
		5	Fax Profile

12.15 +CSTAT – Current Status Indication

12.15.1 Description

This indication gives the current status of the gateway.

12.15.2 Format

+CSTAT=<current connect status>,<current SCO status>

12.15.3 Response

none

12.15.4 Field

Type	Short name	Parameter/comment	
integer	Current connect status	0	Unknown error
		1	Idle
		6	Connecting

		7	Connectable
		8	Connected
		9	Discoverable
		10	Inquiring
		11	Host_inquiring_all
		12	Host_inquiring_audio
		13	PairingAsSalve
		14	PairingAsMaster
		15	Pairing to device
		16	Pair successful
		17	Pair unsuccessful
		18	Connect pending
integer	Current SCO connect status	0	Unknown error
		1	Idle
		6	Connecting
		7	Connectable
		8	Connected
		9	Discoverable
		10	Inquiring
		11	Host_inquiring_all
		12	Host_inquiring_audio
		13	PairingAsSalve
		14	PairingAsMaster
		15	Pairing to device
		16	Pair successful
		17	Pair unsuccessful
		18	Connect pending

12.16 +GETPS – PS key response

12.16.1 Description

The response is used to return PSKEY value asked by host.

12.16.2 Format

+GETPS=<value>

12.16.3 Response

none

12.16.4 Field

Type	Short name	Parameter/comment
string	Value	PSKEY value

12.17 +CLINK – Link Key Indication

12.17.1 Description

The indication gives the link key of the paring Bluetooth device..

12.17.2 Format

+CLINK=<bd_addr>,<link key>

12.17.3 Response

none

12.17.4 Field

Type	Short name	Parameter/comment
Hex String	Bd_addr	address of Bluetooth device
Hex string	Link key	Link key

12.18 +BT – forward the command to BT chip

Command	Discription
+BT=<command>	<command> will be forward to BT chip

13 Proprietary AT commands for Phone suite tool

These commands is used for Phone suite Tool to communicate with our MMI.
These commands will be INVALID if it is a MODULE solution.

13.1 AT+EIMG – Image Download

13.1.1 Description

This command is used to for Phone suite Tool to download/remove/retrieve image to the mobile. We should clearly define the behavior between Phone suite Tool and our file system through the AT command. We have to define the Max data field length. Therefore, if one file is over than our data field size, Phone suite Tool have to segment this file within the Max size. In additional, Phone suite tool should use one Boolean parameter to tell the mobile the end of this file.

If Phone suite tool want to download one exist file. We will delete this file first and create in the after. This is because we want to make sure that file will have correct length and can be retrieve successfully. When downloading, for example, one file has 100 bytes but our limitation is 30 bytes. Phone suite tool should lunch AT command 4 times. However, if any error occurred before successful download, PS will delete this opened file. Another example is if 2 AT command are successfully performed, but user want to abort the download, Phone suite tool should delete this file after all.

NOTE:

5. The file path : \USER\image
6. The open command is for writing a file. Therefore it is only allowed to create a new file. If the filename is already existed in File system, ERROR will be returned when you try to open it.
7. after open a file, write/close command should be issued in 10 seconds. Otherwise, the target might consider it as PC connection broken. The file handle will be closed.

13.1.2 Format

Execution command : AT+ EIMG = <op>[,<file>[,<folder>]][,<length>,<eof_flag>," data "]

(When <op>=0,3,4,5,6 : <file> and <folder> is needed)
(When <op>=2, <length>,<eof_flag>," data " are needed)
(When <op>=7, <folder> is needed)

Read command : AT+ EIMG =? Show if the command is supported

13.1.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	Operation	0	Open image file
			1	Close image file
			2	Write image file
			3	Retrieve image
			4	Delete image
			5	Display image

			6	Stop display image (to Idle screen)
			7	Retrieve image file list
string	file	File name		The file name in the FAT system (in UCS2)
Integer	fld	folder	0	Image standard
Integer	len	Length		The length of data field. The Max length is 64 (after 05.29 max length = 200)
	Enf_flag	End of file flag	0	True
			1	False
string	data	Hex data		File data block. Each bytes of file will present by HEX mode in this block.

13.1.4 Response

Test command : + EIMG: (0-7)

Execution command :

[+EIMG: <number of data block>, <eof_flag> ,< data_len/ total_length>, <data>]s //<op>=3

[+EIMG: <filename>]s //<op>=7

OK

Example:

```
  1. Download a file, named “ki.gif”, of file size 128 bytes.
AT+EIMG =0,"6B0069002E00670069006600",0
OK

  AT+EIMG =
  2,64,0,"D1CC53C73F9597DD792977D64A42A63559EEA6E3167DD16CFF754AB4CB969503
3CF00DA2B02C71453CD5ECCEC6717F5CA3CA29EFBDF2A3539D7BF8F1435F956F"
OK

 AT+EIMG =2,
  64,1,"D1CC53C73F9597DD792977D64A42A63559EEA6E3167DD16CFF754AB4CB969503
3CF00DA2B02C71453CD5ECCEC6717F5CA3CA29EFBDF2A3539D7BF8F1435F956F"
OK
AT+ EIMG = 1
OK

2. Retrieve the previous downloaded file
AT+ EIMG =3,"6B0069002E00670069006600",0

+EIMG: 1, 0, 64, "D1CC53C73F9597DD792977D64A42A63559EEA6E3167DD16CFF
754AB4CB9695033CF00DA2B02C71453CD5ECCEC6717F5CA3CA29EFBDF2A3539D7BF8F1435F956F"

+EIMG: 2, 1, 64, "D1CC53C73F9597DD792977D64A42A63559EEA6E3167DD16CFF
754AB4CB9695033CF00DA2B02C71453CD5ECCEC6717F5CA3CA29EFBDF2A3539D7BF8F1435F956F"
OK

3. Remove a file
```

```
AT+ EIMG =4,"6B0069002E00670069006600",0
OK

4. Display a image file

AT+EIMG = 5, "6B0069002E00670069006600",0
OK

5. List files in DIR
AT+EIMG = 7,0
+EIMG: "6B006900740074007900 2E00670069006600"
+EIMG: "70006F00720073006300680065002E00670069006600"

OK
```

13.2 AT+EMDY – Melody Download

13.2.1 Description

This command is used to for Phone suite tool to download/remove/retrieve midi to the mobile. We should clearly define the behavior between Phone suite tool and our file system through the AT command. We have to define the Max data field length. Therefore, if one file is over than our data field size, Phone suite tool have to segment this file within the Max size. In additional, Phone suite tool should use one Boolean parameter to tell the mobile the end of this file.

If Phone suite tool want to download one exist file. We will delete this file first and create in the after. This is because we want to make sure that file will have correct length and can be retrieve successfully. When downloading, for example, one file has 100 bytes but our limitation is 30 bytes. Phone suite tool should lunch AT command 4 times. However, if any error occurred before successful download, PS will delete this file. Another example is if 2 AT command are successfully performed, but user want to abort the download, Phone suite tool should delete this file after all. If Phone suite tool want to

NOTE:

1. The file path : \USER\sound
2. The open command is for writing a file. Therefore it is only allowed to create a new file. If the filename is already existed in File system, ERROR will be returned when you try to open it.
3. after open a file, write/close command should be issued in 10 seconds. Otherwise, the target might consider it as PC connection broken. The file handle will be closed.

13.2.2 Format

Execution command : AT+ EMDY = <op>[,<file>,<folder>][,<length>,<eof_flag>,” data ”]
Read command : AT+ EMDY =? Show if the command is supported

13.2.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	Operation	0	Open midi file
			1	Close midi file
			2	Download midi
			3	Retrieve midi
			4	Delete midi
			5	Play one midi by name

			6	Stop play one midi by name
			7	Retrieve midi file list
String	file	File name		The file name in the FAT system (in UCS2 format)
Integer	fld	Folder (file type)	0	.imy
			1	.mid
Integer	len	Length		The length of data field. The Max length is 64 (after 05.29 max length = 200)
Integer	Enf_flag	End of file flag	0	True
			1	False
string	data	Hex data		File data block. Each bytes of file will present by HEX mode in this block.

13.2.4 Response

Test command : + EMDY: (0~7)

Execution command :

[+EMDY: <number of data block>, <eof_flag> ,< data_len/ total_length>, <data>]s //<op>=3

[+EMDY: <filename>]s //<op>=7

OK

Example:

1. Download a file, named test.mid, of file size120 byes.

```
AT+EMDY = 0,“74006500730074002E006D0069006400”,1
OK
(→ the data field contains 128 chars for 64 bytes binary data)
AT+EMDY =2, 64 , 0 ,“00FFFB……..”
OK
AT+EMDY = 2,56,1,”BB FA…..”
OK
AT+EMDY = 1
OK

2. Retrieve the previous downloaded file(test.mid)
AT+EMDY = 3, “74006500730074002E006D0069006400”, 1
+EMDY= 1, 0, 64, “00FFFB……..”
+EMDY= 1, 1, 8, “BBFA……..”
OK

3. Remove a midi file
AT+EMDY = 4, “74006500730074002E006D0069006400”, 1
OK

4. Play a midi file
AT+EMDY = 5, “74006500730074002E006D0069006400”, 1
OK

5. Stop Playing a midi file
AT+EMDY = 6, “74006500730074002E006D0069006400”, 1
OK

6.Get specify folder file list.
```

```
AT+EMDY = 7, 1
+EMDY:” 74006500730074002E006D0069006400”
+EMDY:” 74006500730073002e006D0069006400”
OK
```

13.3 AT+EFSR – Read File

13.3.1 Description

Set command is to read a file.
Action command is to abort reading action.

13.3.2 Format

Execution command : AT+ EFSR = <filename>
Test command : AT+ EFSR =? Show if the command is supported
Action command: AT+EFSR

Type	Short name	Long name	
string	<filename>	Full Filepath	**fullpath** should be given. eg: C:\USER\MMS\msg.s In **IRA** format or **UCS2** format, set by **+CSCS** first. Note that the full path that FS support is up to 260 chars, the file name can up to 255 chars. **Note: AT has limitation of UART_QUEUE= 512. Therefore, AT cannot support for UCS2 chars filename length > 125, which represents 500 HEX chars, SO please use IRA format if the full path is longer than 120 chars.** According to V.25ter section 5.4.2.2, backslash’\’ is a special char in string, **If the "\" character itself is to be represented in a string, it shall be encoded as "\5C"**. Eg: “C:\5CUSER\5CMMS\5Cmsg.s” must be given in AT Command for “C:\USER\MMS\msg.s”

13.3.3 Response

Execution command : [+EFSR: <index>,<eof_flag>, <length>, <raw data>]
[[+EFSR: <index>, <eof_flag>, <length>, <raw data>]…]
OK /ERROR

Test command : OK

Type	Short name	Long name	Discription
Integer	index	The number of data block	If the file size is 300 there will be 5 data blocks, from index 1 to index 5.
Integer	Eof_flag	End of file	**0: FALSE** (There is remaining raw data for the file)
			1: TRUE (End of file, the last part of raw data)
Integer	length	Length of raw data (Bytes)	**Maximum = 64 (after 05.24 Maximum = 128)**
String	Raw data	Raw data of the file	In HEX format

13.4 AT+EFSW – Write File

13.4.1 Description

To write a file.

13.4.2 Format

Execution command : AT+ EFSW = <op> [, <filename>] [,<eof_flag>,<length>,<rawdata>]

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

Type	Short name	Long name	Parameter/comment	
Integer	op	Operation	0	**Create and open a file**
			1	**Close the file** (will close the file which was opened by <op>=0
			2	**Write raw data** to a open file
When <op>=0: <filename> shall be present				
String	filename	Fullpath of Filename	Refer to <filename> in +EFSR	
When <op>=2 : <eof_flag>,<length>,<rawdata> shall be present				
Integer	eof_flag	End of file flag	0: FALSE (There is remaining raw data for the file)	
			1: TRUE (End of file, the last part of raw data)	
Integer	length	Length of raw data (Bytes)	**Maximum = 64 (after 05.29 Maximum = 200)**	
String	Raw data	Raw data of the file	In HEX format	

13.4.3 Response

Execution command : OK / ERROR
Test command : +EFSW: (0-2)
OK

13.5 AT+EFSD – Delete File

13.5.1 Description

To delete a file

13.5.2 Format

Execution command : AT+ EFSD = <filename>
Test command : AT+ EFSD =? Show if the command is supported

Type	Short name	Long name	
string	<filename>	Full path of Filename	Same as +EFSR

13.5.3 Response

Execution command : OK /ERROR
Test command : OK

13.6 AT+EFSF – Folder operation

13.6.1 Description

To create/delete a folder

13.6.2 Format

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

Type	Short name	Long name	Parameter/comment	
Integer	op	Operation	0	**Create the folder**
			1	**Delete the folder**

			2	***Enter the folder (available after 04.22)*** *(When the full file path is longer than 120 UCS2 chars (represent by 480 ascii chars), this command can provide the way to access the file, please see example. Note This command need to be provided before every action command, since the stored path is cleared after every action. Also a 10 seconds timer is used. So if there's no file operation in 10 seconds after +EFSF=2 is used, the stored path will be cleared as well.)*
			3	***Back to the Root folder. (available after 04.22)***
String	folder	Fullpath of foldername	Refer to <filename> in +EFSR.	

13.6.3 Response

Execution command : OK
Test command : +EFSF: (0-1)
OK

13.7 AT+EFSL – List Files

13.7.1 Description

Active command is used to get **visible** drives from MT.
Set command is used to get the file list in a folder.

Active command : AT+ EFSL
Execution command : AT+ EFSL = <foldername>
Test command : AT+ EFSL = ? Show if the command is supported

Type	Short name	Long name	Parameter/comment
String	foldername	Fullpath of foldername	Refer to <filename> in +EFSR.

13.7.2 Response

Execution command : [+EFSF: <filename> [,<filesize>, <fileatt>]]
OK /ERROR
Test command : OK

Type	Short name	Long name	Parameter/comment	
String	filename	filename	According to +CSCS format	
Integer	filesize	filesize		
Integer	fileatt	File attribute	0x01	RTF_ATTR_READ_ONLY
			0x02	RTF_ATTR_HIDDEN
			0x04	RTF_ATTR_SYSTEM
			0x08	RTF_ATTR_VOLUME
			0x10	RTF_ATTR_DIR
			0x20	RTF_ATTR_ARCHIVE

NOTE: if +CSCS is set as “IRA” but filename contains Chinese UCS2 characters, the filename might not be displayed correctly.

13.8 AT+EFS – File System Size

13.8.1 Description

Get the available size in file system for image and melody download.

13.8.2 Format

Action command : AT+ EFS (Query the available size of default drive C:)
Response: +EFS: <size>

Execution command : AT+ EFS= <drv>
Response: +EFS: <size>

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

Type	name	comment	
Integer	drv	67	C:
		68	D:
		69	E:
		70	F:
		71	G:
Integer	size	In bytes	

13.9 AT+EFSRN – File/Folder Rename

13.9.1 Description

The command is used to rename a folder/file.
In addition, this command can be used to do move one file/folder to another file/folder in the same drive.

13.9.2 Format

Execution command : AT+ EFSRN = <op> , <filename>

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

Type	Short name	Long name	Parameter/comment	
Integer	op	Operation	0	**Execute the FS_Rename action.** (After execute the Rename action, the temporary paths stored in ME will be cleaned automatically.)
			1	**Set the file name, which will be renamed.** (The path can be appended by continuously issuing this command. A long file path can be given by this way. Please see example.)
			2	**Set the new file name.** (The path can be appended by continuously issuing this command. A long file path can be given by this way. Please see example.)
			3	**Clear the temporary paths stored in ME.**
String	filename	Fullpath of File or Folder	Refer to <filename> in +EFSR.	

13.9.3 Response

Execution command : OK

Test command : +EFSRN: (0-3)
OK

13.9.4 Example

```
/* clear temporary file paths stored in ME */
at+efsrn=3
OK

/* Move the folder "D:\erica2" to "D:\test1\erica1" */
//set file path "D:\erica2"
at+efsrn=1,"0044003A005C006500720069006300610032"
OK
//set new file path "D:\test1\erica1"
at+efsrn=2,"0044003A005C00740065007300740031005C006500720069006300610031"
OK

at+efsrn=0   //do Rename action
OK

/* Move the folder "D:\test1\erica1" to "D:\2erica" */
//set file path "D:\test1\erica1"
at+efsrn=1,"0044003A005C00740065007300740031005C006500720069006300610031"
OK
//set new file path: "D:\2erica"
at+efsrn=2,"0044003A005C00320065007200690063006l"
```

```
OK

at+efsrn=0   //do Rename action
OK

/* Rename the folder "D:\2erica" to "D:\1" */
//set file path "D:\"
at+Efsrn=1,"0044003A005C"
OK
//append and set file path "D:\2erica"
at+efsrn=1,"00320065007200690063006100"
OK
//set new file path "D:\"
at+efsrn=2,"0044003A005C"
OK
//append and set new file path "D:\1"
at+efsrn=2,"0031"
OK

at+efsrn=0   //do Rename action
OK


/* move the file "D:\1.txt" to "D:\1\1.txt" */
//set file path "D:\"
at+efsrn=1,"0044003A005C"
OK
//append and set file path "D:\1.txt"
at+efsrn=1,"0031002E007400780074"
OK
//set new file path "D:\"
at+efsrn=2,"0044003A005C"
OK
//append and set new file path "D:\1\"
at+efsrn=2,"0031005C"
OK
//append and set new file path "D:\1\1.txt"
at+efsrn=2,"0031002E007400780074"
OK

at+efsrn=0   //do Rename action
OK
```

13.10 File operation Examples

```
/* get file lists using +CSCS = "IRA" */
at+cscs="IRA"
OK
at+efsl
+EFSL: "D:"

OK
at+efsl="D:"
+EFSL: "audio", 0, 16

+EFSL: "USER", 0, 16
```

```
OK
at+efsl="D:\5CUSER"
+EFSL: ".", 0, 16

+EFSL: "..", 0, 16

+EFSL: "image", 0, 16

+EFSL: "sound", 0, 16

OK
at+efsl="D:\5CUSER\5Cimage"
+EFSL: ".", 0, 16

+EFSL: "..", 0, 16

+EFSL: "mini.bmp", 17462, 32

+EFSL: "icon1.gif", 422, 32

+EFSL: "ems", 0, 16

+EFSL: "cooper6.bmp", 17462, 32

OK
at+efsr="D:\5CUSER\5Cimage\5Cicon1.gif"
+EFSR: 1, 0, 64, "4749463839611D001900D53300BDE469FFCA1799CF29FFB00BE1FAA9FFE423
ABD949523D00CFEF898B6800719823447403FFED27A5D63ED5F293C9EB7EB1DD53"

+EFSR: 2, 0, 64, "FFDC1F987200497807FFA707654C00FFB90F90B038B285007F5F006C941FAF
C21F53800ED9EC72725500AB8000628C18785A00A57B0085A831E7FB8D7BA02ABD"

+EFSR: 3, 0, 64, "CF3B9E7600769C265842005D88155884116B500085630067901C80A42D8AAC
34FFFF33FF9900FFFFFF0000000000000000000000000000000000000000000000"

+EFSR: 4, 0, 64, "00000000000000000000000021F90401000033002C000000001D00190000
06C3C09970482C1A8FC8A472C96C3A9FD0E8657AC4589FB00EC0042B7E0A81C1A7"

+EFSR: 5, 0, 64, "3922210086CD68288A81073211F345381B04AFE1C91D969D982566681B2543
127C70124D285A262845126F8A4C0A95960A43099A9B094B1A040E0F00100D021A"

+EFSR: 6, 0, 64, "332D310C11011614322D4A2EA0A2A4022E3319AAACAE32194A20B4A3A52033
21BBADAF214A2AC2B62A331EC8BD1E4B2B7568022B432C88322C4C1CD8771C4315"

+EFSR: 7, 1, 38, "DE154C13E30213E6E8EAECEE4229DE294C0BF9FA0B4307FEFF07A2081C48B0
A0C1224100003B"

OK

/*************************************/
/* get file lists using +CSCS = "UCS2" */
at+cscs="UCS2"
OK
at+efsl
+EFSL: "0044003A"

OK
at+efsl="0044003A"
+EFSL: "00610075006400690066006F", 0, 16

+EFSL: "0055005300450052", 0, 16
```

```
OK
at+efsl="0044003A005C0055005300450052"
+EFSL: "002E", 0, 16

+EFSL: "002E002E", 0, 16

+EFSL: "0069006D006100670065", 0, 16

+EFSL: "0073006F0075006E0064", 0, 16

OK
at+efsl="0044003A005C005500530045005 2005C0069006D006100670065"
+EFSL: "002E", 0, 16

+EFSL: "002E002E", 0, 16

+EFSL: "006D0069006E0069002E0062006D0070", 17462, 32

+EFSL: "00690063006F006E0031002E006700690066", 422, 32

+EFSL: "0065006D0073", 0, 16

+EFSL: "0063006F006F007000650072003600 2E0062006D0070", 17462, 32

OK
at+efsr="0044003A005C005500530045005 2005C0069006D006100670065005C00690063006F006
E0031002E006700690066"
+EFSR: 1, 0, 64, "4749463839611D001900D53300BDE469FFCA1799CF29FFB00BE1FAA9FFE423
ABD949523D00CFEF898B6800719823447403FFED27A5D63ED5F293C9EB7EB1DD53"

+EFSR: 2, 0, 64, "FFDC1F987200497807FFA707654C00FFB90F90B038B285007F5F006C941FAF
C21F53800ED9EC72725500AB8000628C18785A00A57B0085A831E7FB8D7BA02ABD"

+EFSR: 3, 0, 64, "CF3B9E7600769C265842005D88155884116B500085630067901C80A42D8AAC
34FFFF33FF9900FFFFFF0000000000000000000000000000000000000000000000"

+EFSR: 4, 0, 64, "00000000000000000000000000021F904010000330 02C000000001D00190000
06C3C09970482C1A8FC8A472C96C3A9FD0E8657AC4589FB00EC0042B7E0A81C1A7"

+EFSR: 5, 0, 64, "3922210086CD68288A81073211F345381B04AFE1C91D969D982566681B2543
127C70124D285A262845126F8A4C0A95960A43099A9B094B1A040E0F00100D021A"

+EFSR: 6, 0, 64, "332D310C11011614322D4A2EA0A2A4022E3319AAACAE32194A20B4A3A52033
21BBADAF214A2AC2B62A331EC8BD1E4B2B7568022B432C88322C4C1CD8771C4315"

+EFSR: 7, 1, 38, "DE154C13E30213E6E8EAECEE4229DE294C0BF9FA0B4307FEFF07A2081C48B0
A0C1224100003B"

OK

/* query free size of 'D' drive */
at+efs=68
+EFS: 31656960

OK

/* create a TEST folder under D:\USER */
at+cscs="IRA"
OK
at+efsf=0,"D:\5CTEST"
OK
at+efsl="D:"
```

```
+EFSL: "audio", 0, 16

+EFSL: "USER", 0, 16

+EFSL: "TEST", 0, 16

OK

/* upload temp3.gif to TEST folder */
at+efsw=0,"D:\5CTEST\5Ctemp3.gif"
OK
AT+EFSW=2, 0, 64,
"4749463839611D001900D53300BDE469FFCA1799CF29FFB00BE1FAA9FFE423ABD949523D00CFEF898B6800719
823447403FFED27A5D63ED5F293C9EB7EB1DD53"
OK
AT+EFSW=2, 0, 64,
"FFDC1F987200497807FFA707654C00FFB90F90B038B285007F5F006C941FAFC21F53800ED9EC72725500AB800
0628C18785A00A57B0085A831E7FB8D7BA02ABD"
OK
AT+EFSW=2, 0, 64,
"CF3B9E7600769C265842005D88155884116B500085630067901C80A42D8AAC34FFFF33FF9900FFFFFF0000000
000000000000000000000000000000000000000000"
OK
AT+EFSW=2, 0, 64,
"00000000000000000000000000021F90401000033002C000000001D0019000006C3C09970482C1A8FC8A472C96
C3A9FD0E8657AC4589FB00EC0042B7E0A81C1A7"
OK
AT+EFSW=2, 0, 64,
"3922210086CD68288A81073211F345381B04AFE1C91D969D982566681B2543127C70124D285A262845126F8A4
C0A95960A43099A9B094B1A040E0F00100D021A"
OK
AT+EFSW=2, 0, 64,
"332D310C11011614322D4A2EA0A2A4022E3319AAACAE32194A20B4A3A5203321BBADAF214A2AC2B62A331EC8B
D1E4B2B7568022B432C88322C4C1CD8771C4315"
OK
AT+EFSW=2, 1, 38,
"DE154C13E30213E6E8EAECEE4229DE294C0BF9FA0B4307FEFF07A2081C48B0A0C1224100003B"
OK
at+efsw=1
OK

at+efsl="D:\5CTEST"
+EFSL: ".", 0, 16

+EFSL: "..", 0, 16

+EFSL: "temp3.gif", 422, 32

OK

/* read temp3.gif */
at+efsr="D:\5CTEST\5Ctemp3.gif"
+EFSR: 1, 0, 64,
"4749463839611D001900D53300BDE469FFCA1799CF29FFB00BE1FAA9FFE423ABD949523D00CFEF898B6800719
823447403FFED27A5D63ED5F293C9EB7EB1DD53"

+EFSR: 2, 0, 64,
"FFDC1F987200497807FFA707654C00FFB90F90B038B285007F5F006C941FAFC21F53800ED9EC72725500AB800
0628C18785A00A57B0085A831E7FB8D7BA02ABD"
```

```
+EFSR: 3, 0, 64,
"CF3B9E7600769C265842005D88155884116B500085630067901C80A42D8AAC34FFFF33FF9900FFFFFF0000000
0000000000000000000000000000000000000000"

+EFSR: 4, 0, 64,
"00000000000000000000000021F90401000033002C000000001D0019000006C3C09970482C1A8FC8A472C96
C3A9FD0E8657AC4589FB00EC0042B7E0A81C1A7"

+EFSR: 5, 0, 64,
"3922210086CD68288A81073211F345381B04AFE1C91D969D982566681B2543127C70124D285A262845126F8A4
C0A95960A43099A9B094B1A040E0F00100D021A"

+EFSR: 6, 0, 64,
"332D310C11011614322D4A2EA0A2A4022E3319AAACAE32194A20B4A3A5203321BBADAF214A2AC2B62A331EC8B
D1E4B2B7568022B432C88322C4C1CD8771C4315"

+EFSR: 7, 1, 38,
"DE154C13E30213E6E8EAECEE4229DE294C0BF9FA0B4307FEFF07A2081C48B0A0C1224100003B"

OK

/* delete temp3.gif */
at+efsd="D:\5CTEST\5Ctemp3.gif"
OK
at+efsl="D:\5CTEST"
+EFSL: ".", 0, 16

+EFSL: "..", 0, 16

OK

/* delete TEST folder */
at+efsf=1,"D:\5CTEST"
OK
at+efsl="D:"
+EFSL: "audio", 0, 16

+EFSL: "USER", 0, 16

OK

/* In order to use relative path, +EFSF=2 must be provide before every action */
at+Efsf=2,"D:\5CUSER"
OK
at+efsl="image"
+EFSL: ".", 0, 16

+EFSL: "..", 0, 16

+EFSL: "icon5.gif", 1065, 32

+EFSL: "mini5.bmp", 17462, 32

+EFSL: "yellow.bmp", 17462, 32

+EFSL: "cooper.bmp", 17462, 32

+EFSL: "ems", 0, 16

OK
at+efsf=2,"D:\5CUSER"
OK
```

```
at+efsr="image\5Cicon5.gif"
+EFSR: 1, 0, 64, "4749463839611D001900F70000FFFFFFFFFFDAFFFFD7FFFEE4FFFFCFFFFFCA
FFFFCDFFFFBCFFFED0FFFFADFFFEBBFFFEC3FFFAEAFFFCBEFFFEADFFFE9BFFFCB2"
…
…
…
+EFSR: 17, 1, 41, "A13E4E70882D58274D908E759AF091F2542021349915CE645EE727C13F26C
38B061F4FBE3CC480003B"

OK
at+cscs="UCS2"
OK
at+efsf=2,"0044003A"   /* “D:” */
OK
at+efsf=2,"0055005300450052"  /* “D:\USER” */
OK
at+efsl="0069006D006100670065" /* “D:\USER\image */
+EFSL: "002E", 0, 16

+EFSL: "002E002E", 0, 16

+EFSL: "00690063006F006E0035002E006700690066", 1065, 32

+EFSL: "006D0069006E00690035002E0062006D0070", 17462, 32

+EFSL: "00790065006C006C006F0077002E0062006D0070", 17462, 32

+EFSL: "0063006F006F00700650072002E0062006D0070", 17462, 32

+EFSL: "0065006D0073", 0, 16

OK
```

13.11 AT+EMMSFS – MMS Folder Status

13.11.1 Description

To get MMS folder status

13.11.2 Format

Execution command : AT+ EMMSFS = <folderID>,<retrievalmode>
Test command : AT+ EMMSFS =?Show if the command is supported

13.11.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	folderID	Folder ID	1(0x01)	Inbox
			2(0x02	Outbox
			4(0x04)	Sent
			8(0x08)	Drafts
			64(0x40)	Templates
Integer	RetrievalMode	RetrievalMode	1	Basic
			2	Full

13.11.4 Response

Test command : +EMMSFS: (1,2,4,8,64) ,(1-2)
Execution command : +EMMSFS: <result>, <n_msg>, <n_unread> ,< home_dir>, <filepath>
OK /ERROR

Type	Short name	Long name	
Integer	result	0	OK (No ERROR)
		1	BUSY
		2	Insufficient Memory
		3	Insufficient Persistent Storage
		4	Invalid Message
		5	Message ID not found
		6	File Operation ERROR
		7	Invalid Folder
		8	Access Deny
		9	Invalid Parameter
		10	Exceed MAX messages
		11	ERROR
		12	MMS Not Ready
Integer	n_msg	Number of Msg	
Integer	n_unread	Number of Unread msg	
string	Home dir	MMS Home directory (Ex. C:\USER\MMS\)	
string	filepath	Filename which keeps msg infomation	

13.12 AT+EMMSEXE – Add /Delete a MMS message

13.12.1 Description

The command is used to Add/Delete a MMS message to system in MT.
Before using this command to ADD message, the MMS message should be already saved to the MT by using related File operation commands.

13.12.2 Format

Execution command : AT+ EMMSEXE = <op> [,<folderID> [,<msgID>]] [,<filepath>]
Test command : AT+ EMMSEXE =? Show if the command is supported

13.12.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	Op	operation	0	Delete message
			1	Add message
Integer	folderID	Folder ID	0	Delete <msgID>
			1(0x01)	Delete all msg in Inbox
			2(0x02	Delete all msg in Outbox
			4(0x04)	Delete all msg in Sent
			8(0x08)	Delete all msg in Drafts
			64(0x40)	Delete all msg in Templates
Integer	msgID	Message ID	The messageID to **delete**	
string	filepath	filepath	The **full** filepath of mms message to **add**	

13.12.4 Response

Test command : + EMMSEXE: (0,1)
OK
Execution command : +EMMSEXE: <result> [,<msgID>] (When <op>=1)

OK / ERROR

13.12.5 Field

Type	Short name	Long name	Parameter/comment	
Integer	result	result	0	OK (No ERROR)
			1	BUSY
			2	Insufficient Memory
			3	Insufficient Persistent Storage
			4	Invalid Message
			5	Message ID not found
			6	File Operation ERROR
			7	Invalid Folder
			8	Access Deny
			9	Invalid Parameter
			10	Exceed MAX messages
			11	ERROR
			12	MMS Not Ready
Integer	msgID	Message ID	The message ID which MMS assigned for the upload req.	

Example:

```
1.Delete a message, <msgid> =1
AT+EMMSEXE = 0,0,1
+EMMSEXE: 0

OK

2. Delete all messages in SENT Box
AT+EMMSEXE = 0, 4
+EMMSEXE: 0

OK

3. Add a MMS message, the file's <filepath>="00xxxxx…"
AT+EMMSEXE = 1, "00xxxxxx…"
+EMMSEXE : 0, 5 => assigned <msgid> will be returned.

OK
```

13.13 AT+EJAVA

13.13.1 Description

Request the Java task to install the jad and jar files.

13.13.2 Format

Execution command : AT+ EJAVA = <is_force>, <jad_file_name>, <jar_file_name>
Test command : AT+ EJAVA =? Show if the command is supported

Type	Short name	Comment

integer	is_force	0	FALSE: if the local installation request is trying to install the AP without user intervention.
		1	TRUE: if the installation is by force, that is, answer “yes” for every installation confirmation.
string	jad_file_name	Local directory for the jad file. This field can be empty (*AT+EJAVA = <is_force>, ,<jar_file_name>* or *AT+EJAVA = <is_force>, “”, <jar_file_name>*) and it means the request installation is a JAR only installation.	
string	jar_file_name	Local directory for the jar file. This field cannot be empty.	

13.13.3 Response

Execution command : OK / ERROR / +CME: <error>
Test command : OK

13.13.4 Error code <error> :

Short name	Value	Comment
J2ME_NO_ERROR	256+ 0	The local install was successful
MISSING_PROVIDER_CERT	256+ 4	The content provider certificate is missing.
CORRUPT_PROVIDER_CERT	256+ 5	The content provider certificate cannot be decoded.
UNKNOWN_CA	256+6	The CA that issued the content provider certificate is unknown.
INVALID_PROVIDER_CERT	256+7	The signature of the content provider certificate is invalid.
CORRUPT_SIGNATURE	256+8	The JAR signature cannot be decoded.
INVALID_SIGNATURE	256+9	The signature of the JAR is invalid.
UNSUPPORTED_CERT	256+10	The content provider certificate is a supported version.
EXPIRED_PROVIDER_CERT	256+11	The content provider certificate is expired.
EXPIRED_CA_KEY	256+12	The CA's public key has expired.
MISSING_SUITE_NAME	256+13	The name of MIDlet suite is missing.
MISSING_VENDOR	256+14	The vendor is missing.

MISSING_VERSION	256+15	The version is missing.
INVALID_VERSION	256+16	The format of the version is invalid.
OLD_VERSION	256+17	This suite is older that the one currently installed.
MISSING_JAR_URL	256+18	The URL for the JAR is missing.
JAR_NOT_FOUND	256+20	The JAR was not found.
MISSING_JAR_SIZE	256+21	The JAR size is missing.
SUITE_NAME_MISMATCH	256+25	The MIDlet suite name does not match the one in the JAR manifest.
VERSION_MISMATCH	256+26	The version does not match the one in the JAR manifest.
VENDOR_MISMATCH	256+27	The vendor does not match the one in the JAR manifest.
INVALID_KEY	256+28	A key for an attribute is not formatted correctly.
INVALID_VALUE	256+29	A value for an attribute is not formatted correctly.
INSUFFICIENT_STORAGE	256+30	Not enough storage for this suite to be installed
JAR_SIZE_MISMATCH	256+31	The JAR was not size in the JAD.
NEW_VERSION	256+32	This suite is newer that the one currently installed.
JAD_MOVED	256+34	The JAD URL is for an installed suite but different than the original JAD URL.
CORRUPT_JAR	256+36	An entry could not be read from the JAR.
ALREADY_INSTALLED	256+39	The JAD matches a version of a suite already installed
DEVICE_INCOMPATIBLE	256+40	The device does not support either the configuration or profile in the JAD.
MISSING_CONFIGURATION	256+41	The configuration is missing from the manifest.
MISSING_PROFILE	256+42	The profile is missing from the manifest.

PUSH_DUP_FAILURE	256+45	The connection in a push entry is already taken.
PUSH_FORMAT_FAILURE	256+46	The format of a push attribute has an invalid format.
PUSH_PROTO_FAILURE	256+47	The class in a push attribute is not in MIDlet-<n>; attribute.
AUTHORIZATION_FAILURE	256+49	Application authorization failure.
ATTRIBUTE_MISMATCH	256+50	An attribute in both the JAD and JAR manifest does not match. This error is for trusted suites only.
TRUSTED_OVERWRITE_FAILURE	256+52	Indicates that the user tried to overwrite a trusted suite with an untrusted suite during an update.
DEFAULT_GAME	256+60	The AP is one of the default games and cannot be updated.
DISK_OPERATION_FAIL	256+80	Disk operation fail. The installation was not finished.

14 Other Proprietary AT Commands

14.1 AT+CPBSE – Band Selection

14.1.1 Description

To set MS preferred band.

14.1.2 Format

Command	Response
+CPBSE=<band>	
+CPBSE?	+CPBSE: <band>
+CPBSE =?	(list of supported <band>s)

14.1.3 Field

<band>

0	BAND 900	
1	BAND 1800	
2	BAND 1900	
3	Dual Band (900/1800)	
4	BAND 850	=> after w05.06
5	Dual Band (850/1900)	=> after w05.06
6	Dual Band (850/1800)	=> after w05.38
7	Dual Band (900/1900)	=> after w05.38
8	Triple Band (850/900/1800)	=> after w05.38
9	Triple Band (900/1800/1900)	=> after w05.38
10	Triple Band (850/900/1900)	=> after w05.38
11	Triple Band (850/1800/1900)	=> after w05.38
12	Quad Band (850/900/1800/1900)	=> after w05.38

14.2 AT+EGPAU – PPP Authentication

14.2.1 Description

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

14.2.2 Format

Execution command : AT+ EGPAU = <op>,<cid> [,<is_chap>]

Test command : AT+ EGPAU =? Show the supported value.

14.2.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	Read	0
			Write	1
Integer	cid	Context id	Please refer to the value in test command response.	

Integer	is_chap	Negotiation protocol	PAP	0
			CHAP	1

14.2.4 Response

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

14.3 AT+EPIN2 – Enter PIN2

14.3.1 Description

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

14.3.2 Format

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

14.3.3 Field

<pin2>, <newpin2>, <puk2>: string type values
<code> values reserved by the present document:
READY MT is not pending for any password
SIM PIN2 MT is waiting SIM PIN2 to be given
SIM PUK2 MT is waiting SIM PUK2 to be given

14.4 AT+EPINC – PIN remaining attempt number

14.4.1 Description

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

14.4.2 Format

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

14.4.3 Field

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

14.5 AT+ESMSS – SMS status change mode

14.5.1 Description

SMS status change mode after +CMGR and +CMGL

14.5.2 Format

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

14.5.3 Field

<mode>

0 Unchange - SMS status remains as “REC UNREAD” after +CMGR or +CMGL

1 Change - SMS status changes from “REC UNREAD” to “REC READ” after +CMGR or +CMGL.

14.6 AT+EOPN – Read Operator name

14.6.1 Description

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

14.6.2 Format

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

14.6.3 Field

<format> : 0 long alphanumeric format

1 short alphanumeric format

<oper_num>: the operator in numeric format

<oper_alpha>: the operator in alphanumeric format

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

14.7 AT+CGSDATA – Sending uplink data

14.7.1 Description

This command is used to send uplink data to network.

14.7.2 Format

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

14.7.3 Field

<byte> the number of byte sending to network

example:
at+cgsdata = 500 (sending 500 bytes)